THE INFLUENCES OF ENGAGEMENT ON THE PERCEPTION OF QUALITY MANAGEMENT SYSTEMS IN THE OIL AND GAS INDUSTRY

ORIGINAL ARTICLE

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ABSTRACT

This article aims to verify the influence of people engagement on the perception of organizational management systems, according to the Job-Demands Resources model in companies in the oil and gas segment that opted to obtain certifications of their management systems through the API (American Petroleum Institute), as well as the benefits of obtaining such engagement and the barriers faced. The research has a qualitative character, and used the triangulation of techniques for obtaining and analyzing data in order to provide an attentive view of the subjective aspects, focusing on the observation of employee involvement, the adoption of good practices and critical success factors in the implementation of the Quality Management System (SGQ)[3]. During the implementation of the SGQ, some challenges were reported with the involvement of employees, need for constant support and feedback, through continuous communication and regarding employees, difficulty in concentrating and prioritizing activities, need for training, more manpower and resistance to change. However, there was a strong positive impact on all the organizations interviewed, contributing to internal improvement, increased customer satisfaction, good reputation, efficient relationship with suppliers, greater control of processes and productivity. It is expected to have contributed to the elaboration, by organizations in the sector, of new people management approaches that strengthen the employee-company relationship, as well as through the exposed questionnaire, a diagnostic mechanism that can be applied in the future by organizations.

Keywords: Engagement, Perception, Management Systems, Leadership.

1. INTRODUCTION

In view of the current scenario of vehement changes presented in the competitive market, companies are increasingly inserted in an adaptation system, seeking to respond to the obstacles that arise in order to maintain a prolific position in this context. Following Carpinetti's (2012) inquiries, to conquer markets and remain competitive, it is necessary to respond positively to customer requirements regarding products and services. Therefore, quality management becomes part of the competitive strategy of organizations in a forceful way.

The concept of quality is approached by several authors, being a challenge to define it. Chiarini (2020) states that there is no global understanding, and that from different circumstances, different descriptions emerge. Yang (2020) believes that quality is easily recognized, but difficult to define.

Chen, Lee, Wang (2020) declare that it is necessary to understand this phenomenon, since quality is a business management instrument of great importance in the competitive and turbulent market, since it has the capacity to affect the lives of organizations and of all individuals in a positive way. It is worth mentioning that its conceptualization is not the mandatory factor, but its understanding by the company's employees, regardless of their field of activity (ALI, HILMAN, GORONDUSTE, 2020). With this, the understanding of quality and management for total quality becomes central and necessary. In this way, companies are giving more and more importance to the need to guarantee their customers that the products and services sold are of quality and, therefore, seek to implement significant changes that prove it.

In view of this, this article aims to verify the influence of people engagement on the perception of organizational management systems in accordance with API Spec Q1 and API Spec Q2 standards, analyzing their impacts on the dissemination and consolidation of the culture of quality in organizations of the oil and gas industry.

2. LITERATURE REVIEW

From the search, analysis and review of journal articles, websites and books related to the subjects under study, the objective was to summarize the concepts and information available in an impartial and formal way, also allowing future researchers to consult references.

2.1 QUALITY MANAGEMENT SYSTEMS

According to the Michaelis dictionary, one of the definitions of system is defined as the interrelation of units, parts, etc., responsible for the functioning of an organized structure. And the term management is defined as the act of managing or administering. According to the ISO 9000:2015 standard, "The quality of products and services includes not only their intended function and performance, but also their perceived value and benefit to the customer". Two other important concepts for understanding the theme presented in this work are defined by this standard. One of them is compliance: "fulfillment of a requirement" and the second, process: "set of interrelated or interactive activities that transform inputs into outputs".

Based on the aforementioned concepts, it is understood that an organization has several processes that are interrelated in favor of its main process, which is the transformation of customer needs into compliant services, and that quality management systems are processes that interrelate relate in order to meet the specified requirements with the objective of increasing the satisfaction of the interested parties in the organization.

In 1986, the American Petroleum Institute released API Spec Q1 for quality management for manufacturing organizations in the oil and natural gas industry. ISO launched the 9000 series in 1897, where the 9001 was intended for quality assurance in projects/development, production, installation and technical assistance, with a focus on creating new products. ISO 9002 basically had the same scope as the previous one, except for the creation of new products. ISO 9003, on the other hand, was related to the final inspection of the product.

Over the years, revisions were carried out in 1994, 2000, 2005, 2008 and 2015, and from the 2000 version, the requirements were unified into a single standard applicable to all branches of business, ISO 9001. As noted by Martínez-Costa, *et al.* (2009), during the updates, the ISO standards were incorporating practices and concepts related to TQM (Total Quality Management, which means Total Quality Management) with regard to the comprehensive perspective of management of organizations and the focus on customer satisfaction. To manage these processes and facilitate the provision of products and services with perceived quality, organizations implement quality management systems usually based on ISO 9001, API Spec Q1 or API Spec Q2 standards that determine requirements for quality management systems and through of periodic external audits prove compliance with such requirements.

2.2 ENGAGEMENT AND THE JD-R MODEL

Bakker, Demerouti and Sanz-Vergel (2014) consider the understanding of engagement through individual characteristics presented as vigor, dedication and absorption, as proposed by the JD-R model. Vigor is defined as the demonstration of energy and mental resilience during work; dedication in turn is defined as feeling a sense of significance, enthusiasm, pride and inspiration while carrying out work; and absorption is defined as being totally absorbed by work, according to Schaufeli *et al.* (2003).

The JD-R model considers that engagement has work resources (physical, psychological, social and organizational aspects) and work demands as antecedents. According to this understanding, resources and work demands positively or negatively affect engagement. Work resources can help employees achieve goals and this contribution can boost work engagement and, consequently, work performance. Work resources are factors that help individuals to deal with work demands. Examples of resources can be mentioned as social and organizational support, opportunities for professional development and autonomy (BAKKER, DEMEROUTI, SANZ-VERGEL, 2014). Work demands are related to the employee's dedication of energy, for example, high workloads, role ambiguity, comments about work, variety of tasks, support from supervision and co-workers, comments about work done, among others, according to

Bakker (2011). Okon (2016) concluded that employees engaged in their activities are emotionally, physically and cognitively connected with their work, resulting in tasks performed with great enthusiasm. The study of engagement at work has therefore been gaining ground due to the potential impact on employee well-being and performance in carrying out activities that are directly related to organizational results. The literature still lacks studies that clearly demonstrate the impacts of personal resources (example: emotional competences) and work resources (example: social and organizational support) on engagement with the work performed by employees. Kim, Han and Park (2019) carried out one of the first studies in a Korean organization with a total of 571 complete responses from employees of the organization, to compare the power of mediation of the constructs of engagement at work with personal resources and work resources in the employee results, thus adding personal resources to your study. Borst, Kruyen and Lako (2019) in turn, expanded the application of the JD-R model in public administration, also integrating the concept of positive psychology. As can be seen, the JD-R model has been adapted by scholars in order to evaluate other constructs, such as, for example, the personal resource to consider specific work realities, such as the aforementioned example of public administration.

2.3 TOTAL QUALITY MANAGEMENT (TQM)

TQM is seen as a change in the culture of an organization and the way people behave at work. Organizational culture is an important factor causing variation in TQM implementation programs that can inhibit or enable the success of such a program. The success of TQM as organizational change will depend heavily on the organizational culture. The successful implementation of TQM requires a significant change in the organization's values, attitudes and culture. TQM programs are more likely to be successful if the prevailing organizational culture is compatible with the values and basic assumptions proposed by the TQM discipline (ALOFAN , CHEN, TAN, 2020).

Andrade, Mendes and Lourenço (2017) believe that much is said about TQM and employee engagement, but little attention is paid to the individual level determinants of employee engagement. Thus, the objective of this work was to analyze the potential

differences in the perception of empowerment in employees without leadership roles between companies based on TQM and companies not based on TQM. It was observed in the results that there are statistically significant differences in some dimensions of empowerment between the two groups of companies, but no previous study has investigated this issue. With that, this research brought new insights into the TQM framework, especially with regard to employee behavior. Oluwafemi and Okon (2018) set out to investigate the conceptual and empirical link between TQM practices, job satisfaction and employee engagement. The study was carried out with 300 participants, of which 190 employees of a multinational food and beverage company answered a questionnaire. Regression and correlation were analyzed, and a significant and positive relationship was observed between the dimensions of TQM practices (leadership and management support, employee participation, training, reward and recognition, and customer focus), job satisfaction and employee engagement at work. It was also noted that job satisfaction and TQM practices build predicted employee engagement jointly and independently. He *et al.* (2019) intended to investigate the relationships between structural capability (SE), role conflict (RC), person-job adequacy (PJF), satisfaction with the use of Six Sigma (SSSU) and employees' intention to continue using (CUI) Six Sigma. Expectancy-Confirmation Theory (ECT) structural equation modeling was used to analyze the degree of relationship between the constructs. This modeling was conducted with AMOS 21.0 based on raw data collected from Chinese companies implementing Six Sigma. The results showed that in a context of mandatory implementation, employee satisfaction is essential to stimulate their work.

3. METHOD

This article, after considering the definitions presented by Vergara (1990) and Gray (2012). And it is classified as qualitative, given the use of instruments to capture reality in depth, based on restricted data. Bearing in mind that bibliometrics is a technique that requires a thorough survey of references about the subject-object of research, the article paid attention to coverage, relevance of references and quality (SOARES, PICOLLI, 2018). Taking this concept into account, the present research focused on

scientific works in the areas of administration, quality management system from the use of the keywords expressed in the abstract, leading to a discovery of more recent articles on the themes addressed in databases of relevant data. The treatment of the data, as well as its analysis, was carried out through the semantic interpretation of the results, as well as through the content analysis, in its qualitative and quantitative form, by the frequency of the answers. The N-VIVO software was used to assist in data processing. It is essential to emphasize that the software was used in view of its many functions, namely the patterns found through specific questions, enabling the analysis of emerging themes and the removal of interpretations and evidence-based conclusions. In short, the study has a predominantly qualitative characteristic considering a representative choice of Global Corporate Solutions customers who use API Spec Q1 and/or API Spec Q2 standards as references for their quality management systems. According to Miles and Huberman (1994), there is a characteristic of "undeniability" in qualitative studies, due to the more concrete and vivid character of the words, which become more convincing to the reader, when compared with numbers. Gray (2012) states that content analysis is one of the most used approaches for analyzing qualitative data, where inferences are made about textual data, identifying special characteristics among them (classes or categories) in a systematic and objective way. Objectivity takes place through the creation of selection criteria, established before data analysis. Data collection was carried out through semi-structured interviews, whose questions were prepared from theoretical categories on engagement, leadership and TQM and took place over a period of two months, with interviews carried out by videoconferences, due to the covid-19 pandemic that overwhelms the international system. The interviews were carried out with seven subjects representing the leaders of three different organizations in the oil and gas industry – two managers of two companies and three managers of one company –, as well as those who are led, with the aim of verifying the impacts of engagement on the perception of quality (or integrated) management systems. For the application of qualitative research, the Job Demands-Resources (JD-R) work engagement model was used in its extended version by Bakker, Demerouti and Sanz-Vergel (2014) as referenced by Santos *et al.* (2019). Through the interviews, a specific discursive structure was sought to help observe the influence of people's engagement on the

perception of organizational management systems and their consequences in the consolidation of the culture of quality. This structuring is formed by a spontaneous discourse that encompasses the interviewee's personal and professional dynamics, evidencing his mental and affective process in a holistic way (BARDIN, 2011, p.96). Coupling the software with a meticulous conceptual analysis, it is intended to observe the implementation of the Quality Management System in oil and gas companies, taking into account the guiding categories of the study.

3.1 TRANSLATED INTERVIEW SCRIPT – LEADERS GROUP. RESPONDENT: MANAGER 6

1. How do you perceive your team's level of energy when developing tasks related to the SGQ? **Answer**: Many times, it took us a long time to start because it wasn't clear how and why we needed to do it. But once we started, we knew what had to be done, making everything simpler.

2. And how much time does the team dedicate to the SGQ during its activities? **Answer**: Comparing main activity time and SGQ: During implementation time, but time is dedicated. When it becomes part of the routine, each activity makes sense. The process and the needs are understood, it becomes natural, it is internalized, the time becomes adequate.

3. Do you think your team is focused when performing tasks related to the SGQ? **Answer**: Last week, I talked to the team, we discussed that now that we have documents, we need to change our culture, to do what has to be done. It's not natural. They are a more operational team, we need to deepen our understanding of quality.

4. How do you evaluate the availability of resources x the volume of demands of the team to carry out work related to the SGQ? **Answer**: I think having a dedicated person is fundamental. If that person is functioning, there is a balance between resources and demand. That's why it's so important to have one person focused on that area to influence the rest.

5. In which situations do you see yourself encouraging the team to face challenges related to the SGQ? **Answer**: I always do this. I start morning meetings with this

topic. Managers and coordinators spend time reviewing, assessing whether we have progressed. We also take visual actions and an active participation in activities.

6. How do you perceive that you encourage cooperation between your team members in order to promote customer focus and the fulfillment of applicable requirements? **Answer**: Each morning, we start the meetings by focusing on what needs to be done, as a team effort. For ten to fifteen minutes, we discuss whether everyone understood the tasks.

7. What emotions, values and ethical aspects were transformed in your team through your performance as a leader? **Answer**: We focus on product quality, problem solving. I know QMS isn't perfect, but we've been implementing daily meetings, trying to support. If we are behind, we have to discuss and see how to improve, always keeping in mind the emotions of confidence, focus.

8. How do you identify continuous improvement in the SGQ in the team? **Answer**: I have been in the manufacturing area for nine and a half years, in one of the factories we only had three machines and now we have thirteen machines. What's curious is that they had all three machines, but they didn't use them.

9. What is your perception of the change in SGQ performance after the implementation of API Spec Q1 and/or Q2? **Answer**: In implementation, the certification requirements are similar. The difference is that after the audit I could see how important this is. The level of detail is higher with the API. We have to understand what kind of norms we use, why we use them, we cannot just say that we have them.

10. What impacts do you notice on the team's performance after implementing the SGQ according to API Spec Q1 and/or Q2? **Answer**: In fact, I'm pretty sure the results are tweaks, improvements to critical vendors, metrics. Not only did we have better performance from the team, but it also became clearer to everyone what to do, why we do it. It's important to have consultants like Global. Two years ago, I started alone with some knowledge that I had, but it is necessary to document more, to have another consulting firm that has experience, extensive knowledge of this specific area. Looking back, I never would have done it, because it takes a lot of technique.

4. RESULTS

4.1 GENERAL CONSIDERATIONS

From previously established theoretical categories, it can be observed that the theme addressed by Jones, Vaux, Olsson-Brown (2019) is reinforced in the manager's responses, regarding the need for enthusiasm, focus to start and then deal with the challenges they will inevitably face in improving, as well as relational capabilities.

This theme is intrinsically related to the degree of energy (vigor, effort) perceived when developing tasks related to the SGQ, as well as the volume of time and level of concentration: as soon as employees and managers understand the importance of application and their role in the organization, they continuously improve in the implementation, making the activities coupled to the routine. Focused on the management level in hospitals, Foster (2017) addresses that efforts to engage and provide dedicated employees are related to improving results, as the manager also pointed out. In this way, the improvement in performance has a clear impact and, over time, becomes a positive cycle of cooperation and mutual encouragement. Through constant communication, through morning meetings, leaders and collaborators share experiences, doubts and start to cooperate. Jones, Vaux, Olsson-Brown (2019) demonstrate that it is imperative to identify a problem in collaboration with the team and use data to help them deal with it (for example, audits, recording data on experiences and results, learning from incidents and complaints). In addition, the authors warn that time should be spent and leadership encouragement techniques incorporated to face challenges (JONES, VAUX, OLSSON-BROWN, 2019).

4.2 ENGAGEMENT ACCORDING TO THE JD-R MODEL. CATEGORIES: ABSORPTION, RESOURCES AND WORK DEMANDS

Bearing in mind that the qualitative analysis is based on "the fact that the inference - whenever it is made - is based on the presence of the index (theme, word, character, etc.!), and not on the frequency of its appearance, in each individual communication" (BARDIN, 2011, p. 146), a first point to be emphasized in the sample set is that in all

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the interviews, the interviewees unanimously emphasized that they have difficulty concentrating on the SGQ. This information is of great value because it exposes that the system demands focus, attention to detail in the procedures and, thus, the sixteen respondents pointed out that, sometimes, elements beyond their will impair concentration. Thus, the narrated difficulty of concentration is directly related to the prioritization of other demands beyond the quality management system, which, by demanding more focus on its realization, makes the interviewees postpone its elaboration, constantly leaving it in the background. Taking this data into account, it is essential that, in future certifications, companies create strategies that better integrate employees. Through empirical data, Oluwafemi and Okon (2018) clarify that with regard to the concentration and absorption of content related to the quality management system, both the emotional state of those analyzed and the work environment, the stimulus to the consolidation of learning influence the implementation of TQM.

In addition, instruments that allow for more effective engagement, time dedicated to these activities, instead of being seen as residual attributions, which could occur with a greater number of hired employees, reducing the diversity of attributions, can come from the leadership itself, " venting" thus the established bottleneck. In the case at hand, it is clear that the high workload, the difficulty of focusing on that specific activity can lead to emotional exhaustion and, consequently, lower professional performance. On the other hand, when employees feel motivated by managers, that is, they experience strong social support of mutual trust, interpersonal learning, their health and performance tend to reach high levels.

Broadly speaking, the proportion of resources and volume of demands is positive among the respondents, and could improve, either by hiring more labor or through mechanisms of constant communication, collection and support from the leadership and the team in a way wider. The authors Parand, Dopson and Vincent demonstrate the indispensability of team motivation, in order to "create an appetite" and "free people's thinking", integrating these individuals to the system's *modus operandi*. One of the measures taken to encourage staff and maintain a balance between resources and work demands was the creation of leadership rounds, constant meetings.

4.3 ENGAGEMENT ACCORDING TO THE JD-R MODEL. CATEGORIES: DEDICATION AND VIGOR

As pointed out in the previous section, although most respondents claim to spend a lot of time on Quality Management System activities, the causes and responses varied within the sample set.

The work environment and the possibility for employees to express their opinions by actively listening to their manager consequently influences this individual's commitment and dedication to their professional tasks (KAHN,1990,1992). The authors Andrade, Mendes and Lourenço demonstrate that training practices and employee empowerment by leadership contribute greatly to making employees focus more on the application and interpretation of the TQM practice, as well as the business strategy. In the scope of quality, aiming to satisfy the applicable requirements, the vigor of the collaborators is fundamental, allowing individuals with different functions in the organization to contribute to the results, making the processes remain in harmony. A difficulty exposed in the interviews was the consolidation of a culture of quality, as well as the awareness that leading processes of change. Commitment in the work environment must be understood as a set of factors linked to a positive state of mind and full of work, determined by vigor, dedication and absorption.

4.4 THE ROLE OF ENCOURAGEMENT AND LEADERSHIP

It was shown that the relationship between leaders and subordinates should be closer with regard to the SGQ, allowing them to share resource and training needs, thus reducing wear and tear regarding the application of quality management. According to Oluwafemi, Okon (2018) the leader's commitment is fundamental to the employee management process, since his contribution can cause a significant change in the workplace. At the same time, employee involvement is essential for the organization's daily operations, given that employee participation brings self-confidence to others, making team members feel dedicated to the organization. Therefore, it was observed that leadership must be vehemently involved in the direction and ordering of goals, system improvements, generating a feeling of confidence and determination for the

entire organization to work towards this objective. This encouragement must be constant, not only on the eve of the audits, with abrupt changes, little listening to employees given that the adoption of a total quality management program impacts not only organizational results, but also the work behavior of employees.

The difficulty of engaging, performing and spending a lot of effort to carry out quality management activities is pertinent to be investigated, since it is related to the hierarchy adopted in the company, in which not all sectors have defined leaders, where the lack of of demanding management skills or charging only before audits can cause this reality reverberated here. The aspects considered "negative" or that would not be replicated from the leaders by the interviewees were greatly reduced compared to the positive aspects of learning and consist of pressure, micromanagement and little encouragement. Respondents, broadly speaking, emphasized that leaders' behaviors generate resilience, greater commitment and trust. In addition, values highlighted as positive and which were learned from managers were mutual trust, firm leadership that believes in the work and competence of its staff, exposing the fundamental role that leadership plays in this context. According to Carpinetti (2012), managers must assume the commitment and responsibility for defining the quality policy and objectives, as well as the critical analysis for continuous improvement of the system. Therefore, the manager will only be able to influence his employees to incorporate the focus on the customer and continuous improvement of the SGQ into the organizational culture, through training and constant presence, as well as adequate work methods. Parand, Dopson and Vincent (2013) demonstrate that managers recognize their roles, identifying five dimensions: motivating the team, incorporating program elements, providing resources, monitoring progress and committing. Despite the recognition of these elements by the managers themselves, the authors emphasize the need for another monitoring of managers' decision-making, as well as constant communication through leadership rounds and the review of the progress of the program and its results (PARAND, DOPSON , VINCENT, 2013). Feedback from management in meetings is highlighted as a powerful influence on team involvement and accountability, as staff are influenced by positive or negative responses from managers. It is important to emphasize that the accountability generated in the constant meetings occurs through

the evaluation of the objectives reached and the actions carried out, with the main intention of the managers, the monitoring of the process and its indicators, aiming at familiarization with the program itself and the control of the progress and challenges.

The implementation of the SGQ was seen as a fruitful investment for the interviewees, and with its effective planning, companies are able to achieve the expected objectives. Despite the different areas of work of the interviewees, the answers were very similar, not being able to say that the observed samples and answers depended on the area in which each one works. Therefore, the organizational culture directly affected the success of the implementation of the quality system, given that the team's joint awareness is a determining factor within companies.

5. CONCLUSIONS

The expanded JD-R model used in this study showed that personal resources tend to increase the individual's well-being and self-evaluation in relation to their work. In addition, the possible interrelation and correlation of personal and work resources was pointed out, which needs further investigation.

The study in question showed that satisfaction related to autonomy resources, peer support and work content tends to increase employee engagement more significantly than resources related to supervisory support, development opportunities and performance measurements. On the other hand, engagement had the contribution of personality characteristics, in addition to environmental factors, confirming the understanding that engagement is a deep mental state.

It is imperative to denote that the Quality Management System involves processes that require a lot of dedication and commitment from the entire organization, since it encompasses very specific and technical procedures and, also, austere supervision and monitoring for the control of processes. Engagement promotes a sense of belonging, reducing the desire to leave organizations.

The difficulties in using the SGQ and in the certifications narrated by the interviews consist of adapting and customizing the procedures, demanding dedication and vigor

until, in the long term, these activities become part of the routine and become integrated by the organization's teams. In addition, it is important to focus on the involvement of the entire organization in the SGQ, and on the leadership and commitment of managers, as well as strong and constant leadership, willing to give feedback and hold meetings. As for the benefits pointed out in the interviews, it is essential to expose customer satisfaction, reduction in the number of complaints, organizational control, access to new markets, improvement in reputation, structuring of processes, better communication between the various departments and a global vision of the organization. In addition, there is an increase in the bond with employees, who become increasingly focused on their tasks, striving to propose solutions, since they understand that a failure affects the company's results, having an understanding of their attributions and functions and how these are intrinsically linked with the rest of the company's functions.

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APPENDIX - FOOTNOTE

3. Sistema de Gestão de Qualidade (SGQ).

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