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ISO 9001:2015 EDITION- MANAGEMENT, QUALITY AND VALUE

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Abstract: *The aim of this research is to evaluate, six months after the issuing of ISO 9001:2015, if the 2015 edition has achieved its aims of being in line with modern management and quality management concepts and bring additional value to organizations of all industry and services sectors worldwide. A survey was carried out among IRCA registered auditors and the statistical analysis of the results support the assumption that ISO 9001:2015 is in line with modern business and quality management concepts and will be a useful tool for the companies. Although the authors acknowledge pursuing further in-depth studies, this is a relevant contribution to the validation of ISO 9001:2015 edition and its value for all type of organizations worldwide.*

Keywords: *ISO 9001:2015, Quality Management System, Management, Auditors, Value*

1. Introduction

ISO first published ISO 9001 International Standard in 1987, and since then it has become a major dimension of the Quality movement and a key management framework for all type of organizations worldwide (Fonseca, 2015a).

Although quality management system (QMS) certification is not compulsory, ISO 9001 certification has a major role in international business and is a highly visible proxy for QMS adoption and intensity.

To ensure that ISO 9001 reflects the needs of today organizations, ISO issued in 15th September 2015, the ISO 9001:2015 edition, with the goal of bringing major benefits for QMSs with less emphasis on documentation and new/reinforced approaches (Fonseca, 2015). However, due to its novelty, there is a

lack of research studies investigating the value of ISO 9001:2015, and this investigation aims to contribute fulfilling that gap.

This research starts with a review of ISO 9001 quality management international standard, focused on the major changes of the 2015 edition, leading to the research questions definition: Is ISO 9001:2015 in line with modern business and quality management concepts and adds value to certified organizations?

To test the research questions, a survey was performed among IRCA (International Register of Certificated Auditors) QMS ISO 9001 auditors, to evaluate their perceptions. The results of the descriptive statistics and the correlation analysis support the conclusions that, according to IRCA registered auditors, ISO 9001:2015 is indeed in line with modern business and quality management concepts and will be a useful tool for the companies.

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This is a relevant contribution to the validation of ISO 9001:2015 edition and highlights its potential value for all type of organizations all over the world. Proposals to improve and extend the conclusions of this research are also presented.

2. Literature review

There is a strong mainstream of research (Powell, 1995; Tarí et al., 2012) supporting the benefits of QMS to the competitiveness and success of organizations. To address a more demanding and multidimensional competitive environment, since the first edition of the ISO 9000 series, in 1987, ISO 9001 QMS, has been adopted by more than 1 million organizations of all activity sectors, on a worldwide basis (Fonseca, 2015a).

To be ISO 9001 QMS certified, an organization has its QMS audited by an independent certification body, to access if it fulfils ISO 9001 requirements and achieves the intended results. The certification body should demonstrate that it has competent management and staff and that it is impartial and free from conflicts of interest. To that end, the accreditation bodies audit certification bodies against ISO/IEC 17021-1:2015 standard and an accredited certification body should fulfil the applicable requirements and generate confidence to its stakeholders.

Researchers have extensively studied the benefits of ISO 9001 certification. Some authors identified more than 100 empirical studies investigating the impact of ISO 9000 standards worldwide. According to Casadesús et al. (2000), ISO 9001 certification can have both internal and external benefits. Amongst the internal benefits, they identified the following ones:

- Improvement in working process definition;
- Higher confidence in quality in the organization;
- Increased involvement of people;

- Better guidance and less improvisation.

The external benefits identified were:

- Better response to customer requirements;
- Access to new markets;
- Improved relations with customers;
- Better customer service;
- Reduction in complaints.

In the same line of research, Boiral (2012) concluded that ISO 9001 certification can originate both internal and external benefits to organizations. As internal benefits, the author identified operational management improvements (productivity, efficiency and cost reductions), improved process and product quality and organizational effectiveness (internal control, training, and communication). Concerning external benefits, ISO 9001 contributes to a better customer service (increased customer satisfaction and complaints reduction), fewer complaints with suppliers (less inspection, improved inbound quality) and marketing advantages (improved image, sales and market share).

Zaramdini (2007) also identified the following benefits of ISO 9001 certification:

- Internal benefits: product and service quality improvement; decrease in incidents, rejections, and complaints; improved productivity and efficiency; decrease in internal costs; profitability incensement; better quality awareness; elimination of non-value added work, work environment improvement and better customer service;
- External benefits: increased customer satisfaction; fewer customer audits; expansion to international markets; competitive advantage improvement; marketing advantages; increased market share; improvement in suppliers quality and better image in the market.

For authors such as Quazi and Padijbo (1998), external benefits of ISO 9001 certification are the most relevant ones (e.g., improved customer satisfaction, better market image and stronger competitive position). On a different perspective, for authors such as Williams (2004), internal benefits of ISO 9001 certification are the most relevant, namely, improved product quality, short delivery times, cost reductions, improved system documentation, and higher quality awareness. Douglas et al. (2003) state that organizations to be able to access some markets and biddings must have ISO 9001 certification and players that have a strong position in the supply chain require their suppliers to have ISO 9001 certification. For Tarí et al. (2012) ISO 9001 has clear benefits on organizational, operational, people and customer results. Other studies indicate that ISO 9001 implementation and subsequent certification contributes to overall (including financial) performance (Chatzoglou et al., 2015). According to Fonseca (2015b), the success in the implementation of ISO 9001 QMS is linked to the organization motivations (most significant results when the motivations are internal rather than external) and to the way the standard is interpreted.

Although QMS certification is not compulsory, ISO 9001 certification should continue to play a major role in the future, with major benefits to organizations and its customers, especially when regarded as a management approach complemented with the use of the suitable quality tools and techniques, to reach sustainable success (Domingues et al., 2016). Researchers have identified several approaches in the quality management domain (Fonseca, 2015a) and there is investigation supporting the existence of positive relationships between ISO 9001 certification maturity and business excellence models such as the EFQM model, due to the adoption of common quality management principles, highlighting the value of ISO 9001 as a step towards excellence (Fonseca, 2015b).

According to ISO directives, standards should be reviewed every 5 years, and the design and development of the new ISO 9001:2015 started in November 2012 by ISO/TC 176, with the aim of achieving an edition that remains stable for the next 10 years (Croft, 2012).

ISO released the ISO 9001:2015 edition 15 September 2015, with the following major changes (Fonseca, 2015a):

- A “high-level structure” with identical core text, terms, and definitions, was adopted, and will be used for all ISO management systems standards;
- Leadership replaced the previous edition concept of management responsibility, requiring Top management to engage and support the QMS;
- External and internal issues that may impact the organization QMS ability to deliver its intended results, and the needs and expectations of relevant stakeholders, must be identified, understood and monitored;
- The adoption of Risk-based-thinking requires that both at organizational and process level, risks and opportunities, which may affect the QMS and its intended results, must be identified and managed;
- A reinforced emphasis on process approach and intended results with less emphasis on prescriptive requirements and on documentation;
- The consideration of change management and knowledge management have been introduced;
- The concept of improvement replaced continual improvement (incremental improvement), allowing also for periodic breakthroughs, reactive change or

reorganization, or other sorts of disruptive improvements.

In the 2015 editions, ISO has also updated the quality management principles (QMPs)

that support ISO 9000 and ISO 9001 quality management standards. There are now seven QMPs briefly presented in Table 1.

Table 1. ISO 9000:2015 and ISO 9001:2015 QMPs

QMP	Statement
1. Customer focus	The primary focus of quality management is to meet customer requirements and to strive to exceed customer expectations.
2. Leadership	Leaders at all levels establish unity of purpose and direction and create conditions in which people are engaged in achieving the organization's quality objectives.
3. Engagement of people	Competent, empowered and engaged people at all levels throughout the organization are essential to enhance its capability to create and deliver value (involvement of people in ISO 900:2005 and ISO 9001:2008).
4. Process approach	Consistent and predictable results are achieved more effectively and efficiently when activities are understood and managed as interrelated processes that function as a coherent system (this principle encompasses the systems approach to management of ISO 9000:2005 and ISO 9001:2008 editions).
5. Improvement	Successful organizations have an ongoing focus on improvement (continual improvement in ISO 9000:2005 and ISO 9001:2008 editions).
6. Evidence-based decision-making	Decisions based on the analysis and evaluation of data and information are more likely to produce desired results (factual approach to decision-making in ISO 9000:2005 and ISO 9001:2008 editions).
7. Relationship management	For sustained success, an organization manages its relationships with interested parties, such as suppliers (mutually beneficial supplier relationships in ISO 9000:2005 and ISO 9001:2008 editions).

Source: ISO 9000:2015 and Fonseca (2015a)

ISO 9001:2015 should provide increased organizational flexibility to tailor QMSs for each organization specific processes and products, and will require a new approach and auditing competence to access organization's conformance with ISO 9001:2015 requirements (Gluck et al., 2015).

As a conclusion, ISO 9001:2015 should be in line with modern business and quality concepts and bring additional value for organizations of all sectors and industries. However, due to its novelty, there is a lack of research to access these expectations.

3. Research method

The research started by carrying out a literature review on ISO 9001:2015, its aims and the reasons behind its revision leading to the research objectives presented in Table 2.

With the aim of collecting a world view of credible and competent quality professionals, a survey was held among QMS ISO 9001 certified IRCA auditors in order to ascertain their perceptions if ISO 9001:2015 is in line with modern business and quality management concepts and adds value to certified organizations. The use of IRCA

certified QMS auditors minimizes the possible bias of studies using perceptual data based on quality managers opinions, by ensuring an external, neutral and competent assessment. IRCA is recognized as a professional body for management system

auditors. And a professional to be certified as IRCA QMS certified auditor must demonstrate high standards and competencies in training, audit and work experience (<http://www.irca.org>).

Table 2. Research objectives

H1: ISO 9001:2015 is in line with modern business management concepts?
H2: ISO 9001:2015 is in line with modern quality management concepts?
H3: ISO 9001:2015 will be most valuable to ISO 9001 certified organizations?
H4: Is there a positive correlation between the use of modern management concepts and modern quality management concepts in ISO 9001:2015?
H5: Is there a positive correlation between the use of modern business management concepts in ISO 9001:2015 and the value it can bring to ISO 9001:2015 certified organizations?
H6: Is there a positive correlation between the use of modern quality management concepts in ISO 9001:2015 and the value it can bring to ISO 9001:2015 certified organizations?

The contacts (E-mail) of the auditors were retrieved from the IRCA website (www.irca.org) and 5459 auditors from 118 countries/economies were contacted in April

2016. An agreement five-point scale (Do not agree at all (1), ..., Totally agree (5)) was adopted to assess the following structured type questions presented in Table 3.

Table 3. Survey questions

P1. Do you agree that ISO 9001:2015 is in line with modern business management concepts?
P2. Do you agree that ISO 9001:2015 is in line with modern quality management concepts?
P3. Taking an overall perspective, do you agree that ISO 9001:2015 will be most valuable to ISO 9001 certified organizations?

4. Research results

A total of 393 auditors (which accounts for nearly 7,2% of the population) from 71 countries answered the survey. The analysis of the survey results suggests that it matches, *i.e.*, properly represents the population (Figure 1). Europe and East Asia and Pacific were the main contributors for the survey responses while, at a country level, USA, UK, and France were the top three (Figures 2 and 3).

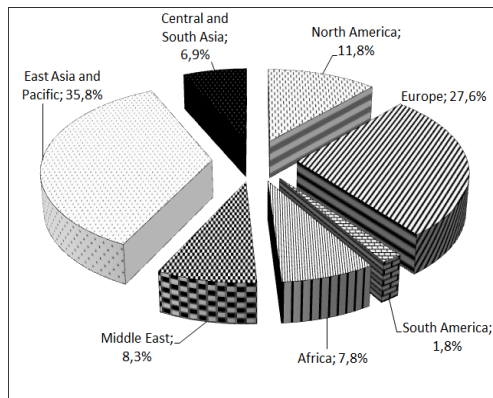


Figure 1. Percentage of auditors- breakdown by macro-region (population)

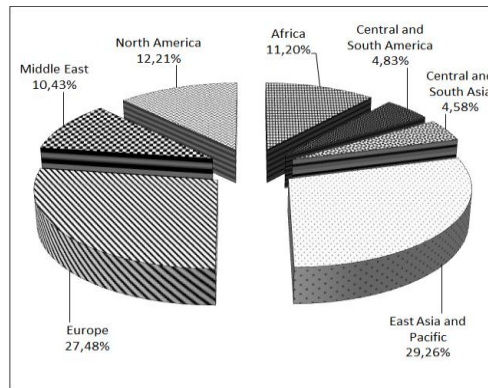


Figure 2. Percentage of respondents- breakdown by macro-region (sample)

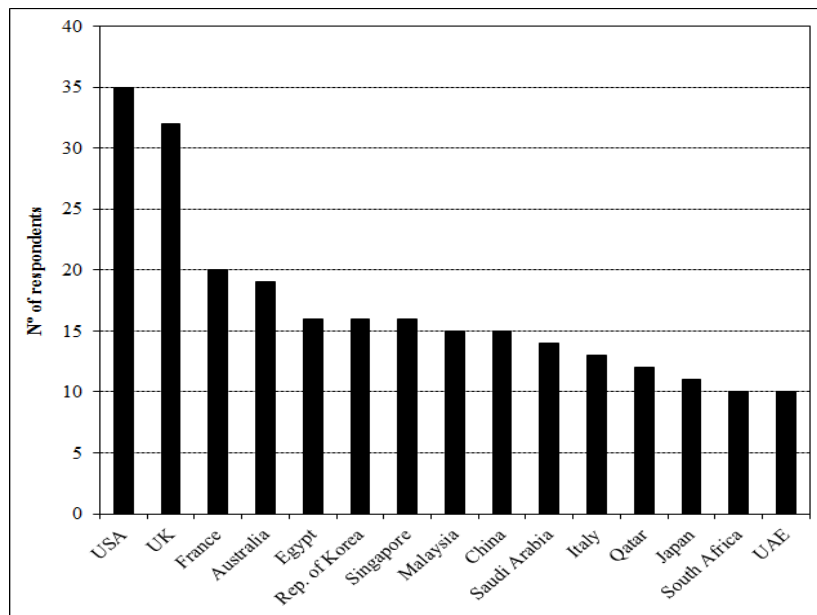


Figure 3. Number of respondents- Countries top 15 (sample)

Table 4 summarizes the descriptive analysis of questions 1, 2 and 3 survey results.

Table 4. Descriptive statistics

Questions	N	Mean	Stand. Deviation
P1. Do you agree that ISO 9001:2015 is in line with modern business management concepts?	393	3,94	0,943
P2. Do you agree that ISO 9001:2015 is in line with modern quality management concepts?	393	3,90	0,927
P3. Taking an overall perspective, do you agree that ISO 9001:2015 will be most valuable to ISO 9001 certified organizations?	393	3,72	1,048

These results clearly show that according to QMS ISO 9001 certified IRCA auditors, ISO 9001:2015 is in line with both modern management and quality management concepts, and they agree that ISO 9001:2015 will be most valuable to ISO 9001 certified organizations. The slightly lower value of the mean in P3 can indicate that organizations are still in the learning process of implementing ISO 9001:2015 to its full potential. In the overall, these results validate H1, H2, and H3.

5. Tests performed and results analysis

We started by testing the normality of the samples through Kolmogorov-Smirnov test (Table 5). In case the data follows a normal distribution, we can use Pearson correlation coefficient and in case this does not occur, we should use correlation coefficient Spearman Rho.

Table 5. One-Sample Kolmogorov-Smirnov Test

		P1	P2	P3
N		393	393	393
Normal Parameters ^{a,b}	Mean	3,94	3,90	3,72
	Std. Deviation	0,943	0,927	1,048
Most Extreme Differences	Absolute	0,287	0,278	0,253
	Positive	0,194	0,196	0,156
	Negative	-0,287	-0,278	-0,253
Test Statistic		0,287	0,278	0,253
Asymp. Sig. (2-tailed)		0,000 ^c	0,000 ^c	0,000 ^c

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.

Based on Kolmogorov-Smirnov test results we can conclude that the three distributions are normal so we can use Pearson

Correlation coefficient to test H4, H5 and H6. The results of Pearson correlation coefficient are presented in Table 6.

Table 6. Correlations

		P1	P2	P3
P1	Pearson Correlation		0,839 ^{**}	0,649 ^{**}
	Sig. (2-tailed)	---	0,000	0,000
	N		393	393
P2	Pearson Correlation			0,640 ^{**}
	Sig. (2-tailed)	---	---	0,000
	N			393
P3	Pearson Correlation			
	Sig. (2-tailed)	---	---	---
	N			

^{**}. Correlation is significant at the 0.01 level (2-tailed).

These conclusions are quite relevant: there is indeed a high positive correlation between the use of modern business management

concepts in ISO 9001:2015 and the value it can bring to certified organizations and also between the use of modern quality

management concepts in ISO 9001:2015 and the value it can bring to ISO 9001:2015 certified organizations. Additionally, it is also confirmed the strong positive relationship between the adoption of modern management concepts and modern quality management concepts in ISO 9001:2015. In summary, Hypothesis H4, H5, and H6 are therefore validated.

6. Discussion of results

The results of the descriptive statistics and the correlation analysis using Pearson correlation coefficient (all correlation coefficients are greater than 0.64) give a strong support to the conclusion that, according to IRCA QMS registered Auditors, ISO 9001:2015 is in line with modern business and quality management concepts and will be a useful tool for the companies. This is a relevant contribution to the validation of ISO 9001:2015 edition, and its value for all type of organizations worldwide.

Top management must now be prepared to evidence leadership (in addition to management) of their QMS. The context of the organization and the needs and expectations of relevant stakeholders must be identified, and taken into consideration. The adoption of Risk-based-thinking requires that risks and opportunities, that may affect the QMS and its intended results, must be identified and managed by the organization. This should be followed by the actions needed to address those risks and opportunities, leading to the possible application of SWOT (Strengths, Weakness, Opportunities, and Threats) analysis for

organizational risk assessment and both qualitative and quantitative methods such as FMEA (Failure Mode Effect Analysis) and Risk Matrix for operational risk assessment. In summary, the adoption of new and reinforced approaches in ISO 9001:2015 and the revised seven Quality Management Principles, have strengthened the alignment of ISO 9001:2015 with both modern management and quality management concepts and, according to IRCA QMS registered auditors, the 2015 revision will be most valuable to ISO 9001 certified organizations.

Since this is a novel study with only six months of ISO 9001:2015 application, it is not entirely comparable to other studies based on previous ISO 9001 International Standard editions. However, it indicates that ISO 9001:2015, by incorporating modern management and quality concepts, will be able to contribute to the organizational internal and external benefits identified in previous studies, in the present complex and dynamic business environment. For future research, further in-depth and continuous investigation, with the application of more powerful statistical tools and the addition of a time perspective, should be carried out, to ascertain these preliminary research results.

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