




Article

Sustainable Quality Management Systems in the Current Paradigm: The Role of Leadership

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Abstract: This study supports the proposition that sustainability's integration into Quality Management Systems (QMS) could be a viable pathway to the development of the Emergency paradigm, in which leadership plays a crucial role. A Systematic Literature Review (SLR) was performed in order to deepen leadership's relationship with Quality Management (QM) from an evolutionary perspective. An exploratory survey was then conducted to assess quality managers' perceptions of sustainability's integration into QMS and their leadership styles, using the 5X Short Leader Form MLQ instrument. The results indicate that leadership is a critical element of QMS performance, enhancing transformational leadership, which appears to be the dominant self-perceived style of the quality managers who participated. Nevertheless, these practitioners recognise the difficulties in committing all employees to the sustainability journey. The theoretical and managerial implications give rise to this work. The SLR results could be a useful database to support future QM and Leadership research. The organisations could follow the suggested pathway to evolve their QMS to support solutions to some of the current challenges. At the same time, quality managers could reflect on their future professional challenges. This work has taken a step forward, indicating sustainable quality management systems as a viable pathway to explore QM knowledge regarding the Emergency paradigm, and thus enhancing leadership's role.

Keywords: quality management systems; sustainability; ISO 9001; leadership; systematic literature review



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1. Introduction

Companies currently face a challenging management paradigm due to the context's pressures, namely intense competition, scarcity of resources, more informed and demanding consumers, progressive technological advances, climate change, and stakeholders' pressure. This scenario imposes a systemic perspective, keeping in mind a long-term horizon in order to achieve economic, environmental, and social results. Several paths have been pointed out for such a purpose, namely, the development of specific tools and models for sustainability management. It is essential to integrate sustainability at different management levels, such as strategic and operational levels, considering stakeholders' current and future needs. Among a wide range of tools to support this goal, the Quality Management Systems (QMS) has been appointed as a pathway to the integration of the principles of Sustainable Development [1].

QMS has urged change and adaptation in organisations in order for them respond effectively to political, economic, and social changes [2]. Organisations expect to recognize

the QMS' value, hoping that their mechanisms (tools, practices, procedures, and processes) may effectively help them to overcome the current challenges, in which sustainable development stands out.

For such a purpose, QM must help organisations to be prepared for constant mutation and growth, and “following procedures is not a solution” [3,4]. However, QM theories are still insufficient to explain how quality management reinforces, modifies, and adapts organisations to cope with social dynamics and new situations [5]. Some authors [5–7] call for more research exploring the ways in which organisational learning and innovation could be better integrated with QM. Backström [8] and Fundin [5] discuss possible strategies for an emergent QM era. In line with this discussion, van Kemenade and Hardjono [2] defend the idea that a new quality paradigm is flourishing, which is focused on being open to change, long-term perspectives, stakeholders, and networks to build a systemic approach. However, how can organisations develop their QM in order to achieve these goals? Fundin [5] suggests that the current QM paradigm could go in several directions. Thus, the present research work supports the proposition that the integration of sustainability into QMS could be one of the viable pathways to the development of this emergent QM paradigm. The integration of sustainability into QMS has been defended as a path to the improvement of the company's performance and, therefore, to increase its competitive advantage by accomplishing its economic, social, and environmental goals. [9,10]. Empirical and theoretical research about the integration of sustainability into QMS (SQMS) has increased. Several studies have been published relating to integrating sustainability with management systems [11–13]. However, this integration implies changes to adapt QMS to a new context's sustainability pressures, i.e., resistances and obstacles to overcome. For this, Leadership is decisive in this changing process; leaders point out directions that inspire changes throughout the organisation. Everyone's involvement in the changing process minimizes the resistance resulting from the modifications [14]. The quality managers' role is crucial; they need to cope with new competence challenges, namely at the strategic and leadership level [4]. Competencies such as intercultural capabilities, adaptability, flexibility, and the ability to create synergies in order to achieve sustainable goals are essential in order for leaders to conduct QMS [3]. The research conducted by Fundin [5] presented an overview of the five themes as important elements in a strategy for emergent quality improvement: leadership, quality organisation, prioritisation, knowledge and competence, and the quality profession. For these authors, leadership involves developing skills for emergencies, like adaptability, resistance, and a willingness to change. The literature defends the notion that the quality profession should develop a long-term perspective into a life cycle approach, with leadership being one of the five most important competencies towards the emergent quality paradigm [5].

For this, leadership is decisive in pointing out directions that inspire changes throughout the organisation [15], involve all employees in sustainable development, and contribute to the new QM paradigm. Some authors identify the relationship between leadership styles and the different quality development stages as future research areas [16]. It is necessary to deepen the research that combines QM and Leadership in the current context. To reinforce the initial proposition, this work defends the idea that leadership plays an essential role in the pathway of the development of the Emergency QM paradigm by SMQS.

Concerning the problem described above, the main research goals are:

- to point out sustainable quality management systems as a viable pathway to explore QM knowledge with regard to the Emergency paradigm, enhancing the leadership's role.
- to deepen the relationship between leadership and quality management.
- to understand how this relationship can help quality managers develop more sustainable QMS, contributing to the new QM paradigm.

In the first phase, this work starts with a systematic literature review that aims to deepen the relationship between leadership and quality management, i.e., to portray the

state-of-the-art that combines QM and Leadership, and to unveil approaches, theoretical models, and different interconnection aspects in both areas.

An exploratory survey was then conducted in order to understand the perception of a group of quality managers who work in Portugal's companies regarding the integration sustainability into QMS and their leadership styles.

The next section presents a literature review which summarizes and characterizes the theoretical constructs which underpin the subsequent exploratory survey. In the last sections, the results are presented and discussed. The paper concludes with theoretical and managerial implications, followed by suggestions for future research.

2. Literature Review

This section fits QM into the current sustainable paradigm, and presents a brief description of the theoretical leadership models, relating leadership with sustainability.

2.1. Corporate Sustainability

Corporations play an essential role in society, pursuing sustainable development from social, economic, and environmental perspectives. They contribute to the creation of jobs, income, human capital development, technology transfer, and products and services [17]. The idea that corporations apply social and environmental performance standards and practices while meeting their financial and legal obligations is usually referred to as corporate sustainability (CS). CS is considered in several general practices, such as making socially responsible investments or behaving ethically. Such practices should be extended by developing a business model that is simultaneously socially, environmentally, and economically sustainable, and also scalable [17,18]. Kantabutra and Ketprapakorn [18] define corporate sustainability as "the leadership and management approach that a corporation adopts so that it can profitably grow and at the same time deliver social, environmental and economic outputs". CS is a broader concept that shows corporate commitments to advancing its performances in three dimensions (social, environmental, and economic), and it focuses not only on the short-term but also long-term aspects of corporate activities. As social standards and science evolve, the needed "integration of sustainability requires the consideration of the complex interactions of social, environmental, and economic aspects simultaneously, and varying degrees of temporal impact (short-term vs. long-term)" [19]. Other definitions of corporate sustainability can be found in the literature: CS "refers to the integration of economic, environmental, and social considerations on the part of corporations" [20]; CS is defined "as organisational approaches aimed at achieving a balance between short-term organisational goals and long-term enterprise and social responsibility" [21]; CS is also defined "as the integration of financial benefit, environmental protection, and social responsibility into business operations and management protection, and social responsibility into business operations and management" [22].

2.2. Sustainable Quality Management Systems in the Current Paradigm

QM is one of the most important discussion areas in modern management, being recognised by organisations as a strategy to pursue in the challenging current context. However, it is critical to revisit the QM concept to explore new ways of integrating it into a contemporary context, in order to achieve both efficiency and effectiveness [5]. Significant research has been focused on the dilemma between the need to exploit existing knowledge and the need to explore new knowledge for the long-term sustainability of an organisation [23]. The long-term initiatives are a new challenge for quality managers. This perspective is less prioritised due to 'instant' problems in production, or customer problems that must be solved immediately. Nowadays, it is necessary to balance the nature of short-term versus long-term planning decisions, an orientation towards current versus future customer solutions, global versus local principles orientation, and agility versus stability regarding process management [5]. Fundin, et al. [24] interconnect internal efficiency (i.e., "doing things right") and external effectiveness ("doing the right things") as key factors

in managing the actual quality dilemma. Such is the emergent QM paradigm: there is a need for quality management to focus more on issues supporting exploration and external effectiveness [24]. This new paradigm of quality management could help organisations to cope with a fast-changing complex environment in modern times. van Kemenade and Hardjono [2] identify four quality management paradigms in the literature—Empirical, Reference, Reflective, and Emergency:

- In the Empirical paradigm, quality is conformance to requirements; it is objective and focused on rules. The problems are essentially technical, and are solved through science. The purpose of this paradigm is the optimization of material, financial and technological resources. In this paradigm, leadership is directive and technical, and fits with the “manager in control”.
- As not everything can be measured with parameters, the Reference paradigm emerges, and provides models and guidelines instead of rules. It promotes continuous improvement and quality awards, supported on models like the ISO 9000, Balanced Score Card, EFQM Excellence Model, or the National Malcolm Baldrige Quality Awards. Leadership in the Reference paradigm is supportive, and is designated as coaching leadership.
- In the third paradigm, the Reflective paradigm, quality is subjective. It assumes no universal reality; each person can have his/her perspective. It is a paradigm that promotes the sharing of views. It is subjective and based on aspects that cannot be observed. It considers people, their interactions, and their capability to reflect on problems, developing the criticism perspective. Leadership is based on delegation; the focus of this paradigm is socialisation competence, and the professional knows best what to do.

A fourth paradigm, designated as the Emergency paradigm, has flourished, and is still under development. Several quality management efforts fail, i.e., managers do not delegate quality responsibilities involving everyone, and there is a failure of management leadership, poor communication with labour force, and resistance to change. This new paradigm is based on the creation of networks, both internal and external, fostering a quality culture with an openness to change. It bets on leadership, which is fundamental in implementing quality management systems and developing an effective organisational environment to involve all employees in the pursuit of quality goals. Following the Emergence Paradigm will imply leadership training, promoting a collaborative, participative, and situational leadership. The Emergency paradigm defines quality holistically, considers all stakeholders’ needs and expectations, and adapts to solving problems by viewing each reality [25].

This last paradigm assumes that companies permanently face uncertainties, and new and diversified challenges claiming proactive continual improvement and innovations in organisational, operational processes, and products based on a sustainable business model. The Emergence Paradigm would imply that an organisation is open to change and its context, in order to start a continuous dialogue with all stakeholders on quality, based on virtues and shared values rather than rules, models, and principles. Emergence is a concept from the systems theory supported by the interaction between the system and its environment [26], and it develops a systemic perspective [2].

As was defended in the introduction section, this new and desirable paradigm could be built in several directions. Once a strategy based on sustainability has been decided at the executive level, the top management will establish, implement, and maintain a QMS’s quality policy appropriate to the organisation’s purpose and context, and which supports its strategic direction. The integration of sustainability into QMS could be a fruitful pathway to develop this new paradigm, as both claim to be open to change, to focus on stakeholders, and to use a systemic approach to the achievement of long-term results. Sustainability can be achieved using better-coordinated management processes and resources through the implementation of QMS to meet different stakeholders’ needs and expectations [12]. Several studies show that QMS support environmental processes and relationships with stakeholders [27]. Poltronieri, et al. [28] performed a literature

review to summarize the ways in which quality management research has been linked with sustainability management. Their results were clustered into four main topics:

- Supporting sustainability through the integration of management systems.
- Quality Management as support for the implementation of an Environmental Management System (EMS).
- Supporting the integration of sustainability considerations in daily work.
- Supporting stakeholder management and a focus on customers.

The evolution of the standards that define the QMS requirements seems to follow the same line. According to [29], there is evidence that changes in recent ISO editions (e.g., ISO 9001:2015) are linked with elements contributing to the development of a corporate sustainability management model, i.e., by introducing the following clauses:

- 4.1. Understand the organisation and its context, providing open and systemic approach management.
- 4.2. Understand the needs and expectations of the interested parties, promoting the involvement of stakeholders.
- 5. Leadership was reinforced in the current ISO 9001:2015 version, with a whole chapter dedicated to leadership, fostering a culture of sustainability. It will strengthen the culture and commitment of all to fulfil the objectives, whether in terms of quality (with economic impact), the environment, or social dimensions. In this regard, quality standards can play an important role. As was referred to above, ISO 9001:2015 enhances leadership, which replaced the previous edition's concept of management responsibility, implying that the top management engages and supports the QMS [30]. Leaders at all levels must establish a unity of purpose and direction in order to create conditions in which people are engaged in achieving the organisation's quality objectives [31]. This has been one of the major new approaches of ISO:9011:2015, which enables managers to demonstrate their leadership throughout the organisation, as defended by Fonseca and Domingues [32].
- 6.1. Actions to address risks and opportunities allow the development of a more preventive management model extended to economic, environmental, and social impacts from a triple-bottom-line perspective.

Supported in these advances in terms of requirements imposed by standards, several contributions have been made in the development of SQMS models: Nawaz and Koç [33] developed a holistic CSM model named Sustainability Management System Framework (SMSF), the Lean-Integrated Management System for Sustainability Improvement (LIMSSI) [34], and Sustainable Management Systems Standards (SMSS): Structures, Roles, and Practices [29].

2.3. Leadership and Sustainability

Leadership approaches are associated with variables that promote change, leading to organisations' success by fulfilling their objectives [35]. Leadership can be defined as personality characteristics that influence others to pursue the organisation's goals by attending to their customers' needs and expectations [25]. The influence process can be understood as being dynamic and interactive; as such, leaders and followers have mutual influence and involve social exchanges [36]. "A charismatic leader gains the trust of his followers, establishes a vision for the future and is respected" [25].

Contemporary leadership approaches seek to identify a leader as an agent of change and transformation. Avolio and Bass [15] defend three leadership models: transactional, transformational, and non-transactional or *laissez-faire*:

- Transactional leadership is based on an exchange of rewards for the effort and goals achieved. Leaders use incentives and their power of persuasion to achieve high levels of performance. However, this is not only translated into benefits, and punishments are also attributed to mistakes and failures.

- Transformational leadership is built on the transactional model, but it goes further and achieves better results in terms of change. The focus is on developing team members and recognizing the individual needs and desires of each one. This type of leader encourages employees to solve problems in different ways, promoting growth and quality. This leadership model is also very focused on change, which can be an asset for organisations in the current dynamic scenario [37].
- Non-transactional or *laissez-faire* leadership is characterised by passive behaviour. The leader avoids commitment and intervention in the organisation's activities [38]. This type of leader usually does not establish goals and objectives for his/her workers, making it difficult to organise work and promote continuous improvement [25].

The research about leadership continues to evolve, mainly by exploring its association with other areas [16], i.e., sustainability management.

To be sustainable, corporations need to embody sustainability strategies in their business model, e.g., governance strategies that involve stakeholders conscientiously, and which contribute to the triple bottom line (TBL) dimensions [39,40]. However, corporate public commitments to sustainability should be real and not just rhetoric, and should be "aimed at creating an image of caring about various social and environmental issues" [41]. Organisations should incorporate social and environmental key performance indicators (KPIs) with the leaders' managerial rewarding structures, which most certainly have significant managerial behaviour implications. Unless managers are intrinsically motivated towards sustainability, they will consider sustainability in their decisions and actions only at stakeholders' requests, or if they are encouraged by rewarding incentives [42].

In the corporate sustainability context, organisational leaders articulating a sustainability vision should be perceived as credible and trustworthy by stakeholders [18]. In this regard, CS can be seen as "the leadership and management notions that a corporation embraces so that it can deliver social, environmental, and economic outputs at the same time" [18]. Effective organisational members who take a leadership role ensure the organisation's commitment only if they can convey an image of a better future for the organisation, themselves, and society.

3. Materials and Methods

This work followed a mixed-method approach. Firstly, a Systematic Literature Review (SLR) was conducted to exhibit the state-of-the-art within the scope of Quality Management and Leadership, and to deepen the relationship between them. An SLR allows us to summarise the existing evidence concerning a topic, identify gaps in the current research, and provide a framework or background to position new research activities appropriately [43]. An exploratory survey was then conducted to identify and analyse the quality managers' perceptions of their leadership styles, and to assess the importance of integrating sustainability into their management processes. A descriptive analysis followed, in order to understand the questionnaire results.

3.1. Gaps, Purpose and Objectives

Organisations expect to recognize the QMS' value in overcoming the current challenges, amongst which sustainable development stands out. This is a new role for quality management systems, and it has been integrated into the current QM paradigm, known as the Emergency paradigm. However, some gaps were identified in the literature review:

- It is critical to revisit the QM concept to explore new ways of integrating it into a contemporary context, to achieve both efficiency and effectiveness [5], contributing to going beyond the existing knowledge and exploring new knowledge-driven methods of achieving the long-term sustainability of an organisation [23].
- The literature defends the idea that Quality professionals should develop a long-term perspective into a life cycle approach, with leadership being one of the five most important competencies for the emergent quality paradigm.

- Some authors identify the relationship between leadership styles and the different quality development stages as future research areas [16]. Therefore, it is necessary to deepen the research that combines QM and Leadership in the current context.

Several scientific contributions point to models for the integration of sustainability with the requirements of quality management systems. However, identifying these synergies and pointing out paths for their integration is only the first step. It will also be necessary to understand how quality managers face this challenge, i.e., whether they care about sustainability in managing the QMS processes. What are their behaviours, attitudes, and leadership styles aimed at involving everyone, allowing organisational changes that strategically promote a sustainable QMS (SQMS)?

As this research aims to point out that the SQMS is a viable pathway to explore QM knowledge for the Emergency paradigm, enhancing the leadership's role, this work starts with narrative literature to interconnect the QM paradigm, SQMS, and Leadership.

Then, as described in Figure 1, in order to deepen the relationship between leadership and quality management, it portrays the state-of-the-art that combines Quality Management and Leadership, and unveils approaches, theoretical models, and different interconnection aspects in both areas.

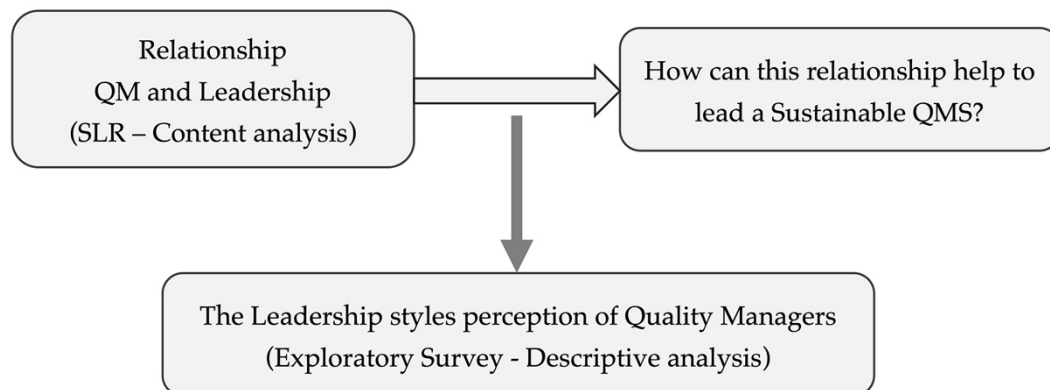


Figure 1. Goals and methodology.

Subsequently, it is essential to understand how this relationship between Quality Management and leadership helps organisations to develop a more sustainable QMS, contributing to the new QM paradigm. For this, an exploratory survey was conducted in order to understand the perceptions of quality managers regarding sustainability integration into QMS and their leadership styles:

- How important is it for these practitioners to manage processes considering the sustainability concerns?
- Which leadership styles are self-perceived by these quality managers?
- Will these professionals have a predominant leadership style to enhance QMS and sustainability synergies, promoting a sustainable management strategy?

3.2. Proceedings of SLR

The SLR followed the steps suggested by Denyer and Tranfield [44], as structured in Figure 2.

Step 1—Setting the aim.

This step is intended to characterize studies that combine Leadership and QM to understand the theme's evolution until the present moment through the number of publications, practical applications, theories, and models that are commonly adopted to merge both the contributions and relationships established between Leadership and QM.

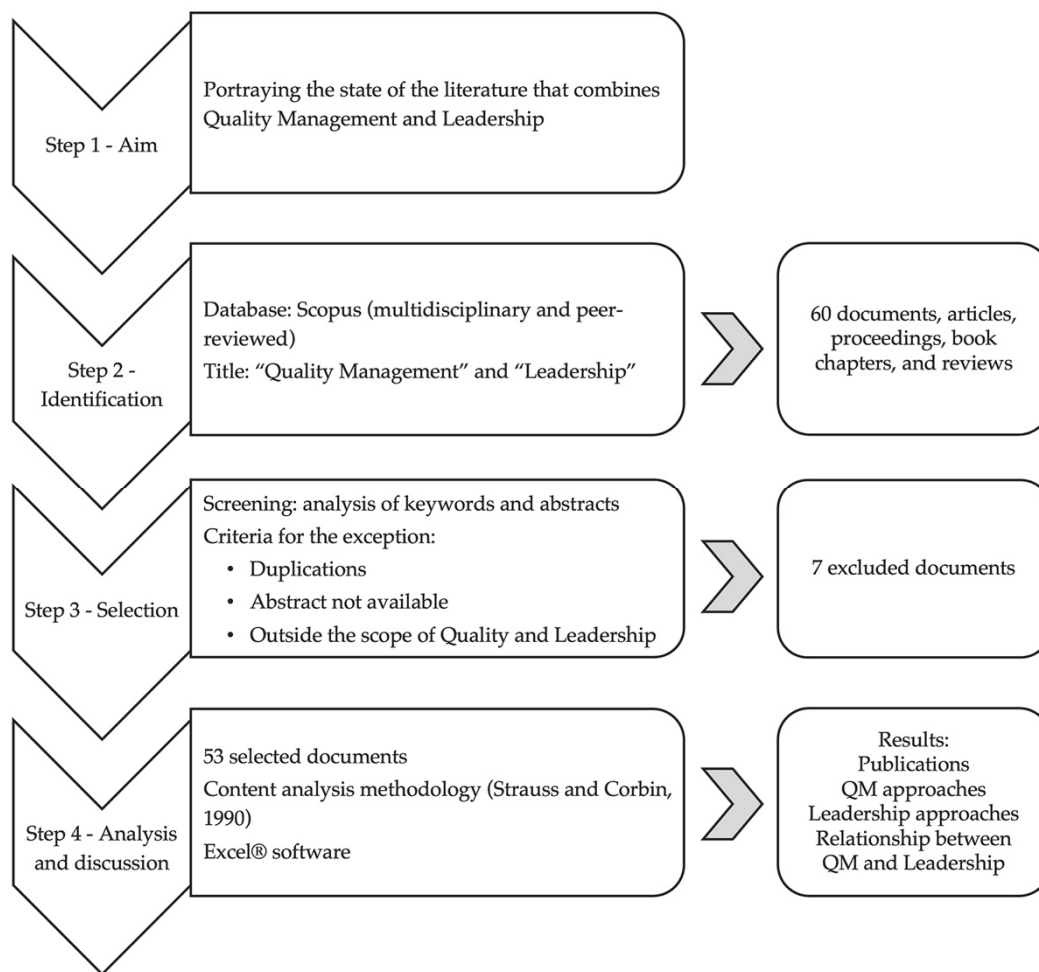


Figure 2. Steps of the Systematic Literature Review.

Step 2—Identification of the studies.

A sample of articles was collected in the scientific database Scopus, as it is one of the largest global databases with available peer-reviewed abstracts and citations. The other criteria for the selection of this database were multidisciplinary fields, such as science, technology, social sciences, and arts and humanities. Those criteria were very important for this research, as it aims to study the relationship between leadership and QM from a broad perspective in different sectors. A literature search was performed in May 2020 using the search path [(Leadership) AND [(Quality Management)]] in the title field, without any date restrictions. The choice of the title field was intended to collect a sample of studies focused on the combination of leadership and QM. The preliminary results returned 60 documents, including 42 articles, 14 conference papers, three review articles, and one book chapter.

Step 3—Selection.

The keywords and abstracts of all of the articles were considered. Seven articles were excluded (two were duplicated, two due to lack of leadership focus, and three the abstracts of which were not available in the database), resulting in 57 relevant articles for the analysis.

Step 4: Results and Analysis.

The analysis followed the qualitative approach for the organisation, categorisation, and data coding. Inspired by Barratt, Choi, and Li [34], this process was supported by Excel® software, building a database structured according to the following coding criteria (Table 1):

Table 1. Coding criteria.

Coding Criteria	Description of Coding
Publication year	The year in which the article was published
Contribution	A short description of the content in terms of contributions
Type of article	Empirical, conceptual, or review
Methodology	For example, case, survey, experiment, action re-search, review, or interview study
Research strategy	Quantitative or qualitative
Results	The outcomes of the articles, such as models, frameworks, propositions
Quality Management Focus	Identification of the main QM approaches, such as TQM, QMS, principles, tools and practices, performance and maturity
Leadership Focus	Identification of the main leadership approaches
The interrelationship between QM and leadership	Analysing how the relationship between these two areas has been researched

3.3. Proceedings of the Exploratory Survey

A questionnaire was developed with a first set of questions to collect the participants' demographic data and their company's data. Then, some questions were structured to understand these professionals' perceptions about implementing sustainability practices in the process management integrated into QMS. This group of questions was structured on a 5-point Likert scale, in which 1 means "totally disagree" and 5 means "totally agree".

Finally, another group of questions was structured to analyse leadership styles from these professionals' perspectives. In this section, the data collection instrument was the Multifactor Leadership Questionnaire®—5X Short Leader Form MLQ (view of the leader) developed by Bruce Avolio and Bernard Bass [15]. The publisher Mind Garden had the right to use the third edition, with a Portuguese translation. In the data collection process, the 45-item version was applied. It is the most suitable for organisational studies and scientific research to assign the dimensions characterised as Transformational Leadership, Transactional Leadership, and *Laissez-faire* Leadership. These 45 items were organised in nine subscales, as shown in Table 2, and were evaluated with a 5-point Likert scale, in which 0 corresponds "not at all", 1 refers to "once in a while", 2 means "sometimes", 3 corresponds to "reasonably often" and 4 means "frequently if not always".

Table 2. MLQ dimensions.

	DIMENSIONS
Transformational Leadership	IDEALISED INFLUENCE (ATTRIBUTED) IDEALISED INFLUENCE (BEHAVIOUR) INSPIRATIONAL MOTIVATION INTELLECTUAL STIMULATION INDIVIDUALISED CONSIDERATION
Transactional Leadership	CONTINGENT REWARD MANAGEMENT-BY-EXCEPTION (ACTIVE)
Laissez-faire Leadership	MANAGEMENT-BY-EXCEPTION (PASSIVE) LAISSEZ-FAIRE

According to Bass [45], four dimensions of transformational leadership can be distinguished:

- Idealised influence: leaders assume the organisation's and employees' objectives, demonstrating a spirit of sacrifice for the common goal, not expecting to be recognised or idolised.

- Inspirational motivation: leaders focus on developing employees with regard to concerns of ethics, truth, and harmony.
- Intellectual stimulation: leaders admit that differences stimulate a critical spirit in finding solutions.
- Individualised consideration: leaders encourage employees to succeed by helping and supporting them.
- Transformational leadership is associated with two dimensions:
- Contingent reward is expressed through recognition and reward when objectives are achieved, and it expects performance improvement, both at the individual and group levels.
- Management-by-exception (Active): strict control of errors and failures is implied, in order to take measures immediately after their occurrence.
- Two more dimensions evaluate *laissez-faire* leadership:
- Management-by-exception (Passive): this translates into apathetic behaviour in the face of problems; the leader decides to intervene only when the issues become severe and negatively impact the organisational performance.
- *Laissez-faire*: this dimension is generally associated with (non-)leaders, given the absence of leadership due to lack of involvement in decision making in urgent matters.

The survey used Google Forms, having requested by email the collaboration of the selected companies with activity in Portugal and certified QMS. The data collection process took place in November 2020, resulting in 52 responses.

4. Results

4.1. Systematic Literature Review Results

The content analysis led to the clustering of the four main themes which portray the state-of-the-art that relates Leadership with QM: Theme I—Publications; Theme II—QM approaches; Theme III—Leadership approaches; and Theme IV—The relationship between Leadership and QM.

4.1.1. Theme I—Publications

The first database article was published in 1990 [46]. The number of publications showed a significant increase in recent years. It should be noted that although the SLR was carried out in May 2020, this year already presents the highest number of publications, with seven published documents having been identified in the sample, as shown in Figure 3.

However, throughout the years, the contributions and methodologies of the published articles changed. Until 2000, 80% of them consisted of reviews, and only 10% consisted of surveys. From 2000 to 2020, there was an apparent inversion: empirical works with a quantitative investigation strategy structured in surveys composed 59.5% of the articles, whereas only 14.8 % were review articles. These results could indicate that this research topic has also been transferred to a more practical research field.

The highlighted subject areas were business, management, and accounting (29.1%), followed by social sciences (17.4%) and engineering (15.1%).

The results presented in Figure 3 show that the research comprising both Leadership and QM is an emerging area with a broad practical implication in the industry, education, and health sectors. Studies were identified in several industries, such as food [47], oil [48], automotive [49], and construction [50]. In the educational area, the works were more focused on higher education [51–55]. However, this area has also raised interest in secondary education [56] and primary education [57]. The healthcare performance was interlinked with leadership from different perspectives [58], and for other functions, such as nurses [59] and executives [54].



Figure 3. Timeline of the analysed articles about Leadership and QM.

4.1.2. Theme II—QM Approaches

Considering the quality management area, studies focused on quality practices were found [60,61], as well on quality tools [49]; quality principles [25,62,63]; quality management systems standards, such as ISO 9001 [31]; models of quality management, like Total Quality Management (TQM) [50,52,64–71]; quality management maturity models like the quality management systems index (QMSI) [72], the Malcolm Baldrige National Quality Award [70], and the European Foundation for Quality Management Excellence Model (EFQM) [55,73,74]; world-class manufacturing [69]; and Hayes' six stages of quality system implementation [47,49,75].

4.1.3. Theme III—Leadership Approaches

Within the scope of the leadership models referenced in the literature review section, the most significant emphasis was placed on transformational and transactional leadership [25,48,49,54,61,64,65,69,72]. Some instruments that assess the leadership profiles were referenced, such as the Multi-Factor Leadership Questionnaire [15], the Leadership Profile Questionnaire designed by Sashkin and Rosenberg [as cited in 57], and the Myers-Briggs Type Indicator (MBTI) [71]. Other leadership approaches were also the object of study regarding their interrelation with QM. Such is the case for leadership turnover [76], the Competing Values Framework leadership model [25], Communicative leadership [58], and Feminist leadership [77].

4.1.4. Theme IV—the Relationship between QM and Leadership

The studies dedicated to the relationship between QM and Leadership try to understand the role of each one. In this regard, some authors choose to study the effect of several factors together, such as quality management, leadership, and knowledge management. This perspective is often followed, as it intends to understand QM and leadership practices' impact on the organisation's management processes and performance [52,67,78]. Chen, Lee and Wang [64], supported by the input-process-output approach (IPO), advocate that TQM should be considered as an input, and that transformational leadership should be considered as a mechanism (process) that allows the coordination of internal and exter-

nal elements in order for the organisation to reach a sustainable competitive advantage (output).

Some correlational studies were focused on the impact of different leadership styles on quality management performance [25,61,66,79,80]. The interest in measuring the influence of several factors on the employees' performance leads to the development of studies that intend to understand the relationship between transformational leadership, transactional leadership, and TQM [48]. However, other studies were designed to determine the effect of ISO 9001 [31] on the top managers' responsibility to manage the organisation's resources and processes. The comparative study shows that top management's commitment was higher in organisations implementing the ISO 9001 for more than seven years [47].

4.2. Exploratory Survey's Results

A descriptive statistical analysis was performed to analyse the survey results, calculating the means and standard deviations for the quantitative measures. The content analysis was applied to the questions with open answers.

The sample comprises 52 quality managers (QMS managers or integrate management system (IMS) managers; only four participants were partner managers) between 25 and 62 years old, with 67.3% being over 40 years old. Only 11.3% had professional experience of less than or equal to two years, 26.4% had performed this role for five years, and 43.4% had been a quality manager for over ten years. Most of these participants had considerable professional experience; hence 62.3% were in this role for more than five years. Manufacturing was the most represented industry (44.2%), followed by wholesale trade (9.6%) and construction (7.7%). In total, 40.6% of the sample worked in medium-sized companies (50 to 250 workers), and 84.6% of the sample belonged to national groups.

All of the companies were QMS certified through ISO 9001:2015 or IATF 16949:2016. In total, 57.7% had been certified for over ten years; only 23.1 % had been certified for less than or equal five years.

When they were asked about the most significant difficulties felt in the management of the quality system, these professionals highlighted the resistance to change, the availability and involvement of all employees, and the process owners.

The participants shared a firm agreement level (mean = 4.57) that the top management knows the market risks of the company. They highlighted (mean = 4.25) the implementation of continuous improvement process plans to be more sustainable with regard to the environmental, social, and economic aspects, and more specifically the systematic reduction of pollution sources (mean = 4.17). To implement such plans, they establish clear and objective performance indicators (mean = 4.26). However, these results show that the most significant difficulties are centred at the employee involvement level, as it is not so consensual to develop practices for the discussion of these same plans with employees (mean = 3.65), nor to develop award practices for employees who suggest process improvements (mean = 2.96).

As shown in Table 3, this group of quality managers identified more with the transformational leadership style, as it has a higher global average (mean=3.05). According to the managers' perceptions, inspirational motivation is the most used transformational leadership dimension in their roles as QMS leaders (mean=3.19). In total, 63.5% of the participants stated that they often express confidence that the goals will be achieved (item 36, with mean = 3.37); 59.6% often articulate a positive vision of the future (item 26, with mean = 3.10), and 53.8% often optimistically describe the future (item 9, with mean = 3.12).

Table 3. Leadership styles results (scale 0–4).

	DIMENSIONS	MEAN (0–4)	TOTAL MEAN
Transformational Leadership	IDEALISED INFLUENCE (ATTRIBUTED) (ITEMS 10, 18, 21, 25)	2.82	3.05
	IDEALISED INFLUENCE (BEHAVIOUR) (ITEMS 6, 14, 23, 34)	3.03	
	INSPIRATIONAL MOTIVATION (ITEMS 9, 13, 26, 36)	3.19	
	INTELLECTUAL STIMULATION (ITEMS 2, 8, 30, 32)	3.11	
	INDIVIDUALISED CONSIDERATION (ITEMS 15, 19, 29, 31)	3.09	
Transactional Leadership	CONTINGENT REWARD (ITEMS 1, 11, 16, 35)	2.83	2.70
	MANAGEMENT-BY-EXCEPTION (ACTIVE) (ITEMS 4, 22, 24, 27)	2.58	
Laissez-faire Leadership	MANAGEMENT-BY-EXCEPTION (PASSIVE) (ITEMS 3, 12, 17, 20)	1.11	0.84
	LAISSEZ-FAIRE (ITEMS 5, 7, 28, 33)	0.58	

The participants reported that they often use intellectual stimulation (mean = 3.11), emphasizing the strategy in order to encourage different alternatives in solving problems (item 8, with mean = 3.27). In total, 61.5% often examine critical situations, asking if they are adequate (item 2), and the same percentage of respondents admit that they often suggest new ways of carrying out and completing activities (item 32).

Within the transactional leadership style (mean = 2.70), contingent reward (mean = 2.83) is used more compared to management-by-exception (mean = 2.58). Regarding contingent reward, item 35 presents the upper average (mean = 3.27), with 40.4% of the respondents showing that they often express satisfaction when others live up to expectations, with 44.2% always doing so.

In the management-by-exception, 55.8% of the respondents admitted being aware of errors, and half of the participants often direct their attention to failures.

For the *laissez-faire* leadership style (mean = 0.84), the mean of the management-by-passive exception dimension was 1.11, as 53.8% of the respondents reported that they rarely expect things to go wrong enough to start taking action, with 42.3% saying that they never adopt this behaviour. However, 32.7% of the respondents admitted that they often show that they believe that one “does not change what is going well” (item 17). The same percentage of participants (32.7) assumed that they followed this strategy a few times.

The *laissez-faire* dimension seems to be ruled out by these professionals. In total, 63.5% reported that they never avoid getting involved when important issues arise (item 5), and 55.8% also stated that they are never absent when employers need them (item 7). Half of the participants also mentioned that they never avoid making decisions (item 28), but 11.5% said that they do this sometimes.

5. Discussion

QM has evolved to support organisations' management models, going through four main paradigms: Empirical, Reference, Reflective, and Emergency [2]. As set out above, the present research work supports the proposition that the integration of sustainability into QMS could be a possible viable pathway to the development of the last QM paradigm: Emergency. The symbiosis developed between QMS and corporate sustainability seems to bring mutual benefits. On the one side, the QMS' added value is enhanced by increasing the internal and external benefits generated by its implementation. On the other side, it enables the development of sustainability management strategies in a structured, systematic, and continuously-improving way.

Therefore, it seems that there are the necessary ingredients for the development of corporate sustainability through its integration into the QMS. The QM standards (such as ISO 9001:2015) have added requirements that reinforce this proposal, and several models have been developed that point out structures, tools, and practices to promote this interconnection [29,33,34]. Even so, these factors may not be self-sufficient. A leader must conduct this 'orchestra', in which there are 'instruments' (standards and models), but the involvement of people is also important to achieve the sustainable strategies set. What is the role of Quality Managers to add this last element ('the musicians') to the 'orchestra'? Martin, et al. [81] identified four main quality management responsibilities levels: centralised and strategic; centralised and operational; local and strategic; and local and operational. Other research works [5] have defended the idea that Quality professionals should develop a long-term perspective into a life cycle approach, bet on customer loyalty, and develop a more committed attitude towards work with quality. These roles are critical drivers of the emergent quality paradigm. Thus, the quality manager should be a key element in the implementation of these synergies and models of integration, building strategies that promote an SQMS. Leadership and/or practices have led to recent calls for a more direct and comprehensive approach to exploring and defining the actual competencies required for quality management [82]. Accordingly, it is necessary to understand the relationship between leadership and quality management, realizing the role and the importance of leadership in a QMS.

The SLR results show that there are studies in both directions, i.e., the impact of leadership on Quality Management, and the reverse. The results were in line with the statistical evidence of leadership's impact on QM [61,80] and the significant effect of charismatic leadership in TQM implementation [48]. Other results indicate that leadership is an essential element of QM and human resource management practices, affecting core quality practices (such as statistical process control and other QM techniques) and, consequently, quality performance [60]. Some authors set QM as a mediator of transactional and transformational leadership's influence on employee performance and attitudes [48]. Chen, Lee and Wang [64] argue that transformational leadership and managers' skills (executives) have a mediating effect on the interrelationship between TQM and a sustainable competitive advantage. Leadership is also recognised as a 'facilitator' element in following the organisation's mission and vision [73].

The SLR also found some studies that present conceptual models for the effective integration of leadership and QM. Farooqui and Ahmed [50] proposed a model designated as 'Leadership-based TQM' to assess the leadership role in organisations that have implemented, or have a plan to implement, a TQM program. Aldaweesh, Al-Karaghoul, and Gallar [52] developed a framework for adopting TQM and leadership. Table 4 presents, in detail, the cross-tabulation of the main topics of QM and Leadership.

Table 4. Cross-tabulation of QM and Leadership studies.

Leadership Quality	Transformational	Transactional	Laissez-faire	Styles and Behaviours
TQM	Chen, Lee and Wang [64], Rahman, Nor, Wahab and Mansor [65]			Gibson [46] Levin [83] Waldman [84] Van Allen [85] Krumwiede, Sheu and Lavelle [71] Savolainen [86] Marco Perles [87] Osayawe Ehigie and Clement Akpan [68] Saiti [67] Aldaweesh, Al-Karaghouli and Gallear [52] Soliman [66] Chen, Lee and Wang [64] Clay-Williams, Taylor, Ting, Arnolda, Winata and Braithwaite [72]
QMS	Gowen, Henagan and McFadden [54]			Clay-Williams, Taylor, Ting, Arnolda, Winata and Braithwaite [72] Walaszczyk and Polak-Sopinska [47]
QM Principles	Barbosa, Gambi and Gerolamo [25]	Barbosa, Gambi and Gerolamo [25]		Milkva, Paulova and Ruskova [62]
QM Tools and Practices	Chan, Tiwari, Ramlan and Ahmad [61]	Chan, Tiwari, Ramlan and Ahmad [61]	Chan, Tiwari, Ramlan and Ahmad [61]	Kharub, Mor and Sharma [75] Mukwakungu, Lumbwe, Niati and Mbohwa [78] Chansatitporn and Pobkeeree [80]
Performance				Zhang, Zheng, Kang, Zhao, Luo, Li and Liu [79]
Maturity	Rosenkrantz [49]	Rosenkrantz [49]		Quddus and Ahmed [73] Anyamele [55] Anyamele [74] Chen [70]

Although a significant part of the studies refers to quality management in general, it was possible to allocate a set of works to Quality-specific topics, such as TQM, QMS, QM principles, QM tools and practices, performance, and maturity. There is an emphasis on studying the leadership associated with TQM, and then with QM maturity. The transformational leadership model has been selected in research related to TQM, QMS, Principles, Tools, Practices, and Maturity. These studies were performed in the last 11 years, indicating that this leadership model has raised more interest in QM research in the current context.

To summarise, leadership has been identified as a key element in QMS performance, and as an emerging and transversal theme in the academic field, enhancing the relationship between transformational leadership and QMS. This relationship should be a useful element in helping organisations to develop a more sustainable QMS, contributing to the new QM paradigm.

The preliminary survey results indicate that quality managers recognize that the QMS allows the integration of sustainability aspects into their processes by continuous improvement plans with environmental, social, and economic objectives. Nevertheless, there was less evidence regarding the discussion of these improvement plans with employees, and less consensus in the development of motivation practices regarding employees' involvement in these plans. These results are in line with another study which aimed to understand how quality professionals perceive the integration of sustainability through the requirements of the ISO 9001:2015 [88]. In this work, two requirement groups were

presented with different perception levels about the integration of sustainability into the QMS. For these professionals, in a group of requirements designated as Planning, Goals, and Performance, there was a higher perception that sustainability had been integrated into the QMS by accomplishing a set of requirements. These requirements demanded the greater involvement of quality managers, namely by establishing objectives to incorporate the TBL vectors at the planning level, defining responsibilities and authorities, and conducting a top management review that included the analysis of sustainability goals. The results show that sustainability was integrated into continuous improvement planning and the development of a corporate sustainability strategy.

In the other group of requirements, cited as involvement and commitment, the integration of sustainability into the QMS was perceived at a lower level (with the lowest mean). It is not so evident that these professionals involve, raise awareness, and commit others to sustainability through the QMS [88].

As defended in the literature [2], following the current QM challenges featured on the Emergency Paradigm will imply leadership training, and the promotion of a collaborative, participative environment.

What is the predominant leadership style perceived in this group of quality managers? Will it be an element that facilitates this integration and promotes a strategy and a culture favouring sustainable development, contributing to this emergent QM era?

According to the preliminary results presented, it was found that the QMS leaders associate themselves more with the transformational leadership style, with a strong commitment to inspiring and motivating strategies, emphasising a positive vision about the future. The intellectual stimulation dimension was also highlighted to incite a critical spirit in the development of alternative solutions and rethinking activities and proceedings. These highlighted transformational leadership dimensions converge with the leadership approach defended by the most recent QM paradigm, which promotes participation and motivation to integrate the strategies, promoting each element as part of some solution.

Compared to the transformational leadership style, the dimensions associated with transactional leadership were not as prominent in this group. Even so, contingent reward proved to be a practice adopted by these professionals as recognition of an employee reaching expectations. Also, attention to failure and errors had some emphasis amongst these professionals.

Although these professionals identified more with the transformational leadership approach, the most significant difficulties were centred at the employee involvement level.

Thus, considering these preliminary results, in order to reinforce the integration of sustainability through the QMS requirements, a more significant effort seems to be necessary for the adoption of the transformational leadership approach that promotes change, encouraging and motivating all in the development of an SQMS.

6. Conclusions

Despite the added value of quality management over the decades in improving organisations' results by implementing rules, procedures, standards, and continuous improvement models, a new QM era is flourishing, which is designated as the Emergency QM paradigm. In this paradigm, QM must help organisations to develop more open and agile models in responding to changes, promoting continuous dialogue with stakeholders, better answering current challenges, and creating a systemic perspective in the long term. However, the recognised QM theories need to be better explored in order to support the organisations to cope with these current context pressures. This QM paradigm needs to explore new QM knowledge, leading to an organisation's long-term sustainability and external effectiveness.

Fundin [6] states that this new paradigm could be built in several directions. Thus, the present research work supports the proposition that the integration of sustainability into QMS (SQMS) could be one of the viable pathways to the development of this new QM era. The narrative literature review presented (Section 2) theoretical foundations

justifying the idea that the development of SQMS leads QM to achieve a systemic perspective, as is claimed in the Emergency QM paradigm. To follow this path, the normative standards (namely ISO 9001:2015) have evolved to become facilitators to the integration of sustainability by implementing its requirements. Several integration models (SMSF, LIMSSI, SMSS: Structures, Roles, and Practices) have also been identified as useful implementation guidelines. Despite their importance, these elements (standards and integration models) are not enough; it is also necessary to involve all employees in the SQMS. For this, quality managers could have an important role; they need to cope with new competence challenges, namely at the strategic and leadership levels. The literature defends the idea that the quality profession should develop a long-term perspective into a life cycle approach, with leadership being one of the five most important competencies regarding the emergent quality paradigm. However, this paradigm fits with a leadership style that promotes a collaborative and participative environment. Thus, in order to reinforce the initial proposition, this work defends the idea that leadership plays an important role in this pathway of the Emergency QM paradigm by SMQS.

Thus, the main research goals were:

- To point out the sustainable quality management system as a viable pathway to explore QM knowledge regarding the Emergency paradigm.
- To deepen the relationship between leadership and quality management, and to unveil more of the predominant approaches that are currently being researched in order to interlink them.
- To understand quality managers' perceptions of the integration of sustainability into QMS, and their predominant leadership styles.

The analysis of SLR and the quality managers' survey results provided the following contributions and findings:

- A broad and original perspective of the state-of-the-art regarding leadership's relationship to QM, introducing a structured analysis in the subtopics and several models or instruments in this research field, and their respective authors.
- Enhancing leadership is a key element in QMS performance, and an emerging academic field theme. Furthermore, it discloses the combined interest of a specific leadership style and QMS—the Transformational leadership approach—which has been detailed in current research related to TQM, QMS, Principles, Tools, Practices, and Maturity QM.
- An exploration of QM knowledge to support the Emergency QM paradigm, materialising a possible pathway by the development of SQMS, wherein a suitable leadership style of quality managers is crucial to the pursuit of this goal.
- The revelation that the participating quality managers recognise the importance of the integration of sustainability into QMS by the development of continuous improvement plans with environmental, social, and economic objectives.
- The disclosure that this group of quality managers identified themselves more with the transformational leadership style, with a strong commitment to inspiring and motivating strategies, promoting a positive vision about the future, and inciting a critical spirit. Nevertheless, there was less evidence about the discussion of these improvement plans with employees, and less consensus in the development of motivation practices to improve employee's involvement in these plans.

These study results seem relevant for the development of the new paradigm by promoting a sustainability strategy integrated into the QMS. As transformational leadership is focused on the development of team members and employee encouragement, it could be very compatible with the leadership behaviour claimed by the Emergency QM paradigm.

Despite the participants identifying themselves predominantly with the transformational leadership style when applying this behaviour to the integration of sustainability into the QMS, there is less consensus in recognizing the discussion of actions with stakeholders, and in the development of motivation and involvement practices. As such, it is not

evident that raising awareness and committing others to sustainability is involved through the QMS.

Although the integration of sustainability into the QMS could be a viable way to meet the Emergency paradigm's main objectives, it is essential to clarify that its implementation is conditioned to an organisation's strategic orientation. The role of quality managers in leading this path, raising employees' commitment, and developing a collaborative and participatory environment will depend on the main strategic decisions. The results of this research work may contribute to supporting organisations in which strategic sustainability has been previously assumed.

To summarise, this research has theoretical and practical implications for the QM field:

- It supports future QM and Leadership research, as the SLR results could be a useful database to deepen several subtopics and easily identify authors, works, models, and instruments in this field.
- Organisations could follow the suggested pathway to evolve their QMS to support some of their current pressures and challenges.
- It recommends that organisations bet on leadership training for their quality managers, promoting the Transformational leadership style.
- It could inspire other quality managers to reflect on their future professional challenges, and could help them to develop their competences by considering the current QM era.

This study's main limitations are the sample size, and the fact that the leadership assessment was made only through the leader's perception. It is also important to make it explicit that sustainability strategies are decided at the corporate level by executives. As is supported by the literature and this research paper, quality managers will play an essential role in ensuring that sustainability is implemented through SQMS, and will increasingly be involved in strategic decisions.

As future steps, the exploratory survey should expand and collect a broader sample of quality managers. Another research line is planned, in which case studies will be developed to assess the leadership styles from the employees' perspectives. It is also necessary to continue to deepen the understanding of the role and added value of transformational leadership in the current QMS paradigm, and to develop guidelines to allow the quality managers' predominant leadership style to drive the Emergency QM paradigm.

A more significant effort from these professionals seems necessary for the adoption of a leadership approach that promotes change, encouraging and motivating all in the development of an SQMS.

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