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Quality Management Systems' Strategic Structure Oriented to Organizational Needs Management

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ABSTRACT

This article proposes a new approach to implement a quality management system's strategic structure that incorporates prospective scenarios analysis in the determination of strategic elements, such as quality policy, mission, vision, needs, and objectives. The qualitative analysis of managers' statements about how the results were perceived revealed a significant change in strategic structure of a study case organization within the Department of Science and Aerospace Technology. This main result of this approach lies in the reorientation of managerial focus, prioritizing organizational needs management. This realignment culminates in superior results, obtained through effective actions aimed at fully satisfying these needs, thus marking a break with historical management practices.

Keywords: Management systems; Management analysis; Management planning; Organizational needs.

INTRODUCTION

Literature analysis on leadership formalization and management commitment to management systems demonstrates that there is a confused, and often mistaken, understanding of fundamental aspects that conceptualize management system strategy for mission fulfillment (Shepherd 2015). Several management frameworks are used to aid decision-making regarding strategies in a given environment and in determining their results' effectiveness, which include analyses such as SWOT, SWOC, PESTEL, McKinsey 7S, ICDT model, Balanced Scorecard, Porter's five forces model, etc. (Aithal 2017). Although the methods employed generate relevant information, there is currently lack of an approach focused on management system's strategic structure. While organizational vision is conceived as a future aspiration, it often becomes detached from organizational reality. Many issues arise from the decision to disaggregate the organization's actual practice from the formally adopted quality policy symbolically (Georgiev 2022).

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Organizations' management system structure in the aerospace sector can be determined by normative requirements implemented worldwide, such as ISO 9001:2015, AQAP 2110:2016, SAE AS 9100:2016, ISO/IEC 17025:2017. There are several standards used for quality assurance, which certify different management systems and are centered on compliance standards in guidelines included in the ISO 9000 standard series (Murray 2016). Organizations implementing ISO 9001:2015 experience many benefits such as improved management, decreased incidence of defective products or services, and increased satisfaction, leading to a reduction in customer complaints (Napitupulu *et al.* 2020). These globally accepted requirements promote profitability through improved quality control in products, operations, and processes (Tomić *et al.* 2012). One of the quality management system's (QMS) strategic structure elements is the quality policy. According to ISO 9001:2015 standard requirements, the quality policy is the formal declaration of management commitment to QMS effectiveness in fulfilling objectives and achieving planned results according to context and strategic direction in process management, in promoting a risk mindset, and continuous improvement (Shepherd 2016). While these requirements fulfill the need for formal communication across the organization and with stakeholders like government agencies and other space-related companies, they do not explicitly emphasize the significance of high management's leadership and commitment to specific management criteria or the importance of identifying, prioritizing, and satisfying organizational needs.

Formalizing mission and vision into clear statements help stakeholders understand the organization's purpose. In addition, these concepts serve as a solid foundation to promote employees' commitment oriented towards planned results (Mansaray 2019). However, it is also considered important to establish cultural values that delineate organizational identity, determine acceptable practices and social responsibility (Bartkus *et al.* 2006). The mission establishes a consistent and enduring ideological foundation to provide guidance and inspiration throughout the product lifecycle that transcends fads, leaders, technologies, and markets (Collins and Porras 1996). The leader should know the organization's values and make decisions to effectively motivate employees, with a minimum supervision (Nagle *et al.* 2012, p. 50). Despite fulfilling of raising employee awareness, publicizing the organization's products and services and having a public relations character, the mission and vision formalization follows a much more ideological aspect in search of a desirable state (Bordum 2010). The vision is often idealistic, lacking a direct connection to the organization's daily activities and management practices.

According to James C. Collins and Jerry I. Porras (1996), the management process should be disciplined to differentiate what must be conserved and protected from processes that must be modified to build organizational progress. The vision is normally understood as the organization strategic plan, while the mission seeks to define the existence of the institution; and objectives are understood as the actions that should be carried out to execute the mission and achieve the vision in the future (Al-Azzah and Yahya 2010). In this conception, the vision reflects cultural values and describes a future with audacious objectives, with a vivid and detailed description, and providing an inspiring definition of what the organization wants to achieve. However, these management practices do not consider changing trends in the organizational context to determine the vision, prioritizing leadership aspects, activity motivation, and promotion without a link oriented to organizational context evolution. Despite the current structuring method having as central elements usual concepts of quality policy, mission, vision, and organizational values, they do not characterize a rational structure directly related to future trends of changes in the organizational context (Bordum 2010).

As success factors, it is essential to implement a process for critical analysis and revision of QMS' strategic structure, considering stakeholders' interests in a way to promote harmonization between established requirements and the organizational needs environment (Al-Azzah and Yahya 2010). In many cases, mission statements are widely publicized and include business rules linked to organizational culture, such as respect for employees and social responsibility. This stance promotes financial performance, as it is associated with organizations recognized by stakeholders as socially responsible (Bartkus *et al.* 2006). Another practice is the use of vision statements as a target for management to make projections, or operational forecasts based on available resources, and possible benefits analysis to be achieved by the organization (Dipura and Soediantono 2022). This makes it possible to clarify for all interested parties the organization's management intentions (Mnich and Matejun 2021). However, it is often just an ideological expression of managers' personal desire for an ideal future, without commitment to current organizational management practices (Georgiev 2022). Thus, formal administration coexists, based on compliance with contractually required standards requirements, implemented at client and other interested parties' request, and informal administration with the objective of meeting the organization's needs. Habitually, managerial focus is often concerned only with meeting deadlines, with no direct

commitment with to expected results and their consequences, but only with the demonstration that scheduled activities were carried out. This practice, in addition to being harmful and without added value to guide strategy towards organizational objectives construction, has the effect of discrediting the managerial methods structured according to quality's requirements.

The paper conducts a detailed analysis of strategic structure development, with a focus on addressing organizational needs. The scope of the research is the management of organizations operating in the aerospace sector. The study of individuals who work in organizations in the aerospace sector, their motivations, needs, and personal desires are not part of the research scope. This assessment was conducted as a case study within the Divisão de Energia Nuclear, Instituto de Estudos Avançados (IEAv), which is currently researching the harmful effects of ionizing radiation on crews, aerospace systems, and defense (ERISA-D) program. The implementation of a QMS according to ISO 9001: 2015 and ISO 17025: 2018 standards is crucial for the accreditation of tests and measurements carried out in this program. Thus, the opportunity arose to research benefits and difficulties in the construction process of the strategic structure by changing the managerial focus to organizational needs management.

Our proposal for building the QMS's strategic structure is comprehensive and may be particularly relevant for professionals and researchers who are less familiar with important aspects for implementation in a research organization composed of several laboratories. To guide managers, we provide in this paper a step-by-step guide on how to implement the strategic structure-building method. Finally, we propose opportunities for future studies in this innovative management research area and decision-making methods.

Proposed method to implement a strategic structure

This study is proposing a method to build QMS's strategic structure with the purpose of promoting organization's needs management from evidence identified by organizational context analysis. AlDhaheri *et al.* (2020) have shown that the strategic formulation of organizational operations, with the explanation of vision, mission, and objectives, has a positive impact on organizational performance. Despite the significance of this research, there is limited literature available on the strategic management of organizational needs. The search for new methods to innovative approaches in quality systems is an important factor to drive organizations' transformation in the management area (Pacana and Ulewicz 2020).

In the study on the theory of human motivation (Maslow 1943), we can highlight several propositions that can be applied to organizations, since these are formed by individuals who have their own motivations and directly influence the decision-making process of their groups within the management system. Knowledge sharing has become an integral part of business strategies, while helping organizations gain a competitive advantage and innovate (Ganguly *et al.* 2019). Considering the relevance of motivational factors that direct organizational choices, the proposal to realign the managerial approach to the management of the organization's needs emerged. This realignment finds application in the construction of the strategic structure of a QMS based on efficiency, robustness and sustainability of operations, according to the phases described in Table 1.

Table 1. Phases of management system's strategic structure proposal based on organizational needs management.

Phase	
1	Organizational context determination and prospective scenarios survey to determine the organization's current state and the required future state.
2	Mission statement determination according to the installed capabilities' current state and the organization's existence purpose.
3	Quality policy statement determination to declare management's commitment to QMS.
4	Vision determination according to the required future state that the organization needs to achieve, identified through prospective scenarios analysis.
5	Organizational needs determination to build the vision (required future state) from the mission (current state).
6	Objectives determination through the possible satisfaction objects that can be conquered to satisfy organization's needs.

Source: Elaborated by the authors.

Strategic structure implementation begins with management's intentions communication to all stakeholders. Organizations around the world adopt a QMS that can be structured as a set of interrelated elements to establish quality-related policies, processes, and objectives (Kumar *et al.* 2018).

While the current state can be determined by diagnosing the organization, through audits, analysis of the internal and external context, and installed capacities, the required future state is determined by stakeholder analysis to identify forward-looking scenarios. Although scenario analysis emerged during World War II, it was only in 1960, with uncertain situations emerging for the oil sector, that the company The Royal Dutch/Shell Group introduced the critical scenario analysis process as a management tool. However, it was only in the 1970s that the prediction of plausible future states was popularized to allow taking advantage of opportunities and avoiding possible threats (Jefferson 2012). During a prospecting future scenarios process, participants discuss current trends and their perspectives, coherent stories about possible futures, within the organization's context. Managers exercise their judgment by searching among the myriad possible future states for most plausible states. Through these prospective scenarios planning, uncertainties, trends, and opportunities that are often unpredictable during daily activities management can be identified, evaluated, and managed (Miller and Waller 2003). Prospective scenarios analysis related to the organization's activity sector and determination of the state that the management needs to conquer in the future is a strategic tool that considers the relevant issues through the worldview and uncertainties and concerns of the organization's leaders (Grumbach and Marcial 2008). Therefore, it is possible to identify which future state should be built by the organization. Thus, the needs for new organizational capacities, possible contingencies, uncertainties, trends, and opportunities can be identified, evaluated, and managed (Miller and Waller 2003). The use of prospective scenarios to identify organization's needs provides a strong change in organizations' management paradigm in the space sector, currently focused on meeting external customer's requirements, which is often dispersed and does not have a defined strategic orientation (Petroni *et al.*, 2009) to focus on meeting the organization's needs.

The objective of this method is to quantitatively and qualitatively prepare the organizational resources for activities execution to meet the greatest number of demands in proposed prospective scenarios. According to Porter (2004, p. 244), the scenarios use is an appropriate technique in sectors where the main aspect is uncertainty, being useful in emerging industries, to guide an active organizational posture to influence stakeholders and transform these possible scenarios into real situations that are advantageous for the organization.

According to Maslow (1981, p. 49), the way to satisfy the dominant need is motivation. Therefore, the statements determination for quality policy, mission, vision, needs, and management system's objectives provide a structure that plays a fundamental role in planning of excellence, and motivates collaborator's actions in a way directed towards the organization's dominant needs' satisfaction (Kunjumuhammed and Magd 2022). By shifting management's focus from customer satisfaction to a new focus on satisfying organizational needs, we will have a direct impact on quality policy. Despite guiding the needs identification, the management system standard requirements should also be met, but with a different interpretation. In this new conception, customer satisfaction becomes a means that should be managed to satisfy the organization's needs. An organization's need represents the gap between its present state and the required future state. Organizational needs are identified through prospective scenarios analysis by disparity between its present and future state.

Strategic structure construction starts with organization diagnosis. In this first phase, the internal organizational context is determined by installed capacities and the SWOT analysis of strengths, weaknesses, opportunities, and threats to determine for each capacity the current and required future state. External context analysis is carried out through the most influential stakeholder identification in the organization's operation area, the most relevant prospective scenarios survey, and determination of the organizational required future state.

The phase 2 is the mission statement determination according to the current state of installed capacities and to describe the organization's existence purpose. The mission determination is carried out through context analysis and identification of organization's current state with installed capacities identification. In this way, the organizational mission presents itself as dynamic, adapting itself over time to direct the best results. However, the mission should be defined as a solid foundation to start the journey to build the future state that the organization needs to achieve, the organizational vision.

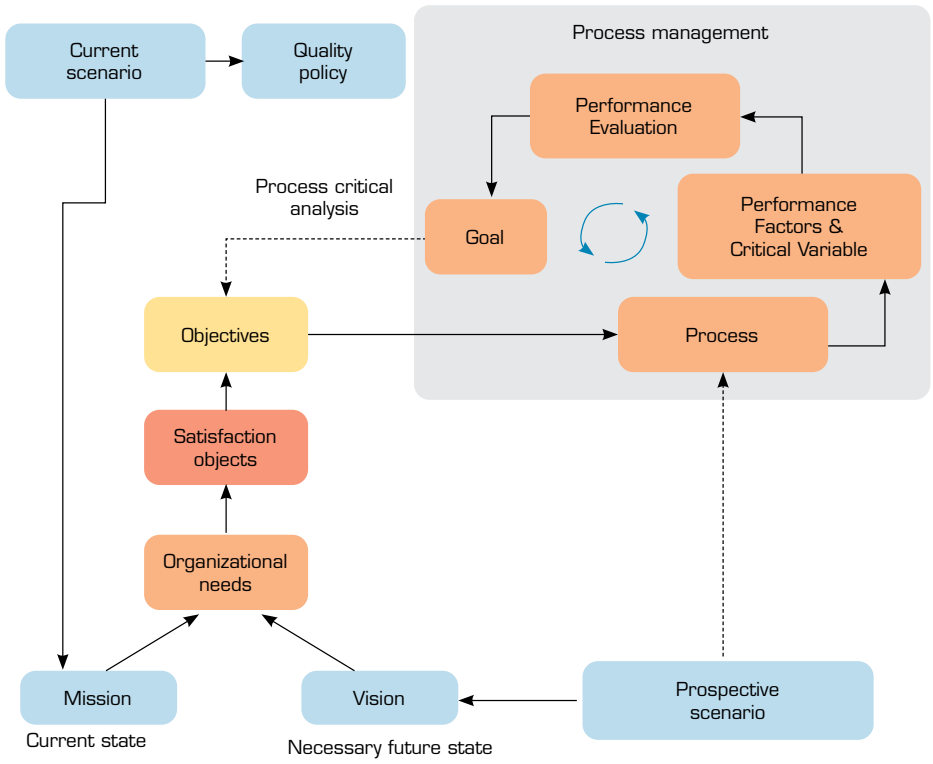
The phase 3 is the quality policy statement determination, which is the management's commitment to the QMS. In order to determine the quality policy, management should critically analyze the statement that should be disclosed internally to employees, and externally to other interested parties, about their commitment to complying with quality's requirements. This statement is directly linked to the organization's activities and should promote the image and active management posture to objectives fulfillment.

The next step is the phase 4 with the vision statement determination according to what future state the organization needs to build. Analyzing prospective scenarios from different dimension enables the identification of the organization's required future state The PESTEL method application, for analysis of political, economic, social, technological, environmental, and legal aspects, guides different dimensions evaluation in prospective scenarios analysis (Aguilar 1967). The vision is the statement that expresses the required future state that organization needs to achieve to promote opportunities and minimize or avoid threats.

In phase 5, the organization's needs are determined from the gap between the required future state and the organization's current state. These needs can be resolved by a satisfaction object capable of filling these gaps. However, according to the principle of equifinality of systems theory, there are several ways of acting to obtain the same result (Hanson 2014, p. 64) and needs management should determine the best satisfaction object to solve the need. Some solutions will be limited by logistical, technological, or economic aspects, while others will be established by expected results priority or determined by the group's decision (Watkins *et al.* 2012, p. 72).

The phase 6 is characterized by objectives determination through the possible satisfaction objects identification that can be conquered to satisfy the organization's needs. These strategic objectives should define and direct the processes that add value to products or services. They should represent the sequence of activities the organization undertakes to fulfill its mission (Shepherd 2023).

Quality management system's strategic structure, illustrated in Fig. 1, relates the organization's quality policy statement, mission, vision, organizational needs, satisfaction objects, and objectives through the current and prospective scenarios analysis.



Source: Elaborated by the authors.

Figure 1. Quality management system's strategic structure.

One of the elements often associated with high-performance organizations is the constant practice of continuous critical analysis and managerial coordination aligned with the management system's strategic structure (Van der Meij *et al.* 2023). In this way, based on satisfaction of organization's needs to build the vision from the mission, the processes responsible for creating satisfaction objects are identified, which are translated into strategic objectives. This process constitutes a tool for rational and evidence-based management (Reinhardt *et al.* 2023).

RESULTS

The researchers applied this proposal at Departamento de Ciência e Tecnologia Aeroespacial (DCTA), being a case study linked to the nuclear technology used in ionizing radiation tests on components for aerospace applications, carried out at Divisão de Energia Nuclear, IEAv. This research was developed through a qualitative approach through a case study, where the study object can be classified as field research, in which the means for the empirical investigation to be carried out is the place where the phenomenon is investigated (Yin 2009). For the results collection, a qualitative research method with a positivist epistemological approach was adopted, according to Bardin's (2002) method. Despite the paradoxical characteristic that associates an interpretive and subjective approach with the search for objective evidence, contextualized in direct observations, it is possible to combine these elements to produce knowledge that values the deep understanding of participants with the use of verifiable empirical evidence (Gobo 2023). Thus, an objective and measurable social phenomenon observation was carried out. The results were presented based on evidence identified using content semantic categorization. These contents were related to current QMS understanding, as expressed in the testimonies collected during interviews with the managers' focus group from the organization under study. Thus, information was obtained about the difficulties perception faced in the implementation process, the achieved results evaluation and the proposed method understanding. All interviews were recorded with the interviewees' consent for subsequent coding and content analysis.

Strategic formalization by statement construction was carried out in weekly meetings using the Brainstorm method, with subsequent critical analysis according to the PDCA method (Plan, Do, Check, Act). In this process, several doubts arose, which were resolved by the group and by process specialists. Some terms and definitions were specified in order to identify and manage organization's needs and began to have a similar meaning, but complementary to that used by the ISO 9000:2015 standard, as shown in Table 2.

Table 2. Correlation between terms and definitions ISO 9000:2015 and those used in the strategic structure built according to the strategic approach to organizational needs management.

Terms and definitions	ISO 9000:2015 – Fundamentals and vocabularies	Definitions according to the strategic approach to organizational needs management
Quality policy	An organization's intentions and direction, as formally expressed by top management.	Management's commitment statement to managing organization's needs and meeting QMS requirements.
Mission	Purpose of organization's existence, as expressed by top management.	Current status statement and installed capabilities for meeting organization's needs purpose.
Vision	Aspiration of what an organization would like to become, as expressed by top management.	Statement of what future state the organization needs to build.
Organizational need	Meeting customer requirements and wishes.	Gap between the current state and the required future state that should be built by organization.
Satisfaction object	Product or service to satisfy the customer.	Object that satisfies an organizational need.
Objective	Result to be achieved with regard to quality.	The outcome or achievement of satisfaction objects that must be attained in order to fulfill an organizational need.

Source: Elaborated by the authors.

The organization's state describes management conditions, while the organization's situation describes how the organization's management, in this state, relates to the context in which the organization is inserted, considering different external and internal issues related to interested parties belonging to the action scope.

The first phase for strategic framework implementation was the organization's current context analysis, external and internal issues relevant to the scope and the determination of 25 installed capacities in the study case organization. Sixteen prospective scenarios were constructed using the brainstorming method. These scenarios were developed by gathering input from managers, who shared their insights on potential events that could impact the organization's mission across political, economic, social, technological, environmental, and legal dimensions (Aguilar 1967). The prospective scenarios construction was sufficient to describe a required future state to minimize risks and maximize opportunities.

The second phase involved an analysis of installed capacities and the current state to formalize the organization's mission statement, which describes the organization's purpose.

The third phase was the construction of the quality policy statement, through the formalization of a sentence, demonstrates alignment with the objectives established by the mission and emphasizes the management and leadership commitment to raise awareness and support employees and stakeholders to act in QMSs.

The fourth phase, the main prospective scenarios that directly affect the installed capabilities are analyzed, to determine what the future state is that the organization needs to build. Determination of the required future state aims to establish a cohesive vision capable of supporting a range of potential future situations, selected based on their significance for the organization's survival and success. The vision statement building process is iterative, in several meetings where employees involved in the focal group expressed constructive opinions that shaped the future to be built plan.

In the fifth phase, the organization's needs identification is carried out through the current state determination and the future state that needs to be achieved. In this process, the employees' desire sense was removed, where the needs are the difference between the current state and a desired future situation (Watkins *et al.* 2012, p. 20), since the organization's strategic orientation is based not on management desires, but on the formal, evidence-based establishment of objectives that should be built.

In the sixth phase, possible satisfaction objects were determined. Through a debate among participants of the managers' focal group, it was chosen which satisfaction object had greater feasibility to be built with installed capabilities, with resources available, at a suitable time to satisfy organizational needs. After selecting the optimal satisfaction object, the strategic objective detailing the construction process of the chosen satisfaction object is established.

Through qualitative research, according to the inductive content analysis method developed by Bardin (2002), it was possible to highlight content related to the objective of knowing the case studies managers' experience and perceptions during the strategic structure construction. The testimonials collected between March 11, 2022 to November 16, 2022 were analyzed for 3 hours 23 minutes and 27 seconds of diagnostic interviews with the focal group formed by managers. These context categories were evaluated and meet homogeneity, relevance, productivity, and mutual exclusion criteria (Bardin 2002).

The testimonials revealed that participants faced challenges in grasping management terminology and concepts related to capabilities-based planning. The difficulty in abandoning the practice carried out for several years in the organization management was also commented. Table 3 presents codes that categorize the interviews content with the case studies' managers and the contents inferred through these codes.

Semantic categorization shows there is a need to emphasize employees' training phase in concepts, terms, and management requirements in the use of analysis methods known as management tools, as well as improve the communication of organizational strategy, stakeholder knowledge, and carry out actions to promote management involvement. During the implementation, the strategic structure concepts was built as shown in Fig. 2, which describes the relationship between structural elements according the strategic approach to organizational needs management.

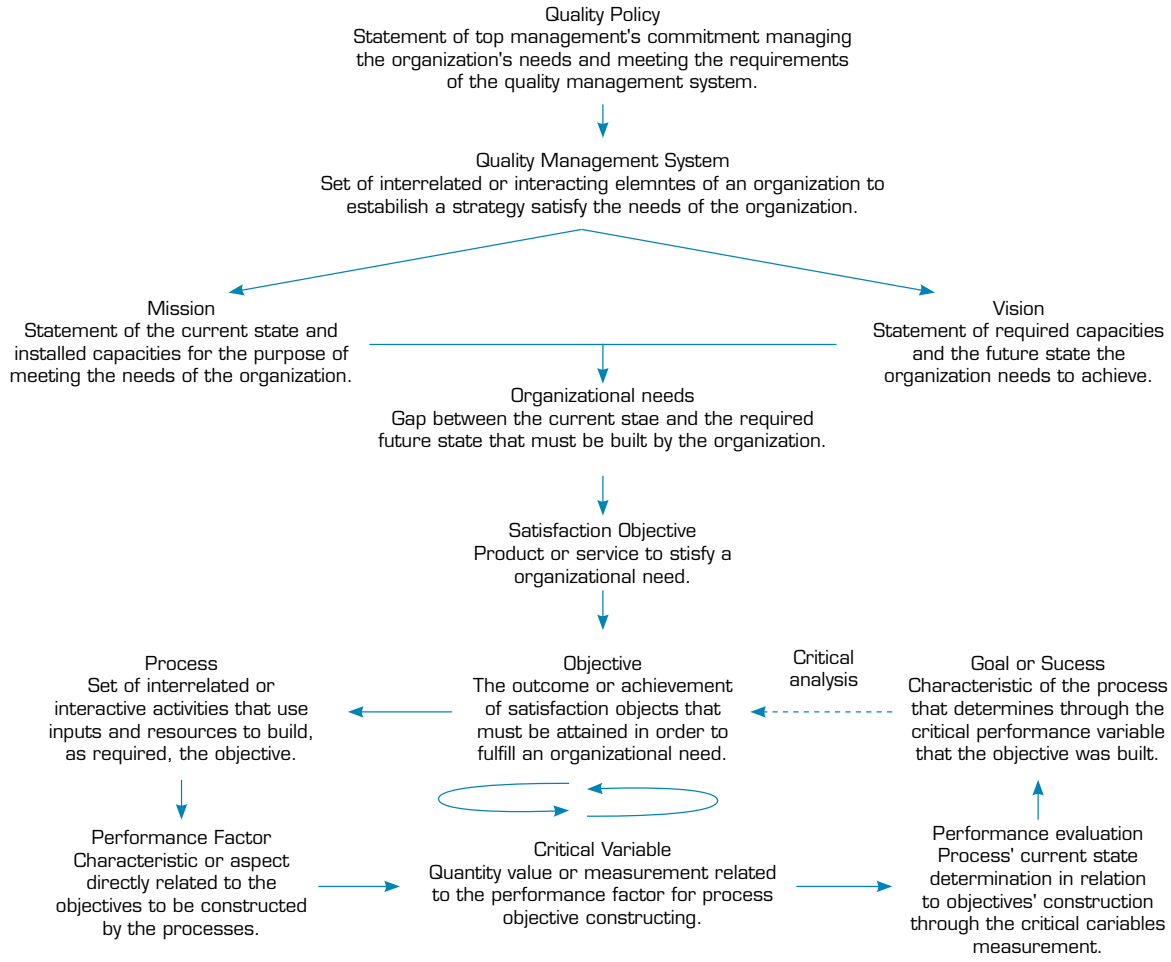
These strategic structure elements should be reviewed periodically during the management critical analysis or when prospective scenarios analysis identifies a trend of change in context that need for organizational strategy's revision (Mintzberg 2004, p. 157).

Despite initial difficulties, it was possible to clearly and concisely determine the structural elements statements. These sentences were used to rationally support the strategic objectives determination through evidences that signals the way for the organization's needs satisfaction to the vision achievement. With the strategic structure formal establishment, there was a significant change in the management system, giving a strategic meaning to these statements, which were previously only lost phrases in management documents' bureaucracy (Georgiev 2022).

Table 3. Semantic coding, context categories, and inferred contents.

N°	Qty	Codes	Context categories	Inferred contents	Qty
1	6	• Affects all levels of the organization.	QMS framework construction method	It should be deployed throughout the organization.	10
2	1	• It is well applied in the field of science and technology.			
3	3	• Should be implemented across the organization.			
4	2	• It should have the analysis of prospective scenarios simplified.		It should be simplified.	4
5	2	• It is difficult to review annually.			
6	1	• It's innovative.		It improves managerial processes.	44
7	10	• It's very good, excellent, fundamental, fantastic.			
8	3	• It is well structured.			
9	1	• This succeeded in synthesizing the concepts.			
10	1	• This determines indicators that measure the construction of objectives.			
11	1	• This is the work of the team of collaborators.			
12	5	• This better outlined the vision.			
13	6	• This improved awareness of the organizational context.			
14	3	• This determines goals that define when objectives are achieved.			
15	1	• This identified the processes.			
16	1	• It helps to formally explain the strategies.			
17	2	• This has a high level of detail and depth.			
18	5	• This promotes a logical sequence.			
19	1	• This promotes consensus.			
20	1	• This reduces the number of indicators.			
21	1	• This reduces the number of objectives.			
22	1	• This uses charts and flowcharts to help you understand.			
23	4	• Lack of support from top management to carry out the necessary actions to achieve the objectives.	Identification of management failures	Lack of support from top management.	6
24	2	• Lack of support from top management to get the necessary resources to achieve the objectives.			
25	1	• Lack of risk management method.	Identification of management failures	Lack of a management method.	5
26	2	• Lacks a method for determining strategic objectives.			
27	1	• Lacks a method to plan the required capacities.			
28	1	• Missing internal audit requirements report.		Lack of documented information management.	7
29	1	• Lack of secure document storage system.			
30	3	• Lack of a document management system.			
31	3	• Lack of a knowledge management system.			
32	2	• Know the interested parts.	Difficulties during the QMS framework implementation	Lack of knowledge about the interested parts.	16
33	6	• Achieve the involvement and commitment of top management and other interested parts.			
34	4	• Build prospective stakeholder scenarios.			
35	4	• Understand the application in the organizational context.			
36	3	• Understand the capabilities-based planning phases.		Lack of knowledge of the QMS framework implementation method	10
37	2	• Changing concepts and paradigms in the management area.			
38	5	• Understand how it will be deployed.			
39	2	• Apply the GUT tool for prioritization.		Lack of management knowledge.	24
40	3	• Understand concepts of effectiveness and efficiency.			
41	2	• Understand concepts of mission, vision and objectives.			
42	7	• Understand concepts.			
43	5	• Understand indicators.			
44	3	• Understand goal.			
45	1	• Identify the lifecycle.			
46	1	• Understand the classification of strategic content according to the PESTEL tool.			
47	2	• Capacity-based planning avoids problems.	Conclusions and perceptions	The QMS framework improves management.	10
48	2	• The adoption of a wrong strategic vision causes problems for the survival of the organization.			
49	1	• The QMS prevents problems.			
50	2	• Current strategic planning is opinion-based and lacks a logical structure.			
51	1	• Knowing the interested parts reduces the uncertainty of building prospective scenarios.			
52	2	• Organizational needs should be prioritized over the interested parts needs.			

Source: Elaborated by the authors.



Source: Elaborated by the authors.

Figure 2. Quality management system's strategic structure concepts diagram.

DISCUSSION

The present study makes several significant theoretical contributions to existing knowledge body, specifically in the domain of QMS's strategic structure. First, by incorporating prospective scenarios use to determine the organization's view, it allows identifying a required future state based on organizational context reality. This approach avoids purely financial bases, blindly adopted with the purpose of improving organizations' economic performance, but without considering the strong trends that model organization's acting sector.

The possible future states identification outlined by prospective scenarios allows an active management stance in context transformation from organization's needs management. Administration is involved and adapted in an incremental and contextualized manner during the objectives construction to meet organization's needs. In the case study researched, the main contribution was to establish a method for building a strategic structure where their elements are logically and contextualized through use of facts-based evidences. This is a relevant research area as it is directly linked to the decision process (Van Looy

and Shafagotova 2016). As a future study is proposed to apply this method in other areas, such as industry, commerce, and services, in order to verify the feasibility of conclusions made in these case studies in other business environments and in medium and large organizations.

Qualitative research allowed the focal group's perception investigation in several areas, with the collection of more detailed and in-depth data, through open interviews and participating observations. Although the positivist epistemological approach could be considered limiting by restricting the scope of research to purely observable and measurable phenomena, neglecting subjective, contextual, and interpretative aspects, it was possible to understand participants' perspectives, identify emerging trends, and generate information about the case study and current management practice. The main challenge involved transitioning from historical practices to implementing a new untested method in an organization with limited experience in QMSs. This was made possible by the commitment of the organization's management to execute various phases of the proposed method. However, this research was constrained by data collection from a case study conducted in only one Brazilian government organization in the aerospace sector, potentially limiting the generalizability of results to countries with different business environments and industries. Future research should explore diverse economic sectors across multiple countries to enhance the external validity of the study. The datasets used in this study can be made available upon request and approval from the corresponding authors.

The findings of this study present a novel approach for effecting change in the strategic structure of QMSs. This is achieved by embracing a management-centric approach to address organization's needs, a methodology that garnered positive feedback from the focal group consisting of managers from the organization under study. This marks a break with the historical management practice adopted in the studied organization.

CONFLICT OF INTEREST

Nothing to declare.

AUTHORS' CONTRIBUTION

Conceptualization: Reinhardt JCV; **Methodology:** Reinhardt JCV; **Software:** Reinhardt JCV; **Validation:** Dewes MF; **Formal analysis:** Gonçalez OL; **Investigation:** Reinhardt JCV; **Resources:** Reinhardt JCV; **Data Curation:** Reinhardt JCV; **Writing - Original Draft:** Reinhardt JCV; **Writing - Review & Editing:** Reinhardt JCV, Dewes MF, and Gonçalez OL; **Visualization:** Reinhardt JCV; **Supervision:** Dewes MF and Gonçalez OL; **Project administration:** Reinhardt JCV; **Funding acquisition:** Reinhardt JCV.

DATA AVAILABILITY STATEMENT

Data will be available upon request.

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