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PERCEPTION OF THE IMPORTANCE TO IMPLEMENT ISO 9001 IN ORGANIZATIONS RELATED TO PEOPLE LINKED TO QUALITY – AN EMPIRICAL STUDY

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Abstract: *Quality Management has been one of the most dominating and pervasive managerial approaches all over the world during the last three decades. The questionnaire of this study included different information, of where we can highlight: the perception of the importance having implemented the ISO 9001 standard; the most used quality tools/techniques in the professional activities. As main conclusions we can highlight: women attach great importance to the implementation of the ISO 9001 standard, namely as regards on customer satisfaction, in the competitiveness of the Organization and in the relationship with customers and give less importance in individual performance, in motivation of professionals and in the evolution of sales. Men value the implementation of the ISO 9001 more, namely regarding to the relationship with customers, in the management mode and they give less importance to the evolution of sales and to the motivation of professionals.*

Keywords: *Quality management, ISO 9001, Perception of quality; Quality Certification.*

1. Introduction

The importance of management commitment to the entire organization and the importance of sharing and understanding information among all employees has to be highlighted. Therefore, among the main competencies that companies look for in quality managers are the commitment to respond to the company's values and goals, and teamwork. That is, managers capable of integrating the entire organization in the pursuit of continuous improvement. These management practices are consistent with the society of developed countries, as the focus of quality is related to the collective effort for perfection. Thus, all are responsible for the quality process,

because, quality is an integral element of the whole process. For example, Japanese excellence in quality management systems, stems from the importance of an “attack” on poor quality across the industry (Parkes, 2015).

According to Nguyen & Aoyama (2014), the practice of sharing and understanding information has the highest impact values, followed by the commitment of management. Top management must create an easily accessible environment for communicating and sharing ideas and information. In the case of correlations, also according to Nguyen & Aoyama (2014), a positive relationship between management commitment and

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quality practice, management commitment to human resources training, teamwork and resource formation and teamwork on information sharing and understanding are confirmed.

In the market, consumers have certain information capability, which can perceive the service quality of products. Thus, when consumers have infinite information capability, they can fully perceive all information about products. But when the consumer's information capability is insufficient, the information of the product cannot be felt at all (Yuan et al., 2019). On the one hand, the information capability of consumers comes from their own consumption experience. On the other hand, the consumers information capability comes from the product information and services provided by producers to the society. For example, Apple can increase consumer awareness of Apple's mobile phone by expanding its advertising coverage, and then discover more potential consumers and generate more demand. Therefore, we can see that consumers' information capability depends on two aspects, that is their own cognition and product quality information provided by producers, both of which will affect the market demand (Yuan et al., 2019).

The main objective of this work is to characterize the perception of the importance to implement ISO 9001 in organizations related to people that, in some way are linked to quality. The referred perception is characterized accordingly to several factors such as the gender, the age, the educational level, the degree of experience and the size of the company.

2. Literature review

Management and development of human resources is becoming increasingly important due to the new place and role of a human in all social processes and in the management of those. Motivation and employee satisfaction become the basis of occupation of modern

human resource management, because only the construction of quality motivational system can help the organization to increase its competitive ability and value of the company (Žunac et al., 2018). It is well known that the higher education sector in the global economy is a prime operator in the areas of economic development, competition and expansion. In addition, the students and graduates of the higher education sector compose the human capital and the future labor force in the world (Al-Hemyari & Al-Sarmi, A.M. (2017). Knight and York (2003) considered employability skills as understandings, achievements and personal qualities that make the fresh engineering graduates to convince the employers with their abilities and ensure the selection in job. Thus, perceived value is the consequence of a mental weighing of perceived benefits versus sacrifices. That is, customers may cognitively perceive what they get and what they have to give up for receiving services (Zeithaml, 1988). Knight and York (2003) state self-efficacy is to believe in self by graduates when facing the challenging circumstances and situations. Woodruff (1997) contends that customers' perception of value is the next underlying source for a competitive advantage. Despite its significance in business marketing literature, perceived value has rarely been mentioned in the health care settings for example. Thus, satisfaction reflects the degree to which a customer believes that the use of a service evokes positive feelings (Rust & Oliver, 1994). As a consequence, to develop a more pragmatic picture of the underlying relationships among service quality, perceived value, satisfaction, and behavioural intentions is important. Thus, according Wu et al. (2008), the use of an integrative model to study customers' perceptions of health care and other services and develop a marketing strategy for health care systems, for example, should be explored.

Motivation encourages creativity, innovation, professional development of employees and is the key for high business standards (Žunac

et al., 2018). In order to improve “critical thinking”, “complex reasoning”, “planning skills”, “organizing skills”, “judging skills” and “employability skills” of graduates, developing HEIs (Higher Education Institutions) in any country must meet some institutional conditions and requirements (Al-Hemyari & Al-Sarmi, 2017). Process improvements, advent of new technology, changes in consumer’s priorities, improved quality of service provided by competitors is just a few. It has, therefore, become important to periodically update the knowledge of consumer expectations and transform the organization to a customer-focused organization. With better understanding of consumers’ perception about product quality and service, a company can identify its relative strengths and weakness and chart a path for future progress and improvement. Thus, it is logical to state that perception of service quality or for example, healthcare quality and related customer satisfaction may widely differ between countries (Hasin et al., 2011). Thus, customer satisfaction is consumers’ perception about a product or service that a supplier has met or exceeded their expectations. With the increase in volume and complexity of retail business, the need for further improvement has become steeper and faster too. In matters of product quality offered by several companies, there exists a strong link among consumer perception, their satisfaction level and retention for the company. But as environment varies, desires of customers and the perception of satisfaction vary. As a result, a major issue is to define the complex nature of customer satisfaction under varied environment (Hasin et al., 2011).

Thus, ‘perception’ score is the rating that the customer gives to the service attributes of a hypothetical “Ideal” hospital for example, where as ‘Expectation’ score is the rating that the customer gives to the same service attributes regarding what (s)he actually gets from the hospital under consideration (Hasin et al., 2011).

As a first step in dealing with the perception of quality, it is important to establish an operational definition of quality. Thus, within the user-based paradigm, quality is an attribute by which consumer goods are marketed. Many products are marked using adjectives such as “choice,” “select,” “prime,” “superior,” or “distinctive” to demonstrate the perception that quality is important and valuable (Perkins, 1990). But the new product quality is unobservable to consumers before purchase. Consumers make purchase decisions based on their perception of product quality (Li et al., 2018). Quality reputation is another important element of consumers’ quality perception towards unobservable quality. According Li et al. (2018) it can be concluded that a warranty is more likely used by nonexpert consumers in forming quality perceptions, especially if the product brand is not well known. Some experimental studies, made by Akdeniz et al. (2013), examine interactions among market cues, such as, brand reputation, warranty and price. The results of these experiments demonstrate what a lot of people supposed. The brand reputation has a greater impact on consumer quality perceptions, than warranties and price. Thus, the empirical research demonstrates the importance of the joint effect of quality reputation and warranty in quality signaling (Li et al. 2018). Quality perception measurements have also been applied to analyze how quality influences and affects company income (Llusar & Zornoza, 2000). Some authors have analyzed the influence of quality perception on client behavior – mainly the client's satisfaction and purchase intentions (Bolton & Drew, 1991; Bitner & Hubbert, 1994; Taylor & Baker, 1994).

But to be able to sell good products it is necessary to have a good organization. However, we contend that when an organization goes through the highly involved and elaborate quality documentation process, it should have an effect on perceptions of quality activities. It can be anticipated that organizational features

pertaining to ISO 9000 planning and implementation will be factors that influence perceptions of the impact that they have on certain quality outcomes (Bellamy et al., 2001).

Quality Management (QM), and in particular Total Quality Management (TQM), has been one of the most dominating and pervasive managerial approaches all over the world during the last three decades. In particular, from the late 1980s to the middle of the 1990s, the term TQM became more and more frequently used in the management literature and magazines, as well as, in the business world (Dahlgaard-Park et al., 2013). Thus, the continuous development of QM in organizations was driven on the one hand by competition and on the other hand by growing requirements of the customers. Mass production with a pure push strategy changed to a more and more pull strategy with higher customer and market orientation. To satisfy the requirements of the triangle quality, cost and time the field of view of QM has continuously been widened from considering “what” is done to “how” it is done (Weckenmann et al., 2015). But in order for companies to compete effectively in the global business world, better business performance is needed (Weckenmann et al., 2015). Hence, the importance of using QM standard such as ISO 9001, therefore, cannot be ignored (Santos & Barbosa, 2006; Magd, 2008; Araújo et al., 2019). Thus, Quality Management System (QMS) when implemented correctly, understood and accepted by all, it offers very important benefits for organisations (Santos et al., 2019a; Zgodavova et al., 2017; Marques et al., 2018; Batista & Santos, 2015; Bravi et al., 2019; Costa et al., 2019) where customers are increasingly demanding (Bravi et al., 2017; Doiro et al., 2017) to improve quality of life (Félix et al., 2018).

Today, many organizations are “searching” for excellence but not many organizations have been able to achieve this goal, seemingly because management does not have a

profound understanding of what really means to be excellent (Dahlgaard-Park & Dahlgaard, 2007). To find the path to excellence, many organizations integrate their different management systems, i.e., Quality Management, Environmental Management and Safety Management, improving quality of products and saving resources, including human and financial resources (Carvalho et al., 2018; Santos et al., 2011; Santos et al., 2017). Organizations can play a significant role in the advancement of Sustainable Development, and companies with Quality, Environmental, and Occupational Health and Safety certified management systems address the three Sustainability Dimensions (economic, environmental, and social) (Santos et al, 2018a; Fonseca & Carvalho, 2019). For that, a good education system provides a great help (Santos et al, 2019b), where new ideas are needed (Santos et al., 2018b), to create value through quality and innovation (Santos et al., 2019c). Thus, knowledge in itself has no value, what creates value is how you use that knowledge in a practical way. According to Dan Brown (Brown, 2009), “knowledge is a tool, and like all tools, its impact is in the hands of those who use it.” According Barca et al. (2012), who knows what to do where and when? Underdevelopment traps that limit and inhibit the growth potential of regions or perpetuate social exclusion are the result of a failure of local elites. The words of Pedro Duque, serving as Minister of Science, Innovation and Universities of Spain from June 2018, during an interview to a magazine (Duque, 2012) can be observed as follows “the power to exit out of crisis is to improve the economic outlook. These, can be improved by developing technology that leads to an increase in exports that gives the country greater competitiveness. If companies do not create/design good and saleable products for the world market, it is impossible to get out of the crisis” (Duque, 2012). Hence, the quality of the production processes is important, but more important is the quality of the design of new products, saleable in the world market.

3. Methodology

In order to make an exploratory analysis, primary data was collected through a structured survey. Thus, allowing to develop a descriptive research design. A structured survey allows to quantify a multitude of data for further analysis and relationships as referred by (Kothari, 2011; Michener, 1997). The use of the survey and the use of quantitative analysis of the data through different techniques and statistical methods can be observed in a variety of research work carried out under studies regarding quality management and its needs (Duran, 2014; Lam, 1995). The questionnaire of this study included different information, of where we can highlight: the perception of the importance having implemented the ISO 9001 standard; the most used quality tools/techniques in the professional activities. The specific research objectives defined were: 1) to analyze the perception about the importance of the implementation of the ISO 9001 standard in different activities of the company; 2) to characterize the perception of the importance to implement ISO 9001, according to several factors such as the gender, the age, the educational level, the degree of experience, the salary level and the size of the company.

3.1. The Survey Design

This study is part of a descriptive research design. The administered questionnaire included different scales of where we highlight the following objectives: 1) profile of the professionals with the information based on years of experience, number of workers of the company and if the company has different quality certifications; 2) the perception of having implemented the ISO 9001 standard (Likert scale, classifying from "very important" to "no so much important"); 3) the most used quality tools/techniques in the professional activities (Binary scale, classing "1" as using and "0" as not using) were considered valid. The surveys were conducted on women (57%) and men (43%),

aged 20 to 60, maintaining the anonymity and confidentiality of the participants. The sample mirrors the universe of quality management professionals reasonably.

3.2. The Sample

The sample that was taken is a convenient sample of quality management professionals, rather than a random representative sample, due to time and budget constraints. The respondents were practitioners in quality management that develop their professional activity in several companies of Northern Portugal. The questionnaire was answered in once the survey was completed, 90 results were considered.

4. Results

According to figure 1, the results of our survey indicate that people working in the quality sector mostly have 3 years of experience. The most experienced people have over 15 years of experience.

Figure 2 shows the number of workers of companies with the quality system certified according to ISO 9001. As we may notice, companies with more collaborators tend to have this certification. In fact, from the companies with less than 10 collaborators only 27% have an ISO 9001 certificate. This percentage grows with the number of collaborators to 45%, 67%, reaching the maximum value of 76% in companies with more than 250 collaborators.

In the figure 3 are represented the activities developed in the companies in which the respondents work. Most of respondents are active in quality auditing, 5S implementation, continuous process improvement according to ISO 9001: 2015, metrology, statistical process control, standardized work, application of quality tools, among others.

This emphasizes the fact that respondents work with other important tools in their companies and are able to evaluate the importance that the ISO 9001 has on their everyday work.

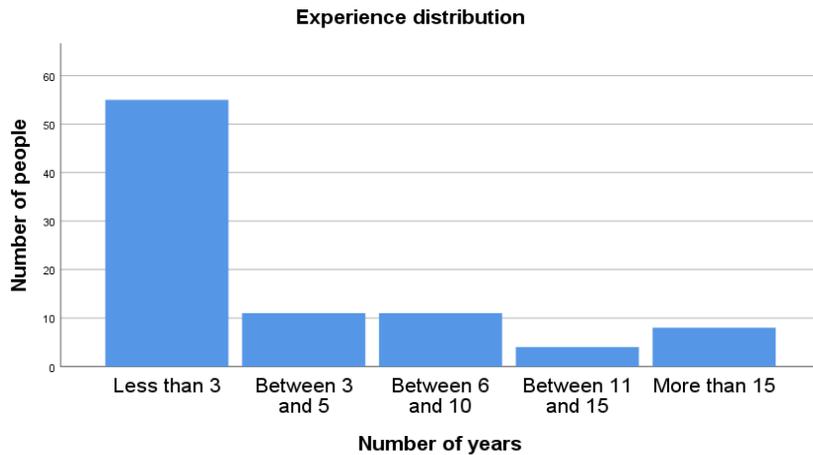


Figure 1. Years of Professional Experience in the Quality Sector.

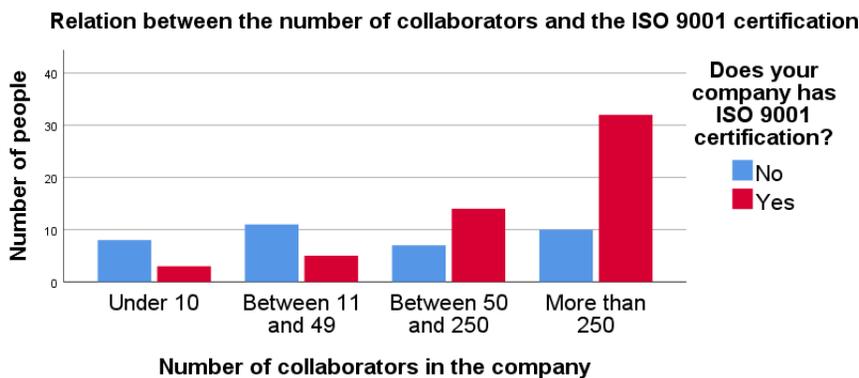


Figure 2. Relation between the number of collaborators and the companies with/without certification according to ISO 9001.

Next we focus our attention on the perceptions about the importance of implementing the standard ISO 9001. For such purpose, it was created an index from 1 to 5, based in a likert scale, where 1 represents “Not important” and 5 represents “Very important”. Thus, the average of the index in each one of the activities of the company, can be a good indicator on the general perception of the elements of the sample, with respect to each one of the activities. This first analysis is a purely descriptive one.

Thus, we can see that women attach great importance to the implementation of the ISO 9001 standard, namely as regards: on

customer satisfaction, in the competitiveness of the Organization and in the relationship with customers. Men value the implementation of the ISO 9001 more, namely with regard to: the relationship with customers, in the management mode. Women give less importance, namely: in individual performance, in motivation of professionals and in evolution of sales. Men give less importance, in what concerns the evolution of sales and in the motivation of professionals.

In the table 1 it is possible to observe that women consider, in all activities, a higher importance than the ones considered by men.

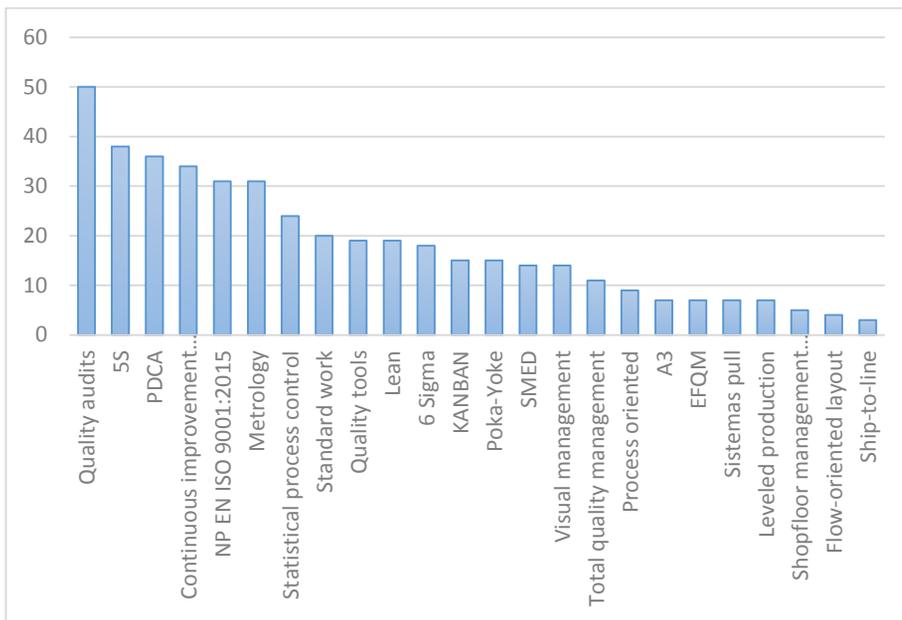


Figure 3. Activities developed in the surveyed companies.

Table 1. Different perceptions of male and female, about the importance of implementing the standard ISO 9001.

	Female	Male
In the management mode	4,09	3,75
In the quality of products / services	4,00	3,65
In the evolution of sales	3,84	3,10
In the internationalization of the business	4,05	3,42
In process productivity	3,89	3,45
In the responsiveness of the organization	4,18	3,48
In the motivation of professionals	3,60	3,25
In individual performance	3,60	3,42
On customer satisfaction	4,38	3,63
In the relationship with customers	4,36	3,84
In the competitiveness of the organization	4,38	3,63

With regard to the level of training and scholarship, it is possible to verify in table 2, that those who assign greater importance to the implementation of the standard ISO 9001 are the respondents with a post-graduation education. Here it seems to us that we have to be careful to mention (if this is the case) that the postgraduate in question is the postgraduate in quality management. Possibly people who enroll in a graduate degree of this nature have at the outset greater interest in this area and therefore already

attach high importance to the implementation of the standard ISO 9001 (ie the sample in this aspect is somewhat skewed). Employers with the Master degree attach great importance to the relationship with customers and the competitiveness of the organization. Employers with secondary school attach great importance in the quality of products / services, the responsiveness of the organization, the relationship with customers and on the customer satisfaction.

Table 2. Perceptions of people with different training and scholarity, about the importance of implementing the standard ISO 9001 in organizations.

	Secondary School	Post Bologna degree	Pre Bologna degree	Post Graduation	Master Degree
In the management mode	3,89	3,78	3,83	4,75	3,45
In the quality of products / services	4,13	3,57	4,17	4,50	3,55
In the evolution of sales	2,75	3,74	3,67	4,00	3,25
In the internationalization of the business	2,88	3,65	4,17	4,17	3,68
In process productivity	3,75	3,61	3,67	4,50	3,20
In the responsiveness of the organization	4,13	3,70	4,00	4,83	3,40
In the motivation of professionals	3,67	3,39	3,00	3,75	3,05
In individual performance	3,63	3,52	3,67	3,92	2,95
On customer satisfaction	4,11	3,96	4,17	4,67	3,80
In the relationship with customers	4,11	4,04	4,17	4,33	4,00
In the competitiveness of the organization	3,22	4,22	4,33	4,33	3,85

According with table 3, the people most experienced in management are those who mostly give a greater importance to the implementation of the standard ISO 9001 in organizations. In what concerns the size of the company we can verify that the companies that give a greater importance to the

implementation of the standard are generally the smaller companies. The most valued activities by the largest companies are the management mode, the relationship with customers and the competitiveness of the organization (table 4).

Table 3. Perceptions of people with different years of experience, about the importance of implementing the standard ISO 9001 in organizations.

	Less than 3 years	Between 3 and 5 years	Between 6 and 10 years	More than 10 years
In the management mode	3,88	4,20	3,67	4,67
In the quality of products / services	3,79	3,90	3,89	4,44
In the evolution of sales	3,60	3,10	3,33	4,22
In the internationalization of the business	3,85	3,10	3,89	4,44
In process productivity	3,70	3,70	3,56	4,22
In the responsiveness of the organization	3,79	4,10	4,00	4,44
In the motivation of professionals	3,48	3,50	2,89	4,11
In individual performance	3,45	3,60	3,44	4,22
On customer satisfaction	4,10	4,00	3,67	4,67
In the relationship with customers	4,17	4,10	3,89	4,67
In the competitiveness of the organization	4,06	3,90	4,11	4,56

Table 4. Relationship between the size to the company and the importance of implementing the ISO9001 standard.

	Number of employees				Total
	Less than 10	Between 11 and 49	Between 50 and 250	More than 250	
In the management mode	4,20	3,92	3,37	4,20	3,95
In the quality of products / services	3,50	3,77	3,63	4,12	3,86
In the evolution of sales	3,60	3,23	3,37	3,74	3,54
In the internationalization of the business	4,11	3,38	3,53	4,00	3,79
In process productivity	4,10	3,62	3,26	3,88	3,71
In the responsiveness of the organization	4,30	4,08	3,32	4,03	3,89
In the motivation of professionals	4,00	3,38	2,84	3,66	3,45
In individual performance	3,90	3,31	3,00	3,79	3,53
On customer satisfaction	4,50	4,00	3,68	4,17	4,06
In the relationship with customers	4,50	4,00	3,53	4,43	4,14
In the competitiveness of the organization	4,70	3,69	3,63	4,26	4,06

Accordingly to table 5, an interesting fact, can be observed. People that work in non-certified companies attribute more importance to implementing the standard than people who already work in certified companies. The only exception concerns the quality of products and services.

In what it concerns other certifications (table 6), the results are different. It is possible to

consider that one of the possible justifications for this may be that companies seeking other certifications consider that the implementation of the standard is important in the development of their activity and therefore their employees recognize the importance of the standard in most of the activities developed by the company.

Table 5. Relationship of the importance of implementing the ISO9001 standard.

	Does the company has the ISO 9001 certification?		
	No	Yes	Total
In the management mode	4,46	3,72	3,95
In the quality of products / services	3,83	3,87	3,86
In the evolution of sales	3,67	3,48	3,54
In the internationalization of the business	4,13	3,63	3,79
In process productivity	4,13	3,52	3,71
In the responsiveness of the organization	4,38	3,67	3,89
In the motivation of professionals	3,79	3,30	3,45
In individual performance	3,67	3,46	3,53
On customer satisfaction	4,50	3,87	4,06
In the relationship with customers	4,42	4,02	4,14
In the competitiveness of the organization	4,46	3,89	4,06

Table 6. Companies with other certified management systems (environmental, safety and others)

	Does the company has other certifications?		
	No	Yes	Total
In the management mode	3,92	3,97	3,95
In the quality of products / services	3,79	3,92	3,85
In the evolution of sales	3,31	3,78	3,53
In the internationalization of the business	3,61	3,97	3,78
In process productivity	3,72	3,67	3,69
In the responsiveness of the organization	4,03	3,78	3,91
In the motivation of professionals	3,38	3,49	3,43
In individual performance	3,46	3,58	3,52
On customer satisfaction	4,15	3,95	4,05
In the relationship with customers	4,05	4,24	4,14
In the competitiveness of the organization	3,79	4,32	4,05

Also regarding table 7, it may be worth reflecting on the evolution of perceptions of the importance of ISO 9001 over the time in different aspects. This evolution may be related to the standard but may also be related to how it is being used by the organization. For example, one can consider the importance of training not only about the standard but

also about how the standard should be implemented in companies to contribute to the commitment of the employees. Possibly, the intensity of monitoring should not be constant over the years. As the implementation gets more mature a more relaxed approach can (or should) be taken.

Table 7. - The evolution of perceptions of the importance of the ISO 9001.

Number of years of ISO 9001 certification	Less than 3 years	From 3 to 5 years	From 6 to 10 years	More than 10 years
In the management mode	3,86	3,71	3,60	3,83
In the quality of products / services	4,00	4,29	3,80	3,83
In the evolution of sales	2,86	3,29	3,70	3,65
In the internationalization of the business	2,50	3,57	3,50	4,09
In process productivity	3,57	3,43	3,60	3,57
In the responsiveness of the organization	4,00	3,86	3,50	3,74
In the motivation of professionals	3,86	3,14	3,20	3,25
In individual performance	4,29	3,29	3,20	3,43
On customer satisfaction	4,14	4,43	3,60	3,83
In the relationship with customers	4,29	4,00	3,90	4,12
In the competitiveness of the organization	3,43	3,43	4,00	4,17

After the descriptive analysis we can move to an inferential analysis and realize if it is possible to infer general results from the data available. In this analysis we should always be careful to recognize that our sample is not representative of the population that somehow work in quality management, since the sample is a convenience sample. In any case, we may be comfortable doing this analysis and that the results we get from it will

be a good indicator for a deeper and more structured analysis.

One of the analyzes that would be interesting to do is a logistics regression. However, it was not possible to obtain an r^2 that would ensure the model fit in either situation.

We then performed an analysis using the chi-square test to see if there are any factors that influence the perception of the importance of

implementing the standard ISO 9001. Most of the results do not present statistical significance (It was considered a significance of 10%). Here, are only presented the results with statistical significance. We started the analysis looking for perceptions that are influenced by the existence of a ISO 9001 certification. The chi-square test showed a

significant influence on the importance “In management mode” with a p-value of 0,05.

In table 8 we may notice that people that work in companies wich do not have this certification tend to beter understand its importance.

Table 8. - Cross Tab The Company Is ISO9001 Certified * In management

		Importance			Total
		3	4	5	
The company is ISO 9001 certified?	No	3	7	14	24
	Yes	17	20	16	53
Total		20	27	30	77

It is also possible to verify that there is a significant difference regarding the importance of the standard “in the responsiveness of the organization”, with a p-value of 0,05. Again, in Table 9., we notice that people that work in companies wich do not have this certification tend to beter understand its importance. In order to understand if the average ages of the different levels of perception of the importance of the standard, it was used an Analysis of variance (ANOVA). It was not possible to identify any

significant difference (alpha = 0.1) between the perceptions for different ages. Age cannot therefore be considered as a differentiating factor for perceptions.

Regarding gender, it was possible to observe some significant differences “in the responsiveness of the organization”, with a p-value of 0,06, and „on the organization competitiveness“, with a p-value of 0,03. In boths cases, as we may see in Tables 10 and 11, the perception on the importance.

Table 9. - Cross Tab The Company Is ISO 9001 Certified * In the responsiveness of the organization.

Count		Importance			Total
		3	4	5	
The company is ISO 9001 certified?	No	5	5	14	24
	Yes	17	20	15	52
Total		22	25	29	76

Table 10. - Cross Tab Sex * In the responsiveness of the organization

		Importance			Total
		3	4	5	
Gender	Female	10	13	22	45
	Male	12	12	7	31
Total		22	25	29	76

Table 11. - Cross Tab Sex * On the organization competitiveness

		Importance			Total
		3	4	5	
Gender	Female	5	16	24	45
	Male	11	11	10	32
Total		16	27	34	77

5. Conclusion

Quality Management has been one of the most important Managerial Systems all over the world, during the last three decades. As main conclusions of this work, it can be highlighted: women attach great importance to the implementation of the ISO 9001 standard, namely concerning customer satisfaction, competitiveness of the organization, and the relationship with customers and give less importance, namely in the individual performance, in the motivation of professionals and in the

evolution of sales. Men value the implementation of the ISO 9001 more, in terms of the relationship with customers, in the management mode and they give less importance, in what concerns the evolution of sales and in the motivation of professionals. With regard to the level of training and scholarship, respondents with a Post-graduation and Master degree education assign greater importance to the implementation of the standard ISO 9001. Employers with secondary school attach greater importance in the quality of products.

References

- Al-Hemyari, Z. A., & Al-Sarmi, A. M. (2017). HEIS Quality Improvement Through Students Perception: Data Analysis and Robustness of the Results. *International Journal for Quality Research*, 11(2), 261-278.
- Akdeniz, B., Calantone, R., & Voorhees, C. (2013). Effectiveness of marketing cues on consumer perceptions of quality: The moderating roles of brand reputation and third-party information. *Psychology & Marketing*, 30(1), 76-89.
- Araújo, R., Santos, G., Costa, J., & Sá, J. C. (2019). The Quality Management System as a Driver of Organizational Culture: An Empirical Study in the Portuguese Textile Industry. *Quality Innovation Prosperity Journal*, 23(1), 1-24. <http://dx.doi.org/10.12776/qip.v23i1.1132>.
- Barca, F., McCann, P., & Rodriguez-Pose, A. (2012). The case for regional development intervention: place-based versus place-neutral approaches. *Journal of Regional Science*, 52(1), 134-152.
- Batista, I., & Santos, G. (2015). O Impacto Financeiro das Auditorias da Qualidade nas Empresas Portuguesas. *Revista Produção e Desenvolvimento*, 1(3), 90-102.
- Bellamy, A. R., Fowler, R., & Boyless, J. (2001). Organizational Correlates of Perceptions of Quality Outcomes for ISO 9000 Registration: A Preliminary Analysis. *Quality Assurance Journal*, 5, 137-147. doi: 10.1002/qaj.145
- Bitner, M. J., & Hubbert, A. R. (1994). Encounter satisfaction versus overall satisfaction versus quality'. In R. Rust, and R. Oliver, (Eds.), *Service Quality: New Directions in Theory and Practice*. Thousand Oaks, CA: Sage Publications. pp. 72-94.
- Bolton, R. N., & Drew, J. H. (1991). A longitudinal analysis of the impact of service changes on customer attitudes. *Journal of Marketing*, 55,1-9.
- Bravi, L., Murmura, F., & Santos, G. (2017). Attitudes and Behaviours of Italian 3D Prosumer in the Era of Additive Manufacturing. *Procédia Manufacturing*, 13, 980-986. <https://doi.org/10.1016/j.promfg.2017.09.095>
- Bravi, L., Murmura, F., & Santos, G. (2019). The ISO 9001:2015 Quality Management System Standard: Companies' Drivers, Benefits and Barriers to Its Implementation. *Quality Innovation Prosperity*, 23(2)64-82.

- Brown, D. (2009). Lisbon: O símbolo perdido, Editora Bertand.
- Carvalho, F., Santos, G., & Gonçalves, J. (2018). The disclosure of information on Sustainable Development on the corporate website of the certified Portuguese organizations. *International Journal of Quality Research*, 12(1), 253-276. <https://doi.org/10.18421/IJQR12.01-14>.
- Costa, A. R., Barbosa, C., Santos, G., & Alves, M. R. (2019). Six Sigma: Main Metrics and R Based Software for Training Purposes and Practical Industrial Quality Control. *Quality Innovation Prosperity*, 23(2), 83-100. doi: 10.12776/QIP.V23I2.1278
- Dahlgaard-Park, S. M., Chen, C-K., Jang, J-Y., & Jens J. Dahlgaard, J. J. (2013). Diagnosing and prognosticating the quality movement – a review on the 25 years quality literature (1987–2011). *Total Quality Management*, 24(1), 1-18.
- Dahlgaard-Park, S. M., & Dahlgaard, J. J. (2007). Excellence – 25 years evolution. *Journal of Management History*, 13(4),371-393
- Doiro, M., Fernández, J. F., Félix, M. J., & Santos, G. (2017). ERP – machining centre integration: a modular kitchen production case study. *Procedia Manufacturing*, 13, 1159-1166.
- Duque, P. (2012). Interview with magazine ‘Lavanguardia’ in 2012.12.21”, Retrieved from: www.lavanguardia.com/ciencia/20120123/54244667445/pedro-duque-estamos-mas-cerca-volver-a-laluna-que-pisar-marte.html
- Duran, C., Çetindere, A., & Şahan, Ö. (2014). An Analysis on the Relationship Between Total Quality Management Practices and Knowledge Management: The Case of Eskişehir. *Procedia - Social and Behavioral Sciences*, 109, 65-77. doi:10.1016/j.sbspro.2013.12.422
- Félix, M. J., Santos, G., Barroso, A., & Silva, P. (2018). The transformation of wasted space in urban vertical gardens with the contribution of design to improving the quality of life. *International Journal for Quality Research*, 12(4), 803-822. <https://doi.org/10.18421/IJQR12.04-02>.
- Fonseca, L., & Carvalho, L. (2019). SDGs reporting by Quality, Environmental, and Occupational Health and Safety certified organizations. *Sustainability*, 11, doi: For peer review; www.mdpi.com/journal/sustainability
- Hasin, M. A. A., Sarker, S., Islam, N., & Shareef, M. A. (2011). Perception of Customer satisfaction and Healthcare Service Quality in the Context of Bangladesh. *International Journal for Quality Research*, 5(3), 237-244.
- Knight, P., & Yorke, M. (2003). Employability and Good Learning in Higher Education. *Teaching in Higher Education*, 8(1), 3-16.
- Kothari, C. R. (2011). Research Methodology, Methods and Techniques New Delhi: New Age International (P) Limited. (2nd ed., 109-110).
- Lam, S. S.K. (1995). Quality management and job satisfaction: an empirical study. *International Journal of Quality & Reliability Management*, 12(4), 72-78. <https://doi.org/10.1108/02656719510087337>
- Li, K., Wang, L., Chhajer, D., & Mallik, S. (2018). The Impact of Quality Perception and Consumer Valuation Change on Manufacturer’s Optimal Warranty, Pricing and Market Coverage Strategies. *Decision Sciences*, 50(2), 311-339
- Llusar, J. C. B. & Zornoza, C. C. (2000). Validity and reliability in perceived quality measurement models. An empirical investigation in Spanish ceramic companies. *International Journal of Quality & Reliability Management*, 17(8), 899-918.

- Magd, H. A. E. (2008). ISO 9001:2000 in the Egyptian manufacturing sector: Perceptions and perspectives. *International Journal of Quality & Reliability Management*, 25(2), 173-200.
- Marques, C., Lopes, N., Santos, G., Delgado, I., & Delgado, P., 2018. Improving operator evaluation skills for defect classification using training strategy supported by attribute agreement analysis. *Measurement*, 119, 129-141.
- Michener, W. K. (1997), Quantitatively Evaluating Restoration Experiments: Research Design, Statistical Analysis, and Data Management Considerations. *Restoration Ecology*, 5, 324-337. doi:10.1046/j.1526-100X.1997.00546.x
- Nguyen, N. T. D., & Aoyama, A. (2014). Achieving efficient technology transfer through a specific corporate culture facilitated by management practices. *Journal of High Technology Management Research*, 25, 108-122.
- Parkes, A. (2015). *Lean Management Genesis*. De Gruyter, 106-121.
- Perkins, C. A. (1990). Quality Perception: A Comparison Between the Navy and the Commercial Environment. *Naval Engineers Journal*, January, 41-52.
- Rust R. T., & Oliver R. L. (1994). Service quality: Insights and managerial implications from the frontier. In R.T. Rust & R.L. Oliver (Eds.), *Service quality: New directions in theory and practice* (pp. 1–19). New York: Sage.
- Santos, G., & Barbosa, J. (2006). QUALIFOUND - a modular tool developed for Quality Improvement in Foundries. *Journal of Manufacturing Technology Management*, 17(3), 351-362. <https://doi.org/10.1108/17410380610648308>.
- Santos, G., Mendes, F., & Barbosa, J. (2011). Certification and integration of management systems: the experience of Portuguese small and medium enterprises. *Journal of Cleaner Production*, 19, 1965-1974.
- Santos, D., Rebelo, M., & Santos, G. (2017). The Integration of certified Management Systems. Case Study – Organizations located at the district of Braga, Portugal. *Procedia Manufacturing* 13, 964-971. <https://doi.org/10.1016/j.promfg.2017.09.168>.
- Santos, G., Murmura, F., & Bravi, L. (2019a). Developing a model of vendor rating to manage quality in the supply chain. *International Journal of Quality and Service Sciences*, 11(1), 34-52.
- Santos, G., Doiro, M., Mandado, E., & Silva, R. (2019b). Engineering learning objectives and computer assisted tools. *European Journal of Engineering Education*, 44(4), 616-628. <https://doi.org/10.1080/03043797.2018.1563585>.
- Santos, G., Gomes, S., Braga, V., Braga, A., Lima, V., Teixeira, P., & Sá, J. C. (2019c). Value creation through quality and innovation – a case study on Portugal. *The TQM Journal*, earlyCite; doi: 10.1108/TQM-12-2018-0223
- Santos, G., Bravi, L., & Murmura, F. (2018a). SA 8000 as a Tool for a Sustainable Development Strategy. *The Corporate Social Responsibility and Environmental Management Journal*, 25, 95-105.
- Santos, G., Afonseca, J., Murmura, F., Félix, M. J., & Lopes, N. (2018b). Critical success factors in the management of ideas as an essential component of innovation and business excellence. *International Journal of Quality and Service Sciences*, 3(3), 214-232.
- Taylor, S., & Baker, T. (1994). An assessment of the relationship between service quality and customer satisfaction in the formation of consumers' purchase intentions. *Journal of Retailing* 70(2), 163-78.

- Weckenmann, A., Akkasoglu, G., & Werner, T. (2015). Quality management – history and trends. *The TQM Journal*, 27(3), 281-293.
- Woodruff, R. B. (1997). Customer value: The next source for competitive advantage. *Journal of the Academy of Marketing Science*, 25(2), 139-153.
- Wu, H-L., Liu, C-Y., & Hsu, W-H. (2008). An integrative model of customers' perceptions of health care services in Taiwan. *The Service Industries Journal*, 28(9), 1307-1319.
- Yuan, G., Han, J., Wangc, Y., Liang, H., Li, G. (2019). The product demand model driven by consumer's information perception and quality perception. *Physica A*, 535, 1-10.
- Zeithaml, V. A. (1988). Customers' perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2-22.
- Zgodavova, K., Hudec, O., & Palfy, P., (2017). Culture of quality: insight into foreign organisations in Slovakia. *Total Quality Management & Business Excellence*, 28(9-10), 1054-1075. <https://doi.org/10.1080/14783363.2017.1309120>
- Žunac, A. G., Buntak, K., & Tišler, P. (2018). Size of a Company and its Impact on Perception of Intangible Motivation. *International Journal for Quality Research*, 13(1), 3-12.

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