# Subrata Talapatra Gilberto Santos<sup>1</sup> Kutub Uddin Filipe Carvalho

Article info: Received 30.05.2019 Accepted 05.09.2019

UDC - 006.013 DOI-10.24874/IJQR13.04-19



## MAIN BENEFITS OF INTEGRATED MANAGEMENT SYSTEMS THROUGH LITERATURE REVIEW

Abstract: The main aim of this paper is to prepare a comprehensive list of benefits offered by Integrated Management System (IMS) discussed in the previous literature. This paper had followed a methodology for literature review based on the keyword search in the electronic database of Web of science, Science direct, Scopus and Emerald. Findings of this literature review have unveiled several important and interesting benefits offered by the integrated management system and wider scope of integration. Several studies have confirmed the listed benefits of integrated management system, namely, Quality Management System (QMS) according ISO 9001, Environmental Management System (EMS) according ISO 14001 and Occupational Health and Safety Management System (OHSMS) according ISO 45001/BS OSHAS 18001. Moreover, this study has highlighted some dimensions of future study in line with the analysis of

benefits of integrated management system.

*Keywords: Quality; Environment; Occupational Health and Safety; Integrated Management Systems; ISO 9001; ISO 14001; ISO 45001.* 

## 1. Introduction

During growth of quality and environment movement back in 90's appeared EMS (Environmental Management System - ISO 14000), OSHMS (Occupational Safety and Health Management System - OHSAS 18001), risk management system, and some others. Appearance of large number of management systems, with different and sometimes divergent demands, demand reconsideration of optimal strategies of introduction of these standards in national quality system and point question of their integration through integrated management system.

Now-a-days, business organizations are practicing several management systems such as quality management system (QMS)

<sup>1</sup> Corresponding author: Gilberto Santos Email: <u>gsantos@ipca.pt</u>

according ISO 9001. environment management system (EMS) according ISO 14001 and occupational health and safety management system (OHSMS) according ISO 45001/BS OSHAS 18001, among others. Recently, business organizations are using Corporate Social Responsibility Management System (CSRMS) (Santos et al., 2018a). Each management system works in particular area and offers benefits in that area. For example, if a firm choose OMS, it can enjoy several benefits like continuous improvement of products, services and process quality, customer satisfaction on quality; improve product reliability, reduction of cost by improving process efficiency etc. (Santos et al., 2019a; Costa et al., 2019; Araújo et al., 2019; Dahlgaard-Park & Dahlgaard-Park, 2019; Marques et al., 2018; Bravi et al., 2019;



Santos & Barbosa, 2006; Batista & Santos, 2015; Lee et al., 2009; Tari et al., 2012; Ferreira et al., 2015; Khan & Farooquie, 2016; Babakian et al., 2015; Ng et a., 2008). It is very importante to créate a quality culture in the Organization (Zgodavova et al., 2017; Santos et al., 1996; Weckenmann et al., 2015; Santos et al., 2019c). Similarly, EMS can offer saving in energy consumption, pollution prevention. customer satisfaction on environmental protection etc. (Asif et al., 2009; Oliveira, 2013; Rebelo et al., 2014; Santos et al., 2016; Tarí et al., 2012; Turk, 2011; Heras-2009; Psomas et al., Saizarbitoria et al., 2011; Gavronski et al., 2008; Matuszak-Flejszman, 2009; Reis et al., 2018; Álvarez-García & RíoRama, 2016; Bednárová & Jergová, 2015).

OHSMS can offer risk level reduction, better safety, employer satisfaction, etc. (Ferreira et al., 2019; Rebelo et al., 2017; Santos et al., 2014; Monteiro et al., 2013; Ferreira & Santos, 2014; Gonçalves et al., 2019; Yiu et al., 2019; Santos et al., 2013; Rzepecki, 2012). On the other hand, the certification of the management systems (QEOHS) also shows benefits (Fonseca et al., 2017).

For this reason, many business organizations those who are not aware of management standard practice, are trying to adopt various system management standards. Implementations of ISO standards are completely voluntary (Rebelo et al., 2016a; 2014). But. now-a-days, it becomes obligatory measure to implement ISO 9001 and ISO 14001 as instructed by the customers (Oliveira, 2013; Guilherme et al., 2013). Researchers are trying to find out significant impact of these management system standards on firm's business performance. Some of them have found positive link (Arimura et al., 2015; Asif et al., 2009; Oliveira et al., 2010; Su et al., 2015), while other have not found any significant link (Abad et al., 2013; Clougherty & Grajek, 2014; Lo et al., 2014; Mohammadfam et al., 2016; Prajogo et al., 2012). Beside this, a large number of studies had been conducted to analyse the benefits offered by ISO 9001

and ISO 14001 implemented sequentially or simultaneously (Manders et al., 2016; Tarí et al., 2012).

Several authors have argued that, two above mentioned ISO standards has a lot of compatibilities from the angle of structure and management procedure (Chen et al., 2016; Rybski et al., 2017). Both of these standards follow continuous improvement practice (PDCA cvcle). Process improvements, advent of new technology, changes in consumer's priorities, improved quality of service provided by competitors is just a few. It has, therefore, become important to periodically update the knowledge of consumer expectations and transform the organization to customer-focused а organization. With better understanding of consumers' perception about product quality and service, a company can identify its relative strengths and weakness and chart a path for future progress and improvement.

Many research scholars have argued that, companies those who have already implemented and are practicing ISO 9001 have enough knowledge to adopt ISO 14001 (Asif et al., 2009; Luo et al., 2015). Because, both of the standards require similar practices to meet the regulations of quality and environment. Similarities between these standards in terms of structure, management philosophy can create an opportunity to integrate, innicially, these two management systems and later other management systems (Rebelo et al., 2016b; Santos et al., 2017).

In this context, synergies may be achieved by integrating these two standards based on their similarities. Greater benefits can be obtained through better synergies (Bernardo et al., 2009; Kafel & Casadesus, 2016). According to Rybski et al. (2017) all individual management systems can be integrated into one management system. Important benefits obtained from the integrated systems are optimum use of resources, unification of audit, increase efficiency of the firm and so on (Abad et al., 2014; Bernardo et al., 2012; Bernardo et al., 2018; Bernardo et al., 2015;



Mezinska et al., 2015; Santos et al., 2011).

Implementation of individual management system standards in an integrated way leads to achieve several benefits. So far our knowledge go, limited literature review has taken any attempt to prepare a comprehensive list of benefits offered by integrated management system. This is an important issue from both academic and managerial point of view. Therefore, contribution of this study covers both academic and managerial perspectives. First come to the point of academic perspectives, this study will increase the present knowledge regarding the benefits of integrated management system. Several benefits have been found from the previous literature and has prepared a comprehensive list of benefits obtained from integrated management systems. This could be a guideline of future studies. Second come to the point of managerial perspectives, the knowledge of benefits offered by integrated management system could help the manager to identify the level of integration of their firms.

An important element in the PAS 99 specification the is structure of documentation, especially the point about the basis requirement of documentation built. An important requirement of PAS 99 is the obligation to establish, conduct audits by the organizations plan of an integrated management system, which should be based on the most important aspects of the management system and include: Review of the organization; The frequency of audits; Methodology and competence of auditors for auditing the individual systems; Reporting; Risk management in the organization. Organizations that exhibit a greater degree of integration of management systems in a complete way also try to integrate and plan audits.

The main aim of this work is to prepare a comprehensive list of benefits offered by Integrated Management System (IMS) discussed in the previous literature.

The present study has the following structure. Background of the main benefits of integrated management system is highlighted in the first section. In the methodology section, strategy of research has been described. In the result section, main benefits of integration are presented. In conclusion section, direction of future research has been presented.

### 2. Literature review

Management and development of human resources is becoming increasingly important due to the new place and role of a human in all social processes and in the management of those. Motivation and employee satisfaction become the basis of occupation of modern human resource management because only the construction of quality motivational system can help the organization to increase its competitive ability and value of the company. In today's globalized economy, firms are facing ever increasing market challenges (Ardito et al., 2015). Hence, new ideas must be constantly sought to develop new products, new methods of reducing costs and improving, in particular, the quality of products and services. to reduce environmental impacts, as well as, to promote the health and well-being of its employees (Santos et al., 2018b). To this end, several organizations integrate their main management systems, namely the OMS (Quality Management System), EMS (Environmental Management System) and the OSHMS (Occupational Hygiene and Safety Management System). But according Feldam and Flórida (1994), since the sixteenth century, and perhaps before, the fortunes of regions and nations have depended on new ideas and new products that energized these places and facilitated their economic growth. If Innovation is one of the keys to prosperity, then precisely how this happens - how a region breaks with convention and introduces new quality products – is a question of some significance. This idea is reinforced by Acemoglu and Robinson (2013), who stated that "the great



inequality of the present world, which emerged in the nineteenth century, was caused by the unequal diffusion of technologies and industrial production". Schwab (2016), states that today, the lesson of the first industrial revolution still remains valid: the extent to which society adopts technological innovation is the main determinant of progress. Hence, innovation is seen as a competitive advantage that many companies use to assure continuity and success of their business, in dynamic markets, always taking into account the quality of the products, the respect for the environmental rules, as well as the well-being of all the employees of the organization. Hence, innovation is seen as a competitive advantage that many companies use to assure continuity and success of their business, in dynamic markets. As such, the design of new ideas is the starting point for innovation (Trott, 2005). A new idea in itself, though interesting, is not an invention or an innovation, it is just a concept or a thought or a compilation of thoughts. But it is important for quality, the environment, the safety and innovation. In Developing Countries, engineering and innovation are more evident in production processes rather than in product design. It is certain that production creates jobs and this is good for developing countries. But the largest share of value created is for the economies that project/design and develop new products. This is one of the main reasons why the economies of poor or developing countries are almost always in crisis (Santos et al., 2019c).

Appreciating integration of different management systems has own strategic and tactical component. Strategic component refers to decision about management system integration,"core integration" definition, defining integration and procedures, with obligational determination of goals and management system integration strategy. Tactical component refers to plan making and program integration, surveying management system integration procedure, making decisions in particular control points and reporting for strategic level.

When an organization decide to integrate their management systems, they achieve a better efficiency related to more efficient management of multiple management systems, as well as, improving external image and relationship with stakeholders. Motivation encourages creativity, innovation, professional development of employees and is the key for high business standards.

Bernardo et al. (2015) conducted a literature in the web of science, Scopus and Emerald database to identify the benefits arising from implementation and use of IMS. 18 empirical studies were analysed and result shows that, companies which integrate their management systems have obtained more benefits when compared to separate management system. Among the IMS benefits this study has highlighted the followings.

The simplification achieve in the process leads to less confusion, redundancy, conflict in documentation and bureaucracy (Bernardo et al., 2015; Gianni & Gotzamani, 2015; Su et al., 2015). Better definition of management responsibility and authority also reduce less confusion (Abad et al., 2013; Clougherty & Grajek, 2014; Simon et al., 2014). Unification of audit both internal and external ensures better use of audit result and reduces cost through avoidance of duplication of effort (Abad et al., 2013; Arimura et al., 2015; Barbosa et al., 2018; Oliveira et al., 2010). Organization began to conceive integrated procedures in order to make their process simple (Arimura et al., 2015; Asif et al., 2013; Manders et al., 2016; Nunhes & Oliveira, 2018). Integration of documents requires extra effort initially, but offer many benefits in long run.

IMS will give better risk management. In IMS risk are more likely to be identified and treated when process are reviewed from all angles. Elimination of these would have direct benefits (Mohammadfam et al., 2016; Prajogo et al., 2012; Rebelo et al., 2014). Integrated approach of risk management and control will lead to optimum allocation of



resources for it. IMS can provide a better opportunity for good communication (Carvalho et al., 2015; Nunhes & Oliveira, 2018; Carvalho et al., 2019). Effective communication is a key element for efficient management (Carvalho et al., 2019). Holistic view of IMS is important to achieve objectives (Abad et al., 2013; Arimura et al., 2015; Bernardo et al., 2017; Manders et al., 2016; Rebelo et al., 2014). Improve management and process transparency leading to more efficient and effective management review.

When the management systems are united, increased profitability is attained through lowering cost, better risk control and creativity (Oliveira et al., 2010; Gianni et al., 2017; Guilherme et al., 2013; Su et al., 2015; Nunhes & Oliveira, 2018). Greater computability and alignment of current standards facilities easier decision-making.

IMS promoting a sustainable success in business by efficient management and fulfil the requirements of all stakeholders (Abad et al., 2013; Oliveira, 2013; Mohammadfam et al., 2016; Nunhes et al., 2018; Prajogo et al., 2012; Santos et al., 2011; Carvalho et al., 2018; Carvalho et al., 2019).

## 3. Methodology

This study has performed a literature review to find out all possible benefits offered by integrated management system. This study has included the information regarding the benefits of IMS discussed in the previous research articles. This study has also reviewed several empirical studies of IMS.

## **3.1. Strategy of literature review**

Four electronic databases (Web of science, Science direct, Scopus and Emerald) were utilized for searching the article related to benefits of IMS (quality, environment and safety). Strategy followed for searching articles is keyword searching Strategy. The key words used for searching the articles are "integrated management" or "IMS", and "Benefits", "implementation". Electronic databases search result show the research articles containing text words present in the title or abstract in the article.

## **3.2. Selection of articles**

Total 323 academic research articles were identified from the year 2008 to 2018. In order to identify relevant articles, title and abstract of identified articles were checked by the authors. A criterion that was set to include a paper in the review was; paper containing benefits of integrated management system. Excluding criteria was; benefit offered by individual management systems. Study regarding the firm performance analysis was also excluded from this study. Finally, 57 articles had successfully passed out from inclusion /exclusion criteria. 42 of them were cited in table 1. On the other hand, we find other publications that meet the search criteria but are not indexed to the databases referred (see, e.g., Kafel, 2016, 2015; Forbes & Walker, 2016; Kania & Spilka, 2016; El Khachab et al., 2015; Marić et al., 2012; Raišiene, 2011). These, among others, are part of the references. They helped us to find the main benefits of Management Systems Integration (Quality, Environment and Safety).

## 4. Results

Benefits of IMS are presented in the table 1. According to the study, two important benefits were obtained from integrated management system. They are improving company image (Arimura et al., 2015; Asif et al., 2013; Guilherme et al., 2013; Rebelo et al., 2014; Jewalikar & Shelke, 2017; Samy et al., 2015; Soler & Fernández, 2014; Simon et al., 2015; Soler & Fernández, 2014; Simon et al., 2016; Clougherty & Grajek, 2014; Lo et al., 2014; Luo et al., 2015; Rebelo et al., 2014; Oliveira et al., 2010; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015; Simon et al., 2012; Soler & Fernández, 2014).



Sl.	Benefits	References		
No.				
1	Enhance the reputation of the organization to its stakeholders	Bernardo et al. (2018); Rybski et al. (2017); Jewalikar and Shelke (2017); Carvalho et al. (2015); Samy et al. (2015); Simon et al. (2012)		
2	Contribute integrated approach for risk management in business	Nunhes et al. (2018); Manders et al. (2016); Carvalho et al. (2015); Prajogo et al. (2012); Nouri et al. (2010)		
3	Increase the capacity of the organization to attain objective	Nunhes and Oliveira (2018); Bernardo et al. (2015); Mezinska et al. (2015); Samy et al. (2015)		
4	Provide better alignment of strategic, tactical, and operational policies and objectives	Nunhes et al. (2017); Jewalikar and Shelke (2017); Gianni and Gotzamani (2015); Carvalho et al. (2015); Domingues et al. (2015); Samy et al. (2015); Simon et al. (2012)		
5	Better decision-making	Gianni et al. (2017); Oliveira (2013); Prajogo et al. (2012)		
6	Ensure optimum use of various resources	Bernardo et al. (2017); Jewalikar and Shelke (2017); Kafel and Casadesús (2016); Manders et al. (2016); Domingues et al. (2015); Samy et al. (2015)		
7	Provide competitive advantages from synergies of different management policies	Barbosa et al. (2018); Jewalikar and Shelke (2017); Domingues et al. (2015); Samy et al. (2015); Rebelo et al. (2014); Oliveira (2013);		
8	Improve the compliance of legislation	Jewalikar and Shelke (2017); Rebelo et al. (2016a); Mezinska et al. (2015); Domingues et al. (2015); Samy et al. (2015); Oliveira (2013)		
9	Enhance collaboration inside and outside the organization	Ribeiro et al. (2017); Mezinska et al. (2015); Samy et al. (2015); Soler and Fernández (2014)		
10	Develop inter-relationship among stakeholders	Nunhes and Oliveira (2018); Rybski et al. (2017); Jewalikar and Shelke (2017); Gianni and Gotzamani (2015); Samy et al. (2015); Soler and Fernández (2014); Simon et al. (2012)		
11	Reduce duplication of documents, records, and making them simple	Jewalikar and Shelke (2017); Rebelo et al. (2016a); Samy et al. (2015); Domingues et al. (2015); Almeida et al. (2012); Bernardo et al. (2012); Zeng et al. (2011); Hasle and Zwetsloot (2011)		
12 13	Increase in profit margins Eliminate hostilities, doubt, and redundancy among the management standards	Jewalikar and Shelke (2017) Jewalikar and Shelke (2017); Kafel and Casadesús (2016); Luo et al. (2015); Gianni and Gotzamani (2015); Domingues et al. (2015); Samy et al. (2015)		
14	Provide greater compatibility of several management systems	Bernardo et al. (2018); Jewalikar and Shelke (2017); Domingues et al. (2015); Samy et al. (2015); Clougherty and Grajek (2014); Zeng et al. (2011)		
15	Lowering the implementation and management cost of IMS	Jewalikar and Shelke (2017); Rebelo et al. (2016a); Domingues et al. (2015); Samy et al. (2015); Asif et al. (2013); Oliveira (2013); Zeng et al. (2011); Nouri et al. (2010)		
16	IMS is helpful to attain sustainability in business	Nunhes and Oliveira (2018); Rybski et al. (2017); Bernardo et al. (2017); Jewalikar and Shelke (2017); Domingues et al. (2015); Samy et al. (2015)		

Table 1. Main ber	nefits of integrated	management syst	em (IMS)	through literature review	v.



(201111				
Sl. No.	Benefits	References		
17	Improve process performance and simplify tasks	Nunhes and Oliveira (2018); Jewalikar and Shelke (2017); Bernardo et al. (2015); Mezinska et al., (2015); Domingues et al. (2015); Samy et al. (2015)		
18	Provide wonderful and easier communication	Gianni et al. (2017); Jewalikar and Shelke (2017); Samy et al. (2015); Soler and Fernández (2014); Almeida et al. (2012); Simon et al. (2012)		
19	Improvement of organizational culture	Bernardo et al. (2018); Samy et al. (2015); Soler and Fernández (2014); Asif et al. (2013); Oliveira (2013); Simon et al. (2012)		
20	Better imitative to arrange employee training	Jewalikar and Shelke (2017); Rebelo et al. (2016a); Domingues et al. (2015); Samy et al. (2015); Abad et al. (2013)		
21	Optimization of training activities through unification of training	Manders et al. (2016); Domingues et al. (2015); Samy et al. (2015); Rebelo et al. (2014); Oliveira (2013)		
22	Better employee motivation and greater participation in team work	Bernardo et al. (2017); Jewalikar and Shelke (2017); Carvalho et al. (2015); Samy et al. (2015); Abad et al. (2014); Simon et al. (2012); Santos et al. (2011)		
23	Ensure adequate number of competent workforce	Barbosa et al. (2018); Samy et al. (2015)		
24	Improve productivity and organization efficiency	Jewalikar and Shelke (2017); Kafel and Casadesús (2016); Domingues et al. (2015); Samy et al. (2015); Soler and Fernández (2014); Simon et al. (2012); Oliveira et al. (2010); Bernardo et al. (2009)		
25	Yielding the ability to add a new management standards	Nunhes et al. (2018); Domingues et al. (2005); Samy et al. (2015); Soler and Fernández (2014); Simon et al. (2012); To et al., 2012		
26	More precise clarification of authority and responsibility in new management system	Manders et al. (2016); Samy et al. (2015); Simon et al. (2012)		
27	Better utilization audit results in control procedures	Ribeiro et al. (2017); Samy et al. (2015); Simon et al. (2012)		
28	Unification of external audit	Jewalikar and Shelke (2017); Kafel and Casadesús (2016); Domingues et al. (2015); Samy et al. (2015); Oliveira (2013); Asif et al. (2009)		
29	Greater robustness and agility	Bernardo et al. (2018); Carvalho et al. (2015)		
30	Better utilization of creativity and innovation efficiency	Nunhes and Oliveira (2018); Hernandez-Vivanco et al. (2018); Oliveira (2013)		
31	Improve the image of the organization	Jewalikar and Shelke (2017); Samy et al. (2015); Soler and Fernández (2014); Simon et al. (2012)		
32	Simplify the certification process	Domingues et al. (2015); Samy et al. (2015); Zeng et al. (2011)		
33	Facilitate the continuous improvement	Samy et al. (2015); Zeng et al. (2011); Nouri et al. (2010)		
34	Promotes the sustainable development	Rebelo et al. (2016a); Mezinska et al. (2015); Samy et al. (2015)		

**Table 1.** Main benefits of integrated management system (IMS) through literature review (continued)

Some other studies have highlighted the following benefits. They are optimum use of resources (Abad et al., 2013; Arimura et al.,

2015; Bernardo et al., 2009; Chen et al., 2016; Kafel & Casadesus, 2016; Manders et al., 2016; Jewalikar & Shelke, 2017; Domingues



et al., 2015; Samy et al., 2015), better communication (Abad et al., 2014, 2013; Asif et al., 2009; Bernardo et al., 2015; Chen et al., 2016; Kafel & Casadesus, 2016; Jewalikar & Shelke, 2017; Samy et al., 2015; Simon et al., 2012; Soler & Fernández, 2014), reduction of cost (Abad et al., 2013; Arimura et al., 2015; Bernardo et al., 2009; Bernardo et al., 2015; Chen et al., 2016; Mežinska et al., 2015; Rebelo et al., 2014; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015; Zeng et al., 2011).

Some research scholars have argued that, shearing of resources reduce the effort of duplication (Abad et al., 2013; Prajogo et al., 2012; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015; Zeng et al., 2011). Many authors like Bernardo et al. (2018) and Nunhes et al. (2018), have argued that, in IMS implementation, common elements are implemented in shared way.

Most important benefits close to human resource management, are employee training (Abad et al., 2013; Asif et al., 2013; Oliveira et al., 2010; Su et al., 2015; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015), employee involvement (Arimura et al., 2015; Asif et al., 2009; Bernardo et al., 2012; Chen et al., 2016; Kafel & Casadesus, 2016; Lo et al., 2014; Mohammadfam et al., 2015; Simon et a., 2012), team work (Abad et al., 2013; Chen et al., 2016; Oliveira et al., 2010; Guilherme et al., 2013; Rebelo et al., 2014; Samy et al., 2015; Simon et a., 2012; Soler & Fernández, 2014).

Some other researchers have argued that, integrated management system provides simplification of process which leads to reduction of confusion (Abad et al., 2013; Arimura et al., 2015; Bernardo et al., 2012; Bernardo et al., 2018; Oliveira et al., 2010; Manders et al., 2016; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015; Zeng et al., 2011), redundancy (Arimura et al., 2015; Asif et al., 2013; Guilherme et al., 2013; Mohammadfam et al., 2016; Domingues et al., 2015; Samy et al., 2015), and bureaucracy (Abad et al., 2013; Bernardo et al., 2012; Chen et al., 2016; Kafel & Casadesus, 2016; Luo et al., 2015; Rybski et al., 2017; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015).

According to Zeng et al. (2011), the IMS simplify the certification process and facilitates the continuous improvement.

Other studies have highlighted the benefits related to audit. They are unification of audit (Bernardo et al., 2015, 2012, 2009; Kafel & Casadesus, 2016; Mežinska et al., 2015; Simon et al., 2014; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015;), better utilization of audit result (Bernardo et al., 2012; Luo et al., 2015; Mezinska et al., 2015; Samy et al., 2015; Samy et al., 2012; neduction of resource and time (Abad et al., 2013; Asif et al., 2013; Oliveira et al., 2010; Prajogo et al., 2012; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015; Samy et al., 2015; Nezinska et al., 2010; Prajogo et al., 2012; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015; Samy et al., 2015; Nezinska et al., 2015; Nezinska et al., 2010; Prajogo et al., 2012; Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015; Nezinska et al., 2015; Nezinska et al., 2015; Nezinska et al., 2016; Prajogo et al., 2012; Jewalikar & Shelke, 2017; Domingues et al., 2015; Nezinska et al., 2015; Nezinska et al., 2015; Nezinska et al., 2015; Nezinska et al., 2016; Prajogo et al., 2012; Jewalikar & Shelke, 2017; Domingues et al., 2015; Nezinska et

According to some research scholars, such as Nunhes et al. (2018) and Arimura et al. (2015) claim that, integrated management system bring sustainability in business. can Improvement of stakeholder's relationship with firm and their satisfaction are the two important benefits highlighted by several authors (Bernardo et al., 2015; Carvalho et al., 2015; Nunhes & Oliveira, 2018; Rebelo et al., 2016a, 2014; Ribeiro et al., 2017; Simon et al., 2014; Jewalikar & Shelke, 2017, Samy et al., 2015; Simon et al., 2012). Today, customers are increasingly demanding (Bravi et al., 2017). It is necessáry to meet all their requirements to do good business when technologies are always improving (Bravi et al., 2018) to ptomote a better quality of life (Felix, Santos, Barroso, & Silva, 2018; Doiro et al., 2017).

Customer satisfaction is consumers' perception about a product or service that a supplier has met or exceeded their expectations. With the increase in volume and complexity of retail business, the need for further improvement has become steeper and faster too. In matters of product quality

ch guality Rebaearch

offered by several companies, there exists a strong link among consumer perception, their satisfaction level and retention for the company. Thus, customer satisfaction is the fundamental driver of business sustainability. This requires important ideas (Santo et al., 2018b) and a system that promotes good education (Santos et al., 2019b). According to Al-Hemyari & Al-Sarmi (2017) it is well known that the higher education sector in the global economy is a prime operator in the areas of economic development, competition and expansion. In addition, the students and graduates of the higher education sector compose the human capital and the future labor force in the world. Hence, in order to thinking", improve "critical "complex reasoning", "planning skills", "organizing skills", "judging skills" and "employability skills" of graduates, developing HEIs (Higher Education Institutions) in any country must meet some institutional conditions and requirements (Al-Hemyari & Al-Sarmi, 2017).

In short, the IMS promotes various external and internal benefits in the organizations (Jewalikar & Shelke, 2017; Domingues et al., 2015; Samy et al., 2015).

## 5. Conclusion

Several relevant conclusions can be drawn

from this literature revision about IMS. In first place, it confirms that many companies around the world follow the integration rules. Integration of the referred Management Systems of companies bring advantages in terms of: (i) Enhance the reputation of the organization to its stakeholders: (ii) Contribute for integrated approach for risk management in business; (iii) Increase the capacity of the organization to attain objective; (iv) Provide better alignment of strategic, tactical and operational policies and objectives; (v) Provide competitive advantages from synergies of different management policies; (vi) Eliminate hostilities, doubt and redundancy among the management standards; (vii) Improve the sustainability in business; (viii) Improve of organizational culture; (ix) Improve productivity and organization efficiency; (x) Promotes the sustainable development in the organizations. And more: multiple systems goals; with the same reduction of management costs; better definition of management responsibilities and authority; improved external image of the company.

Regarding direction of future research, it can be done a study/review with more articles. But the result should not be very different from that presented in this paper. Can only be optimized, because it is always possible to improve.

## **References:**

- Abad, J., Dalmau, I., & Vilajosana, J. (2014). Taxonomic proposal for integration levels of management systems based on empirical evidence and derived corporate benefits. *Journal of cleaner production*, 78(1), 164-173. doi: 10.1016/j.jclepro.2014.04.084
- Abad, J., Lafuente, E., & Vilajosana, J. (2013). An assessment of the OHSAS 18001 certification process: Objective drivers and consequences on safety performance and labour productivity. *Safety Science*, *60*(1), 47-56. doi: 10.1016/j.ssci.2013.06.011
- Acemoglu, D., & Robinson, J. A. (2013). *Why Nations Fail* (Portuguese version). Lisbon, Portugal: Círculo de Leitores.
- Al-Hemyari, Z. A., & Al-Sarmi, A. M. (2017). HEIS Quality Improvement Through Students Perception: Data Analysis and Robustness of the Results. *International Journal for Quality Research*, *11*(2) 261-278.



International Journal for Guality Research

- Almeida, J., Sampaio, P., & Santos, G. (2012). Integrated management systems quality, environment and health and safety: Motivations, benefits, difficulties and critical success factors. In 8th International Symposium on Occupational Safety and Hygiene (SHO 2012), 9 and 10 February, University of Minho, School of Engineering, Guimaraes, Portugal (pp. 26– 32). Retrieved from http://hdl.handle.net/1822/36162
- Álvarez-García, J., & RíoRama, M. C. (2016). Sustainability and EMAS: Impact of motivations and barriers on the perceived benefits from the adoption of standards. *Sustainability*, 8(10), 1-16. doi: 10.3390/su8101057
- Araújo, R., Santos, G., Costa, J., & Sá, J. C. (2019). The quality management system as a driver of organizational culture: An empirical study in the Portuguese textile industry. *Quality Innovation Prosperity Journal*, 23(1), 1-24. doi: 10.12776/qip.v23i1.1132
- Ardito, L., Petruzzelli, A. M., & Albino, V. (2015). From technological inventions to new products: a systematic review and research agenda of the main enabling factors. *European Management Review*, 12, 113-147.
- Arimura, T. H., Darnall, N., Ganguli, R., & Katayama, H. (2015). The effect of ISO 14001 on environmental performance: Resolving equivocal findings. *Journal of Environmental Management, Forthcoming*, 5(2), 126-138. doi: 10.1016/j.jenvman.2015.10.032
- Asif, M., Bruijn, E. J., Fisscher, O. A., Searcy, C., & Steenhuis, H. J. (2009). Process embedded design of integrated management systems. *International Journal of Quality & Reliability Management*, 26(3), 261-282. doi: 10.1108/02656710910936735
- Asif, M., Searcy, C., Zutshi, A., & Fisscher, O. A. (2013). An integrated management systems approach to corporate social responsibility. *Journal of Cleaner Production*, 56(1), 7-17. doi: 10.1016/j.jclepro.2011.10.034
- Babakian, P., Agoush, L., Foshtamy, S. S., & Rajabi, M. (2015). Benefits of ISO 9001-2008 quality management system on the change of quality indexes effectiveness in the case of three Iranian regional hospitals. *Biomedical and Pharmacology Journal*, 8(1), 213-218. doi: 10.13005/bpj/601
- Barbosa, L. C. F., Oliveira, O. J., & Santos, G. (2018). Proposition for the alignment of the integrated management system (quality, environmental and safety) with the business strategy. *International Journal for Quality Research*, 12(4), 925–940. doi: 10.18421/IJQR12.04-09
- Batista, I., & Santos, G. (2015). O impacto financeiro das auditorias da qualidade nas empresas Portuguesas. *Revista Produção e Desenvolvimento*, 1(3), 90–102. doi: 10.32358/ rpd.2015.v1.112
- Bednárová, L., & Jergová, N. (2015). Benefits from Environmental Management System Implementation. *Óbuda University e-Bulletin*, 5(1), 25-30. Retrieved from http://uniobuda.hu/e-bulletin/Bednarova\_Jergova\_6.pdf
- Bernardo, M., Casadesus, M., & Heras, I. (2009). Management systems integrated audits: An empirical study. *Ingeniería de Organización*, 8(3), 170-179.
- Bernardo, M., Casadesus, M., Karapetrovic, S., & Heras, I. (2012). Do integration difficulties influence management system integration levels? *Journal of Cleaner Production*, 21(1), 23-33. doi: 10.1016/j.jclepro.2011.09.008
- Bernardo, M., Gianni, M., Gotzamani, K., & Simon, A. (2017). Is there a common pattern to integrate multiple management systems? A comparative analysis between organizations in Greece and Spain. *Journal of Cleaner Production*, 151(1), 121-133. doi: 10.1016/j.jclepro.2017.03.036



- Bernardo, M., Gotzamani, K., Vouzas, F., & Casadesus, M. (2018). A qualitative study on integrated management systems in a non-leading country in certifications. *Total Quality Management & Business Excellence*, 29(3-4), 453-480. doi: 10.1080/14783363.2016.1212652
- Bernardo, M., Simon, A., Tarí, J. J., & Molina-Azorín, J. F. (2015). Benefits of management systems integration: A literature review. *Journal of Cleaner Production*, 94(1), 260-267. doi: 10.1016/j.jclepro.2015.01.075
- Bravi, L., Murmura, F., & Santos, G. (2017). Attitudes and behaviours of Italian 3D prosumer in the era of additive manufacturing. *Procédia Manufacturing*, *13*, 980-986. doi: 10.1016/j.promfg.2017.09.095
- Bravi, L., Murmura, F., & Santos, G. (2019). The ISO 9001:2015 quality management system standard: Companies' drivers, benefits and barriers to its implementation. *Quality Innovation Prosperity Journal*, 23(2), 64-82. doi: 10.12776/QIP.V23I2.1277
- Bravi, L., Santos, G., & Murmura, F. (2018). Fabrication laboratories: The development of new business models with new digital technologies. *Journal of Manufacturing Technology Management*, 29(8), 1332-1357. doi: 10.1108/JMTM-03-2018-0072
- Carvalho, F., Domingues, P., & Sampaio, P. (2019). Communication of commitment towards sustainable development of certified Portuguese organisations: Quality, environment and occupational health and safety. *International Journal of Quality & Reliability Management*, 36(4), 458-484. doi: 10.1108/IJQRM-04-2018-0099
- Carvalho, F., Santos, G., & Gonçalves, J. (2018). The disclosure of information on Sustainable Development on the corporate website of the certified Portuguese organizations. *International Journal of Quality Research*, *12*(1), 253-276. doi: 10.18421/IJQR12.01-14
- Carvalho, K. M., Picchi, F., Camarini, G., & Edna, M. (2015). Benefits in the implementation of safety, health, environmental and quality integrated system. *International Journal of Engineering and Technology*, 7(4), 333-338. doi: 10.7763/IJET.2015.V7.814
- Chen, D., Liu, Z., Luo, Z., Webber, M., & Chen, J. (2016). Bibliometric and visualized analysis of emergy research. *Ecological Engineering*, *90*, 285-293. doi: 10.1016/j.ecoleng.2016.01.026
- Clougherty, J. A., & Grajek, M. (2014). International standards and international trade: Empirical evidence from ISO 9000 diffusion. *International Journal of Industrial Organization*, *36*(2), 70-82. doi: 10.1016/j.ijindorg.2013.07.005
- Costa, A. R., Barbosa, C., Santos, G., & Alves, M. R. (2019). Six sigma: Main metrics and R based software for training purposes and practical industrial quality control. *Quality Innovation Prosperity Journal*, 23(2), 83-99. doi: 10.12776/QIP.V23I2.1278
- Dahlgaard-Park, S. M., & Dahlgaard, J. J. (2007). Excellence 25 years evolution. Journal of Management History, 13(4), 371-393. doi: 10.1108/17511340710819606
- Doiro, M., Fernández, J. F., Félix, M. J., & Santos, G. (2017). ERP-machining centre integration: A modular kitchen production case study. *Procédia Manufacturing*, 13, 1159-1166. doi: 10.1016/j.promfg.2017.09.178
- Domingues, J. P. T., Sampaio, P., & Arezes, P. M. (2015). Analysis of integrated management systems from various perspectives. *Total Quality Management & Business Excellence*, 26(11-12), 1311-1334. doi: 10.1080/14783363.2014.931064
- El Khachab, M., Mardhy, A., Ennaji, M. M., & Kerak, E. (2015). Advantages of integrating management system quality, safety and environment: Case of Moroccan companies. *International Journal of Innovation and Applied Studies*, *12*(3), 593-605. Retrieved from http://www.issr-journals.org/links/papers.php?journal=ijias&application=pdf&article=IJIAS-15-103-23



International Journal for Guality Research

- Feldam, M.P. & Flórida, R. (1994). The geographic source of innovation: technological infrastructure and product innovation in United States. *Annals of the Association of American Geographers*, 84(2), 210-229.
- Ferreira, C. S., Salgado, E. G., Silva, C. E. S., Mello, C. H. P. M., & Sampaio, P. (2015). Reasons and benefits associated with ISO 9001 certification for sugar and ethanol companies. *Independent Journal of Management & Production*, 6(3), 623-642. doi: 10.14807/ijmp.v6i3.301
- Ferreira, N., & Santos, G. (2014). Simultaneity of risk in the civil site construction: An analysis of accumulated risk. In Occupational Safety and Hygiene II Selected Extended and Revised Contributions from the International Symposium Occupational Safety and Hygiene (SHO 2014), 259-264.
- Ferreira, N., Santos, G., & Silva, R. (2019). Risk level reduction in construction sites: Towards a computer aided methodology A case study. *Applied Computing and Informatics*, *15*(2), 136-143. doi: 10.1016/j.aci.2018.01.003
- Fonseca, L. M. C. M., Domingues, J. P., Machado, P. B., & Calderón, M. (2017). Management System Certification Benefits: Where Do We Stand?. *Journal of Industrial Engineering and Management*, 10(3), 476-494. doi: 10.3926/jiem.2350
- Forbes, D., & Walker, K. (2016). Operational benefits of an integrated QHSE and sustainable development management system: A case study from the UK. In SPE International Conference and Exhibition on Health, Safety, Security, Environment, and Social Responsibility, 11-13 April, Stavanger, Norway. doi: 10.2118/179292-MS
- Gavronski, I., Ferrer, G., & Paiva, E. L. (2008). ISO 14001 certification in Brazil: Motivations and benefits. *Journal of Cleaner Production*, 16(1), 87-94. doi: 10.1016/j.jclepro.2006.11.002
- Gianni, M., & Gotzamani, K. (2015). Management systems integration: Lessons from an abandonment case. *Journal of Cleaner Production*, 86(1), 265-276. doi: 10.1016/j.jclepro.2014.08.023
- Gianni, M., Gotzamani, K., & Tsiotras, G. (2017). Multiple perspectives on integrated management systems and corporate sustainability performance. *Journal of Cleaner Production*, 168(1), 1297-1311. doi: 10.1016/j.jclepro.2017.09.061
- Gonçalves, I., Sá, J. C., Santos, G., & Gonçalves, M. (2019). Safety stream mapping—A new tool applied to the textile company as a case study. *Studies in Systems, Decision and Control*, 202, 71-79. doi: 10.1007/978-3-030-14730-3\_8
- Guilherme, S. E., Calarge, F. A., & Augusto, C. M. P. (2013). Experience with an integrated management system in a sugar and ethanol manufacturing unit: Possibilities and limitations. *Management of Environmental Quality*, 24(6), 710-725. doi: 10.1108/MEQ-10-2012-0068
- Hasle, P., & Zwetsloot, G. (2011). Editorial: Occupational Health and Safety Management Systems: Issues and challenges. *Safety Science*, *49*, 961-963.
- Heras-Saizarbitoria, I., Landín, G. A., & Molina-Azorín, J. F. (2011). Do drivers matter for the benefits of ISO 14001?. *International Journal of Operations & Production Management*, 31(2), 192-216. doi: 10.1108/01443571111104764
- Hernandez-Vivanco, A., Cruz-Cázares, C., & Bernardo, M. (2018). Openness and management systems integration: Pursuing innovation benefits. *Journal of Engineering and Technology Management*, 49, 76-90. doi: 10.1016/j.jengtecman.2018.07.001

- Jewalikar, A. D., & Shelke, A. (2017). Lean integrated management systems in MSME reasons, advantages and barriers on implementation. *Materials Today: Proceedings*, *4*, 1037-1044. doi: https://doi.org/10.1016/j.matpr.2017.01.117
- Kafel, P. (2015). Integration of normalized management systems with AQAP standards. In *9th International Quality Conference (IQC)* (pp. 361–366), 5th June, Center for Quality, Faculty of Engineering, University of Kragujevac, Serbia. Retrieved from http://www.cqm.rs/2015/cd1/pdf/papers/focus\_2/055.pdf
- Kafel, P. (2016). Benefits of management systems integration. *Studia Oeconomica Posnaniensia*, 4(10), 122-133. doi: 10.18559/SOEP.2016.10.9
- Kafel, P., & Casadesus, M. (2016). The order and level of management standards implementation: Changes during the time. *The TQM Journal*, 28(4), 636-647. doi: 10.1108/TQM-02-2015-0027
- Kania, A., & Spilka, M. (2016). Analysis of integrated management system of the quality, environment and occupational safety. *Journal of Achievements in Materials and Manufacturing Engineering*, 78(2), 78-84. doi: 10.5604/01.3001.0010.1498
- Khan, A., & Farooquie, J. A. (2016). Motives and benefits of ISO 9001 quality management system: An empirical study of Indian SMEs. *Brazilian Journal of Operations & Production Management*, *13*(3), 320-329. doi: 10.14488/BJOPM.2016.v13.n3.a8
- Lee, P. K. C., To, W. M., & Yu, B. T. W. (2009). The implementation and performance outcomes of ISO 9000 in service organizations. An empirical taxonomy. *International Journal of Quality & Reliability Management*, 26(7), 646-662. doi: 10.1108/02656710910975732
- Lo, C. K., Pagell, M., Fan, D., Wiengarten, F., & Yeung, A. C. (2014). OHSAS 18001 certification and operating performance: The role of complexity and coupling. *Journal of Operations Management*, 32(5), 268-280. doi: 10.1016/j.jom.2014.04.004
- Luo, H., Li, G., & Li, C. (2015). Research on integration method of integrated management system. *Open Automation and Control* Systems *Journal*, 7(1), 1802-1807. doi: 10.2174/1874444301507011802
- Manders, B., Vries, H. J., & Blind, K. (2016). ISO 9001 and product innovation: A literature review and research framework. *Technovation*, 48(1), 41-55. doi: 10.1016/j.technovation.2015.11.004
- Marić, B., Rajković, D., Moljević, S., & Jašarević, S. (2012). Factors, benefits and motivies of integrated management systems (IMS). In 16th International Research/Expert Conference "Trends in the Development of Machinery and Associated Technology" (TMT 2012), 10-12 September, Dubai, UAE (pp. 247-250). Retrieved from http://tmt.unze.ba/zbornik/TMT2012/056-TMT12-175.pdf
- Marques, C., Lopes, N., Santos, G., Delgado, I., & Delgado, P. (2018). Improving operator evaluation skills for defect classification using training strategy supported by attribute agreement analysis. *Measurement*, *119*, 129-141. doi: 10.1016/j.measurement.2018.01.034
- Matuszak-Flejszman, A. (2009). Benefits of Environmental Management System in Polish Companies Compliant with ISO 14001. *Polish Journal of Environmental Studies*, 18(3), 411-419. Retrieved from http://www.pjoes.com/pdf-88250-22108?filename=Benefits of Environmental.pdf
- Mezinska, I., Lapiņa, I., & Mazais, J. (2015). Integrated management systems towards Sustainable and socially responsible organisation. *Total Quality Management & Business Excellence*, 26(5-6), 469-481. doi: 10.1080/14783363.2013.835899



- Mohammadfam, I., Kamalinia, M., Momeni, M., Golmohammadi, R., Hamidi, Y., & Soltanian, A. (2016). Developing an integrated decision making approach to assess and promote the effectiveness of occupational health and safety management systems. *Journal of Cleaner Production*, *127*, 119-133. doi: 10.1016/j.jclepro.2016.03.123
- Monteiro, P., Santos, F. A., & Santos, G. (2013). Costs of safety at work vs. Costs of "no" safety at work-building sector. In *Occupational Safety and Hygiene Proceedings of the International Symposium on Occupational Safety and Hygiene (SHO 2013)*, 149-152.
- Ng, T., Palaneeswaran, E., & Kumaraswamy, M. (2008). Costs and benefits of ISO9000-based quality management systems to construction contractors. *The Australasian Journal of Construction Economics and Building*, 8(2), 23-29. doi: 10.5130/AJCEB.v8i2.3003
- Nouri, J., Abbaspour, M., Fard, M. T., & Fam, I. M. (2010). Advantages of integrated management system in educational centers. *Journal of Food, Agriculture & Environment*, 8(3-4), 1259-1264. Retrieved from http://world-food.net/download/journals/2010-issue\_3\_4/61(2).pdf
- Nunhes, V., Barbosa, L. C. F., Oliveira, O. J. (2017). Identification and analysis of the elements and functions integrable in integrated management systems. *Journal of Cleaner Production*, 142, 3225-3235. http://hdl.handle.net/11449/170048
- Nunhes, T. V., & Oliveira, O. J. (2018). Analysis of integrated management systems research: Identifying core themes and trends for future studies. *Total Quality Management & Business Excellence*, 29(3-4), 556-582. doi: 10.1080/14783363.2018.1471981
- Nunhes, T. V., Vilamitjana, M. B., & Oliveira, O. J. (2018). Guiding principles of integrated management systems: Towards unifying a starting point for researchers and practitioners. *Journal of Cleaner Production*, 210(1), 977-993. doi: 10.1016/j.jclepro.2018.11.066
- Oliveira, O. J. (2013). Guidelines for the integration of certifiable management systems in industrial companies. *Journal of Cleaner Production*, 57(1), 124-133. doi: 10.1016/j.jclepro.2013.06.037
- Oliveira, O. J., Serra, J. R., & Salgado, M. H. (2010). Does ISO 14001 work in Brazil? *Journal of cleaner production*, *18*(18), 1797-1806. doi: 10.1016/j.jclepro.2010.08.004
- Prajogo, D., Tang, A. K., & Lai, K. H. (2012). Do firms get what they want from ISO 14001 adoption?: An Australian perspective. *Journal of Cleaner Production*, 33(1), 117-126. doi: 10.1016/j.jclepro.2012.04.019
- Psomas, E. L., Fotopoulos, C. V., & Kafetzopoulos, D. P. (2011). Motives, difficulties and benefits in implementing the ISO 14001 Environmental Management System. *Management of Environmental Quality*, 22(4), 502-521. doi: 10.1108/14777831111136090
- Raišiene, A. G. (2011). Advantages and limitations of integrated management system: The theoretical viewpoint. *Social Technologies*, 1(1), 25-36. Retrieved from https://www.mruni.eu/upload/iblock/4a1/02\_raisiene.pdf
- Rebelo, M. F., Santos, G., & Silva, R. (2014). Conception of a flexible integrator and lean model for integrated management systems. *Total Quality Management & Business Excellence*, 25(5-6), 683-701. doi: 10.1080/14783363.2013.835616
- Rebelo, M. F., Santos, G., & Silva, R. (2016a). Integration of management systems: Towards a sustained success and development of organizations. *Journal of Cleaner Production*, 127(1), 96-111. doi: 10.1016/j.jclepro.2016.04.011
- Rebelo, M., Santos, G., & Silva, R. (2017). The integration of standardized management systems: Managing business risk. *International Journal of Quality & Reliability Management*, 34(3), 395-405. doi: 10.1108/IJQRM-11-2014-0170



- Rebelo, M., Silva, R., Santos, G., & Mendes, P. (2016b). Model based integration of management systems (MSs) - Case Study. *TQM Journal*, 28(6), 907-932. doi: 10.1108/TQM-09-2014-0079
- Reis, A. V., Neves, F. O., Hikichi, S. E., Salgado, E. G., & Beijo, L. A. (2018). Is ISO 14001 certification really good to the company? A critical analysis. *Production*, 28, 1-16. doi: 10.1590/0103-6513.20180073
- Ribeiro, F., Santos, G., Rebelo, M. F., & Silva, R., (2017). Integrated management systems: Trends for Portugal in the 2025 horizon. *Procedia Manufacturing*, 13(1), 1191-1198. doi: 10.1016/j.promfg.2017.09.194
- Rybski, C., Jochem, R., & Homma, L. (2017). Empirical study on status of preparation for ISO 9001:2015. Total Quality Management & Business Excellence, 28(9-10), 1076-1089. doi: 10.1080/14783363.2017.1303886
- Rzepecki, J. (2012). Cost and benefits of implementing an occupational safety and health management system (OSH MS) in enterprises in Poland. *International Journal of Occupational Safety and Ergonomics*, 18(2), 181-193. doi: 10.1080/10803548.2012.11076927
- Samy, G. M., Samy, C., P., & Ammasaiappan, M. (2015). Integrated management systems for better environmental performance and sustainable development – A review. *Environmental Engineering and Management Journal*, 14(5), 985-1000. doi: 10.30638/eemj.2015.109
- Santos G., Rebelo, M., Ramos S., Silva, R., Pereira M., & Ramos, G. N. L. (2014). Developments regarding the integration of the occupational safety and health with quality and environment management systems. In Ilias G. Kavouras & Marie-Cecile G. Chalbot. (Ed.), *Developments Regarding the Integration of the Occupational Safety and Health with Quality and Environment Management Systems* (pp. 113-146). New York: Nova Publishers New York.
- Santos, D., Rebelo, M., & Santos, G. (2017). The Integration of certified management systems. Case Study – Organizations located at the district of Braga, Portugal. *Procédia Manufacturing*, 13, 964-971. doi: 10.1016/j.promfg.2017.09.168
- Santos, G., & Barbosa, J. (2006). QUALIFOUND A modular tool developed for quality improvement in foundries. *Journal of Manufacturing Technology Management*, *17*(3), 351-362. doi: 10.1108/17410380610648308
- Santos, G., Afonseca, J., Murmura, F., Félix, M. J., & Lopes, N. (2018b). Critical success factors in the management of ideas as an essential component of innovation and business excellence. *International Journal of Quality and Service Sciences*, *3*(3), 214-232. doi: 10.1108/IJQSS-05-2017-0051
- Santos, G., Barros, S., Mendes, F., & Lopes, N. (2013). The main benefits associated with health and safety management systems certification in Portuguese small and medium enterprises post quality management system certification. *Safety Science*, *51*(1), 29-36. doi: 10.1016/j.ssci.2012.06.014
- Santos, G., Bravi, L., & Murmura, F. (2018a). SA 8000 as a tool for a sustainable development strategy. *The Corporate Social Responsibility and Environmental Management Journal*, 25, 95-105. doi:10.1002/csr.1442
- Santos, G., Mendes, F., & Barbosa, J. (2011). Certification and integration of management systems: the experience of Portuguese small and medium enterprises. *Journal of Cleaner Production*, 19(17-18), 1965-1974. doi: 10.1016/j.jclepro.2011.06.017



- Santos, G., Pais, M. S., Pereira, A. L., & Machado, V. C. (1996). Impact of quality certification in SMEs. In *Proceedings of 40th EOQ (European Organization Quality) Congress*, *1*, 131-140. 10 September, Berlin, Germany.
- Santos, G., Rebelo, M., Lopes, N., Alves, M. R., & Silva, R. (2016). Implementing and certifying ISO 14001 in Portugal: motives, difficulties and benefits after ISO 9001 certification. *Total Quality Management & Business Excellence*, 27(11-12), 1211-1223. doi: 10.1080/14783363.2015.1065176
- Santos. G., Murmura, F., & Bravi, L. (2019a). Developing a model of vendor rating to manage quality in the supply chain. *International Journal of Quality and Service Sciences*, 11(1), 34-52. doi: 10.1108/IJQSS-06-2017-0058
- Santos, G., Doiro, M., Mandado, E., & Silva, R. (2019b). Engineering learning objectives and computer assisted tools. *European Journal of Engineering Education*, 44(4), 616-628. doi: 10.1080/03043797.2018.1563585
- Santos, G., Gomes, S., Braga, V., Braga, A., Lima, V., Teixeira, P., & Sá, J. C. (2019c). Value creation through quality and innovation – a case study on Portugal. *TQM Journal*. Earlycite. https://doi.org/10.1108/TQM-12-2018-0223
- Schwab, K. (2016). The Fourth Industrial Revolution (Portuguese version). ISBN-978-989-682-709-0. Lisbon, Portugal: Levoir.
- Simon, A., Karapetrovic, S., & Casadesús, M. (2012). Difficulties and benefits of integrated management systems. *Industrial Management & Data Systems*, 112(5), 828-846. doi: 10.1108/02635571211232406
- Simon, A., Yaya, L. H. P., Karapetrovic, S., & Casadesús, M. (2014). An empirical analysis of the integration of internal and external management system audits. *Journal of Cleaner Production*, 66(1), 499-506. doi: 10.1016/j.jclepro.2013.11.020
- Soler, V. G., & Fernández, A. C. (2014). Integrated management systems Levels of integration, benefits, and difficulties. *3C Empresa*, *3*(4), 234-245. Retrieved from https://dialnet.unirioja.es/descarga/articulo/4924485.pdf
- Su, H. C., Dhanorkar, S., & Linderman, K. (2015). A competitive advantage from the implementation timing of ISO management standards. *Journal of Operations Management*, 37(1), 31-44. doi: 10.1016/j.jom.2015.03.004
- Tarí, J. J., Molina-Azorín, J. F., & Heras, I. (2012). Benefits of the ISO 9001 and ISO 14001 standards: A literature review. *Journal of Industrial Engineering and Management*, 5(2), 297-322. doi: 10.3926/jiem.488
- To, W. M., Lee, P. K. C., & Yu, B. T. W. (2012). Benefits of implementing management system standards: A case study of certified companies in the Pearl River Delta, China. *The TQM Journal*, 24(1), 17-28. doi: 10.1108/17542731211191195
- Trott, P. (2005). Innovation Management and New Product Development. London: Prentice Hall.
- Turk, A. M. (2009). The benefits associated with ISO 14001 certification for construction firms: Turkish case. *Journal of Cleaner Production*, 17(5), 559-569. doi: 10.1016/ j.jclepro.2008.11.001
- Weckenmann, A., Akkasoglu, G., & Werner, T. (2015). Quality management History and trends. *The TQM Journal*, 27(3), 281-293. doi: 10.1108/TQM-11-2013-0125
- Yiu, N. S. N., Chan, D. W. M., Shan, M., & Sze, N. N. (2019). Implementation of safety management system in managing construction projects: Benefits and obstacles. *Safety Science*, 117, 23-32. doi: 10.1016/j.ssci.2019.03.027



Zeng, S. X., Xie, X. M., Tam, C. M., & Shen, L. Y. (2011). An empirical examination of benefits from implementing integrated management systems (IMS). *Total Quality Management & Business Excellence*, 22(2), 173-186. doi: 10.1080/14783363.2010.530797

Zgodavova, K., Hudec, O., & Palfy, P. (2017). Culture of quality: Insight into foreign organisations in Slovakia. *Total Quality Management & Business Excellence*, 28(9-10), 1054-1075. doi: 10.1080/14783363.2017.1309120

#### Subrata Talapatra

Khulna University of Engineering & Technology, Khulna, Bangladesh Sub\_ksy@yahoo.com **Gilberto Santos** Design School, Polytechnic Institute Cavado Ave, Barcelos, Portugal <u>gsantos@ipca.pt</u>

#### Kutub Uddin Khulna University of Engineering & Technology, Khulna, Bangladesh <u>kutubuddin@me.kuet.ac.bd</u>

#### **Filipe Carvalho**

Technology School, Polytechnic Institute Cavado Ave, Barcelos, Portugal fcarvalho@ipca.pt



International Journal for Quality Research