

Citation:

Tarí, J.J., Molina-Azorín, J.F., Pereira-Moliner, J. and López-Gamero, M.D. (2020). Internalization of Quality Management Standards: A Literature Review, **Engineering Management Journal**, 32:1, 46-60, DOI: [10.1080/10429247.2019.1671764](https://doi.org/10.1080/10429247.2019.1671764)

Internalization of Quality Management Standards: A Literature Review

Juan José Tarí*, José F. Molina-Azorín, Jorge Pereira-Moliner and María D. López-Gamero

Department of Business Management, University of Alicante, Alicante, Spain

Authors:

Juan José Tarí* (jj.tari@ua.es), Full Professor

José F. Molina-Azorín (jf.molina@ua.es), Associate Professor

Jorge Pereira-Moliner (jorge.pereira@ua.es), Associate Professor

María D. López-Gamero (md.lopez@ua.es), Associate Professor

Department of Business Management, University of Alicante, PO Box 99, 03080,

Alicante, Spain

Tel./fax: 0034 965903606

* Corresponding author

ABSTRACT

This work examines the literature on the internalization of quality management standards via database searches (Web of Science, Emerald, ScienceDirect, and

ABI/Inform-ProQuest). This review describes the characteristics of the relevant literature (theoretical or empirical, countries of study, and methods used), the internalization process (two constructs to measure internalization and items under each construct), drivers (reasons for seeking certification, quality culture, leadership, and training), and the effects of internalization (customer, people, and social results). Engineering managers can consider these aspects and associated drivers when they seek to improve the current processes and performance of their firms. On the basis of this review, this article identifies gaps in the literature and proposes future research areas.

Keywords: Quality management, Internalization, Quality standards, Literature review

Introduction

The adoption of quality standards and other quality initiatives is an important strategy for many organizations to improve their current management system (AlMaian, Needy, Walsh & Alves, 2015) and competitiveness (Rubio-Andrada, Alonso-Almeida, & Rodríguez-Antón, 2011; Castka, Prajogo, Sohal, & Yeung, 2015; Razieri, Torabi, Tabrizian, & Zahiri, 2018). Most previous work on quality standards assumes a homogeneous adoption of the standard; that is, they consider that all organizations adopt quality standards in the same way (Bayo-Moriones, Merino-Díaz-de-Cerio, & Escamilla-de-León, 2011; Mak, 2011; Alonso-Almeida, Rodríguez-Antón, & Rubio-Andrada, 2012; Djekic, Dimitrijevic, & Tomic, 2017). Although these studies are key to explaining the effects of quality standards, they fail to elucidate the process of the

heterogeneous adoption (internalization) of quality standards because they only measure adoption in binary terms (certified firm/non-certified firm). The studies that consider heterogeneous adoption (internalization) of quality standards such as ISO 9001 (Naveh & Marcus, 2005; Boiral, 2011; Ataseven, Prajogo, & Nair, 2014) argue that ISO 9001 certified organizations meet the quality standard requirements differently. These studies measure the internalization (heterogeneous adoption) as a set of items that are used to measure the extent of quality standards adoption. The manner of adoption may lead to a higher or lower level of quality standards implementation. For example, organizations may adopt a quality standard in a symbolic way or develop a substantive implementation (Naveh & Marcus, 2005; Heras & Boiral, 2015). These varying degrees of adoption are not examined in studies that treat all quality standards adoptions as being equivalent.

In this regard, the concept of internalization suggests that organizations apply the requirements of quality standards in their day-to-day activities as a way of integrating quality philosophy into the organizational routines and seek to improve continuously (Naveh & Marcus, 2005; Heras, 2011). For example, when organizations implement a quality standard, they typically document their processes, fill in records, and define responsibilities. However, this is not sufficient to internalize quality standard requirements, and the requirements must form part of daily practices and serve to identify improvement opportunities. That is, quality standard requirements may serve to create knowledge that can be used to reinforce continuous improvement that will contribute to improving current processes and performance (Lin & Wu, 2007; Garstenauer, Blackburn & Olson, 2014).

Limited attention has been paid to the process of internalizing quality standards (Cai & Jun, 2018), and most prior work examines the effects of internalization on

operational and business performance and the reasons for seeking certification (Arauz & Suzuki, 2004; Prajogo, 2011; Allur, Heras-Saizarbitoria, & Casadesús, 2014). There is a lack of research that examine other benefits (e.g., customer, employee, and social results) and drivers that go beyond seeking certification for its own sake (e.g., quality culture, leadership, and training). In addition, there is no consensus on how internalization could be measured. Studies on internalization use inconsistent approaches to measure quality standard adoption (e.g., Naveh & Marcus, 2005; Singh, 2008). Therefore, how internalization impacts dimensions of performance, how various drivers play a role in this relationship, and how internalization can be measured remains relatively ambiguous in the body of knowledge.

This article reviews literature related to the internalization of quality standards and identifies the drivers of internalization, the effects of internalization on performance, and how to measure the quality standards internalization. This article synthesizes the relevant quality standards internalization literature and improves academic knowledge about this critical research topic (Nair & Prajogo, 2009; Heras-Saizarbitoria & Boiral, 2013). This work will interest researchers and practitioners (e.g., engineering managers, consultants, and auditors) as they seek to understand the antecedents of quality standards adoption and the path to increased associated benefits.

Based on the above discussion, this article seeks to contribute in three major areas. First, this article extends the body of knowledge regarding quality standards internalization and its effect on performance. Second, this article contributes to identifying additional adoption drivers beyond those commonly analyzed in prior work and other benefits of quality standard adoption including customer, employee, and social impacts in addition to those commonly examined in the existing literature

(operational and financial performance). Third, a recommendation is made for the measurement of the internalization variable.

Methodology

This study conducted a literature review of previous research on the internalization of quality standards following the three-step review procedure suggested by Tranfield, Denyer, and Smart (2003); plan the review, conduct the review, and reporting and dissemination.

Planning the review

In the initial planning stage, database searches of Web of Science, Emerald, ScienceDirect, and ABI/Inform-ProQuest were selected to identify articles that focus on the internalization of quality standards from 1991 to 2018. These databases were chosen to be consistent with prior research in the quality field (e.g., Heras-Saizarbitoria & Boiral, 2013). The inclusion criteria for academic articles include: a) theoretical, qualitative, and quantitative peer-reviewed academic journal articles from a management perspective, b) articles examining internalization (heterogeneous adoption) of quality standards, and c) written in the English language. This review identifies the main research themes, countries of origin, methods employed, and variables/dimensions, similar to previous literature reviews in the quality management field (e.g., Sila & Ebrahimpour, 2003; Manatos, Sarrico, & Rosa, 2014). Although quality standards have been widely examined in quality literature, more than eight hundred articles consider a homogeneous quality standard adoption (measured as a binary variable), and twenty-six articles discuss the heterogeneous adoption of the

standard (measured as a set of items). Non-peer-reviewed articles are excluded from the study.

Conducting the review

In the second stage, four databases (Web of Science, Emerald, ScienceDirect, and ABI/Inform-ProQuest) were searched to locate articles that include “internalization,” “daily usage,” “implementation,” or “adoption” and “ISO 9001” or “ISO 9000” in the title, abstract, and/or keywords. These search terms were selected because they are common terms (e.g., adoption of ISO 9001, depth of implementation of ISO 9001, internalization of ISO 9001, and daily usage of ISO 9001 requirements) in seminal works related to quality standards internalization.

Altogether the database searches yielded 1,080 articles (192 in Web of Science (SCI and SCCL), 467 in ABI/Inform- ProQuest, 155 in ScienceDirect, and 266 in Emerald) with 190 duplicated articles resulting in a final set of 890 unique articles. Two researchers read the abstract of each article to identify those that meet the inclusion criteria. A review of the bibliographical references in the articles was conducted to verify completeness of the search. This resulted in a sample of twenty-six articles that focus on the internalization process of quality standards. The other articles measure adoption using a binary variable or do not focus on quality standards. The main research themes of those articles measuring adoption using a binary variable are used to compare the selected twenty-six internalization papers with this prior binary work.

Reporting and dissemination

Finally, in the reporting and dissemination stage, the authors conducted content analyses of the twenty-six identified articles (Neuendorf, 2017) and created tables to summarize

the main research themes (e.g., drivers, effects on performance), authors, the sample used (manufacturing/service organizations), countries of origin, the methods used (theoretical/empirical studies and analysis), variables related to the internalization process, driver variables, performance variables, and primary results. Two authors coded these categories in all studies. The inter-rater reliability (percentage of agreement) was 90%, and disagreements were discussed and jointly resolved (Stemler, 2004). Exhibits were created to present the following review aspects:

- An exhibit of qualitative studies on internalization of quality standards included the following elements: study (author and year of publication), sample (final sample used in the study), analysis, and main results (Exhibit 1).

Exhibit 1 here

- An exhibit of quantitative studies on internalization of quality standards included the following elements: study, sample, analysis (methodology used and/or statistical analyses carried out), main results, internalization variables (items used to measure internalization), motive variables (indicated if the work examined reasons for seeking certification) and other variables (variables used to measure performance) (Exhibit 2).

Exhibit 2 here

- Three exhibits classified items about internalization of quality standards. In Exhibit 3 (first step), an exhibit was created including authors, items and dimensions. In

Exhibit 4 (second step), two dimensions of internalization are identified and a set of items and authors are included under each dimension. Finally, Exhibit 5 identifies the final set of items under each dimension.

Exhibits 3, 4 and 5 here

Based on the reviewed articles and these exhibits, this article identifies the characteristics of the articles (sample, methodology, countries) and the main research themes of these articles: the internalization process (dimensions or constructs and items under each dimension to recommend how internalization can be measured), drivers of internalization, and the effects of internalization on performance. These research themes are compared with the research themes in prior binary work. This article then suggests gaps and future research. This process provides a synthesis of the research articles, indicating what the prior research on internalization of quality standards has found and the emerging themes or future research areas.

Results

The article identifies the characteristics, internalization process, drivers of internalization, and effects of internalization of the reviewed articles and compares these articles with the prior binary work and identifies gaps and proposes future research areas to fill each gap identified.

Characteristics of the articles

Among the articles identified, two are theoretical and twenty-four are empirical with six qualitative and eighteen quantitative analyses. Two of the eighteen quantitative articles analyzed the reasons for seeking certification and the relationships between these reasons and performance (Boiral & Roy, 2007; Martínez-Costa, Martínez-Lorente, & Choi, 2008). Although these two works do not employ a set of items for measuring the internalization of ISO 9001, the authors suggest ideas on the internalization process based on the relationships between reasons for seeking certification and performance. Both of these articles were included in the literature review because they present ideas about internalization (aim of the search). The other sixteen quantitative studies measure internalization in two ways. Seven articles measure internalization using various items as a way of assessing the degree of development of ISO 9001 requirements (Huang, Horng, & Chen, 1999; Arauz & Suzuki, 2004; Jang & Lin, 2008; Singh, 2008; Prajogo, Huo & Han, 2012; Psomas, Kafetzopoulos, & Fotopoulos, 2013; Psomas, Pantouvakis, & Kafetzopoulos, 2013). Nine studies measure the concept of internalization by studying the extent to which the quality requirements were used in day-to-day operations (Naveh & Marcus, 2004, 2005; Briscoe, Fawcett, & Todd, 2005; Christmann & Taylor, 2006; Nair & Prajogo, 2009; Prajogo, 2011; Tarí, Heras-Saizarbitoria, & Pereira-Moliner, 2013; Allur et al., 2014; Ataseven et al., 2014). These internalization studies use a set of items to measure the extent of implementation of the quality standard and its integration into day-to-day organizational practices.

Two of the identified studies are literature reviews. One literature review suggests that ISO 9001 studies mainly examine how to implement these systems, motivations for seeking certification, benefits of management systems, the degree of implementation, integration of management systems, and consultancy and auditing for management standards and states that further studies on internalization are needed

(Heras-Saizarbitoria & Boiral, 2013). The other literature review suggests that effective implementation requires top management support and positive employee attitudes, employees' usage of the system, internal improvement, and use of information technology (Ivanova, Gray & Sinha, 2014).

The qualitative contributions by Boiral (2003; 2011) analyze internalization using questions regarding reasons for certification, advantages and disadvantages of certification, employee involvement in implementation and usage of the ISO 9001 standard, and key factors for a successful adoption of ISO 9001. Boiral (2003) suggests various levels of internalization (quality enthusiasts, ceremonials and dissidents). Depending on the level of internalization, the effects on business performance, human resources, and bureaucracy are different. Heras (2011) and Cai and Jun (2018) propose a set of issues in order to understand the internalization process, namely, key aspects facilitating quality standard internalization. In this context, Heras-Saizarbitoria and Boiral (2015) add that internal contingencies may affect the internalization process, and the level of development of these internal factors may lead to different levels of internalization. These ideas and Exhibit 1 suggest the first gap in the literature where few studies have examined the opinions of different stakeholders (managers, employees, certification bodies) using qualitative studies to understand the quality standards internalization process (see Exhibit 6, which shows the gaps identified in this article).

Exhibit 6 here

The quantitative studies on quality standard internalization (see Exhibit 2) examine the internalization process, drivers, and effects of internalization and use t-test, factor analysis, hierarchical linear models and regression, and structural analyses to

identify links between reasons for seeking certification, internalization and performance, and indirect and/or moderating effects.

Most of the articles focus on certified firms in the manufacturing and service sectors (e.g., Arauz & Suzuki, 2004; Naveh & Marcus, 2004; Cai & Jun, 2018) with a predominance of manufacturing firms. Four studies focus strictly on manufacturing firms (e.g., Briscoe et al., 2005; Singh, 2008; Psomas, Kafetzopou, & Fotopoulos, 2013), and two focus on service firms (e.g., Psomas, Pantouvakis, and Kafetzopoulos, 2013; Tarí et al., 2013). Regarding geographical areas, the qualitative and quantitative studies were conducted in Australia (5), USA (4), Canada (4), Spain (4), Taiwan (2), Greece (2), China (1) and Japan (1). This information leads to the second and third gaps (see Exhibit 6): the service sector has been analyzed to a lesser extent, and there is a need to analyze this issue in different countries.

The internalization process

Qualitative studies analyze the internalization process using interviews, while quantitative works examine this process using one or multiple constructs. For instance, Naveh and Marcus (2005) uses four constructs (two of which could be considered internalization drivers), Briscoe et al. (2005) uses two constructs, and Christmann and Taylor (2006), Nair and Prajogo (2009), Prajogo (2011), Tarí et al. (2013), Allur et al. (2014) and Atasaven et al. (2014) use a single construct consisting of multiple items. As there is no consensus on the best way to measure internalization (Gap 4, Exhibit 6), a set of multiple items is recommended for its measurement based on these previous studies. In this respect, two constructs are identified in order to measure quality standards internalization, daily practices, and continuous improvement (Naveh and Marcus, 2005) together with a set of items for each construct (see Exhibit 5).

These ten items, grouped into two constructs, could be considered for future quantitative studies as a way of measuring the degree of quality standard adoption. This is a framework that shows the major ingredients of the internalization process. These items reflect the key aspects of internalizing a quality standard identified by qualitative studies. For example, the work by Heras (2011) identifies seven key aspects for internalization: 1) reorganization geared towards management of processes, 2) involvement of middle management, 3) features of documentation, 4) qualifications and involvement of employees, 5) concurrent implementation of other improvements with ISO 9001, 6) active participation of employees in audits, and 7) extension of the ISO 9001 model implemented. For their part, Cai and Jun (2018) identify four key issues for the internalization of ISO 9001; namely documentation, education, auditing and process improvement. These key issues are needed for effective ISO 9001 maintenance (Ab Wahid, 2012; Basir & Davies, 2018). The quality standard internalization process requires that firms apply documentation in their daily routines, facilitate training as a way of instilling the knowledge of quality issues into employees, usage of audits as one of the techniques to identify improvement opportunities, and making efforts to discover improvement opportunities and to improve processes and introduce innovations. These qualitative results are consistent with results of quantitative studies. Engineering managers may consider this framework to leverage these practices to improve internal activities and performance in their areas.

Finally, these two constructs (see Exhibit 5) may be related. In this regard, Naveh and Marcus (2005), and Briscoe et al. (2005) consider two constructs for measuring internalization, but they do not establish a relationship between them. Future studies could examine the relationship between the constructs to extend the body of knowledge regarding internalization processes.

Drivers of internalization

Multiple drivers are analyzed in the literature. Those most widely analyzed are the reasons for earning a quality certificate. These reasons are internal (for example, product quality and improved systematization) and/or external (for instance, customer demands and image), and both may have an influence on internalization and on performance. These reasons are consistent with those identified in studies on homogeneous implementation of the ISO 9001 standard (e.g., Sampaio, Saraiva & Rodrigues, 2009; Gómez-López, Serrano-Bedia & López-Fernández, 2016; Djofack & Robledo Camacho, 2017).

Regarding the influence of these drivers on internalization, the results of the quantitative studies in Exhibit 2 and the qualitative studies in Exhibit 1 lead to different conclusions. First, for some authors, internal and external reasons for seeking certification impact on how companies develop quality standards (Boiral & Roy, 2007; Nair & Prajogo, 2009). Second, internal reasons have a higher weight than external ones in the fuller adoption of a quality standard. In this context, researchers point out that internal reasons for certification play a mediating role between external reasons and the adoption of ISO 9001 (Jang & Lin, 2008) and that internal reasons have positive moderating effects on the internalization-institutional results link (Prajogo, 2011). This indicates that there may be a relationship between the reasons for certification which might play a mediating and/or moderating role. Accordingly, new studies are needed to examine the relationship between drivers and their mediating and/or moderating role (Gap 5, Exhibit 6).

In relation to the influence of these drivers on performance, although both types of reasons may lead to improved performance, some scholars suggest that internal

reasons have a higher weight in this relationship (Martínez-Costa et al., 2008) and that when internal and external reasons are less important, bureaucratic problems may arise (Boiral & Roy, 2007). In this context, Prajogo (2011) finds that external reasons do not generate any operational benefits. In general, this review suggests that internal reasons for gaining a quality certificate have a greater effect on results and that external reasons have effects which are not so clear. This indicates that new analyses should be considered in the future to clarify these relationships (Gap 6, see Exhibit 6).

Alongside the reasons for certification, these studies on internalization also analyze other drivers which might facilitate internalization and might be considered in the future. These other drivers, which are only studied in four quantitative articles on the internalization process (Naveh & Marcus, 2005; Briscoe et al., 2005; Christmann & Taylor, 2006; Singh, 2008), could also increase or reduce the positive effects of internalization on performance. These other drivers are as follows (Gap 7, Exhibit 6):

- **Quality culture.** Companies with a quality-proactive approach will have less difficulty adopting a quality standard. This proactive behavior creates a quality culture that facilitates the development of quality practices and tools (Briscoe et al., 2005). Although this driver facilitates the internalization process, it might also be an outcome of internalization, as will be seen in the next subsection.
- **Leadership.** Leadership has an important role in a quality management context and has an impact on other quality practices and on performance. For example, in ISO 9001-certified companies, leaders should define policies and plans, develop actions to focus on customers, offer training to workers, manage supplier relationships, and improve the communication channels (Singh, 2008). These behaviors facilitate the development of the quality standard in a more advanced way.

- **Training.** Those companies that offer more training to their staff may have less difficulty in integrating the quality standard requirements in their day-to-day operations. In addition, as employees receive more training, they may introduce improvements in their activities (Naveh & Marcus, 2005). As can be seen in the next subsection, this driver could be also an outcome of the internalization process.
- **Frequent auditing by customers.** It may help firms to adopt quality issues to a greater extent. This indicates that a greater concern among customers for ensuring quality (for example via a quality certificate) may create an internal interest in the company for applying quality initiatives more effectively as a way of better satisfying its customers (Christmann & Taylor, 2006).
- **Innovative environment.** Companies that face continuous changes in their environment are more likely to make efforts to improve quality practices (Briscoe et al., 2005). As has been suggested in the definition of internalization, when a company really applies the requirements of a quality standard, the firm introduces improvements which may lead to the creation of an environment where innovation is encouraged. Innovation could also be an outcome of internalization. In this context, some scholars have indicated that quality generates innovations (Zeng, Phan, & Matsui, 2015).
- **System coordination with suppliers and customers.** Companies that need to coordinate their processes with suppliers and/or maintain relations with customers (for example, to develop new processes or products) may be more interested in adopting quality initiatives more efficiently (Briscoe et al., 2005; AlMaian et al., 2015) in order to benefit from these relationships with suppliers and/or customers.

Some qualitative studies support these ideas. For example, Cai and Jun (2018) suggest that training and a culture of continuous improvement facilitate the internalization process. In this context, Heras-Saizarbitoria and Boiral (2015) suggest that organizations can use ISO 9001 in different ways depending on their objectives, resources, and needs. Thus, internal contingencies (e.g., leadership and training) are associated with different levels of ISO 9001 adoption.

This review suggests that, in general terms, these drivers facilitate internalization although their degree of development may also explain a superficial or in-depth adoption of the quality standard. For example, although leadership and training are needed to increase the level of internalization and they are considered by some scholars to be success factors for internalization, a low involvement of managers or their lack of power to change internal activities may be associated with the decoupling of discourse from practice. This means that these factors could also explain superficial adoption.

The effects of internalization on performance

Quality standards internalization studies find that companies that implement ISO 9001 in a more advanced way achieve better operational results, and these operational results lead to improved business results (Naveh & Marcus, 2005; Jang & Lin, 2008; Allur et al., 2014). When a company adopts the standard in day-to-day operations, it offers more training to workers, makes people more committed to quality improvement, carries out periodic audits, and uses feedback from customers and other stakeholders to improve quality and reduce costs (Huarng et al., 1999; Singh, 2008). These ideas suggest that a higher development of a quality standard facilitates the introduction of improvements (for example in products and processes), and then costs are reduced and product/service quality is improved (Nair & Prajogo, 2009). These positive operational results lead to

improved business performance (Huarng et al., 1999). Accordingly, operational performance acts as a mediating variable, as six of the quantitative articles indicate (Huarng et al., 1999; Naveh & Marcus, 2005; Jang & Lin, 2008; Nair & Prajogo, 2009; Psomas, Pantouvakis, & Kafetzopoulos, 2013; Allur et al., 2014).

Although operational and business performance are the most widely analyzed in internalization studies, Exhibit 2 shows these studies do not examine the effects of internalization on other performance dimensions such as quality culture, human issues, customer results, and societal results (Gap 8, Exhibit 6). For example, twelve studies in Exhibit 2 include an item related to customer and employee results in the operational performance construct. There is little work on the relationship between quality standards internalization and customer and employee results, although the latter are widely examined in prior binary works. In addition, similar to other quality models such as excellence models (Curkovic, 2003), societal results are another outcome of quality practices.

Scholars who examined the effects of quality standards considering homogeneous adoption find these benefits; improved systematization, efficiency, customer results, employee results (training, motivation, satisfaction, communication, knowledge, etc.), and relationships with providers and other stakeholders (Tari, Molina-Azorín, & Heras, 2012). Thus, the quality standard leads to systematization of processes and could improve efficiency and results for employees, customers, and society. Based on these ideas, it might also be interesting to analyze these outcomes (customer, employee, and societal results) in the case of quality standards internalization.

In this context, the studies on internalization show, in addition to the obvious impacts on operational and business performance, that a higher degree of internalization leads to improved process management, supplier management, customer management

(Pragojo et al., 2012), intellectual capital (Atasaven et al., 2014), and the application of quality tools (Tarí et al., 2013). For example, human capital, organizational capital, and social capital could play a mediating role between internalization and process improvement. These scholars show that the internalization of ISO 9001 influences human capital and organizational capital, and thereby process improvement and operational results. Similarly, firms with greater internalization use the quality tools to a greater extent in order to introduce improvements.

Boiral and Roy (2007) distinguish four groups of firms on the basis of their internal and external reasons for certification and point out different outcomes (e.g., employee results, bureaucracy). Different concerns for internal and external reasons indicate varying levels of internalization, leading to different outcomes. For instance, firms that have limited concern about either internal or external reasons may have bureaucracy problems.

According to this literature review, the more advanced the internalization level, the greater the impact on operational and business performance. However, other outcomes are also possible, such as employee results (Boiral & Roy, 2007; Atasaven et al., 2012), a greater degree of development of quality practices (Pragojo et al., 2012) and/or quality culture, quality tools, bureaucracy, customer results, and societal results. These outcomes can also have an influence on performance and therefore could act as mediating outcomes for operational and/or business performance. For instance, the internalization of the quality standard may lead to greater employee training, which in turn improves operational and business performance. In this way, training plays a mediating role between internalization and operational results. In addition, these outcomes can also play a moderating role. For example, companies where quality culture is more developed may reinforce the positive effects of internalization on

performance. In this regard, Pragojo et al. (2012) suggest that culture can be a moderating factor to study in future. Organizations with a high quality level may be more active at integrating the requirements of a quality standard and adopt improvement actions to a greater extent than others with a lower quality level. The same could happen with firms with a higher training level. This suggests that the effects of internalization of quality standards on other dimensions of performance (e.g., customer, employee, and societal results) leading to business performance have been analyzed less. In this context, these results could even play a mediating role (Gap 8, Exhibit 6).

In addition, following the ideas of Boiral (2003), different levels of internalization lead to different outcomes. A limited amount has been written on levels of internalization, and it would be interesting to analyze the different levels of internalization in the future in order to better understand how to move from one level to another, together with the benefits of the various levels (Gap 9, Exhibit 6).

Finally, there are parallels between different management standards such as quality and environmental standards (Klassen & McLaughlin, 1993; Molina-Azorín, Tarí, Claver-Cortés, & López-Gamero, 2009) as the homogeneous adoption literature shows (Zhu, Cordeiro, & Sarkis, 2013). Some scholars find that quality initiatives help companies to more easily develop environmental initiatives (Curkovic, 2003; Teixeira et al., 2017). In this context, there is a lack of studies on environmental standards internalization (Castka & Pragojo, 2013) and internalization of different standards jointly (quality and environmental standards) (Gap 10, Exhibit 6).

Comparative analyses between heterogeneous and homogeneous adoption works

The homogeneous adoption literature, those measuring quality standards adoption with a binary variable, focus on multiple research themes (see Exhibit 7). Among these research

themes shown in Exhibit 7, benefits, motives, and implementation processes are also examined in quality standards internalization works. Regarding benefits, internalization studies mainly focus on the effects of quality standards on operational and financial performance, while the prior binary work examined the influence of quality standards on different types of benefits that go beyond operational and financial performance. Although internalization studies supplement prior binary work by indicating that those benefits are due to internalization and not merely the securing of the quality certificate, new internalization studies must examine other impacts in addition to operational and financial performance (see Exhibit 6) using subjective and objective measures as some homogeneous adoption studies have done.

Exhibit 7

In relation to motives, internalization studies supplement prior binary work showing possible relationships between internal and external motives and suggesting that how companies develop their internal drivers (e.g., management commitment and training) to affect performance. Regarding implementation processes, internalization studies add to prior binary work a richer analysis of critical factors for successful adoption. For example, the way of measuring the level of adoption using a set of items suggests critical aspects for standard implementation. Although heterogeneous and homogeneous studies identify critical success factors, this research theme needs to be expanded in future (e.g., the role of information technology in quality standard adoption). In relation to diffusion, there are no internalization studies on this theme and how internalization is impacted in different countries is an interesting area for future research. Although some prior binary works examine the relationships or the integration between quality standards and other

management systems and some authors examine environmental standards internalization (Castka & Prajogo, 2013), there is a lack of studies on the relationships between quality internalization and other standards internalization (e.g., environmental standards). Finally, prior homogeneous adoption literature suggests that contextual factors may impacts standard implementation, although there is no clear evidence of this influence and new studies of the effects of contextual factors are needed.

Discussion and conclusions

This review further supports the fact that organizations can implement quality standards in different ways. Some organizations adopt quality standards only to gain a quality certificate, in which case they adopt the standard in a symbolic way (Meyer & Rowan, 1977; Boiral, 2011) as a way of satisfying customers and maintaining greater legitimacy (DiMaggio & Powell, 1991). Other organizations develop a substantive implementation in which the standard requirements become part of their day-to-day operations (Naveh & Marcus, 2005).

When organizations internalize quality standards, it is easier for them to achieve real benefits. The results show that greater internalization means better operational and business results as well as other benefits including quality culture, customer results, employee results (training, knowledge, etc.), and societal results. These outcomes can be mediating outcomes and, as a consequence, lead to improved business performance; while some of them (such as quality culture and training) can play a moderating role as well.

To achieve these benefits from the standard, the drivers are critical (e.g., management commitment, employees' usage of the system, training for employees, and a culture of continuous improvement). The results show that these drivers facilitate

internalization. Those companies that focus on internal reasons develop the standard more easily than those ones that focus on external reasons. This greater level of internalization leads to greater benefits compared to those obtained from a symbolic adoption. Nevertheless, companies may begin focusing on external reasons and then show a higher interest for internal reasons later in the process, which could indicate a relationship between the two types of reasons in certain firms. Alongside the reasons for certification, other drivers may be important to understand these links between internalization and performance including quality culture, leadership, and training.

Although the importance of internal drivers is observed in previous work on ISO 9001 implementation, it can be added that the way in which these drivers are developed may lead to a superficial or in-depth adoption. For example, a low commitment to continuous improvement or training may lead to a less in-depth adoption of the standard.

These ideas suggest the key factors for internalization process. Cai and Jun (2018) argue that an organization with an effective quality management system may derive little benefit from ISO 9001 implementation even though the organization adopts the standard for internal motives. This supports the idea that the existence of a quality culture is more important than a quality certificate. Accordingly, the standard should help firms to reinforce their current management system. If they do not have a quality system in place, the quality standard should be used to create a quality culture following the internalization process.

Recommendations for academia

This review of quality standards internalization facilitates the understanding of what is known about this topic and identifies gaps on quality standards internalization. The gaps

in this work help to identify new topics of study on quality standards internalization (see Exhibit 6).

Based on the gaps identified in this study as shown in Exhibit 6, it would be interesting to carry out new qualitative studies, asking different stakeholders how the internalization process should be implemented. It appears to be important to continue analyzing these issues in sectors other than manufacturing (e.g. the tourism industry) and in different countries. This will help to extend knowledge about this topic to other sectors and to other countries that scholars have rarely examined. It may be interesting to use a set of items in these studies in order to measure quality standards internalization and analyze the relationships between the constructs included in the dimensions of internalization. New studies can continue analyzing the role of internal and external reasons in the internalization-performance link and the aspects that suggest the importance of external reasons in this link. In this regard, it is important to study how internal reasons or other internal drivers act as mediating variables between external reasons (or other external drivers) and internalization and performance. In addition, it may be relevant to consider which drivers, other than to simply gain a certificate, have an influence on internalization and on the internalization-performance link. While it is known that internalization has direct effects on operational performance and indirect effects on business results, new studies could be performed to examine the impacts of internalization on other dimensions of performance (e.g., customer, employee, and societal results). Including drivers other than reasons for certification might also help understand this relationship. New studies are needed to analyze a taxonomy of internalization and how each level of internalization is related to different benefits. Finally, these studies could be applied both to quality standards and to environmental standards, given the similarities between the two sets of standards.

Based on a comparative analysis between internalization and homogeneous adoption works, it can be added that it would be interesting to measure performance using subjective and objective measures to extend prior internalization work. Similarly, how the different levels of development of internal drivers or enablers affect the internalization process is a potential future research area. For example, information technology is a key factor and considering the large amount of data that exists today, engineering managers should use these data in an orderly way to identify stakeholders' needs and opportunities for improvement. Finally, how contextual factors affect internalization processes could be examined in future research works.

Implications for Engineering Managers

Managers, consultants, and auditors should understand that quality standards may be adopted in different ways and their success depends on internalization and not on the quality certificate alone. Engineering managers should understand the importance of quality culture, training, and cooperation with customers and suppliers (internal drivers) to facilitate quality standards internalization. These issues should be reinforced by leadership because creating a quality culture that focuses on continuous improvement significantly supports the full adoption of quality standards, which leads to better benefits for organizations. Thus, engineering managers can achieve benefits from the quality standard by focusing on the key factors that facilitate the internalization process and can leverage the drivers to reinforce the internalization process. Although internal drivers are success factors for internalization, the level of these drivers may reduce or increase the positive effects of internalization. For example, a stronger commitment to quality, greater participation in improvement activities, involvement of employees in training activities, use of audits as a real tool to identify areas for improvement, and use

of information technology to manage big data to identify stakeholders' needs and consequent improvements will help engineering managers to carry out their activities with greater success. Creating awareness of continuous improvement activities will contribute to the improvement of current internal practices and integrate these issues in the management of companies.

Consultants and auditors should understand the importance of informing managers and other employees about the quality requirement in order to increase commitment and reinforce the benefits of the management standards. For example, talks and/or training activities about how to reinforce employee participation and information technology are critical tools to avoid a symbolic adoption of the quality standard.

Limitations

This article presents a literature review based on four databases (Web of Science, Emerald, ScienceDirect, and ABI/Inform-ProQuest) used in previous literature reviews in the quality management and operations management fields. Other databases could be used in future literature reviews. Similarly, the literature review presented in this article considers common terms about internalization, and new terms could be used to expand the search.

Acknowledgement

This work has been carried out as part of the research project ECO2012-36316 funded by the Science and Innovation Ministry (Plan Nacional de I+D+i). The authors thank and acknowledge the support received.

References

- Ab Wahid, R. (2012). Beyond certification: a proposed framework for ISO 9000 maintenance in service. *The TQM Journal*, 24, 556-568.
- Albuquerque, P., Bronnenberg, B.J., & Corbett, C.J. (2007). A spatiotemporal analysis of the global diffusion of ISO 9000 and ISO 14000 certification. *Management Science*, 53, 451-468.
- Allur, E., Heras-Saizarbitoria, I., & Casadesús, M. (2014). Internalization of ISO 9001: a longitudinal survey. *Industrial Management & Data Systems*, 114, 872-885.
- AlMaian, R.Y., Needy, K.L., Walsh, K.D., & Alves, T.C.L. (2015). Supplier quality management inside and outside the construction industry. *Engineering Management Journal*, 27, 11-22
- Alonso-Almeida, M.M., Rodríguez-Antón, J.M., & Rubio-Andrada, L. (2012). Reasons for implementing certified quality systems and impact on performance: An analysis of the hotel industry. *The Service Industries Journal*, 32, 919-936.
- Arauz, R., & Suzuki, H. (2004). ISO 9000 performance in Japanese industries. *Total Quality Management & Business Excellence*, 15, 3-33.
- Ataseven, C., Prajogo, D.I., & Nair, A. (2014). ISO 9000 internalization and organizational commitment-implications for process improvement and operational performance. *IEEE Transactions on Engineering Management*, 61, 5-17.
- Basir, S.A., & Davies, J. (2018). ISO 9000 maintenance measures: the case of a Malaysian local authority. *Total Quality Management & Business Excellence*, 29, 185-201.
- Bayo-Moriones, A., Merino-Díaz-de-Cerio, J., & Escamilla-de-León, S.A. (2011). The impact of ISO 9000 and EFQM on the use of flexible work practices. *International Journal of Production Economics*, 130, 33-42.

- Benner, M.J. & Veloso, F.M. (2008). ISO 9000 practices and financial performance: A technology coherence perspective. *Journal of Operations Management*, 26, 611-629.
- 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, 121-133
- Boiral, O. (2003). ISO 9000: outside the iron cage. *Organization Science*, 14, 720-737.
- Boiral, O. (2011). Managing with ISO Systems: Lessons from Practice. *Long Range Planning*, 14, 197-220.
- Boiral, O. (2012). ISO certificates as organizational degree?, Beyond the rational myths of certification. *Organization Studies*, 33, 633-654.
- Boiral, O., & Roy, M.J. (2007). ISO 9000: integration rationales and organizational impacts. *International Journal of Operations & Production Management*, 27, 226-247.
- Briscoe, J.A., Fawcett, S.E., & Todd, R.H. (2005). The implementation and impact of ISO 9000 among small manufacturing enterprises. *Journal of Small Business Management*, 43, 309-330.
- Cai, S., & Jun, M. (2018). A qualitative study of the internalization of ISO 9000 standards: the linkages among firms' motivations, internalization processes, and performance. *International Journal of Production Economics*, 196, 248-260.
- Calisir, F., Kulak, O., & Dogan, I. (2005). Factors influencing Turkish textile companies' satisfaction with ISO 9000. *Total Quality Management & Business Excellence*, 16, 1193-1204

- Cândido, C.J.F., Coelho, L.M.S., & Peixinho, R.M.T. (2016). The financial impact of a withdrawn ISO 9001 certificate. *International Journal of Operations & Production Management*, 36, 23-41,
- Cao, X. & Prakash, A. (2011). Growing Exports by Signaling Product Quality: Trade Competition and the Cross- National Diffusion of ISO 9000 Quality Standards. *Journal of Policy Analysis and Management*, 30, 111-135.
- Castka, P. & Prajogo, D. (2013). The effect of pressure from secondary stakeholders on the internalization of ISO 14001. *Journal of Cleaner Production*, 47, 245-252.
- Castka, P., & Prajogo, D. (2013). The effect of pressure from secondary stakeholders on the internalization of ISO 14001. *Journal of Cleaner Production*, 47, 245-252.
- Castka, P., Prajogo, D., Sohal, A., & Yeung, A.C.L. (2015). Understanding firms' selection of their ISO 9000 third-party certifiers. *International Journal of Production Economics*, 162, 125-133.
- Chatzoglou, P., Chatzoudes, D., & Kipraios, N. (2015). The impact of ISO 9000 certification on firms' financial performance. *International Journal of Operations & Production Management*, 35, 145-174,
- Christmann, P., & Taylor, G. (2006). Firm self-regulation through international certifiable standards: determinants of symbolic versus substantive implementation. *Journal of International Business Studies*, 37, 863–878.
- Curkovic, S. (2003). Environmentally Responsible Manufacturing: the development and validation of a measurement model. *European Journal of Operational Research*, 146, 130-155.
- Delmas, M. & Montiel, I. (2008). The Diffusion of Voluntary International Management Standards: Responsible Care, ISO 9000, and ISO 14001 in the Chemical Industry. *Policy Studies Journal*, 36, 65-93.

- DiMaggio, P.J., & Powell, W. (1983). The iron cage revisited institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48, 147-60.
- Djekic, I., Dimitrijevic, B., & Tomic, N. (2017). Quality Dimensions of Intellectual Capital in Serbian Fruit Industry. *Engineering Management Journal*, 29(3), 154-164.
- Djofack, S. & Robledo Camacho, M.A. (2017). Implementation of ISO 9001 in the Spanish tourism industry. *International Journal of Quality & Reliability Management*, 34, 18-37
- Djofack, S., & Robledo Camacho, M.A. (2017). Implementation of ISO 9001 in the Spanish tourism industry. *International Journal of Quality & Reliability Management*, 34, 18-37.
- Garstenauer, A., Blackburn, T., & Olson, B. (2014). A knowledge management based approach to quality management for large manufacturing organizations. *Engineering Management Journal*, 26, 47-58.
- Gómez-López, R., Serrano Bedia, A.M., & López-Fernández, M.C. (2016). Motivations for implementing TQM through the EFQM model in Spain: an empirical investigation. *Total Quality Management & Business Excellence*, 27, 1224-1245.
- Gómez-López, R., Serrano Bedia, A.M., López-Fernández, M.C. (2016). Motivations for implementing TQM through the EFQM model in Spain: an empirical investigation. *Total Quality Management & Business Excellence*, 27, 1224-1245.
- Gotzamani, K.D. & Tsiotras, G.D. (2002). The true motives behind ISO 9000 certification: Their effect on the overall certification benefits and long term contribution towards TQM. *International Journal of Quality & Reliability Management*, 19, 151-169.

- Guler, I., Guillén, M. F., & Macpherson, J. M. (2002). Global Competition, Institutions, and the Diffusion of Organizational Practices: The International Spread of ISO 9000 Quality Certificates. *Administrative Science Quarterly*, 47, 207–232.
- Hashem, G. & Tann, J. (2007). The Adoption of ISO 9000 Standards within the Egyptian Context: A Diffusion of Innovation Approach. *Total Quality Management*, 18, 631-652,
- Heras-Saizarbitoria, I. (2011). Internalization of ISO 9000: an exploratory study. *Industrial Management & Data Systems*, 111, 1214-1237.
- Heras-Saizarbitoria, I., & Boiral, O. (2013). ISO 9001 and ISO 14001: Towards a Research Agenda on Management System Standards. *International Journal of Management Reviews*, 15, 47-65.
- Heras-Saizarbitoria, I., & Boiral, O. (2015). Symbolic adoption of ISO 9000 in small and médium-sized enterprises: the role of internal contingencies. *International Small Business Journal*, 33, 299-320.
- Heras-Saizarbitoria, I., Casadesús, M., & Marimón, F. (2011). The impact of ISO 9001 standard and the EFQM model: The view of the assessors. *Total Quality Management & Business Excellence*, 22, 197-218,
- Huang, F., Horng, C., & Chen, C. (1999). A study of ISO 9000 process, motivation and performance. *Total Quality Management*, 10, 1009-1025.
- Ismyrlis, V., Moschidis, O., & Tsiotras, G. (2015). Critical success factors examined in ISO 9001:2008-certified Greek companies using multidimensional statistics. *International Journal of Quality & Reliability Management*, 32, 114-131.
- Ivanova, A., Gray, J., & Sinha, K. (2014). Towards a unifying theory of management standard implementation: the case of ISO 9001/ISO 14001. *International Journal of Operations & Production Management*, 34, 1296-1306.

- Jang, W-Y., & Lin, C-I. (2008). An integrated framework for ISO 9000 motivation, depth of ISO implementation and firm performance, The case of Taiwan. *Journal of Manufacturing Technology Management*, 19, 194-216.
- Kammoun, R. & Aouni, B. (2013). ISO 9000 adoption in Tunisia: experiences of certified companies. *Total Quality Management & Business Excellence*, 24, 259-274.
- Kasperavičiūtė-Černiauskiene, R. & Serafinas, D. (2018). The adoption of ISO 9001 standard within higher education institutions in Lithuania: innovation diffusion approach. *Total Quality Management & Business Excellence*, 29, 74-93,
- Klassen, R., & McLaughlin, C. (1993). TQM and environmental excellence in manufacturing. *Industrial Management & Data Systems*, 93, 14-22.
- Lakhal, L. (2014). The Relationship Between ISO 9000 Certification, TQM Practices, and Organizational Performance. *Quality Management Journal*, 21, 38-48
- Lin, C., & Wu, C. (2007). Case study of knowledge creation contributed by ISO 9001:2000. *International Journal of Technology Management*, 37, 193-213.
- Lo, C.K.Y., Wiengarten, F., Humphreys, P., Yeung, A.C.L., & Chen, T.C.E. (2013). The impact of contextual factors on the efficacy of ISO 9000 adoption. *Journal of Operations Management*, 31, 229-235.
- Mak, B.L.M. (2011). ISO certification in the tour operator sector. *International Journal of Contemporary Hospitality Management*, 23, 115-130.
- Manatos, M., Sarrico, C.S., & Rosa, M.J. (2014). A systematic literature review on quality management in higher education: a trend towards integration. 1st International Conference on Quality Engineering and Management, University of Guimaraes (Portugal), 15-16 september.

- Martínez-Costa, M., Martínez-Lorente, A., & Choi, T.Y. (2008). Simultaneous consideration of TQM and ISO 9000 on performance and motivation: an empirical study of Spanish companies. *International Journal of Production Economics*, 113, 23-39.
- Meyer, J.W., & Rowan, B. (1977). Institutional organizations: formal structure as myth and ceremony. *American Journal of Sociology*, 83, 340-363.
- Molina-Azorín, J.F., Tarí, J.J., Claver-Cortés, E., & López-Gamero, M.D. (2009). Quality management, environmental management and firm performance: a review of empirical studies and issues of integration. *International Journal of Management Reviews*, 11, 197-222.
- Murmura, F., Casolani, N., Liberatore, L., & Vicentini, A. (2018). An empirical analysis of ISO 9001:2008 application in Italian services and manufacturing companies. *Total Quality Management & Business Excellence*, 29, 786-797.
- Nair, A., & Prajogo, D. (2009). Internalisation of ISO 9000 standards: the antecedent role of functionalist and institutionalist drivers and performance implications. *International Journal of Production Research*, 47, 4545-4568.
- Naveh, E., & Marcus, A. (2005). Achieving competitive advantage through implementing a replicable management standard: installing and using ISO 9000. *Journal of Operations Management*, 24, 1-26.
- Naveh, E., & Marcus, A.A. (2004). When does the ISO 9000 quality assurance standard lead to performance improvement? Assimilation and going beyond. *IEEE Transactions of Engineering Management*, 51, 352-363.
- Neuendorf, K.A. (2017). *The content analysis guidebook, Second Edition*, SAGE, USA.

- Prajogo, D., Huo, B., & Han, A. (2012). The effects of different aspects of ISO 9000 implementation on key supply chain management practices and operational performance. *Supply Chain Management: An International Journal*, 17, 306-322.
- Prajogo, D.I. (2011). The roles of firms' motives in affecting the outcomes of ISO 9000 adoption. *International Journal of Operations & Production Management*, 31, 78-100.
- Psomas, E.L., Fotopoulos, C.V., & Kafetzopoulos, D.P. (2011). Core process management practices, quality tools and quality improvement in ISO 9001 certified manufacturing companies. *Business Process Management Journal*, 17(3), 437-460
- Psomas, E.L., Kafetzopoulos, D.P., & Fotopoulos, D.V. (2013). Developing and validating a measurement instrument of ISO 9001 effectiveness in food manufacturing SMEs. *Journal of Manufacturing Technology Management*, 24, 52-77.
- Psomas, E.L., Pantouvakis, A., & Kafetzopoulos, D.P. (2013). The impact of ISO 9001 effectiveness on the performance of service companies. *Managing Service Quality*, 23, 149-164.
- Razieri, Z., Torabi, S.A., Tabrizian, S., & Zahiri, B. (2018). A hybrid GDM-SERVQUAL-QFD approach for service quality assessment in hospitals. *Engineering Management Journal*, 30, 179-190.
- Rubio-Andrada, L., Alonso-Almeida, M.M., & Rodríguez-Antón, J.M. (2011). Motivations and impacts in the firm and stakeholders of quality certification: evidence from small-and medium-sized service enterprises. *Total Quality Management & Business Excellence*, 22, 833-852.

- Sampaio, P., Saraiva, P., & Rodrigues, A.G. (2009). ISO 9001 certification research: questions, answers and approaches. *International Journal of Quality & Reliability Management*, 26, 38-58.
- Sampaio, P., Saraiva, P., & Rodrigues, A.G. (2009). ISO 9001 certification research: questions, answers and approaches. *International Journal of Quality & Reliability Management*, 26, 38-58.
- Sila, I., & Ebrahimpour, M. (2003). Examination and comparison of the critical factors of total quality management (TQM) across countries. *International Journal of Production Research*, 41, 235-263.
- Singh, P.J. (2008). Empirical assessment of ISO 9000 related management practices and performance relationships. *International Journal of Production Economics*, 113, 40-59.
- Singh, P.J., Feng, M., & Smith, A. (2006). ISO 9000 series of standards: comparison of manufacturing and service organisations. *International Journal of Quality & Reliability Management*, 23, 122-142.
- Soubihia, D.F., Chiappetta Jabbour, C.J. & Lopes de Sousa Jabbour, A.B (2015). Green Manufacturing: Relationship between Adoption of Green Operational Practices and Green Performance of Brazilian ISO 9001-Certified Firms. *International Journal of Precision Engineering and Manufacturing-Green Technology*, 2, 95-98.
- Stemler, S.E. (2004). A comparison of consensus, consistency, and measurement approaches to estimating interrater reliability. *Practical Assessment, Research & Evaluation*, 4, 1-11.
- Sun, H. & Cheng, T-K. (2002). Comparing reasons, practices and effects of ISO 9000 certification and TQM implementation in Norwegian SMEs and large firms. *International Journal Business Journal*, 20, 421-442.

- Tarí, J.J., Heras-Saizarbitoria, I., & Pereira-Moliner, J. (2013). Internalization of quality management in service organizations. *Managing Service Quality*, 23, 456-473.
- 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, 297-322.
- Teixeira, A.A., Jabbour, C.J.C., Latan, H., de Oliveira, J.H.C., Freitas, W.R.S., & Teixeira, T.B. (2017). The importance of quality management for the effectiveness of environmental management: evidence from companies located in Brazil. *Total Quality Management & Business Excellence*, in press.
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14, 207-222.
- Tsekouras, K, Dimara, E., & Skuras, D. (2002). Adoption of a quality assurance scheme and its effect on firm performance: A study of Greek firms implementing ISO 9000. *Total Quality Management*, 13, 827-841.
- Valmohammadi, C. & Kalantari, M. (2015). The moderating effect of motivations on the relationship between obtaining ISO 9001 certification and organizational performance. *The TQM Journal*, 27, 503-518.
- Withers, B.E., Ebrahimpour, M., & Hikmet, N. (1997). An exploration of the impact of TQM and JIT on ISO 9000 registered companies. *International Journal of Production Economics*, 53, 209-216
- Zeng, J., Phan, C.A., & Matsui, Y. (2015). The impact of hard and soft quality management on quality and innovation performance: an empirical study. *International Journal of Production Economics*, 162, 216-226.

Zeng, S.X., Tian, P., & Tam, C.M. (2007). Overcoming barriers to sustainable implementation of the ISO 9001 system. *Managerial Auditing Journal*, 22, 244-254.

Zhu, O., Cordeiro, J., & Sarkis, J. (2013). Institutional pressures, dynamic capabilities and environmental management systems: Investigating the ISO 9000 – Environmental management system implementation linkage. *Journal of Environmental Management*, 114, 232-242.

Exhibit 1. Qualitative studies about quality standards internalization

Work	Sample	Analysis	Main Results
Boiral (2003)	ISO 9000 certified organizations in Quebec	47 interviews of managers and employees	The study shows the coexistence of several manners of integrating ISO 9000 standards. The quality enthusiasts facilitate the development of the standard's requirements. The ceremonial integrators are unconvinced followers of the standard who nonetheless want to pass the final exam in order to obtain the ISO 9000 certificate. Finally, the dissidents succeed in coming to terms with the very flexible requirement of the certification audit while indirectly showing their opposition to the system's contradictions
Boiral (2011)	Certified organizations in Canada	189 interviews (managers and employees)	Organizations that adopt ISO 9001 can obtain benefits although such benefits are far from automatic. They are due less to the standards themselves and more to the way the standard is adopted
Heras (2011)	Eight Spanish organizations that adopted the standard a long time ago	Eight case studies using semi-structured interviews with managers and employees)	Seven factors (reorganization geared towards management of processes, involvement of middle management, features of documentation, qualifications and involvement of employees, concurrent implementation of other improvements with ISO 9001, active participation of employees in audits and extension of the ISO 9001 model implemented) and 22 sub-factors are suggested to define internalization
Boiral (2012)	60 certified organizations in Quebec	Interviews with managers and employees	The study shows that the rationale for learning and motivation coexist with different levels of adoption of the standard
Heras and Boiral (2015)	Eight Spanish SMEs with ISO 9001 certificate	65 in-depth interviews of general managers, middle managers and employees	Organizations can implement ISO 9001 symbolically in response to different internal drivers
Cai and Jun (2018)	ISO 9001 certified North American firms	47 quality managers via semi-structured interviews and follow-up surveys	Four major ISO 9000 internalization processes: documentation, process improvement, education, and auditing. When a firm has a preexisting quality management system in place before ISO 9001 adoption along with other quality improvement initiatives, its improved operations performance is not necessarily attributed to the ISO 9001 implementation alone.

Exhibit 2. Quantitative studies about quality standards internalization

Work	Sample	Analysis	Main Results
Huang, Horng, and Chen (1999)	370 certified companies in Taiwan	Regressions	There is a relationship between internal reasons and an improvement in quality and a reduction in cost, and between external reasons and sales. Similarly, those companies developing the standard better achieve better results.
Arauz and Suzuki (2004)	292 ISO 9000 certified companies in Japan (manufacturing/service organizations)	t-test, factor analysis and regression	The integration of the standard with new quality initiatives improves customer satisfaction.
Naveh and Marcus (2004)	1150 ISO 9000 managers (manufacturing/service organizations)	Regression models	Companies can adopt ISO 9001 in a superficial or full way. In-depth development means that companies may improve operational and business performance
Briscoe, Fawcett, and Todd (2005)	275 ISO 9000 certified small-firm manufacturers in US and Canada	Structural equation model (SEM)	Organizations with a quality proactive approach have few problems in the internalization process of ISO 9001. In this case, these companies will have better results (operational and market result).
Naveh and Marcus (2005)	1150 managers from 924 ISO 9000 certified manufacturing/service organizations	Hierarchical linear model (HLM)	If ISO 9001 is used in daily routines and as a way of introducing changes, companies can improve their operational results.
Christmann and Taylor (2006)	172 quality certified firms in China	Regressions	Companies that achieve customer satisfaction only with a symbolic development of the standard or control or sanctions are weak to go beyond the minimum; companies can select a symbolic adoption
Jang and Lin (2008)	441 ISO 9000 certified firms in Taiwan	SEM	There is a relationship between internal motives and internalization and there is no link between external motivation and internalization. In addition, the depth of adoption is related to operational performance and indirectly affects market performance.
Singh (2008)	418 ISO certified organizations in Australia (manufacturing industry)	SEM	Leadership facilitates the development of other practices and performance. Some of these practices impact on steady processes and steady processes on performance
Nair and Prajogo (2009)	281 ISO 9001 certified companies in Australia	SEM	Internalization of ISO 9001 is associated with operational performance, and operational performance leads to business outcomes.
Prajogo (2011)	328 ISO 9000 certified organizations in Australia	Multiple regression analysis	The results show the importance of internal motives for ISO 9001 adoption and that external reasons have no impact on operational performance
Prajogo, Huo, and Han (2012)	321 ISO 9000 organizations in Australia (manufacturing and non-manufacturing)	SEM	There is a link between advanced and supportive implementation and operational performance.
Psomas, Kafetzopoulos, and Fotopoulos (2013)	335 ISO 9001 certified companies (Greek food manufacturing industry)	Exploratory and confirmatory factor analysis	The study shows that ISO 9001 effectiveness can help companies to improve quality, prevent failure and improve customer satisfaction
Psomas, Pantouvakis, and Kafetzopoulos (2013)	100 ISO 9001 certified companies (Greek service industry)	Multiple linear regression analyses	The effectiveness of ISO 9001 leads to improved operational performance and then to financial performance
Tarí, Heras-Saizarbitoria, and Pereira-Moliner (2013)	32 certified hotels in Alicante (Spain)	PLS	Internal reasons are more important to internalization and internalization leads to better benefits and the application of quality tools
Allur, Heras-Saizarbitoria, and Casadesús (2014)	110 certified organizations in Basque Autonomous Region in Spain	Regressions	Internalization leads to the application of quality tools and a higher level of internalization improves benefits from the ISO 9001 implementation

Ataseven, Prajogo, and Nair (2014)	321 Australian certified organizations	SEM	Internalization of ISO 9001 impacts on human, organizational and social capital. Human and organization capital have positive effects on process improvement and then on operational performance
--	---	-----	---

Exhibit 3. Items about internalization based on literature (firs step)

Dimensions, Items and Authors

Applied to solving problems:

To what extent: is the system applied to operations such as marketing, human resources and finance?

Do managers value the internal audits the system requires?, are ISO 9000 audit findings incorporated into training?, does top management use the data generated to find solutions to the company's technical problems (Naveh & Marcus, 2004)

Internalization (buy-in):

Top management uses ISO data to solve business problems, top management uses ISO data to solve technical problems, ISO audit findings incorporated into training, ISO 9000 helped prevent problems (Briscoe et al., 2005)

Catalyst for change:

to what extent was design and development of your ISO 9000 system a springboard to introduce new practices?, to what extent has ISO 9000 led to the discovery of improvement opportunities?, to what extent was your investment of time and resources in ISO 9000:

- a starting point for other more advances practices?
- a catalyst for rethinking the way you do business?
- understood as an opportunity to innovate? (Naveh & Marcus, 2005)

Internalization (routine):

ISO 9000 documents used in daily practice, ISO 9000 document updated regularly, ISO 9000 drove improvement opportunities, ISO 9000 has become part of the regular routine, ISO 9000 is coordinated with quality programs, managers value internal audits (Briscoe et al., 2005)

Daily practice:

To what extent: are the documents created for the purpose of ISO 9000 registration used in daily practice?, are preparations for external audits made at the last minute?, is the system regularly ignored?, is the system an unnecessary burden?, has it become part of your regular routine? (Naveh & Marcus, 2005)

Internalization:

- (1) 'To what extent are the documents created for the purpose of ISO 9000 used in daily practice?'
- (2) 'To what extent has the ISO 9000 system become part of your regular routine?'
- (3) 'To what extent are preparations for external audits made at the last minute?' (reverse scored) (Christmann & Taylor, 2006)

Internally integrated:

To what extent was design and development of your ISO 9000 system:

- coordinated and led by employees who were trained and developed inside the organization
- integrated with practices already in place?

Based on an analysis of internal processes and performance?

-customized to the needs of your company? (Naveh & Marcus, 2005)

Internalization:

All employees were trained in total quality concepts and ISO 9000 requirements during the implementation process, our company's quality policy, objectives, and procedures were explained clearly to all employees, we clearly documented the quality policy and procedures for quality management and continuously update them, we always maintain our daily practices to comply with the documented procedures based on the ISO 9000 requirements, we conduct an internal audit regularly and the results are used as a basis for improving our processes (Nair & Prajogo, 2009)

Externally coordinated:

To what extent was design and development of your ISO 9000 system:

- coordinated with suppliers?
 - coordinated with customers?
 - based on learning from other companies that already were registered? (Naveh & Marcus, 2005)
-

Exhibit 4. Items about internalization based on literature (second step)

Dimensions, Items and Authors

Daily practice:

To what extent are the documents created for the purpose of ISO 9000 registration used in daily practice? (Naveh & Marcus, 2005)

To what extent has it become part of your regular routine? (Naveh & Marcus, 2005)

To what extent are the documents created for the purpose of ISO 9000 used in daily practice? (Christmann & Taylor, 2006)

To what extent has the ISO 9000 system become part of your regular routine? (Christmann & Taylor, 2006)

ISO 9000 documents used in daily practice (Briscoe et al., 2005)

ISO 9000 has become part of the regular routine (Briscoe et al., 2005)

To what extent are preparations for external audits made at the last minute? (Naveh & Marcus, 2005;)

To what extent are preparations for external audits made at the last minute?? (reverse scored) (Christmann & Taylor, 2006)

Catalyst for improvements:

To what extent was design and development of your ISO 9000 system a springboard to introduce new practices? (Naveh & Marcus, 2005)

To what extent has ISO 9000 led to the discovery of improvement opportunities? (Naveh & Marcus, 2005)

To what extent was your investment of time and resources in ISO 9000:

-a starting point for other more advanced practices?

-a catalyst for rethinking the way you do business?

-understood as an opportunity to innovate? (Naveh & Marcus, 2005)

Top management uses ISO data to solve business problems (Briscoe et al., 2005)

Top management uses ISO data to solve technical problems (Briscoe et al., 2005)

ISO audit findings incorporated into training (Briscoe et al., 2005)

ISO 9000 helped prevent problems (Briscoe et al., 2005)

Managers value internal audits (Briscoe et al., 2005)

ISO 9000 drove improvement opportunities (Briscoe et al., 2005)

We conduct an internal audit regularly and the results are used as a basis for improving our processes (Nair & Prajogo, 2009)

Other items:

ISO 9000 document updated regularly (Briscoe et al., 2005)

To what extent was design and development of your ISO 9000 system: -coordinated and led by employees who were trained and developed inside the organization (Naveh & Marcus, 2005)

All employees were trained in total quality concepts and ISO 9000 requirements during the implementation process (Nair & Prajogo, 2009)

We clearly documented the quality policy and procedures for quality management and continuously update them (Nair & Prajogo, 2009)

Exhibit 5. Constructs and items for measuring internalization in future research

***Daily practice* (Briscoe et al., 2005; Naveh & Marcus, 2005; Christmann & Taylor, 2006)**

The documents created for certification are used in daily practice

The quality system becomes part of daily work routines

External audits are prepared at the last moment

All employees are trained in the notions of quality and the requirements of the quality standard

The quality policy and the quality system procedures are updated in order to adapt them to daily organizational practices

***Continuous improvement* (Briscoe et al., 2005; Naveh & Marcus, 2005; Nair & Prajogo, 2009)**

The development of the quality system makes it possible to introduce new improvement practices

The quality standard has led the organization to discover improvement opportunities

Investing time and resources in the quality standard is a starting point towards the implementation of other more advanced practices

Investing time and resources in the quality standard helps to reflect on the way work is done in the firm and improves our work

Investing time and resources in the quality standard is seen as an opportunity to innovate in our organization

Exhibit 6. Gaps and future research on internalization

	Gaps	Future Research
1	Scarcity of research examining the points of view of different stakeholders (managers, employees, certification bodies, etc.)	Study of these issues from the perspectives of various stakeholders. This could include qualitative studies further analysing internalization, or mixed (quantitative + qualitative) studies
2	Although the studies have focused on certified organizations in the manufacturing and service sectors, the service sector has been analysed to a lesser extent	Analysis of these issues in the service sector and, within the service sectors, in quality-prone sectors, where these internalization issues have been little studied, if at all
3	Need for studies in different countries	Study of these issues in countries less analysed so far, other than Australia and Canada
4	How can we measure internalization in future studies?	Use of different dimensions (e.g. daily practices and continuous improvement) for measuring internalization, and examine the relationships between these dimensions in quantitative studies; Analyses of the key factors facilitating the internalization process in qualitative studies
5	Need for future studies to investigate the potential relationship between internal-external drivers. Also need for new analyses to examine the mediating and moderating effects of reasons for certification	Analysis of the mediating effects of internal drivers on the relationship between external drivers and internalization; Examination of the mediating and moderating effects of reasons for certification on the internalization-performance link
6	Need for further studies that focus on the effects of the reasons for certification on performance	Analysis of the relationships among reasons, internalization and performance
7	Drivers other than reasons for certification have been studied little. Also, the different roles of internal drivers in facilitating the internalization process have not been examined very thoroughly	Study of drivers other than reasons for certification in the internalization-performance link. Study of the mediating and moderating effects of some of these factors (e.g., quality culture, training). Analysis of the role of quality management practices on internalization and on the internalization-performance link; Analysis of the role of each internal driver in the internalization process to understand how each internal driver (e.g., leadership, training, ...) may affect superficial or full adoption of a quality standard
8	Most studies have analysed the internalization-operational/business performance link, while the effects on other performance dimensions (quality culture, customer results, training, etc.) have not been clarified	Effects on internalization on various performance dimensions (e.g., customer, people and society results), quality management practices, etc.
9	Internalization levels leading to different performance levels. Little has been written on internalization taxonomy	Analysis of internalization levels through cluster analyses making it possible to identify an internalization taxonomy
10	Expansion of the quality system to similar practices (e.g. environmental practices)	Internalization of practices similar to quality (e.g., environmental practices) and of the two practices in one single study

Exhibit 7. Main research themes in homogeneous adoption works

Main Research Themes	References
<p>Benefits of quality standards</p> <ul style="list-style-type: none"> • Different typologies of benefits: operational, customer, people and financial performance; internal and external benefits; operational and financial performance • Efficiency, customer satisfaction and image are key benefits • Operational and customer results are the clearest benefits and the effects on financial performance are mixed. • The majority of studies measure them using subjective measures (e.g., based on questionnaires) and few use objective indicators. 	<p>Tsekouras, Dimara & Skuras (2002), Benner & Veloso (2008), Bayo-Moriones, Merino-Díaz-de-Cerio, Escamilla-de-León & Selvam (2011), Chatzoglou, Chatzoudes & Kipraios, (2015), Cândido, Coelho & Peixinho (2016), Murmura, Casolani, Liberatore & Vicentini (2018)</p>
<p>Motives for adopting quality standards</p> <ul style="list-style-type: none"> • Internal (product quality, improve systematization, improve internal processes, improve employees' knowledge) and external (customer demand, improve image, improve competitive advantage, increase market share) motives • Customer demand is a critical driver • Some organizations seek quality certification due to external forces (e.g., customer demands) while others due to internal issues. There is no a clear evidence about the main drivers for seeking quality certification although both motives are related to benefits. 	<p>Gotzamani & Tsiotras (2002), Sun & Cheng (2002), Sampaio, Saraiva & Rodrigues (2009), Valmohammadi & Kalantari (2015), Gómez-López, Serrano-Bedia & López-Fernández (2016), Djofack & Robledo Camacho (2017)</p>
<p>Implementation process</p> <ul style="list-style-type: none"> • Implementation steps and audits • Critical success factors (internal improvement, top management support, employee involvement, education, and communication, etc.) • Barriers (lack of top management involvement, poor communication, lack of training, etc.) 	<p>Calisir, Kulak & Dogan (2005), Singh, Feng & Smith (2006), Zeng, Tian & Tam (2007), Heras-Saizarbitoria, Casadesús & Marimón (2011), Kammoun & Aouni (2013), Ismyrlis, Moschidis & Tsiotras (2015)</p>
<p>The diffusion of quality standards</p> <ul style="list-style-type: none"> • Diffusion of quality standards. • The quality standard is in a mature stage although it is an interesting strategy for many companies to improve competitiveness. • Differences in adoptions among different contexts. Different factors (e.g., bilateral trade) can explain differences in the adoption of the quality standards in different countries. For example, trade competition can lead many companies to adopt ISO 9001 standard. 	<p>Guler, Guillén & Macpherson (2002), Albuquerque, Bronnenberg & Corbett (2007), Cao & Prakash (2011)</p>
<p>Integration</p> <ul style="list-style-type: none"> • Relationships between ISO 9001 and other management systems (e.g., ISO 14001) • Integration process in a single management system. This is due to parallels between quality standards and environmental standards, and between quality standards and other similar management systems. Integration with total quality management and/or quality techniques and tools. • Certified companies apply few quality tools and techniques and the adoption of other quality initiatives such as total quality management can allow quality certified companies to achieve greater benefits from ISO 9001 adoption. 	<p>Delmas & Montiel (2008), Psomas, Fotopoulos & Kafetzopoulos (2011), Zhu, Cordeiro & Sarkis (2013), Lakhali, L. (2014), Soubihia, Chiappetta Jabbour & Lopes de Sousa Jabbour (2015), Bernardo, Gianni, Gotzamani & Simon (2017)</p>
<p>Contextual factors</p> <ul style="list-style-type: none"> • Organizational characteristics, characteristics of innovation and characteristics of the external environment are associated with the adoption of ISO 9000 standards. • Technology intensity, labor productivity competition, innovation, competitive pressure, organizational characteristics (size, formalization...) influence the efficacy of quality standard adoption. Nevertheless, the evidence is not conclusive. 	<p>Withers, Ebrahimpour & Hikmet (1997), Hashem & Tann (2007), Lo, Wiengarten, Humphrey, Yeung & Chen (2013), Djofack & Robledo Camacho (2017), Kasperavičiūtė-Černiauskienė & Serafinas (2018)</p>