PROJECT, DESIGN AND MANAGEMENT

ISSN: 2683-1597

PROJECT DESIGN & MANAGEMENT

How to cite this article:

Vázquez Lema, M. R. & Vazquez Loayza, J. P. (2021). Leadership and organizational success with the ISO 9001 model. *Project, Design and Management, 3*(1), 89-112. doi: 10.35992/pdm.v3i1.620.

LEADERSHIP AND ORGANIZATIONAL SUCCESS WITH THE ISO 9001 MODEL

Marcelo Rodrigo Vasquez Lema
Universidad Internacional Iberoamericana (Bolivia)
. marcelo@marcelovasquez.org . https://orcid.org/0000-0001-8739-4417
Juan Pablo Vazquez Loayza
Universidad Politécnica Salesiana de Ecuador (Ecuador)
pabloaiza@hotmail.com - https://orcid.org/0000-0003-0646-3930

Abstract. Given the growing adoption of the ISO 9000 model by the Industrial Companies of Cotton Textile Products in Bolivia (EIPAT), to effectively address a dynamic context and, as they are unable to visualize representative changes in their performance; furthermore, considering the impact of a solid Leadership on the collaborators and its repercussion on the processes and the organization, and finally, being one of the principles of quality management the Leadership; It was sought to establish the relationship between it and Organizational Success (EO). Two objectives were established: (1) Determine if the management levels exercise the Leadership actions recommended by the ISO 9000 model and, (2) Determine the relationship that exists between the Leadership exercised at each of the management levels and the EO. The alternative hypothesis was "The actions to exercise Leadership positively influence the Success of organizations with ISO 9001 certification"; and the null "Actions to exercise Leadership do not positively influence the Success of organizations with ISO 9001 certification". The information collection instrument was validated by experts in research methodology and Cronbach's Alpha statistic. In the data analysis, the measures of central tendency and variability were used for the descriptive and the Spearman correlation coefficient for the correlational; This made it possible to determine that there is a strong and moderate positive relationship between the study variables; as well as, that the middle management levels exercise these practices more frequently.

Keywords: Leadership, ISO 9001, Organizational Success.

LIDERAZGO Y ÉXITO ORGANIZACIONAL CON EL MODELO ISO 9001

Resumen. Ante la adopción creciente del modelo ISO 9000 por las Empresas Industriales de Productos Algodoneros Textiles en Bolivia (EIPAT), para abordar eficazmente un contexto dinámico y, al no poder visibilizar cambios representativos en su desempeño; además, considerando el impacto de un Liderazgo sólido en los colaboradores y su repercusión en los procesos y la organización, y por último, siendo uno de los principios de gestión de la calidad el Liderazgo; se buscó establecer la relación entre éste y el Éxito Organizacional (EO). Se establecieron 2 objetivos: (1) Determinar si los niveles de dirección ejercen las acciones de Liderazgo

recomendadas por el modelo ISO 9000 y, (2) Determinar la relación que existe entre el Liderazgo que se ejerce en cada uno de los niveles de dirección y el EO. La hipótesis alterna fue "Las acciones para ejercer Liderazgo influyen positivamente en el Éxito de las organizaciones con certificación ISO 9001"; y la nula "Las acciones para ejercer Liderazgo no influyen positivamente en el Éxito de las organizaciones con certificación ISO 9001". El instrumento de recolección de información fue validado por expertos en metodología de la investigación y el estadístico Alfa de Cronbach. En el análisis de los datos se utilizó las medidas de tendencia central y variabilidad para lo descriptivo y el coeficiente de correlación de Spearman para lo correlacional; lo cual permitió determinar que existe una relación positiva fuerte y moderada entre las variables de estudio; así como, que los niveles de dirección medios ejercen con mayor frecuencia dichas prácticas.

Palabras clave: Liderazgo; ISO 9001, éxito organizacional, sistemas de gestión de la calidad.

Introduction

The quality of products and services has ceased to be seen as an added value and has become a minimum expected by consumers, who are increasingly more and better informed due to the ease of access to technical and legal information, as well as to know multiple options before making a purchase decision. This situation has led organizations to be concerned about maintaining quality in order to satisfy the needs and expectations of their customers and, through this, to achieve the expected financial and market results. This has led to strong competition among companies, pushing them to adopt, implement, and maintain ISO 9001 quality management systems (QMS) to achieve high quality standards in order to meet the demands of the environment and differentiate themselves from the rest (Gonzáles, 2015).

Since its publication in 1987, this standard has had 5 versions in which modifications have been incorporated to suit the needs of users and other stakeholders (Manders, de Vries and Blind; 2016), becoming a referential tool to enable the growing internationalization of business and the need for common QMS standards (Fonseca, 2015). According to the report published by ISO (2019), worldwide, the number of certifications in force with ISO 9001 reached 883,521 in 1,217,972 sites; and in Bolivia a total of 241 (ISO, 2019b).

This standard, published by the International Organization for Standardization (ISO), and approved as a Bolivian Standard (NB) by the Bolivian Institute for Standardization and Quality (IBNORCA), establishes a series of generic requirements for designing and implementing a QMS in any type and size of organization, aimed at improving the ability to deliver products and services that meet technical and legal specifications, as well as customer satisfaction (Medina, López and Ruiz, 2017). Having, according to Rodriguez (2012), a favorable impact on efficiency, productivity, competitiveness, profitability, customer satisfaction, and overall performance in organizations providing those who adopt this standard, achieve superior financial and non-financial metrics in relation to others that do not (Fontalvo, Mendoza and Morelos, 2011; Marin, 2013; Benzaquen and Convers, 2015).

Focusing on the management principles of the ISO 9000 model, Leadership is the only one that has an exclusive chapter in the ISO 9001 (2015) standard, inferring the importance that the model gives to it since it states that leaders, at all levels of the organization, create the conditions in which people are involved in achieving the objectives, understanding the achievement of an objective as Success for this model. At the same time, it also specifies that *Leadership* must start with the creation of unity of purpose, and the direction and management of people, so that the organization can align its strategies, policies, processes, and resources towards the achievement of the objectives.

From the review carried out, referring to ISO 9001 and *Leadership*, it can be considered a strategy to implement a QMS under this model to address the complex and dynamic environment, which not only depends on meeting a series of generic requirements but also on

principles where, according to the contribution of different authors (Summers, 2006; Iqbal, Anwar and Halder, 2015; Robbins and Judge, 2017; Benavides, 2017; Chiavenato, 2018; Palazzeschi, Bucci and Di Fabio, 2018; Sousa & Rocha, 2019) can play a key role in the achievement of objectives and, therefore, of Organizational Success (EO) since, additionally, the same authors associate it with the ability to influence people, while according to Rachma (2014) it is a practice that transcends a simple control task because it also understands a focus on interpersonal relationships and motivation (Godoy & Bresó, 2013; Bester, Stander, & van Zyl, 2015; Qian, Song, Jin, Wang, & Chen, 2018). With the background of these investigations and considering what was exposed by Bass and Avolio (1994, 1997), it is possible to affirm that managing an adequate *Leadership* promotes the good functioning of any organization.

Therefore, it is feasible to infer that the more influence the leader has to improve employee practices, the more effective will be the development of a shared vision among the company's collaborators (Blanchard, 2016). Recognizing also that Leadership, in an increasingly dynamic environment and generator of growing uncertainty, is key to generate synergy in work teams in favor of achieving organizational results to survive in the highly competitive market (Youssef and Luthans 2012; Mendoza, García and Uribe, 2014; Tysen Wald and Heidenreich, 2014).

Despite the positive effects of implementing an ISO 9001 QMS, the researcher's experience has shown that it has not made a significant difference to date in the management results obtained by the EIPATs in Bolivia, which have adopted this model in an attempt to deal more effectively with an increasingly complex and dynamic environment. In addition to the above, the exercise of a weak *Leadership* by the different levels of management in this sector can be perceived during the processes of design, implementation, and maintenance of the QMS. ISO 9000 (2015) presents a series of actions to exercise *Leadership* within the QMS that would allow the creation of the unity of purpose and direction and management of people that would facilitate an organization to align its strategies, policies, processes, and resources to achieve the objectives and, seen in this way, it is convenient to intervene in a study on Leadership in organizations that have obtained the certification since it is assumed that the intention and the *know how* that the standard guides exist. Among the possible actions, and as mentioned by ISO 9000 (2015), are: (1) continuous training by management levels (FR), (2) communication the purpose, strategies, policies, and quality processes (CPEPP), (3) participation in teams or continuous improvement projects (PPEC), (4) recognition of personnel who promote and/or effectively apply quality principles and standards (RPPEC), (5) active participation in QMS performance monitoring and evaluation activities (PAED), (6) promotion and development of positive leadership at different levels (FDLP), (7) prioritization of the treatment of issues related to product and service quality (PTTR), (8) promotion and provision of resources, training, and authority required to act with responsibility and accountability (FPFARORC).

Being the supplier of choice is an increasing challenge in different sectors. Competition becomes more intense as new competitors emerge unexpectedly. Customers are more demanding and have many options available to them. Therefore, they expect to get what they want, when they want it, and they want their needs to be fully satisfied (Blanchard, 2016). In addition to the above, smuggling and increased imports of products of Chinese origin at lower prices add to the complexity of the context. This reality specifically describes the current environment in which the EIPATs are developing. This has led organizations in the sector to rely on ISO 9001 to meet the needs and expectations of the market in order to improve their business results. However, beyond the improvement in the image in general, there has not been a direct impact associated with greater customer satisfaction, profits or increase in sales during the period 2017-2019 as shown by the documented information related to management and QMS results in the organizations of the sector; aspects that for the management levels are synonymous with management *Success*. The aforementioned motivated to investigate if the

management levels were exercising the *Leadership* actions promoted by the adopted model; and if these have a relationship with the EO. In this sense, the hypothesis was based on the assumption that *Leadership* actions do not have a positive influence on the *Success* of ISO 9001 certified organizations.

Method

The research, conducted during the period August-December 2020, was framed in the non-experimental-transversal, descriptive, and correlational typology according to the classification presented by Hernández, Fernández and Baptista (2014). The study applied empirical methods and sought to determine the relationship of the exercise of Leadership of the management levels - as an independent variable -, based on the actions suggested by the ISO 9000:2015 standard, with *Success in Organizations* - as a dependent variable - within a certified QMS of the EIPATs during the 2017-2019 fiscal managements. In turn, the following specific objectives were raised: (1) to determine whether the management levels exercise the Leadership actions recommended by the ISO 9000 model and; (2) to determine the relationship that exists between the Leadership exercised at each of the management levels and Success in ISO 9001 certified organizations. To this end, the following research hypotheses were formulated:

(H_1) Alternative hypothesis: Leadership actions positively influence the success of ISO 9001 certified organizations.

(H_0) Null hypothesis: Leadership actions do not positively influence the success of ISO 9001 certified organizations.

The unit of analysis of the research was the EIPAT, where a population of 43 management positions divided into managers (10), department heads (13), and supervisors (20) was recognized. A percentage of 100% of them were administered an Ad Hoc questionnaire of ordinal scales validated under expert judgment and Cronbach's Alpha statistic with a value of 0.9078, which inquired about the participation of management levels in: (1) training related to ISO 9001 (FR); (2) communication of quality purpose, strategies, policies, and processes (CPEPP); (3) participation in continuous improvement teams or projects (PPEC); (4) recognition to promotion and application of quality principles and standards (RPPEC); (5) participation in QMS performance evaluation activities (PAED); (6) encouragement and development of positive leadership (FDLP); (7) prioritization of the treatment of quality-related issues (PTTR) and; (8) encouragement and proportion to act responsibly and be accountable (FPRRC).

Subsequently, after a process of socialization and staff training, the self-assessment questionnaire was applied. Following this, the instrument was prepared in the Google Forms application to facilitate its application, collection, and tabulation and was sent by e-mail. It was given 7 days to be completed, but it was 100% completed within 72 hours. Next, authorization was requested from the Senior Management (SM) of the organizations in the study sector, in order to have access to the documented information to collect the necessary data through the check sheet to corroborate the results of the questionnaire; as well as, those related to customer satisfaction, profits, and sales corresponding to the period 2017-2019. The organizations provided temporary access to this data through virtual folders such as OneDrive, Dropbox, and Google Drive.

The data analysis was performed taking into account the levels of measurement of the variable and using descriptive statistics according to the classification of Hernández at al. (2014). The measures of central tendency and variability were used for the descriptive and the parametric test of Spearman's correlation coefficient to determine whether the Leadership actions promoted by the 9000 model are related to *Organizational Success* in the sector. For

those that had a coefficient between 0.5 < X < 7.5 recognized as Moderate Positive and Strong Positive for those with 5,701 < X.

Results

After analyzing and interpreting the information obtained from the measures of central tendency and variability in each of the dimensions of the independent variable of *Leadership* globally and by level of management, the following results were obtained:

From the consultation on the participation in FR actions with ISO 9001, either managed at personal request or being part of the general training program, to keep updated and strengthen their skills in the subject continuously, it was observed that most managers *almost never* participate in these, as can be seen in Figure 1. There is a high dispersion in the exercise of this activity and a tendency to do it with some regularity as can be seen in Table 1.

However, as can be seen in the DM levels, they tend to do it more frequently and have a more homogeneous exercise of this *Leadership* action; in comparison with the AD and DO who do it *almost never*, as shown in Figure 2 and Table 2.

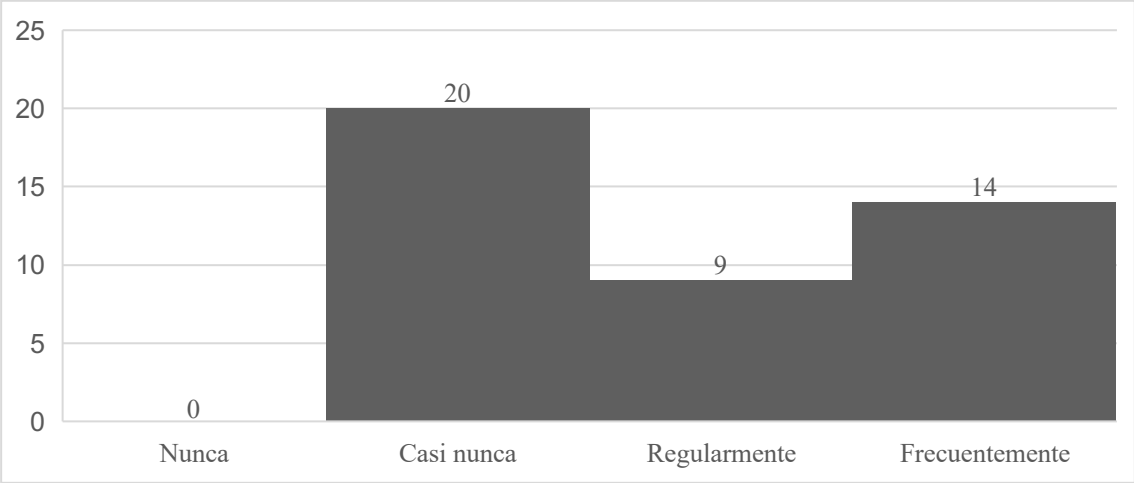

Figure 1. General participation in ISO 9001 training activities
Note: Own elaboration.

Table 1
Participation in ISO 9001 training activities

Tendency and variability	Data
Mean	2,860465116
Median	3
Mode	2
Range	2
Standard deviation	0,8885889

Note: Own elaboration.

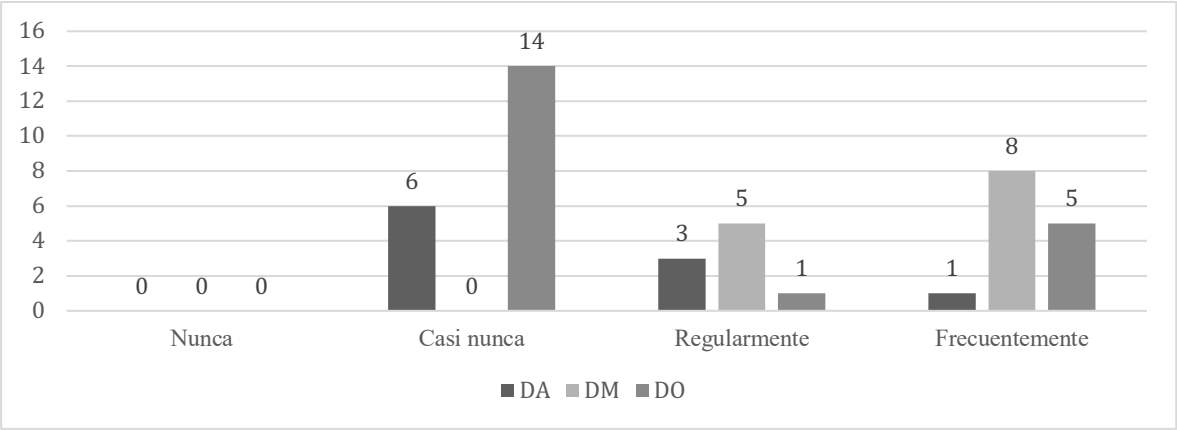

Figure 2. Participation in ISO 9001 training actions by level of management
Note: Own elaboration. Represents all management levels to which the instrument was applied. AD = Senior Management, DM = Middle Management, DO = Operational Management

Table 2
Participation in ISO 9001 training activities by management level

Tendency and variability	Senior Management	Middle Management	Operational Management
Mean	2,5	3,6153	2,55
Median	2	4	2
Mode	2	4	2
Range	2	1	2
Standard deviation	0,7071	0,5053	0,8870

Note: Own elaboration.

The second variable associated with *Leadership* for this study is related to the CPEPP. From the consultation on the execution and participation in these activities through different spaces such as meetings, messages, training actions, among others, it was observed that most of them do it *regularly* as shown in Figure 3. General communication of quality purpose, strategies, policies, and processes

; there is a high dispersion in the exercise of this activity and a slight tendency to do it *almost never* as can be seen in Table 3. However, as shown in Figure 4 and Table 4, the DM and DO levels tend to do it more *regularly*, compared to the AD that do it *almost never*; at the same time, in the three levels, the deviation is high average.

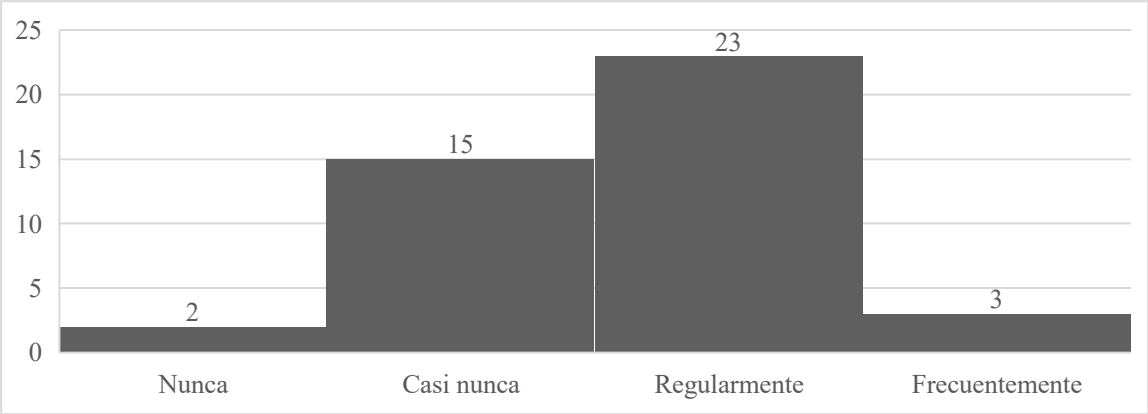

Figure 3. General communication of quality purpose, strategies, policies, and processes
Note: Own elaboration.

Table 3
Communication of quality purpose, strategies, policies, and processes

Tendency and variability	Data
Mean	2,6279
Median	3
Mode	3
Range	3
Standard deviation	0,6908

Note: Own elaboration.

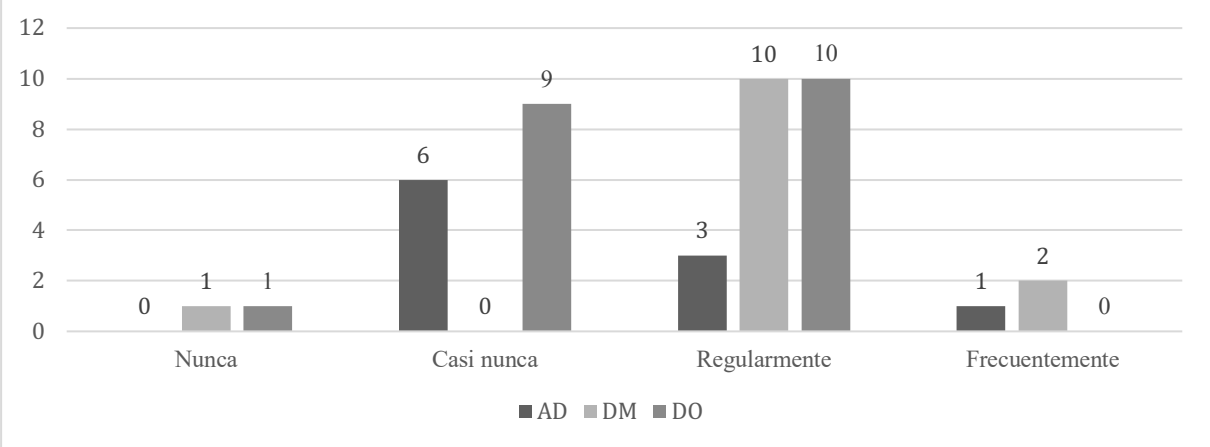

Figure 4. Overall communication of quality purpose, strategies, policies, and processes
Note: Own elaboration. Total number of management levels to which the instrument was applied. DA = Senior Management, DM = Middle Management, DO = Operational Management

Table 4
Communication of quality purpose, strategies, policies, and processes by management level

Tendency and variability	Senior Management	Middle Management	Operational Management
Mean	2,5	3	2,45
Median	2	3	2,5
Mode	2	3	3
Range	2	3	2
Standard deviation	0,7071	0,7071	0,6048

Note: Own elaboration.

The third associated variable, which is related to the PPEC by management levels, it was observed that taking part *frequently* is the most repeated, as shown in Figure 5, with a high average dispersion in the exercise of this activity as can be seen in Table 5. However, as shown seen in Figure 6 and Table 6, the DM levels tend to do it more *frequently* and are more homogeneous in their exercise, compared to the AD who do it *regularly* and the DO who do it *almost never.* In turn, in the latter two the deviation is high.

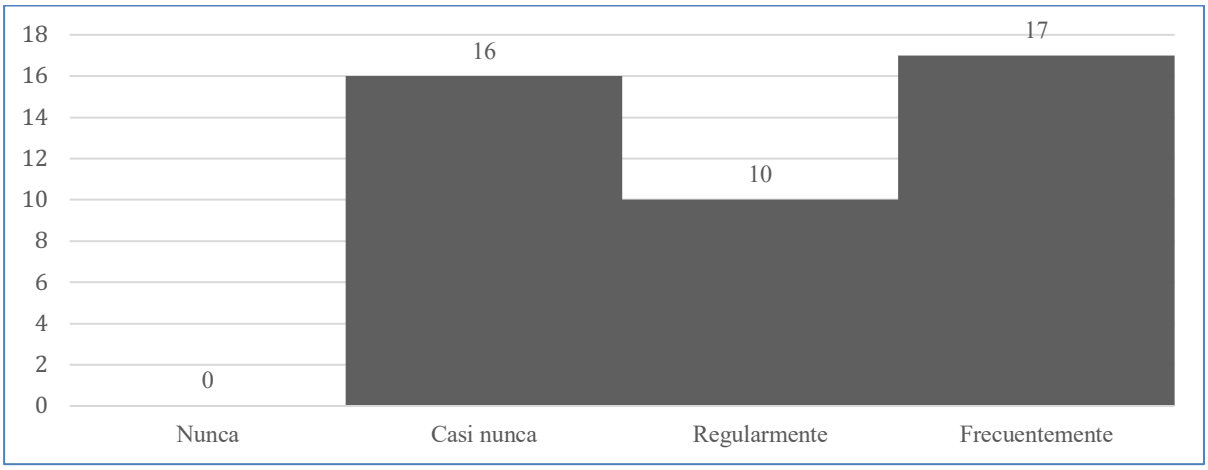

Figure 5. Participation in improvement teams or projects
Note: Own elaboration. Represents all management levels to which the instrument was applied.

Table 5
Participation in improvement teams or projects

Tendency and variability	Data
Mean	3,0232
Median	3
Mode	4
Range	2
Standard deviation	0,8860

Note: Own elaboration.

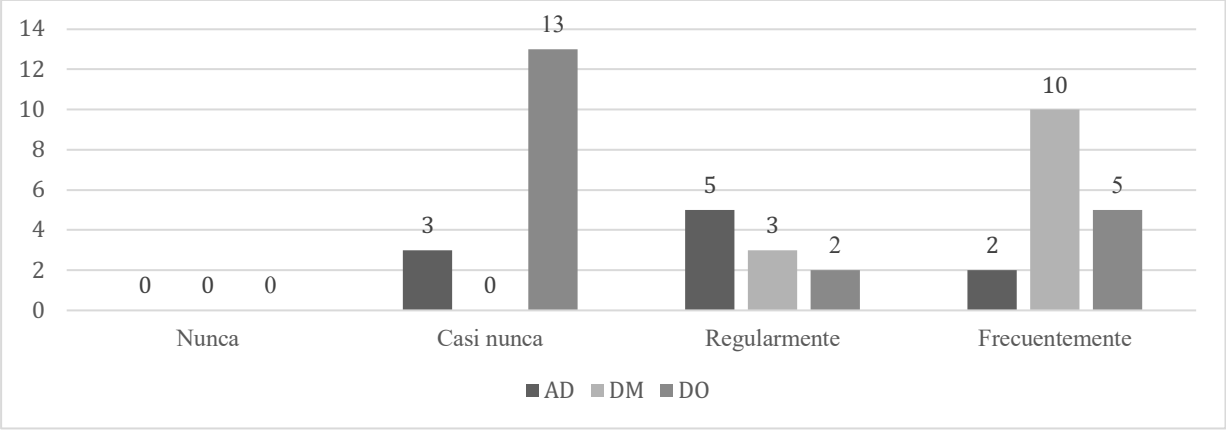

Figure 6. Participation in improvement teams or projects by level of management
Note: Own elaboration. Total number of management levels to which the instrument was applied. AD = Senior Management, DM = Middle Management, DO = Operational Management

Table 6
Participation in improvement teams or projects by management level

Tendency and variability	Senior Management	Middle Management	Operational Management
Mean	2,9	3,7692	2,6
Median	3	4	2
Mode	3	4	2
Range	2	1	2
Standard deviation	0,7378	0,4385	0,8825

Note: Own elaboration.

The fourth variable associated with leadership is related to the RPPEC. It was observed that taking part regularly is the most repeated, as shown in Figure 7, with a high average dispersion in the exercise of this activity as can be seen in Table 7.
However, as shown in Figure 8 and Table 8, the AD and DM levels tend to do it more regularly, compared to the DOs who do it almost never. The behavior of DMs and DOs are more homogeneous with respect to their performance in this Leadership action.

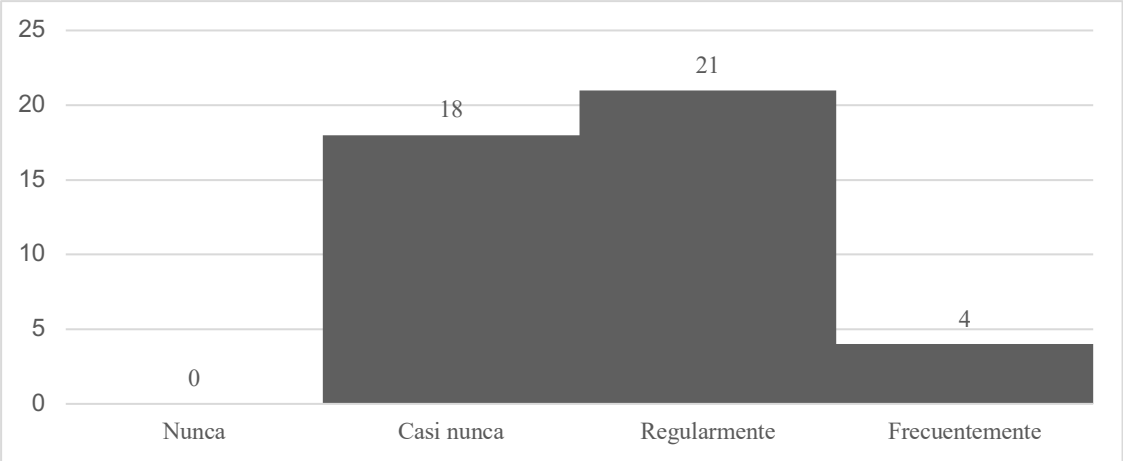

Figure 7. Recognition of personnel who promote and apply quality principles and standards

Note: Own elaboration. Total number of management levels to which the instrument was applied.

Table 7
Recognition of the promotion and application of quality principles and standards

Tendency and variability	Data
Mean	2,6744
Median	3
Mode	3
Range	1
Standard deviation	0,64442

Note: Own elaboration.

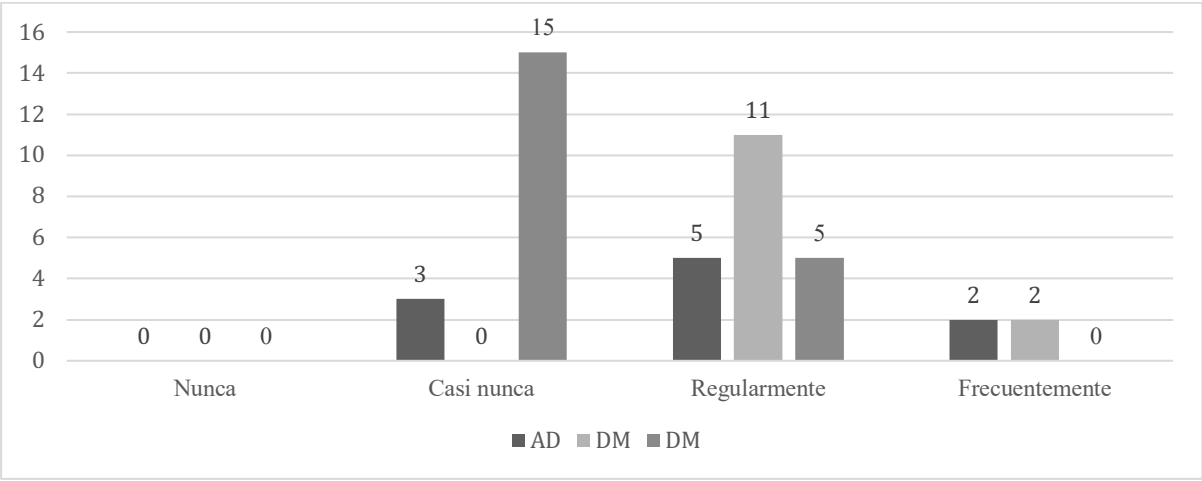

Figure 8. Recognition to promote and apply quality principles and standards
Note: Own elaboration. Total number of management levels to which the instrument was applied. AD = Senior Management, DM = Middle Management, DO = Operational Management

Table 8
Recognition for promoting and applying quality principles and standards by management level

Tendency and variability	Senior Management	Middle Management	Operational Management
Mean	2,9	3,1538	2,25
Median	3	3	2
Mode	3	3	2
Range	2	1	1
Standard deviation	0,7378	0,3755	0,4442

Note: Own elaboration.

The fifth associated variable is related to the PAED of the QMS. It was observed that *frequent* participation is the most repeated, as shown in Figure 9, with a high dispersion in the exercise of this activity, as can be seen in Table 9. However, as shown in Figure 10 and Table 10, the DM levels tend to do it more *frequently* compared to the AD levels that do it regularly, and the DOs that do it *almost never.* The behavior of the higher levels is more homogeneous with respect to their performance in this *Leadership* action, while that of the DMs and DOs is more dispersed.

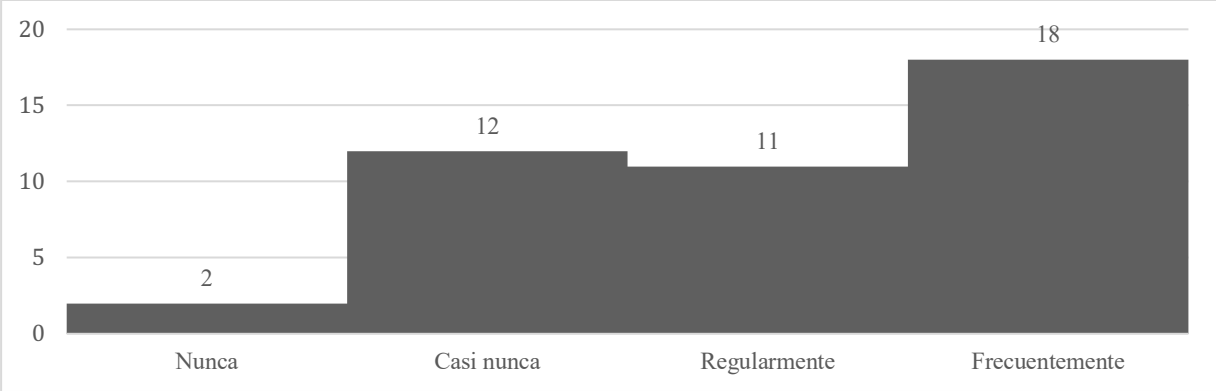

Figure 9. Participation in QMS performance evaluation activities

Note: Own elaboration. Represents all management levels to which the instrument was applied.

Table 9
Participation in QMS performance evaluation actions

Tendency and variability	Data
Mean	3,0465
Median	3
Mode	4
Range	3
Standard deviation	0,9500

Note: Own elaboration.

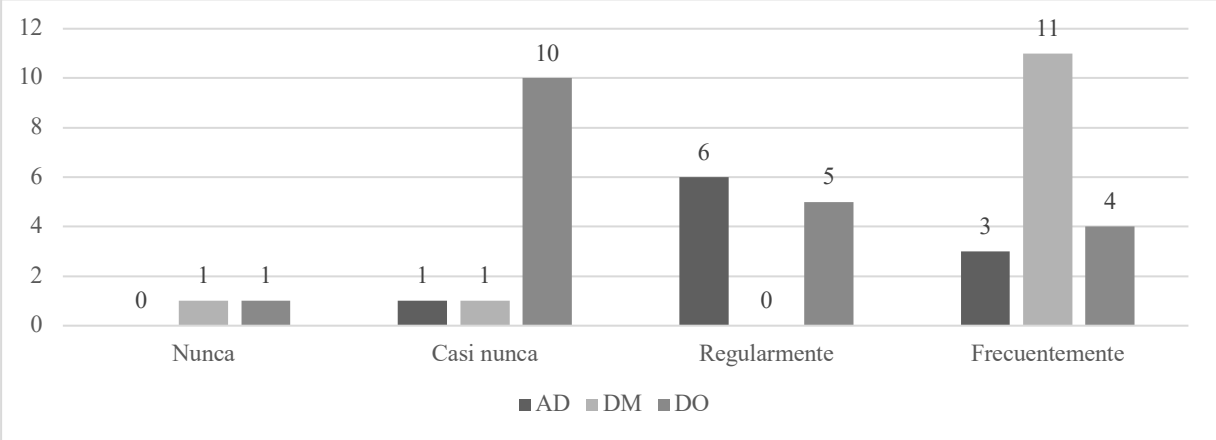

Figure 10. Participation in QMS performance evaluation actions by level of management

Note: Own elaboration. Total number of management levels to which the instrument was applied. AD = Senior Management, DM = Middle Management, DO = Operational Management

Table 10
Participation in QMS performance evaluation actions by management level

Tendency and variability	Senior Management	Middle Management	Operational Management
Mean	3,2	3,6153	2,6
Median	3	4	2
Mode	3	4	2
Range	2	3	2
Standard deviation	0,6324	0,9607	0,8825

Note: Own elaboration.

The sixth associated variable is related to FDLP. It was observed that taking part *regularly* is the most repeated, as shown in Figure 11, with a high average dispersion in the exercise of this activity as can be seen in Table 11. However, as shown in Figure 12 and Table 12, the DM levels tend to do it more *frequently* compared to the AD and DO levels that do it *regularly.* The

behavior of DMs and DOs are more homogeneous with respect to their performance in this *Leadership* action, while AD have a high average deviation.

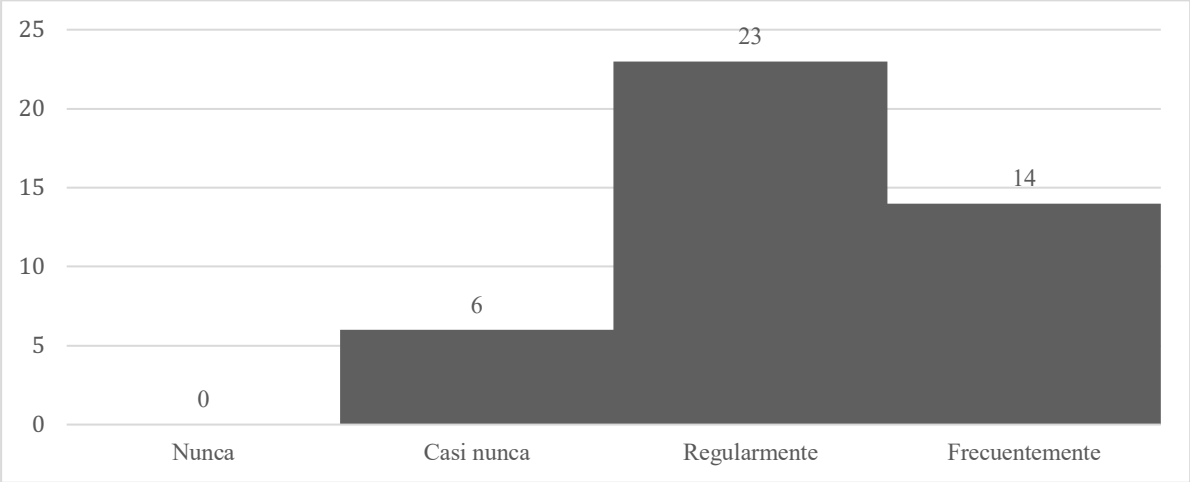

Figure 11. Encouragement and development of positive leadership
Note: Own elaboration. Represents all management levels to which the instrument was applied.

Table 11
Fostering and developing positive leadership by management level

Tendency and variability	Data
Mean	3,1860
Median	3
Mode	3
Range	2
Standard deviation	0,6638

Note: Own elaboration.

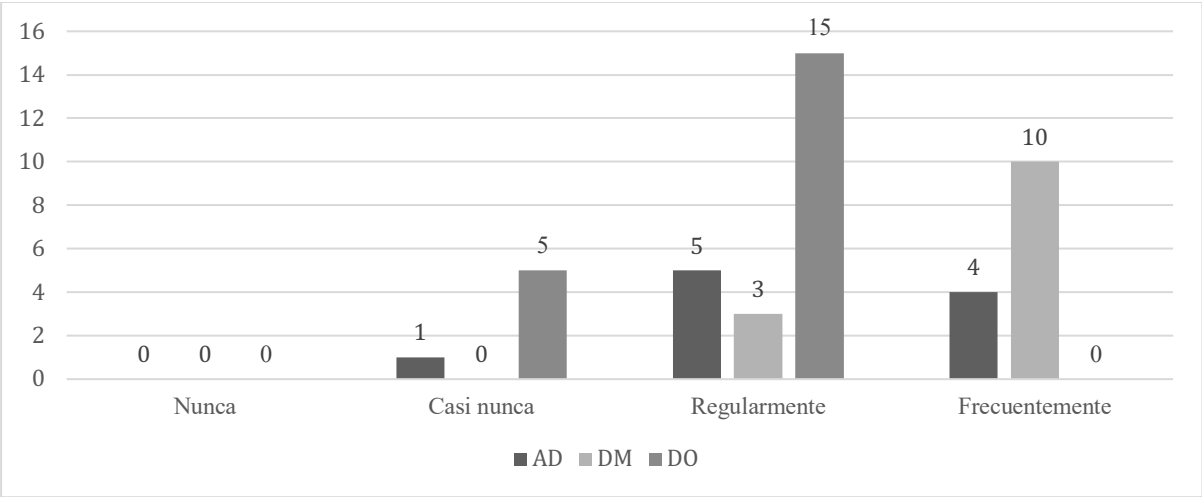

Figure 12. Fostering and developing positive leadership by level of management
Note: Own elaboration. Total number of management levels to which the instrument was applied. DA = Senior Management, DM = Middle Management, DO = Operational Management

Table 12
Encouragement and development of leadership by management level

Tendency and variability	Senior Management	Middle Management	Operational Management
Mean	3,3	3,7692	2,75
Median	3	4	3
Mode	3	4	3
Range	2	1	1
Standard deviation	0,6749	0,4385	0,4442

Note: Own elaboration.

The seventh variable associated with Leadership is related to PTTR with the quality of products and services. It was observed that taking part regularly is the most repeated, as shown in Figure 13 and Table 13. Prioritization of issues related to product or service quality, with a high dispersion in the exercise of this activity as can be seen in Table 13. As shown in Figure 14 and Table 14, the DM levels tend, in greater quantity, to do it *regularly.* The behavior of the DMs is more homogeneous with respect to their performance in this *Leadership* action, while the ADs and DOs have a high deviation.

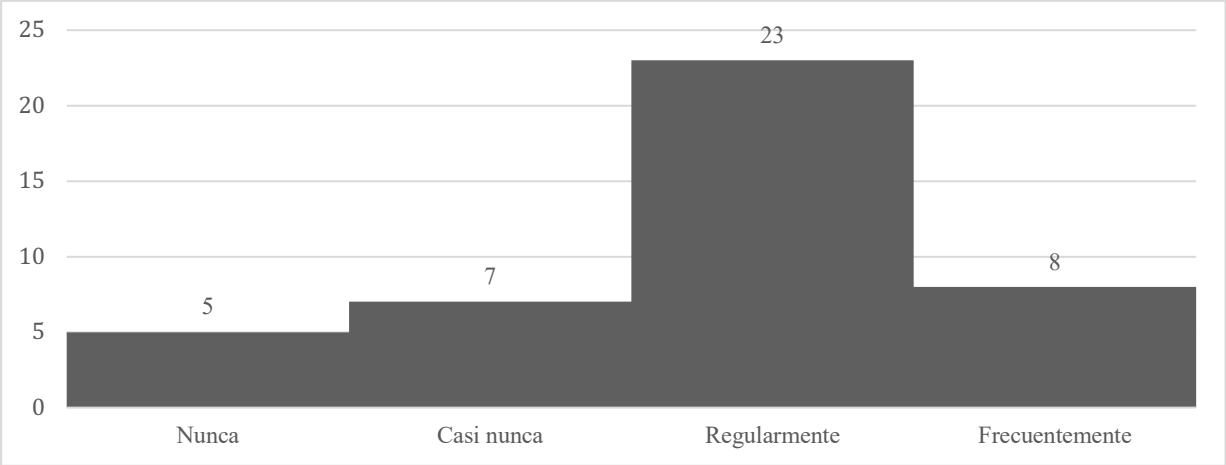

Figure 13. Prioritization of issues related to product or service quality.
Note: Represents all management levels to which the instrument was applied.

Table 13
Prioritization of issues related to product and service quality.

Tendency and variability	Data
Mean	2,7906
Median	3
Mode	3
Range	3
Standard deviation	0,8879

Note: Own elaboration.

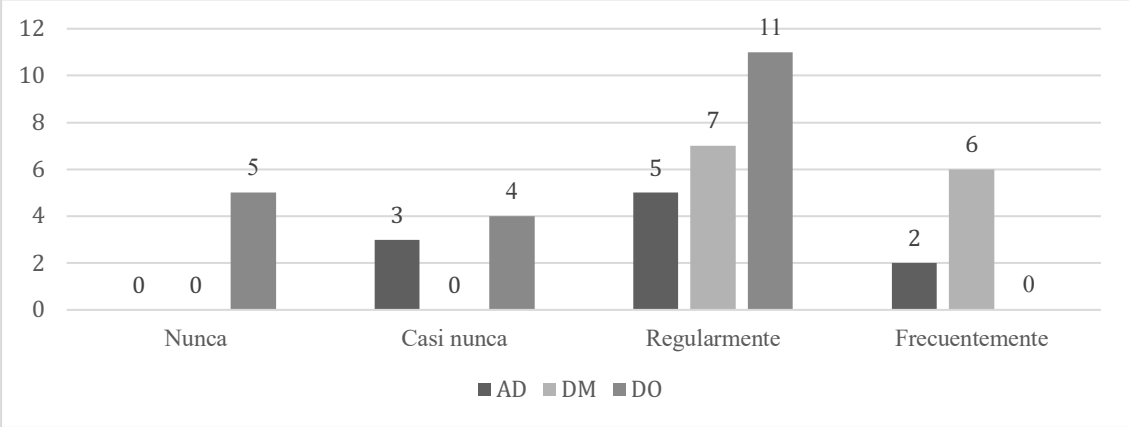

Figure 14. Prioritization of product and service quality issues by management level.

Note: Own elaboration. Total number of management levels to which the instrument was applied. AD = Top Management, DM = Middle Management, DO = Operational Management.

Table 14
Prioritization of issues related to the quality of products and services.

Tendency and variability	Senior Management	Address Media	Operational Management
Mean	2,9	3,4615	2,3
Median	3	3	3
Mode	3	3	3
Range	2	1	2
Standard deviation	0,7378	0,5188	0,8645

Note: Own elaboration.

The last variable associated with *leadership* is related to the FPFARORC. It was observed that taking part *regularly* is the most repeated, as shown in Figure 15, with a high dispersion in the exercise of this activity as can be seen in Table 15. As shown in Figure 16 and Table 16, the AD and DM levels tend, in greater numbers, to do it *regularly*, while the DOs *almost never*. The behavior of the DMs is more homogeneous with respect to their performance in this Leadership action, while the ADs and DOs have a high deviation.

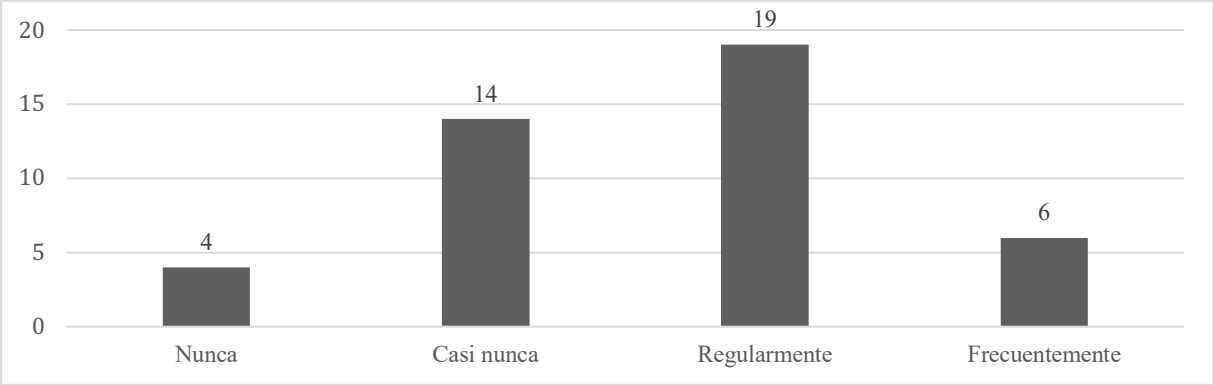

Figure 15. Encouragement and proportion of training for responsible and accountable action
Note: Own elaboration. Total number of management levels to which the instrument was applied.

Table 15
Encouragement and provision of training and resources for responsible and accountable action and accountability

Tendency and variability	Data
Mean	2,6279
Median	3
Mode	3
Range	3
Standard deviation	0,8458

Note: Own elaboration.

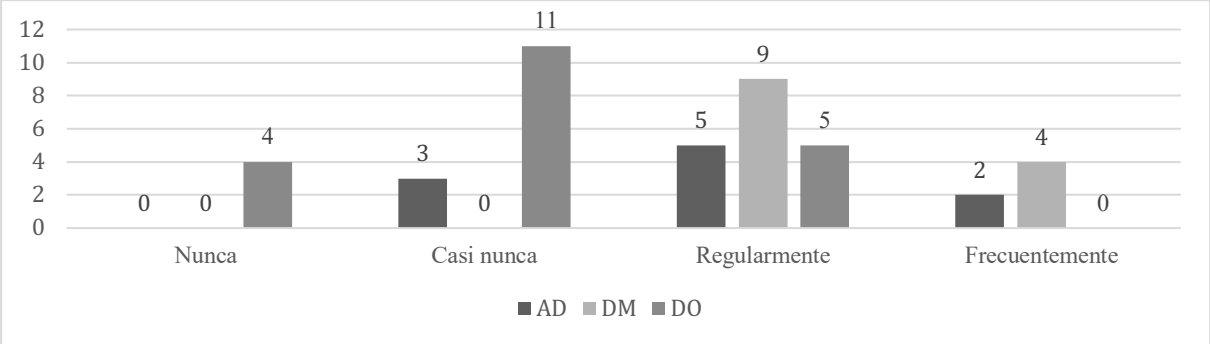

Figure 16. Encouragement and proportion of resources and training for accountability and responsibility by level of management
Note: Own elaboration. Represents all management levels to which the instrument was applied. DA = Senior Management, DM = Middle Management, DO = Operational Management.

Table 16
Encouragement and provision of resources and training to act responsibly and accountably by levels of management

Tendency and variability	Senior Management	Middle Management	Operational Management
Mean	2,9	3,3076	2,5
Median	3	3	2
Mode	3	3	2
Range	2	1	2
Standard deviation	0,7378	0,4803	0,6863

Note: Own elaboration.

After performing the individual analysis of the results of each variable associated with *Leadership*, which represent the actions proposed by the 9000 model for this purpose, it can be seen that in the PPEC and PAED of the QMS, the category that is most repeated globally is *frequently.* While in the CPEPP, the RPPEC, the FDLP, the PTTR, and the FPFAFRORC, the category that is most repeated globally is *regularly.* Finally, the category that is most repeated globally as related to FR is *almost never.* It can be observed that none of the actions recommended by the 9000 model for the exercise of *Leadership* shows a mode in the category *never.* Therefore, it can be said that none of the *Leadership* actions is not executed by most of the study subjects. Figure 17 shows the overall data for the overall measures of central tendency.

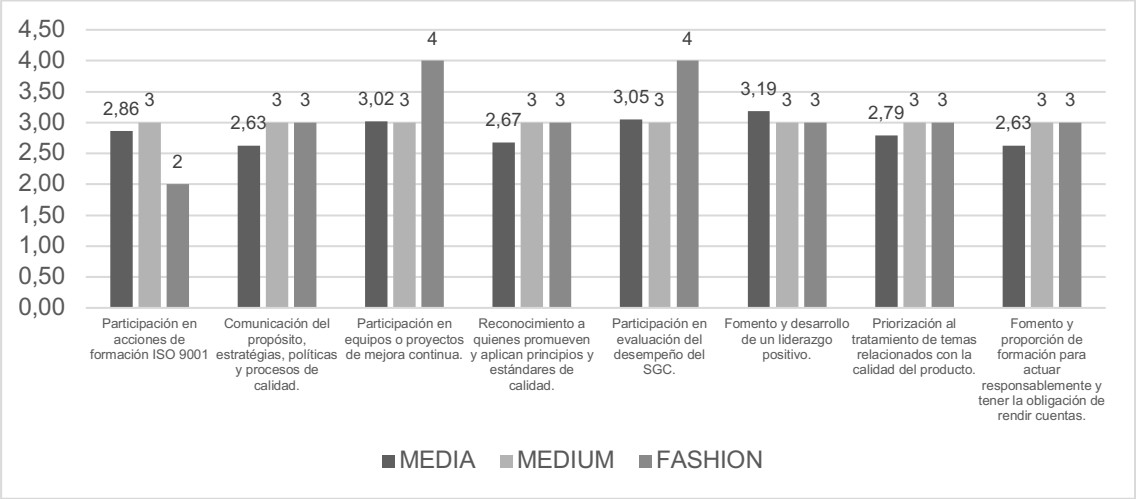

Figure 17. Overall tendency measures
Note: Prepared by the author. Summary of the measures of central tendency obtained for each of the dimensions of the independent variable. Although the three main ones (mean, median, and mode) were presented, the reference measure used as the main one is the mode, considering that the data are not normal.

In turn, Figure 18. Measures of global variability shows the overall ranges and standard deviation in the data for each of the dimensions of the *Leadership* independent variable.

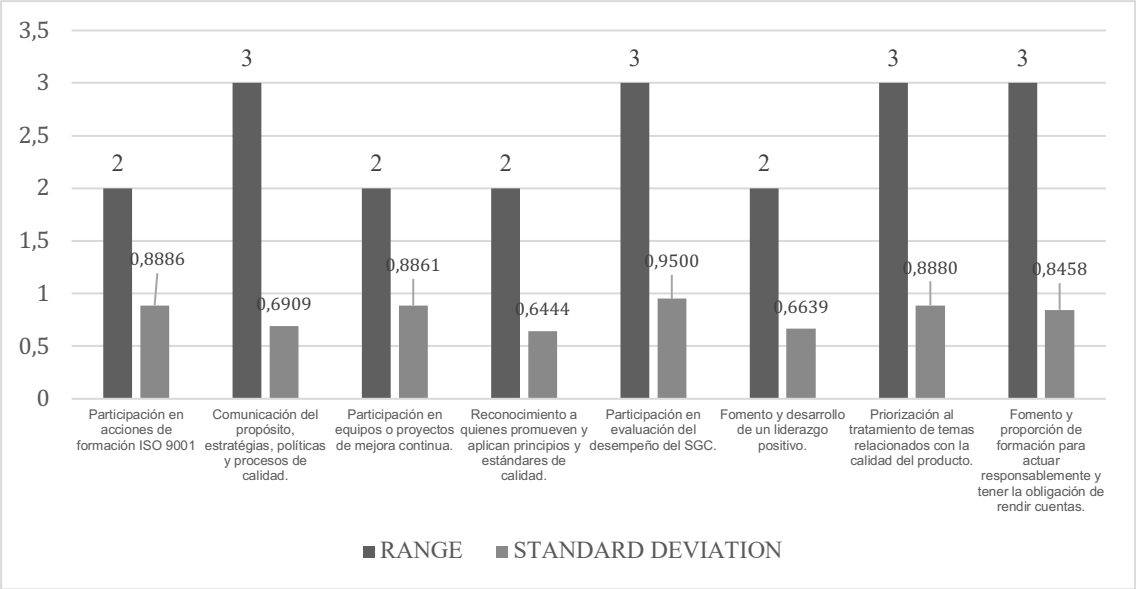

Figure 18. Measures of global variability

Note: Prepared by the author. The range and standard deviation were determined as measures of variability, variance was not used in the analysis because "for descriptive purposes, the standard deviation is preferably used" (Hernández, Fernández and Baptista, 2014).

Regarding whether *Leadership* has a relationship with *EO*, based on the actions suggested by the ISO 9000 model for its exercise by determining the Spearman Correlation Coefficient, we proceed to reject H_0 and, therefore, accept H_1. It can then be affirmed that there is a relationship between the exercise of *Leadership*, under the actions suggested by the ISO 9000 model, and *EO*. The results of the hypothesis test are shown in Table 17. Table 18 shows the relationship coefficients by variable. In turn, Tables 19, 20, and 21 show the categorization of the current leadership exercise performed by each of the management levels in relation to the variables associated with the *EO* in which the correlation is considered to be high positive.

Table 17
Hypothesis test results

Hypothesis	Decision
(H1) Alternative hypothesis: Leadership actions positively influence the success of ISO 9001 certified organizations.	Accepted
(H0) Null hypothesis: Leadership actions do not positively influence the success of ISO 9001 certified organizations.	Rejected

Note: Prepared by the author.

Table 18
Correlation between Leadership and EO

Leadership Dimensions	EO Period 2017-2019		
	Customer satisfaction	Profitability	Sales
FR	0,769933555	0,765176684	0,644707037
CPEPP	0,769933555	0,765176684	0,644707037
PPEC	0,802023558	0,745092117	0,771858955
RPPEC	0,749546965	0,682195711	0,686348535
PAED	0,750302024	0,778918756	0,702091513
FLPD	0,692804289	0,753737542	0,630738448
PTTR	0,73480444	0,72763138	0,701279825
FPDPARORC	0,741430082	0,686084265	0,713002114

Note: Own elaboration. The coefficients in dark lead color represent a strong positive correlation between both dimensions of the variables. The coefficients in light lead color represent a moderate positive correlation.

Table 19
Leadership and its positive and strong relationship with Customer Satisfaction

Leadership Actions based on ISO 9000 model	Period 2017-2019		
	Senior Management	Middle Management	Operational Management
FR	Weak	Very Good	Weak
CPEPP	Weak	Good	Good
PPEC	Good	Very Good	Weak
PAED	Good	Very Good	Weak

Note: Prepared by the author. To facilitate the analysis, Table 4.18 is used considering the dimension of the dependent variable being addressed. In turn, to facilitate its interpretation, the following terms are used according to the category where the identified mode is found for each dimension: Never= Null contribution, Almost never= Weak contribution, Regularly= Good (a), and Frequently= Very good (a).

Table 20
Leadership and its strong positive relationship with Profitability

Leadership Actions based on ISO 9000 model	Period 2017-2019		
	Senior Management	Middle Management	Operational Management
FR	Weak	Very Good	Weak
CPEPP	Weak	Good	Good
PAED	Good	Very Good	Weak
FDLP	Good	Very Good	Good

Note: Prepared by the author. To facilitate the analysis, Table 4.18 is used considering the dimension of the dependent variable being addressed. In turn, to facilitate its interpretation, the following terms are used according to the category where the identified mode is found for each dimension: Never= Null contribution, Almost never= Weak contribution, Regularly= Good (a), and Frequently= Very good (a).

Table 21
Leadership and its strong positive relationship with Sales

Leadership Actions based on the ISO 9000 model	Period 2017-2019		
	Senior Management	Middle Management	Operational Management
PPEC	Good	Very Good	Weak

Note: Prepared by the author. To facilitate the analysis, Table 4.18 is used considering the dimension of the dependent variable being addressed. In turn, to facilitate its interpretation, the following terms are used according to the category where the identified mode is found for each dimension: Never= Null contribution, Almost never= Weak contribution, Regularly= Good (a), and Frequently= Very good (a).

Discussion and conclusions

The DM levels have a greater and more frequent participation in the exercise of *Leadership* in the QMS, from the perspective of the actions suggested by the 9000 model. Due to the correlation identified between the independent and dependent variables, the exercise of *Leadership* in the DM and OD should be strengthened.

With respect to whether the *Leadership* actions suggested by the ISO 9000 model are exercised at the different management levels; it is evident that they are, although not with the same performance and prominence in each one of them.

The null hypothesis is rejected; therefore, the alternative hypothesis is accepted, establishing that there is a relationship between the exercise of *Leadership* and the EO of those who certify ISO 9001; which leads to the awareness of the importance of developing and maintaining strong leadership to influence the expected organizational results.

The *Leadership* actions suggested by the 9000 model that have a strong positive relationship with respect to customer satisfaction are the FR, the CPEPP, the PPEC, and the PAED of the QMS.

The *Leadership* actions suggested by the 9000 model that have a strong positive relationship with respect to customer satisfaction are the FR, the CPEPP, the PAED of the SGC and the FDLP.

The only *Leadership* action, of those suggested by the ISO 9000 model, which has a strong positive relationship with sales is the PPEC by management levels.

Due to the strong positive correlation that exists between FR with respect to customer satisfaction, a greater exercise of the actions suggested by the ISO 9000 model should be encouraged for the *Leadership* of the AD and DO levels, which are found in greater numbers in the category of *almost never*.

Due to the strong positive correlation that exists between CPEPP with respect to customer satisfaction, a greater exercise of the actions suggested by the ISO 9000 model should be encouraged for the *Leadership* of the AD and DO levels which are found in greater numbers in the category of *almost never*.

Due to the strong positive correlation that exists between PPEC with respect to customer satisfaction, a greater exercise of the actions suggested by the ISO 9000 model should be encouraged for the *Leadership* of the AD and DO levels, which are found in greater numbers in the category of *almost never*.

Due to the strong positive correlation that exists with the FR, with respect to profits, a greater exercise of the actions suggested by the ISO 9000 model for *Leadership* should be encouraged by the AD and DO levels, which are found in greater numbers in the category of *almost never*.

Due to the strong positive correlation that exists with the CPEPP with respect to profits, a greater exercise of the actions suggested by the ISO 9000 model should be encouraged for the *Leadership* of the AD and DO levels, which are found in greater numbers in the category of *almost never*.

Due to the strong positive correlation that exists between PAED with respect to customer satisfaction, a greater exercise of the actions suggested by the ISO 9000 model for *Leadership* should be encouraged at the DO levels, which have a mode of *almost never*, in contrast to the DM levels with a mode of frequently and the AD of *regularly*.

Due to the strong positive correlation that exists between PAED with respect to profits, a greater exercise of the actions suggested by the ISO 9000 model for *Leadership* should be encouraged at the DO levels, which have a mode of *almost never*, in contrast to the DM levels with a mode of frequently and the AD of *regularly*.

Due to the strong positive correlation that exists between FDLP with respect to profits, a greater exercise of the actions suggested by the ISO 9000 model for *Leadership* should be encouraged at the AD and DO levels, which have a mode of *regularly*, in contrast to the DM levels with a mode of *frequently*.

Due to the strong positive correlation that exists between PPEC with respect to sales, a greater exercise of the actions suggested by the ISO 9000 model for Leadership should be encouraged at the AD and DO levels, which have a mode of *regularly* and *almost never*, in contrast to the DM levels with a mode *of frequently*.

This research has allowed an approach to the study of leadership in the QMS proposed by the ISO 9000 model and its impact on the success of the organizations that adopt it. However, it is also necessary to recognize the existence of a series of limitations, as well as to propose some recommendations for future studies.

An important limitation of the work revolves around the main data collection instrument used. The number and length of the questions included in the questionnaire, since in order to motivate the response, it was considered appropriate not to add more items than the specific ones related to the actions to exercise *Leadership* according to the ISO 9000 model. This did not allow us to ask some other questions that could have enriched the work. At the same time, due to the global pandemic and the restrictions on circulation, it was not possible to collect data (from the application of the questionnaire) in person, which would have facilitated the explanation and complementation of a greater number of questions. Since the instrument had

to be self-administered, it should be simple and short. For this reason, it is recommended that this study be improved with more extensive instruments when the global situation allows it and that it be complemented with qualitative studies to deepen the perception and behaviors related to *Leadership*.

Another important limitation is the fact that the data collection instrument was applied only to the management levels of the organizations in the sector under study. In order to know the perception on the part of the leaders and to contrast this information, it should be a study that complements this one later on. Because workers in this type of sector do not use computer equipment or have access to the Internet to carry out their work, it was necessary to collect information directly in situ. This was not done for biosafety reasons.

Although the universe of the EIPATs was considered, in order to generalize the conclusions reached in this study, it is important to expand to a more representative number of companies, starting with sectors with a certain similarity in the way they work.

Leadership was approached from the perspective and actions suggested by the 9000 model, under the premise that it influences the success of the QMS; however, it was limited to identify and analyze whether or not the actions of the management levels are consistent with those established in the standard, and to determine whether or not there is an influence on success. However, it did not consider the other six principles of quality management, which could also influence the *EO*, as well as other actions to exercise *Leadership* complementary to those established in the 9000 model.

References

Benavides, C. (2017). Leadership styles in Chilean newsrooms: a study of managers' self-perception. *Cuadernos, info,* 41, 123-140. https://doi.org/10.7764/cdi.41.1133.

Benzaquen, J. and Convers, J. (2015). ISO 9001 and TQM in Colombian companies. Globalization. *Competitiveness and Governance, 9(3),* 107-128. http://doi.org/10.3232/GCG.2015.V9.N3.05.

Blanchard, K. (2016). *Leadership at the highest level*. Editorial Norma.

Botello, H. A. (2016). Quality certifications and the internationalization of Colombian industrial firms. *Suma de Negocios*, *7*(16), 73-81. http://doi.org/10.1016/j.sumneg.2016.02.009. http://doi.org/10.1016/j.sumneg.2016.02.009

Casadeús Fa, M., Heras Saizarbitoria, I., and Díaz de Cerio, J. M. (2005). *Calidad Práctica*. FT Prentice Hall.

Chiavenato, I. (2017). *Human Resources Administration*. McGraw Hill.

Colan, L. (2010). *Performance in difficult times*. McGraw-Hill Interamericana.

Fonseca, L. (2015). From quality gurus and TQM to ISO 9001:2015: A review of several quality paths. *International Journal for Quality Research, 9*(1), 167-180.

Fontalvo, T., Vergara, J. C. and De la Hoz, E. (2012). Evaluation of the impact of quality management systems on the liquidity and profitability of companies in the Vía 40 Industrial Zone. *Thought and Management, 32,* 165-189.

Godoy, R. and Bresó, E. (2013). is transformational leadership a determinant of followers' intrinsic motivation? *Journal of Work and Organizational Psychology, 29*(2), 59-64. http://dx.doi.org/10.5093/tr2013a9.

González, Y. P. (October 2015). Standards reflect what the world asks of any organization (A. Alba, Interviewer). ICONTEC: *Revista Estándares*. https://issuu.com/icontec_internacional/docs/revista_est__ndares.

Govindarajan, R. (2012). *Excellence in healthcare with ISO 9001*. McGraw-Hill. https://elibro.net/es/lc/biblionur/titulos/50186

International Organization for Standardization - ISO. (2019a). *The ISO Survey of Management System Standard Certifications 2019. ISO.* https://www.iso.org/the-iso-survey.html

International Organization for Standardization - ISO. (2019b). *ISO Survey of Management System Standard Certifications 2019 - Industrial Sectors: Industrial sectors per countries - data for 2018.*

https://isotc.iso.org/livelink/livelink?func=ll&objId=18808772&objAction=browse&viewType=1

Iqbal, N., Anwar, S. and Haider, N. (2015). Effect of leadership style on employee performance. *Arabian Journal of Business and Management Review, 5,* 1-6. https://doi.10.4172/2223-5833.1000146.

Manders, B., de Vries, H. and Blind, K. (2016). ISO 9001 and product innovation: A literature review and research framework. *Technovation*, *48-49*, 41-55. http://doi.org/10.1016/j.technovation.2015.11.004.

Marín, L. M. (2013). Total Quality Management and non-financial indicators: reflecting the value of ISO 9001:2000 certification. *European Journal of Management and Business Economics, 22*(2), 97-106. http://doi.org/10.1016/j.redee.2012.11.002

Medina, F., López, A. and Ruiz, C. (2017). ISO 9001-2015 Management System: Quality engineering techniques and tools for its implementation. *Engineering, Research and Development,* 17(1), 59-69.

Mendoza, I., García, B. and Uribe, J. (2014). Leadership and its relationship with outcome variables: a comparative structural model between transformational and transactional leadership in an entertainment company in Mexico. *Acta de Investigación Psicológica, 4*(1), 1412-1429 https://doi.org/10.1016/S2007-4719(14)70384-9.

Morelos, J., Fontalvo, T. and Vergara, J. (2013). Incidence of ISO 9001 certification on productivity and financial profit indicators of companies in the industrial zone of Mamonal in Cartagena. *Estudios Gerenciales*, *29*(126), 99-109. https://doi.org/10.1016/S0123-5923(13)70025-1.

Palazzeschi, L., Bucci, O., & Di Fabio, A. M. (2018). High entrepreneurship, leadership, and professionalism (HELP): a new resource for workers in the 21 st century. *Frontiers in Psychology, 9,* 1-8. https://doi:10.3389/fpsyg.2018.01480.

Qian, J., Song, B., Jin, Z., Wang, B., & Chen, H. (2018). Linking empowering leadership to task performance, taking charge, and voice: the meadiating role of feedbackseeking. *Frontiers in Psychology, 9,* 1-11. https://doi:10.3389/fpsyg.2018.0202.

Robbins, S., & Timothy, J. (2017). *Organizational behavior*. Pearson education.

Rodríguez, F. (2012). Incidence of the ISO 9000 standard in Colombia and in some companies around the world. *Revista Ciencias Estratégicas, 20*(27), 149-160.

Roncancio, M. A., Castro, J. A. and Rivera, A. (2015). Comparative analysis of ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 standards for their integral application in construction processes for Civil Engineering companies. *Responses, 20*(1), 95-11.

Sousa, M. and Rocha, Á. (2019). Leadership styles and skills developed through game-based learning, *Journal of Business Research, 94,* 360-366. https://doi.org/10.1016/j.jbusres.2018.01.057

Summers, D. (2006). *Quality management*. Pearson Education.

Tyssen, A., Wald, A., & Heidenreich, S. (2014). Leadership in the context of temporary organizations: a study on the effects of transactional and transformational leadership on followers' commitment in projects. *Journal of Leadership & Organizational Studies, 21*(4*),* 376-393. https://doi.org/10.1177/1548051813502086.

Vnders, B., de Vries, Henk, J. and Blind, K. (2016). ISO 9001 and product innovation: A literature review and research framework. *Technovation, Elsevier,48,* 41-55.

Youssef, C. and Luthans F. (2012). Of psychological empowerment and Positive global leadership. *Journal core self-evaluations and the mode of World Business, 47*(4), 539-547. https://doi.org/10.1016

Receipt date: 04/05/2021
Revision date: 05/25/2021
Acceptance date: 05/22/2021