Iso 9001 Quality Management Systems: Literature Review

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Resumo:
Este artigo identifica o estado da arte no que respeita às motivações, benefícios e dificuldades na implementação e certificação dos sistemas de gestão da qualidade (SGQ) nas organizações. A revisão da literatura sugere que, em relação às motivações internas ou externas, algumas podem ser mais ou menos intensas do que outras, dependendo do tipo de organização e do seu contexto operacional. Como regra geral, a literatura aponta para um melhor desempenho das organizações que operam SGQ de acordo com a ISO 9001, embora alguns estudos tenham demonstrado que a correlação entre a certificação e o desempenho da organização é apenas marginal, ou não existe mesmo. Por outro lado, as maiores dificuldades na implementação e certificação do SGQ recaem na burocracia, no fraco compromisso com a qualidade, no custo e no tempo. Dadas as conclusões divergentes, contraditórias e não consensuais, retiradas desta revisão, bem como de outras similares, levantamos questões metodológicas sobre a investigação destes tópicos, e recomendamos outras dimensões de análise, no sentido de colmatar as dificiências encontradas.

Palavras-chave: Sistema de gestão da Qualidade, Motivações, Benefícios, dificuldades.

Abstract:
This paper is focused on the state of the art in regards to the motivations, benefits and difficulties of implementation and certification of quality management systems (QMS) in organizations. The literature review suggests that, in regard to internal or external motives, some may be more or less intense than others, depending on the type of organization and its operating context. As a general rule literature points out to a better performance of organizations that have a QMS according to ISO 9001, although some studies have shown that correlation between the QMS certification and performance is only marginal, or does not exist. On the other hand, the greatest difficulties in implementation and certification of QMS are felt in the bureaucracy, weak commitment to quality, cost and time spent. Finally, we raise methodological questions about research on these topics, and other dimensions of analysis are recommended.

Keywords: Quality management system, Motivations, Benefits, Difficulties.

1. Introduction

In the last decades of the 20th Century the standardization of management practices enhanced tremendously mainly due to the publication of international standards for different areas of business management in an economic environment characterized by globalization and economic integration of markets (Marimon et al., 2005; Heras and Casadesús, 2006; Casadesús et al., 2009; Karapetrovic et al., 2010). Giaccio et al. (2013) state that ISO series 9000 have provided the rules for the development of the concept of total quality in which all sectors of a business become involved and in which quality comes to define the strategic objective that business will follow.

Escanciano (2001) pointed out that the implementation of a QMS and its certification are two differentiated stages of a process whose ultimate goal is to ensure quality, although in practice there is a trend to consider them as one. Firstly, the certification implies the existence of a QMS which serves as its basis. Secondly, the characteristics of the current economic environment make the demonstration of quality of processes to be considered a fundamental condition to compete in certain sectors and in the international market. This led to the existence of a QMS not being considered as an element of sufficient evidence if it is not certified by an accredited agency (Escanciano, 2002). The implementation and certification of QMS according to ISO 9001 is an aspect of paramount importance for a significant number of organizations worldwide (Sampaio, 2008).

The study of motivations, advantages and benefits coming from implementation and certification of a QMS has largely been made, although they are often conflicting, controversial and even contradictory findings (e.g. Escanciano, 1998; Singels et al., 2001; Poksinska et al., 2002; Sun and Cheng, 2002; Casadesús and Heras, 2005; Sharma, 2005; Lundmark and Westelius, 2006; Poksinska et al., 2006; Boiral and Roy, 2007; Sampaio et al., 2010; Heras-Saizarbitoria et al., 2011; Giaccio et al., 2013; Vilkas and Vaitkevicius, 2013; Santos and Millán, 2013; Santos et al., 2013; Georgiev and Georgiev, 2015), therefore justifying more research.

2. Motivations for quality

According to an almost unanimous opinion of the scientific community, the reasons that lead an organization to implement and certify its QMS, i.e., the system to maintain or improve the quality of a firm's products and services by fulfilling the satisfaction of consumer expectation (Dahlgaard et al., 1992), have an internal and/or external nature (Vloeberghs and Bellens, 1996; Huarng, et al., 1999; Singels et al., 2001; Poksinska et al., 2002; Escanciano et al., 2003; Llopis and Tarí, 2003; Casadesús and Heras, 2005; Cruz et al., 2005; Poksinska et al., 2006; Rodríguez-Escobar, et al., 2006; Zaramdini, 2007; Sampaio, 2008; Sampaio et al., 2010; Heras-Saizarbitoria et al., 2011; Giaccio et al., 2013; Vilkas and Vaitkevicius, 2013; Santos and Millán, 2013; Santos et al., 2013; Allur et al. 2014; Chatzoglou et al., 2015; Georgiev and Georgiev, 2015; Valmohammadi and Kalantari, 2015). Behind the consideration of the existence of internal reasons is the idea that quality is something objective and intrinsic to products, while external reasons are based on the idea that quality is more subjective and dependent on external factors (Giaccio et al., 2013).

Vloeberghs and Bellens (1996) conducted a study on the experience achieved by quality and human resources managers in Belgium, having concluded on internal motivations - orientation to processes, procedures and people of the organization to ensure efficiency and quality of the products/services - and external motivations - focus on business environment (eg. market share, customers, product reliability). This classification of expectations or the expected and obtained benefits has been widely used by other authors (e.g. Singels et al., 2001; Poksinska et al., 2002; Llopis and Tarí, 2003; Casadesús and Heras, 2005; Cruz et al., 2005; Poksinska et al., 2006; Zaramdini, 2007; Sampaio, 2008).

In Spain, the motivations for QMS certification have been researched by several authors (Escanciano, 1998; Escanciano et al., 2003; Casadesús and Heras, 2005; Heras et al., 2006). Escanciano (1998) and Escanciano et al. (2003) carried out two studies in Astúrias (Spain), noting that companies have implemented and certified their QMS primarily moved by the expectation of improving the quality of products and services and its internal process and procedures. These internal motivations prevailing over the external, such as the improvement of the company image and the need to certify the QMS to compete in the sector. In turn, Casadesús and Heras (2005) and Heras et al. (2006) resorted to a panel of experts to conduct two Delphi studies to identify the motivations for QMS implementation, concluding that companies implemented ISO 9001 mainly due to external reasons: pressure/demand of customers and improvement of the image derived from the QMS certification.

Rodríguez-Escobar et al. (2006) analyzed the dissatisfaction with the implementation of a quality management system according to ISO 9000 in a sample of 131 small companies certified in Spain, since, according to these authors, certification is only a guarantee that a company uses a list of requirements and procedures and the benefits that have been attributed to ISO 9000 have often been overstated and consequently companies tend to generate high expectations that are hard to perceive. Therefore, they developed a model to measure dissatisfaction by comparing expectations before certification to perceived results after certification. The overvaluation, the exaggeration attributed to certification and the consequent of unrealistic expectations raise the dissatisfaction with the managers, reason why, the results of this study empirically showed that the certification ISO 9001 does not live up to the expectations of the small Spanish companies in diverse aspects of the business, in particular to commercial aspects: access to new markets, increase of market share and business portfolio, image improvement, and so on.

Ofori and Gang (2001) point out to improvement of quality assurance, operational procedures, competitiveness and company image as the main reason for Singaporean building companies to implement and certify their QMS.

Sun and Cheng (2002) searched for motivations of small and large companies in Norway for ISO 9001:2000 certification and to implement total quality management (TQM) practices. Small companies referred that the most important motivations are the customer pressure and the need of being integrated in joint projects. Large companies pointed out the company survival, the cost reductions and the improvement of competitiveness.

In Portugal, Domingues (2003) concluded that the reasons leading companies to certification were mainly of a business/organizational nature: better organization of company, reduction of non-quality costs, increase productivity, increase competitiveness, and improve after sales service and increased workers' satisfaction.

According to Branco (2008) Portuguese companies implement QMS mainly in search of opportunities to improve the organization, to systematize working methods, to improve products/services and to be oriented to customer's interests. The hierarchy of motivations for the implementation of QMS and the consensus around organizational aspects in detriment of market reasons leads to the conclusion for supremacy of internal reasons. In the case of QMS certification, Branco (2008) pointed out that the most relevant motives are the greater responsibility for systematic implementation of procedures, business/differentiation advantage in the current market, satisfaction of the customers/market requirements, and to grasp business opportunities and to enter in new markets.

Sampaio et al. (2010) carried out a study with a sample of 100 ISO 9001 QMS certified companies from Portugal, with the objective of comparing statistically the two types of motivations (internal motivations and external motivations) which lead companies to certification. For this, the authors have developed classification methodologies which allow to classify companies, according to their dominant, ISO 9001 motivation, using information gathered from their audit report profiles. The results of this study allow us to predict if a given company follows mostly internal or external motivations from information contained in the corresponding audit reports.

Santos et al. (2014) carried out a study with the objective of analyzing different aspects associated with motivation and benefits of ISO 9001 certification, together with 426 Portuguese companies with certified ISO 9001 QMS, belong only to the Minho region in the north of Portugal. The results suggest that the main motivations for certification were "improvement of quality", "improvement of company image", "marketing advantage", "give empowerment to workers / capturing workers knowledge" and "cost reduction".

Although the more intensive motivation for certification is of an internal nature, the market reasons are widely represented. Poksinska et al. (2006) carried out three case studies in small Swedish companies, concluding that none of them understood and implemented the QMS to improve performance. In all case studies, market pressure was so important that it would be impossible for those companies to operate without certification according to ISO 9001 standards.

Zaramdini (2007) also studied motivations in the United Arab Emirates with a focus on SME and large certified companies, concluding that companies with QMS certified were more focused on internal motivations management body decision, improve processes and procedures, improve products/services, increase efficiency/productivity, reduce incidents, returns and complaints – than the external ones – improve the company image, achieve a marketing tool, gain competitive advantage, maintain or increase market share and satisfy a requirement to compete in their sectors.

In Kazakhstan, Moldashev (2009) investigated the reasons that led companies to adopt ISO 9001 standard, concluding that most companies wanted to improve satisfaction of customers' needs (28%) and to increase competitiveness through cost (26%).

White et al. (2009) carried out a case study in England, in a non-profit sector organization founded in 1777. The motivations for implementation and certification of a QMS were connected to the need to develop a new business model to support the progress of the organization, to generate more business opportunities, to increase market share, and to promote continuous improvement of performance.

A study carried out in Tunisia showed a prominence of external motives (Kammoun et al., 2013). In fact, the main motivations leading Tunisian companies to pursue certification were satisfaction of customer's needs, improvement of supplier's relationships, increase of market shares and the fact that competitors are being certified. These external motives are pursued by internal motives as management commitment, awareness of establishing a QMS, the need to be able to export and improvement of work environment.

According to Al-Darrab et al. (2013), many Saudi Arabian companies are interested in displaying certification to enhance the marketability of their products, than implementing quality standards companywide. However, an earlier study conducted by Magd (2006) with Saudi Arabian manufacturing companies showed that certification was seen as a tool to assist in development of quality management. A less recent study conducted with manufacturing companies in Saudi Arabia showed that the main elements that motivated the certification were increasing consistency of operations, improvement quality of services and products, maintenance/improvement of the market share, anticipation of demand from future customers for ISO and to provide proof of commitment to TQM (Mezher and Ramadan, 1999).

Georgiev and Georgiev (2015) studied motivational factors for ISO 9001 certification in Bulgaria which included two interviews with experts in the field of quality management

at the exploratory stage, and a survey involving 127 companies at the descriptive stage. The main motivational factor for ISO 9001 certification in Bulgaria was enhanced company image and competitiveness. On the other hand, this study indicates that Bulgarian firms are not predominantly externally driven, but for internal motivations including process improvement and product quality improvement seem to be an important driver for ISO 9001 certification, and that enhanced company image and competitiveness has a stronger impact on the motivations for ISO 9001 certification than customer and supplier pressure, which is in line with previous research works in developing economies such as Bulgaria.

Table 1 summarizes the motivations to certification according to ISO 9000 standards. It is clear that the main motivations are related to quality system efficiency, which is in line with ISO purposes (Magd, 2006)

Table 1.Motivations to certification

Motivations to certification	Authors
Internal	
To improve organizational processes and procedures; to improve work environment; to improve the organization in general	Vloeberghs and Bellens (1996); Escanciano (1998); Mezher and Ramadan (1999); Ofori and Gang (2001); Escanciano et al. (2003); Domingues (2003); Zaramdini (2007); Branco (2008); Karapetrovic et al. (2010); Magd (2010); Kammoun et al. (2013)
To improve the quality of products and services	Escanciano (1998); Mezher and Ramadan (1999); Escanciano et al. (2003); Zaramdini (2007); Georgiev and Georgiev (2015)
To improve quality	Ofori and Gang (2001); Magd (2006); Kammoun et al. (2013); Santos et al. (2014)
To increase competitiveness by reducing costs	Moldashev (2009); Santos et al. (2014); Georgiev and Georgiev (2015)
To develop a new business model to support the development of the organization	White et al. (2009)
To be able to export	Kammoun et al. (2013); Xun and Aseem (2011)
To install a quality management	Casadesus and Karapetrovic (2005); Lo and Chang (2007)
To provide proof of commitment to TQM	Mezher and Ramadan (1999); Karapetrovic et al. (2010); Magd (2010); Kammoun et al. (2013)
To ensure company survival	Poksinska et al. (2006)
External	
To face market/customers pressure and needs	Sun and Cheng (2002); Casadesús and Heras (2005); Heras et al. (2006); Poksinska et al. (2006); Rodríguez-Escobar et al. (2006); Kammoun et al. (2013); Santos et al. (2014); Georgiev and Georgiev (2015)
To satisfy customer's needs; to increase customer's satisfaction	Domingues (2003); Martínez-Costa et al. (2009); Moldashev (2009); Karapetrovic et al. (2010); Kaziliunas (2010); Magd (2010); Santos et al. (2014); Georgiev and Giorgiev (2015)
To improve company image	Mezher and Ramadan (1999); Casadesús and Heras (2005); Heras et al. (2006); Rodríguez-Escobar et al. (2006); Santos et al. (2014); Georgiev and Georgiev (2015)

To maintain/increase market share	Mezher and Ramadan (1999); Rodríguez-Escobar et al. (2006); Martínez-Costa et al. (2009): White et al. (2009); Karapetrovic et al. (2010); Kaziliunas; (2010); Magd (2010); Kammoun et al. (2013); Santos et al. (2014)
To improve supplier's relationships	Martínez-Costa et al. (2009): Karapetrovic et al. (2010); Kaziliunas (2010); Magd (2010); Kammoun et al. (2013); Georgiev and Georgiev (2015)
To compete with competitors with certified QMS	Martínez-Costa et al. (2009): Karapetrovic et al. (2010); Kaziliunas (2010); Magd (2010)
To increase marketability of products	Rodríguez-Escobar et al. (2006); Al-Darrab et al. (2013); Santos et al. (2014);
To anticipated demand from future customers for ISO	Mezher and Ramadan (1999)

3. Quality benefits

The literature on analysis of motivations for ISO 9001 certification also concerns to resulting benefits and the relationships between both elements. As motivations, benefits can also be categorized as internal and external. Vloeberghs and Bellens (1996) stated that benefits of implementation and certification of ISO 9001 QMS are internal and external in nature, as its effects are felt in ~~the~~ internal and external scope of organizations. Other authors have used this classification in their research (e.g. Escanciano, 1998; Casadesús and Giménez, 2001; Casadesús et al., 2001; Yahya and Goh, 2001; Poksinska et al., 2002; Escanciano et al., 2003; Chang and Lo, 2005; Rodríguez-Escobar et al., 2006; Singh and Sareen, 2006; Lo and Chang, 2007; Zaramdini, 2007; Cagnazzo et al., 2009; Karipidis et al., 2009; Cagnazzo et al., 2010; Tarí et al., 2012; Simon et al., 2013; Kammoun et al., 2013; Karim, 2013; Abad et al., 2014; Bernardo et al., 2014; Martin-Peña et al., 2014; Santos et al., 2014).

According to Vloeberghs and Bellens (1996) the main positive internal effect of certification founded in Belgian companies is a well-defined rule system, which is reflected in definition of responsibility for quality, in reduction of improvisation and in greater transparency throughout organization. Other internal benefits are: reduction of errors and waste, better order processing, greater trust in quality and cost reduction. Externally, the greatest benefit is the response to customers´ requests, resulting in a greater confidence in the organization.

Studies of Escanciano (1998) and Escanciano et al. (2003) have identified the following internal benefits: clear definition of processes and responsibilities, improvement of awareness for quality, training, quality of products/services, and reduction in the rate of incidents, waste and non-conformities. As for the external benefits, the most important

are the improvement of the company image and customer's satisfaction, greater and better knowledge of customer needs and expectations, attraction of new customers and better quality of purchases from suppliers.

Poksinska et al. (2002) pointed out that the internal benefits with a better average are: improved internal procedures and quality, motivated staff and higher productivity. As to the external benefits, the following were highlighted: better company image, greater client satisfaction, better punctuality in deliveries to customers, improved relations with authorities and environmental improvement.

Domingues (2003) stated that QMS implementation enabled feelings of satisfaction and dissatisfaction of different intensities. However, in a study of Portuguese companies the QMS certification obtained a positive assessment in all the areas considered. The positive effects are most satisfactory in the area of company organization, which is improved by the standards of work and management and the reduction of uncertainty in the execution of tasks and the organization overall. This item is followed by client satisfaction, due to the conformity of supplies, and competitiveness, an effect which accumulates several benefits that certification seems to help maintain or improve.

The study carried out by Branco (2008), with Portuguese companies, shows that the main advantages obtained with QMS implementation are the improvement of the organization and working methods, increased customer confidence and more information for analysis of opportunities for improvement.

Santos et al. (2014) carried out a study with the objective of analyzing the different aspects associated with the motivation and benefits of ISO 9001 certification, together with 426 certified Portuguese companies, belong only to the Minho region of the north of Portugal. The main benefits that Portuguese companies have gained from the referred certification have been, among others, the improvement of "procedures", beneficial effect on the "company's image", improvement of quality products/services, increase of the "customer satisfaction", improvement of "on-time delivery"; improvement ~~the~~ "morale" of workers' increase in productivity and decrease of "production costs", among others.

Lundmark and Westelius (2006), in a study carried out with Switzerland companies, reached the conclusion that ISO 9001 certification provided benefits to companies. The most important benefits are the improvement of client relations, the greater awareness of quality, the better basis for decision making, the better knowledge management and the better definition of responsibilities, duties and procedures.

Piskar and Dolinsek (2006) also consider that ISO 9001 is an important tool for the management of Slovenian organizations, in that it provides an improved vision of processes, improves the quality of products and services and the reputation of the organization, increases client satisfaction and provides a better information system.

In the study carried out by Singh and Sareen (2006), in Indian schools, the following benefits were encountered:

- Internal benefits for the system (organization, efficiency and communication), for the teachers (planning, infrastructure, motivation) and for the students (premises, control of activities, suggestions, visits to industry).
- External benefits: improving the reputation of institutions and attracting better prepared students.

Through the study of the benefits of ISO 9001 certification, Zaramdini (2007) concluded for the supremacy of internal benefits. The four most important benefits – improvement of processes and procedures, greater awareness of quality, quality of products/ services, better customer care – are, as stated by the author, associated to internal operational aspects like processes, procedures and quality of products and services. The external benefits occupy more modest positions in the hierarchy of benefits presented by Zaramdini (2007): improving the image of the organization in the market, more satisfied customers, effective *marketing* tool and greater competitive advantage, appear respectively in the fifth, sixth, seventh and eleventh places of the table.

To Zeng and Tian (2007), Chinese companies that certified their QMS in accordance with ISO 9001 improved internal operations, client relations (which requires certification) and with subcontractors, and managed an increase of market share among other less significant improvements.

Karipidis et al. (2009) state that the most important benefits resulting from the implementation of a QMS were the greater awareness of quality, the better diagnosis of problems, the better administrative control, a more discipline and a greater cohesion within the organization. As to the external benefits, the most important were the increase of market share, the international competitiveness, the conformity with regulation and the better relations with customers and suppliers.

For Gotzamani (2010), implementation of ISO 9001:2008 provided the following benefits for Greek companies: commitment of management to quality, continuous improvement of processes, continuous improvement of products and services, orientation to effectiveness and efficiency and a better understanding of the client requirements.

According to Moldashev (2009) the benefits obtained from QMS ISO 9001 by Kazakhstani companies are the improvement of the quality of products and services, better relations with suppliers, sales growth, higher profits, lower production costs and better internal coordination.

White et al. (2009), in a case study for a non-profit sector organization, in England, found that the main benefits consisted in the structuration, documentation and optimization of internal processes, the improvement of product quality and the better responses to customers.

Ali and Rahmat (2010) made a study in Malaysia, with certified companies in the building sector. It was stated that the implementation of ISO 9001 can benefit organizations, through improved efficiency in its control, increased productivity and better customer service.

Georgiev and Georgiev (2015) who studied the motivational factors for ISO 9001 certification in Bulgaria, the results revealed that there is moderate, yet positive correlation between motivations for and benefits of ISO 9001 certification.

Based on the work of Tarí et al. (2012), which identified 82 articles, about ISO 9001, standards and the benefits derived from implementing them, and in the other authors previously mentioned, the Table 2 resumes the benefits of implementation/certification of QMS according to the ISO 9000 standards.

Table 2. Benefits of implementation/certification of QMS according to the ISO 9001 standard

Benefits of certification	Authors
Internal	
Rule system	Vloeberghs and Bellens (1996)
Vision of the processes; definition of processes and responsibilities; optimization of the processes; better documentation of procedures	Zhao et al. (1995); Vloeberghs and Bellens (1996); Jones et al. (1997); Escanciano (1998); Krasachol et al. (1998); Lee et al. (1999); Nield and Kozak (1999); Ragothaman and Korte (1999); Tang and Kam (1999); Beskese and Cebeci (2001); Dissanayaka et al. (2001); Escanciano et al. (2001); Singels et al. (2001); van der Wiele et al. (2001); Gotzamani and Tsiotras (2002); Lo (2002); Poksinska et al.(2002); Santos and Escanciano (2002); Chow-Chua et al. (2003); Escanciano et al. (2003); Magd and Curry (2003); Terziovski et al. (2003); Williams (2004); Bhuiyan and Alam (2005); Zeng, Tian, Tam (2005); Madg (2006); Piskar and Dolinsek (2006); Rodríguez-Escobar et al. (2006); Singh et al. (2006); Bayati and Taghavi (2007); Calisir (2007); Lo and Chang (2007); Zaramdini (2007); Zeng and Tian (2007); Branco (2008); Feng et al. (2008); Jang and Lin (2008); Magd (2008); Singh (2008); White et al. (2009);
Awareness to quality	Escanciano (1998); Escanciano et al. (2003); Lundmark and Westelius (2006); Magd (2006); Karipidis et al. (2009); Zaramdini (2007)
Use of modern management techniques	Calisir (2007); Kammoun and Aouni (2013)

Training	Escanciano et al. (2003)
Working methods	Branco (2008)
Improvements in employee results (motivation, satisfaction, teams, communication, knowledge)	Buttle (1997); Terziovski et al. (1997); Brown et al. (1998); Krasachol et al. (1998); Lee (1998); Lee et al. (1999); Leung et al. (1999); Nield and Kozak (1999); Casadesús and Giménez (2000); Sun (2000); Casadesús et al. (2001); Dissanayaka et al. (2001); Escanciano et al. (2001); Singels et al. (2001); Tan and Sia (2001); Gotzamani and Tsiotras (2002); Posinska et al. (2002); Santos and Escanciano (2002); Chow-Chua et al. (2003); Magd et al. (2003); Magd and Curry (2003); Pan (2003); Arauz and Suzuki (2004); Quazi and Jacobs (2004); Williams (2004); Casadesús and Karapetrovic (2005); Zeng, Tian, Tam (2005)Magd (2006); Rodríguez-Escobar et al. (2006); Singh et al. (2006); Bayati and Taghavi (2007); Calisir (2007); Lo and Chang (2007); Zaramdini (2007); Feng et al. (2008); Jang and Lin (2008); Magd (2008); Martínez-Costa et al. (2008); Karipidis et al. (2009); Cagnazzo et al. (2010); Kammoun and Aouni (2013);
Company organization	Domingues (2003); Branco (2008)
Competitiveness	Domingues (2003)
Data to enable/support decision making	Lundmark and Westelius (2006)
Efficiency of the quality system	Magd (2006); Singh and Sareen (2006)

Benefits of certification	**Authors**
Internal	
Reduction of errors and waste	Vloeberghs and Bellens (1996); Casadesus and Karapetrovic (2005); Calisir (2007); Kammoun and Aouni (2013)
Cost reduction	Lo and Chang (2007); White et al. (2009); Kammoun and Aouni (2013)
Improved quality in product/service	Brown et al. (1998); Huarng (1998); Lee et al. (1999); Ragothaman and Korte (1999); Abraham et al. (2000); Escanciano et al. (2001); Singels et al. (2001); Tan and Sia (2001); van der Wiele et al. (2001); Gotzamani and Tsiotras (2002); Santos and Escanciano (2002); Chow-Chua et al. (2003); Magd and Curry (2003); Magd et al. (2003); Terziovski et al. (2003); Quazi and Jacobs (2004); Magd (2006); Singh et al. (2006); Calisir (2007); Lo and Chang (2007); Zaramdini (2007)Magd (2008); Singh (2008); White et al. (2009);
Efficiency (control, productivity, savings in costs, reduction in mistakes and rework, shorter lead time, improved management control)	Zhao et al. (1995); Vloeberghs and Bellens (1996); Askey and Malcolm (1997); Buttle (1997); Jones et al. (1997); Terziovski et al. (1997); Brown et al. (1998); Huarng (1998); Krasachol et al. (1998); Lee (1998); Lee et al. (1999); Leung et al. (1999); McAdam and McKeown (1999); Oliver and Qu (1999); Ragothaman and Korte (1999); Tang and Kam (1999); Abraham et al. (2000); Casadesús and Giménez (2000); Martínez Fuentes et al. (2000); Sun (2000); Beskese and Cebeci (2001); Casadesús et al. (2001); Dissanayaka et al. (2001); Escanciano et al. (2001); Singels et al. (2001); Tan and Sia (2001); van der Wiele et al. (2001); Gotzamani and Tsiotras (2002); Posinska et al. (2002); Santos and Escanciano (2002); Chow-Chua et al. (2003); Magd and Curry (2003); Magd et al. (2003); Pan (2003); Terziovski et al. (2003); Arauz and Suzuki (2004); Johnson (2004); Martínez-Lorente and Martínez-Costa (2004); Naveh and Marcus (2004); Ruzevicius et al. (2004); Williams (2004); Briscoe et al. (2005); Casadesús and Karapetrovic (2005); Zeng, Tian, Tam (2005); Magd (2006); Rodríguez-Escobar et al. (2006); Singh et al. (2006); Bayati and Taghavi (2007); Calisir (2007); Han et al. (2007); Lo and Chang (2007); Terziovski and Power (2007); Zaramdini (2007); Feng et al. (2008); Jang and Lin (2008); Magd (2008); Martínez-Costa et al. (2008); Singh (2008); Ali and Rahmat (2010);
Profitability	Buttle (1997); Terziovski et al. (1997); Huarng (1998); Casadesús and Giménez (2000); Lima et al. (2000); Casadesús et al. (2001); Beirao and Cabral (2002); Heras et al. (2002); Nicolau and Sellers (2002); Santos and Escanciano (2002); Tsekouras et al. (2002); Wayhan et al. (2002); Magd et al. (2003); Martínez-Costa and Martínez-Lorente (2003); Arauz and Suzuki (2004); Dimara et al. (2004); Naser et al. (2004); Casadesús and Karapetrovic (2005); Corbett et al. (2005); Naveh and Marcus (2005); Sharma (2005); Calisir (2007); Lo and Chang (2007); Martínez-Costa and Martínez-Lorente (2007); Pinar and Ozgur (2007); Terziovski and Power (2007); Zaramdini

	(2007); Benner and Veloso (2008); Dick et al. (2008); Dunu and Ayokanmbi (2008); Jang and Lin (2008); Magd (2008); Martínez-Costa et al. (2008); McGuire and Dilts (2008); Singh (2008);
Management commitment and continuous improvement	Gotzamani (2010)
External	
Customers trust	Vloeberghs and Bellens (1996); Branco (2008)
Improved image	Buttle (1997); Terziovski et al. (1997); Brown et al. (1998); Escanciano (1998); Krasachol et al. (1998); Lee (1998); Lee et al. (1999); Leung et al. (1999); Nield and Kozak (1999); Tang and Kam (1999); Martínez Fuentes et al. (2000); Beskese and Cebeci (2001); Dissanayaka et al. (2001); Poksinska et al. (2002); Santos and Escanciano (2002); Chow-Chua et al. (2003); Magd and Curry (2003); Pan (2003); Terziovski et al. (2003); Zeng, Tian, Tam (2005); Piskar and Dolinsek (2006); Rodríguez-Escobar et al. (2006); Singh and Sareen (2006); Singh et al. (2006); Calisir (2007); Lo and Chang (2007); Zaramdini (2007); Feng et al. (2008); Magd (2008); Karipidis et al. (2009).

Benefits of certification	Authors
External	
Improved customer satisfaction (reduction in complaints, attracting new customers, etc.)	Vloeberghs and Bellens (1996); Buttle (1997); Jones et al. (1997); Terziovski et al. (1997); Escanciano (1998); Huarng (1998); Krasachol et al. (1998); Lee (1998); Lee et al. (1999); Leung et al. (1999); McAdam and McKeown (1999); Nield and Kozak (1999); Oliver and Qu (1999); Ragothaman and Korte (1999); Tang and Kam (1999); Abraham et al. (2000); Casadesús and Giménez (2000); Martínez Fuentes et al. (2000); Sun (2000); Beskese and Cebeci (2001); Casdesús et al. (2001); Dissanayaka et al. (2001); Escanciano et al. (2001); Singels et al. (2001); Tan and Sia (2001); van der Wiele et al. (2001); Gotzamani and Tsiotras (2002); Poksinska et al. (2002); Santos and Escanciano (2002); Chow-Chua et al. (2003); Domingues (2003); Escanciano et al. (2003); Magd and Curry (2003); Magd et al. (2003); Pan (2003); Terziovski et al. (2003); Arauz and Suzuki (2004); Naveh and Marcus (2004); Quazi and Jacobs (2004); Ruzevicius et al. (2004); Williams (2004); Bhuiyan and Alam (2005); Casadesús and Karapetrovic (2005); Zeng, Tian, Tam (2005); Magd (2006); Piskar and Dolinsek (2006); Rodríguez-Escobar et al. (2006); Singh et al. (2006); Bayati and Taghavi (2007); Han et al. (2007); Lo and Chang (2007); Zaramdini (2007); Branco (2008); Jang and Lin (2008); Magd (2008); Martínez-Costa et al. (2008); Singh (2008); Sampaio et al. (2009); White et al. (2009); Ali and Rahmat (2010); Cagnazzo et al. (2010); Gotzamani (2010); Gutiérrez et al. (2010); Kammoun and Aouni (2013).
Relations with customers	Lundmark and Westelius (2006); Zeng and Tian (2007)
Reducing customer's complaints	Calisir (2007); Kammoun and Aouni (2013)
Improved relationship with suppliers	Lee (1998); Lee et al. (1999); Ragothaman and Korte (1999); Dissanayaka et al. (2001); Escanciano et al. (2001); Gotzamani and Tsiotras (2002); Magd and Curry (2003); Magd et al. (2003); Terziovski et al. (2003); Arauz and Suzuki (2004); Casadesús and Karapetrovic (2005); Rodríguez-Escobar et al. (2006); Singh et al. (2006); Lo and Chang (2007); Magd (2008); Moldashev (2009); Cagnazzo et al. (2010); Gutiérrez et al. (2010); Kammoun and Aouni (2013).
Improved relationship with authorities and other stakeholders	Ragothaman and Korte (1999); Sun (2000); Posinska et al. (2002); Magd and Curry (2003); Pan (2003).
Sales and sales growth	Buttle (1997); Jones et al. (1997); Terziovski et al. (1997); Huarng (1998); Lee (1998); Leung et al. (1999); McAdam and McKeown (1999); Casadesús and Giménez (2000); Lima et al. (2000); Casadesús et al. (2001); Escanciano et al. (2001); Singels et al. (2001); Gotzamani and Tsiotras (2002); Heras et al. (2002); Santos and Escanciano (2002); Chow-Chua et al. (2003); Terziovski et al. (2003); Arauz and Suzuki (2004); Johnson (2004); Martínez-Lorente and Martínez-Costa (2004); Naveh and Marcus (2004); Ruzevicius et al. (2004); Briscoe et al. (2005); Casadesús and Karapetrovic (2005); Corbett et al. (2005); Sharma (2005); Zeng, Tian, Tam (2005); Singh et al. (2006); Martínez-Costa and Martínez-Lorente (2007); Dick et al. (2008).
Improve export guarantees	Zhao et al. (1995); Terziovski et al. (1997); Brown et al. (1998); Huarng (1998); Ragothaman and Korte (1999); Simmons and White (1999); Escanciano et al. (2001); Tan and Sia (2001); Santos and Escanciano (2002); Chow-Chua et al. (2003); Magd and Curry (2003); Magd et al. (2003); Arauz and Suzuki (2004); Naveh and Marcus (2004); Briscoe et al. (2005); Magd (2006); Singh et al. (2006); Calisir (2007); Asbrafi (2008); Feng et al. (2008); Magd (2008); Kammoun and Aouni (2013).
Increase of market share	Askey and Malcolm (1997); Buttle (1997); Terziovski et al. (1997); Brown et al. (1998); Simmons and White (1999); Casadesús and Giménez (2000); Martínez Fuentes et al. (2000); Sun (2000); Casadesús et al. (2001); Dissanayaka et al. (2001); Escanciano et al. (2001); Singels et al. (2001); Tan and Sia (2001); Gotzamani and Tsiotras (2002); Santos and Escanciano (2002); Magd et al. (2003); Pan (2003); Naveh and Marcus (2004); Casadesús and Karapetrovic (2005); Briscoe et al. (2005); Zeng, Tian, Tam (2005); Magd (2006); Singh et al. (2006); Calisir (2007); Han et al. (2007); Lo and Chang (2007); Zeng and Tian (2007); Feng et al. (2008); Jang and Lin (2008); Martínez-Costa et al. (2008); Singh (2008); Karipidis et al. (2009);

	Cagnazzo et al. (2010); Gutiérrez et al. (2010); Kammoun and Aouni (2013); Posinska et al. (2002); Rodríguez-Escobar et al. (2006); Zaramdini (2007).
Benefits of certification	**Authors**
External	
Quality of products and customer service	Magd (2006); Piskar and Dolinsek (2006); Moldashev (2009)
Improvement in competitive position/competitive advantage	Zhao et al. (1995); Askey and Malcolm (1997); Huarng (1998); Leung et al. (1999); Nield and Kozak (1999); Abraham et al. (2000); Martínez Fuentes et al. (2000); Sun (2000); Dissanayaka et al. (2001); Gotzamani and Tsiotras (2002); Chow-Chua et al. (2003); Quazi and Jacobs (2004); Williams (2004); Rodríguez-Escobar et al. (2006); Singh et al. (2006); Lo and Chang (2007); Zaramdini (2007); Feng et al. (2008).
Organization prominence; international competitiveness	Escanciano (1998); Poksinska et al. (2002); Piskar and Dolinsek (2006); Singh and Sareen (2006); Zaramdini (2007); Karipidis et al. (2009).
Attracting better prepared students	Singh and Sareen (2006)

Table 2 shows that the main internal benefits are focused on the concepts of order, procedures, discipline, efficiency and quality. As for external benefits, the customers mentioned in nearly all items are clearly the most benefitted, as organizations exist to serve customers.

Also regarding to benefits, other authors are likely to adopt a different classification. Beattie and Sohal (1999) refer to the existence of strategic and operational benefits, which Escanciano (2001) summarizes in 6 factors: workers, customers, efficiency improvement, collaboration with suppliers, improvement of working conditions and audit. Casadesús et al. (2004a, 2004b, 2009) and Karapetrovic et al. (2010) allude to benefits shown in operational and financial results, in customers and staff. Casadesús and Heras (2005) and Heras et al. (2006) distribute the benefits of ISO 9001 by operations, economic results, staff, customers, image and quality of the products and services. Magd (2006) summarizes the benefits in four factors: internal and external emphasis, competitiveness and export prospects. Poksinska et al. (2006) refer to direct effects, internal and external, and to indirect effects. Finally, Depexe and Paladini (2008) proceed similarly, joining administrative benefits to financial benefits.

In accordance with the large majority of research works, the benefits arising from implementation/certification of QMS ISO 9001 in organizations is diverse in nature, resulting in positive effects at an operational and strategic level, internally and externally, with a greater or lesser intensity (e.g. about the quality of processes, procedures, products and services, efficiency, customers, image of the organization and market share), leading to a better performance of organizations.

However, even in this case research studies are not consensual, as there are authors that express reservations or conclude differently. Sharma (2005) studied the relationship between ISO 9001 certification and the financial performance of a sample of companies from Singapore, having concluded that certification is associated with significant improvement in financial performance: profit margins, sales growth and earnings per share. Conversely, Sun and Cheng (2002), in a study carried out in small and large Norwegian companies, concluded that the correlation between QMS certification and the performance of small companies was only marginal. As regards larger organizations, no relationship was found between those two factors. Singels et al. (2001) stated that the results do not show a positive relationship between the ISO certification and the performance of German organizations. Both certified and non-certified organizations developed their production processes, such as improving production flow (*lead time*) and technical flexibility. Also there were no significant differences in benefits related to client satisfaction and staff motivation. These authors even state the contrary: non-certified companies experienced a larger reduction of costs and a greater net profit than certified companies, probably due to the influence of another variable in ISO certification and the performance of companies: motivation.

4. Difficulties and obstacles

Despite the benefits that can be achieved with QMS implementation, this path also entails difficulties and adverse effects (Vloeberghs and Bellens, 1996; Escanciano, 1998; Ofori and Gang, 2001; Tarí, 2001; Yahya and Goh, 2001; Escanciano, 2002; Poksinska et al., 2002; Domingues, 2003; Lundmark and Westelius, 2006; Poksinska et al., 2006; Singh and Sareen, 2006; Boiral and Roy, 2007; Zeng and Tian, 2007; Branco, 2008; Cagnazzo et al., 2009; Karipidis et al., 2009; White et al., 2009; Cagnazzo et al., 2010; Gotzamani, 2010; Karapetrovic et al., 2010; Al-Najjar and Jawad, 2011; Heras-Saizarbitoria et al., 2011; Karim, 2013; Simon et al., 2013; Martin-Peña et al., 2014).

According to Vloeberghs and Bellens (1996), the biggest obstacles to implementation of ISO 9001 QMS, felt by Belgian companies are related with time, costs and the quality manual. Escanciano (2002), in a study with Spanish companies, found three factors of difficulty for the implementation/certification of QMS: resistance to change; lack of experience and excessive formalism.

Martin-Peña et al. (2014) identify the main benefits firms obtain from these systems, and the difficulties they face in their implementation and certification in Spain in automotive industry. The benefits of these systems are improvements in the firm's market position, stakeholder relations, and environmental performance, and access to environmental technologies.

The difficulties are the system requirements, the organisational structure and commitment of the human resources (managers and workers), and the environmental information in terms of establishing objectives, calculating outcomes and establishing workers' environmental responsibilities.

Domingues (2003), in a study carried out in Portuguese companies, concluded that the most relevant difficulties concerned to corrective and preventive actions, design control and planning of quality. The requirements that were less difficult to implement were operations that demanded less group work, simple decisions and a more instrumental activity, whilst the most difficult to implement demanded participation of many people, more complex decisions and technically more demanding activities. Branco (2008) also investigated the main difficulties experienced by Portuguese companies in the implementation of QMS, quoting lack of time, treatment of corrective and preventive actions and lack of top management involvement.

Lundmark and Westelius (2006) studied the effects of quality management in accordance with ISO 9001 in Switzerland companies, founding that the most frequently reported problems were bureaucracy, difficulties in understanding and to make others understand the standard, and the loss of flexibility. Poksinska et al. (2006) made three case studies in small Swedish companies, referring to the existence of a significant cast of barriers and obstacles to implementation and maintenance of the QMS, such as: weak motivation to change practices,–belief that to change documents is equivalent to change behaviors, operations implementation in a reverse order (describe the routines before creating/ practicing them) and the inability to understand the standard as a tool to improve performance.

In India, Singh and Sareen (2006) studied the effectiveness of ISO 9001 in schools. The findings showed as main obstacles: lack of time, lack of commitment to quality, added burden of increased workload, lack of funds and resistance to change by employees. Zeng and Tian (2007), in China, identified the following main barriers to the implementation of ISO 9001: a weak vision of the quality objectives, over optimistic expectations about ISO 9001 and the fact that it is a compulsory requirement to compete in some industries

(leads to a lack of sincerity in the commitment to quality). Magd (2006) stressed the high costs associated with the auditing process faced by Saudi Arabian companies.

Gotzamani (2010) also investigated the problems felt by Greek companies in QMS implementation, which were summarized in two factors: (i) approach to process management and use of quality data, and (ii) uncertainty about standard requirements (unspecified, sometimes unrealistic; the extent that must be satisfied).

Heras-Saizarbitoria et al. (2011), verified that main obstacles to implementing ISO 9001 standard were relate to bureaucratic workload it generates for some organisations and also the lack of motivation and involvement that this seems to generate, as well as the low motivation and involvement of managers in firms regarding these standards.

Al-Najjar and Jawad (2011) studied only five Iraqi organizations with ISO 9001 QMS certified at the end of 2008, and examined the various barriers and misconceptions, impeding ISO 9001 implementation in service and manufacturing sectors in Iraq. The survey was conducted using a random sample of 50 directors in service and manufacturing organizations in Baghdad. The analysis of the survey revealed nine important factors that hinder the standard implementation, lack of top management commitment heads the list. In addition, ten misconceptions were identified by this study, including the top ranked belief that ISO 9001 uncovers job security.

Karim (2013) examined the extent of satisfaction with ISO 9001 certification among companies in Bangladesh, with a sample of 150 companies. This study specifically examined the problems with standard implementing, improvements after implementation and organizational satisfaction with the results. The preliminary data indicated overall improvements in operations and satisfaction with program outcomes even though many problems were encountered while implementing the ISO 9001 standard. Table 3 summarizes the main barriers experienced.

From analysis of Table 3 the biggest difficulties in the implementation/ certification of QMS are: excessive documentation and complex (bureaucracy), weak commitment to quality of management and staff, high cost/scarcity of resources and time spent with additional tasks to process implementation.

In accordance to Pinto and Soares (2009), the development of all QMS support documentation is, usually, one of the greatest difficulties, mainly due to the interconnection between different documents, in order to form a coherent whole.

Karapetrovic et al. (2010), in the scope of a study carried out with Spanish companies, present a dynamic vision of the cost and the time required to implement and maintain ISO

9001, between 1998 and 2006. According to these authors, although the costs are still high, the saturation of the certification market has led to a sustained reduction of implementation and maintenance costs of the QMS, as the average time required for implementation, while continuing to observe a trend towards reduction, it stagnated around 18 months, irrespective of the size of the organizations concerned.

Table 3. Difficulties in the implementation/certification of QMS according to ISO 9001 standard

Difficulties/barriers	Authors
Lack of time	Vloeberghs and Bellens (1996); Singh and Sareen (2006); Branco (2008)
Weak commitment of management	Singh and Sareen (2006); Zeng and Tian (2007); Branco (2008)
Corrective and preventive actions	Branco (2008)
Weak vision of quality objectives	Zeng and Tian (2007)
Over optimistic expectations	Zeng and Tian (2007)
Use of quality data	Gotzamani (2010)
Uncertainty about the requirements of the standard	Gotzamani (2010)
High costs	Vloeberghs and Bellens (1996)
Documentation	Vloeberghs and Bellens (1996); Poksinska et al. (2006)
Resistance to change, lack of experience, formalities	Escanciano (2002)
Corrective and preventive actions and design control, quality planning, control of processes	Domingues (2003)
Bureaucracy, difficulty in understanding the standard, less flexibility	Lundmark and Westelius (2006)
Resistance to change, inability to understand the norm	Poksinska et al. (2006)
increased workloads, scarce resources	Singh and Sareen (2006)
High costs associated with the auditing process	Magd (2006)
Weak commitment (compulsory certification)	Zeng and Tian (2007)
Approach by processes	Gotzamani (2010)

5. Relationship between the motivations and the benefits

Sampaio (2008) stated that there is unanimity regarding relationships between results obtained through the QMS certification and reasons that led the organization to do so. Ofori and Gang (2001) observed that the three most important benefits – improvement of the company image, operational procedures and competitiveness – are contained in the four primary motivations, which shows a close relationship between motivations for quality and the resulting benefits. The most important benefit – improvement of the company image – is of an external nature.

According to Singels et al. (2001), results show that organizations involved in quality with high levels of internal motivations (eg. improvement of the organizational structure, its competitive position, business margin and others) show a better performance (e.g. more effective production methods, bigger reduction of costs, less complaints, greater commitment by staff to quality). Inversely, those organizations that move towards quality with low levels of internal motivations, driven above all by external motives, mainly client pressure, government demand, as a result of inspections and others of a similar nature, achieve lesser benefits.

So, it may be concluded that QMS certification, alone is not enough to obtain positive results in performance improvement, as frequently expected. Motivation plays a fundamental role (Singels et al., 2001). In the same line of reasoning, Poksinska et al. (2002) state that the most important conclusion of their study is that motivations influence the performance of QMS. Organizations focused on the improvement of quality achieve more benefits, with an emphasis for the internal organization and operation. Conversely, organizations with external motivations, such as improvement of image, or client pressure, achieve benefits only in those areas. External motivations did not evidence a positive relationship with the improvement of quality.

Boiral and Roy (2007), in Canada, also did research in this area, using an approach not found in other specialist literature. The qualitative analysis of data led to the identification of categories of respondents, with different motivations, which correlated with obtained benefits:

- Quality enthusiasts (strong internal motivation and high external pressure) and ISO supporters (strong internal motivation and low external pressure): high level of benefits, low level of organizational problems, positive vision of standards and audit processes;
- Ritual members (superficial or ceremonial. Weak internal motivation and high external pressure): low level of benefits and organizational problems, negative vision of standards;
- Dissidents (weak internal motivation and weak external pressure): low level of benefits, high level of organizational problems, negative vision of standards and audit processes.

These researchers advocate that underlying motivation has a significant impact on the certification benefits. The group of ISO members, although confronted with low external pressure to implement the quality standards, but with a strong internal motivation,

achieved the same benefits of the group of enthusiasts which, in addition to strong internal motivations experienced high external pressure also.

When the standards are implemented based on internal and external motivations (quality enthusiasts), the benefits with the reduction of costs and improvement of quality are high. Conversely, when the QMS implementation follows with low levels of internal and external (dissidents) motivation, the resulting benefits are slender.

Large companies show a higher rate of quality enthusiasts (41,2 %) and ISO supporters (24,2%) and also a smaller rate of dissidents (13,1%). These results suggest that the implementation of quality standards in large companies seek performance improvement, whilst in the remaining ones it is due to external pressure, in line with the ritual members and dissidents (Boiral and Roy, 2007).

At this point it seems possible to assert that, the findings of various studies are not fully convergent. Zaramdini (2007) analyzed the relationship between motivations and benefits achieved with QMS certification of United Arab Emirates companies, and found a moderate correlation between motives and benefit resulting from ISO 9001 certification. On the other hand, the findings of a study conducted in Canada by Boiral and Roy (2007) emphasizes that results and difficulties related to ISO 9001 are not monolithic. These can significantly vary from one organization to another, depending on how the standards are integrated. In this view, it is not the actual standard itself that has an impact on organizational performance, but the conditions and the context in which it is implemented.

6. Concluding remarks

The majority of motivations that lead an organization to implement and to certify its QMS have an internal and/or an external origin, in accordance to a general opinion of the scientific community. The literature review points out toward considering that both motivations are directed to efficiency of internal processes and procedures, improvement of products and services are entirely valid, as well as market oriented motivations, although in some studies the internal reasons were highlighted whilst in others the external ones were so as well, which may be due to differences among the organizations studied – dimension, product or provided service, market, quality motivations and others.

The biggest difficulties in implementation/certification of QMS are: excessive and complex (bureaucratic) documentation, weak commitment to quality by management and

staff, high cost/scarce resources and time spent with the additional tasks of implementation process.

According to vast majority of accessed studies, benefits from implementation/certification of QMS are of a diverse nature. The main internal benefits are focused on the concepts of order, procedures, discipline, efficiency, quality. As to the external benefits, the customers are listed in nearly all items, leading us to believe that the principle of client orientation is particularly welcome by organizations.

As a general rule, we can point out to a better performance of organizations that operate a ISO 9001 QMS. However, the findings from several studies are not consensual, because there are studies where the correlation between QMS certification and organization performance is marginal or non-existent.

Regarding to relationships between motivations nature and achieved benefits, the majority of studies consider that organizations, moving towards quality based on internal motivations reap greater benefits than those moved by external reasons. However, the findings of other studies are not in full agreement, as the conditions and the context may significantly differ from one organization to another, depending on how the standards are integrated into business environment and strategy.

7. Limitations and Further Work

From a different point of view, this literature review can uncover typical deficiencies in similar studies also. Although this research was focused on ISO 9001 QMS, some terminology was not coincident (examples are: ISO 9000 certification instead of ISO 9001certification; company certification instead of QMS certification; ISO 9001 QMS certification equivalent to TMQ processes).

Controversial, conflicting and even contradictory, and/or non-consensual results in different countries can suggest cultural dimensions are lacking. Similar situation in the same country can question methodological issues (examples are: companies dimensions; activity sectors; competitive environment; company position in value chains; stability; instability). Additionally, other methodological issues can also be related to data collection instruments (eg. questionnaires to collect perceptions/opinions) are not the most appropriate for achieving desired information or data processing does not validate the results. On the other hand, statistical tests do not identify all aspects of reality and environment and seems researchers trust statistics without analyse.

Many research works are based on perceptions/opinions (eg. motivations, benefits, difficulties) are missing tangible results, being conclusions built only on qualitative data. Quantitative data are not used to objectivize and validated qualitative findings. Physical or economic indicators rarely are presented. Researchers may not have asked for quantitative data or even ignore these aspects of organizational reality, or the organizations also do not have this type of data. It is hard to corroborate statements (from company's managers) or findings (from researchers) without other objective evidences (examples are: motivations influence QMS performance ; cost reduction is a benefit; the biggest difficulties in implementation/certification of QMS are the excessive and complex (bureaucratic) documentation, the weak commitment to quality by management and staff, the high cost/scarce resources and the time spent with the additional tasks of the implementation process; organizations operating an ISO 9001 QMS show a better performance).

These reflections and findings suggest further and deeper work for researcher in these quality issues, considering more dimensions. Bearing in mind concerns that quality movement is losing popularity, because it does not appear to managers with quantitative data proving contributions of quality to increase productivity and competitiveness.

Contradictory and conflicting findings from country to country and in same country gives rise to the hypothesis that quality is lacking in scientific support, because cannot find out universal "laws".

Another matters can also be taken into account such as the relative size of the certification phenomenon in each country or region and the economic and social development. These contextual factors can distort findings.

The scientific affiliation of researchers (eg. Industrial engineering, Management, Sociology, Organizational psychology) may also have implications for the research perspective and aspects that are privileged in analysis and conclusions. Thus, we will take into account in our future research the limitations we have identified in this one and strongly recommend to other researchers our conclusions.

Some of difficulties in implementation QMS deserve additional research, for instance the consultancy competency, bearing in mind that ISO 9001 standard requirements are basic ones and companies need to adapt and integrate them into a global management model.

Certification market seems to be saturated in some countries (with a limited number of companies, typically the best ones) which can suggest this factor should be considered.

ISO 9001 certification has been less adopted in large markets as USA, phenomenon that needs to be explained, compared to what is happening in China.

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