Quality Management Synergy In Connection With Environmental Management Practices: A Study in Malaysian Perspective

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Abstract: Recent discussions support the fact that the degree and sophistication of environmental management activities are influenced by quality management in Scopus databases and ISI Web of Science. However, the need for research has been checked to quantitatively reflect this relationship, especially in Malaysian-based enterprises. The goal of this research is therefore to address this gap: Does quality management have a positive impact in Malaysian companies on the implementation of environmental practices? The questionnaire for this analytical stage of investigations was therefore established and was a self-administered e-survey of 209 companies of every size and industry in Malaysia. This questionnaire was based on the above-mentioned issues. This study is established on four variables: Quality management (QM), environmental management (EM), ISO 14001 certification (ISO 14001), and size of the company (SC). The findings have shown that QM is significantly related to the practices of environmental management. Furthermore, the ISO 14001 certification and size of the companies were checked due to the regulation towards EM practices. Up to now, a report to test the empirical significance between QM and EM in the organizations in Malaysia has been the first to reveal for empirical study.

Keywords: Total Quality Management (TQM), Organizational Performance, Green Management, ISO 14001, Sustainable Development

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1. Introduction and Research Context

Today, more and more businesses are aware of their obligations for creating green initiatives like goods practices and services (DeSimone & Popoff, 2000) [1]. Overall, big corporations are more obliged to do so than small and medium-sized firms because they have greater corporate management and a stronger financial flexibility than small and medium-sized corporations. In contrast with large companies, many other organizations did not consider their own environmental activities to be significant (Van Hemel & Cramer, 2002) [2]. The prior evidence shows that there is alignment of quality management and sustainability, and the digital technologies in industry 4.0 (Eriksson and Fundin, 2026) [3]. The majority of research on environmental sustainability enterprises has concentrated on the experience of businesses in greening their facilities. Because many organizations are considered to play a vital role in the economic development of a country and can be seen in any nation as the strength/pillar of the

economic development. The contribution of organizations towards the country's Gross Domestic Product (GDP) in Malaysia has been estimated to be 32.5 percent in 2011, and these businesses are projected to donate 41 percent to the Malaysian GDP by 2020. Malaysian authorities have drawn up policies requiring businesses to increase their workforce, increase exports, and register companies in Malaysia by 2020. A lot of studies have been conducted that explained the benefits of an integrated management system, such as engagement of stakeholders, efficiency of resources, and enhanced compliance (Ludusanu et al., 2025) [4]. Corporations benefit from their job opportunities and represent broad corporations as suppliers of goods and services. Organizations are identified under several parameters, including age, location, size, number of staff, business structure, asset value, sales volume, innovation, and technology ownership. The majority of companies follow simple procedures and methods allowing flexibility, direct input, and quick decisions. More significantly, businesses have a better understanding and quicker response to consumer needs than large companies. The term enterprises refers to a new manufacturing paradigm that implements a wider range of strategies, technologies, and innovations. Green environmental practices produce procedures that utilize responses and procedures that are highly competitive, with almost no waste and pollution. Green manufacturers' practices are examples of pollution control, which involves the elimination of energy usage, raw materials, and solid waste, reuse and recycling of goods. Many green practices include the use of recycled resources, environmentally friendly technology, invention and procedure redesign, and training of product management personnel. The fact that organizations lack the data, capital, technological skills, and experience available in green initiatives differs from the drivers and barriers of green enterprises. Organizations' environmental success is primarily influenced by their owners' wishes.

Furthermore, organizations have very different characteristics across geographic areas. Therefore, in order to expedite the use of these environmental practices in organizations in Malaysia, we believe there is a crucial need to recognize the quality management practices in the country. From the literature, we have observed that limited research has focused on identifying the implementation of EM practices along with QM in enterprises, particularly in an emerging region like Malaysia. Many researches in this area is focused primarily on the literature results that may not be relevant to current practices. To fill this void, our research aims to define QM and EM practices in Malaysian businesses. We collected data through an e-survey to gather

opinions on the QM and EM practices from a community of experts recruited from the organizations and authorities. However, as our analysis is still in its early stages, only findings from the first round of the e-survey are reported.

In the last twenty years, environmental problems have grown considerably.

Organizations in particular are under growing pressure to sustain their operations and mitigate or eliminate harm to the environment. Most of the research in large organizations on environmental protection programs was performed. The integration of sustainability with total quality management causes the enhancement of financial performance and also enhances the social and environmental outcomes (Chaher & Lakhal, 2024) [5]. This is regrettable because the organization represents over ninety percent of the production facilities and has a significant share of the economy of the business sector. Organizations thus play an important part in a nation's prosperity, which can make a major contribution to a sustainable industry in a nation. Different studies have shown that most emissions originate from big businesses. The environmental effect of the businesses thus exceeds the total environmental impact of large firms. Recently, the initiative to reduce the environmental impact of corporations was mostly based on large organizations. Yet all businesses, including smaller and bigger ones, have environmental consequences.

In 20 years, a wide variety of literature on environmental management policy has been addressing several green policies or initiatives. Environmental initiatives can be divided between reactive and proactive approaches. Preceding researches have discovered that environmental management strategies are linked by the organizations (Walton, Handfield, & Melnyk, 1998) [6]. Wartick and Cochran (1985) [7] presented earlier versions of environmental policies more than 20 years ago. The model divided environmental management programs of organizations into four phases based on their analysis of the environmental management strategy; they were proactive, accommodative, defensive, and reactive.

Subsequently, in 1992, Marshall (2002) [8] listed environmental management procedures of the organizations, firstly: commercial and sustainability for the community, cooperative solution to environmental problems. Secondly, leading-edge environmental practices are seen as an instrument for competitive advantage. Thirdly, non-compliance arises if a business cannot respond due to cost and resource constraints to environmental standards. Fourthly, compliance–

primarily motivated by law enforcement. Fifthly, compliance plus constructive strategies are starting.

Ronald, Berg, and Legg (1993) defined environmental measures based on the degree of environmental reactivity of the company in 1993, using somewhat simpler categories. The least sensitive organizations are labeled as reactive, and instead constructive and value-oriented organizations have a continuous classification. A minimum contribution to capital with respect to environmental practices may be defined as reactive organizations. They usually use "end-of-line" measures, including recycled materials and filters, or at the end of manufacturing processes, to handle waste. By designing green goods and processes, innovative companies begin to achieve environmental commitment. Small resources are dedicated to commitments under environmental policies to reuse and recycle goods. The ultimate solution is to foster interest, where companies incorporate environmental policies at a more strategic level. Their goal is to actively pursue ways to mitigate the environmental effects of their goods and processes. Steve, Handfield, and Melnyk (1998) [9] recently expanded Ronald et al. (1993) [10] work to six comparable environmental management strategies, which start with a resistant approach: constructive and receptive, reactive, adaptation, embracing without innovating, and comply with the letter of the law.

Reactive policy is more focused on measures to reduce emissions. The reactive approach is a strategic expenditure that, after pollution has come to an end (Stephan & Robert, 2008) [11], handles or disposes of pollution. Irfan et al. (2025) [12] explored that organizational sustainability is affected by total quality management, and it also affects the sustainability through the organizational commitment mediation. End-of-pipe equipment and remediation programs are part of emissions control initiatives. For example, the installation of manufacturing equipment, which is considered to be collecting hazardous waste before discharge, is the ultimate pipe technology. Definitions of this technology include air or water filtration systems. Settlement operations include initiatives aimed at cleaning up ecological damage, such as cleaning up oil tanks leaking. Although this technique will meet the reduction goals of an organization's source, needless additional expenditures are incurred. Yet with this ineffectiveness, managers are still less disruptive than improvements centered on products or procedures and tend to incorporate these types of technology into their production processes because of their ease of use.

More focus on pollution prevention projects is a proactive strategy. The Policy illustrated a strategic investment in development involving improvements in processes or goods (Robert & Clay, 1999) [13]. Finally, green technology initiatives minimize and remove emissions by modifying or minimizing hazardous products, removing design without added benefit, and/or enhancing manufacturing processes. Other examples of constructive approaches in infrastructure investors include environmental management systems, better housekeeping, and the incorporation of environmental factors in production planning and scheduling. A proactive approach includes the whole organization's attention. Top managers must ensure their staff are properly aware of the environment through ongoing environmental learning. This research is part of environmental literature and aims at exploring environmental management requirements for big enterprises in Malaysia. The paper has the following form. We study the literature that analyzes environmental management policies and pay specific attention to the enterprises of Malaysia, along with the research design and results of data analysis. Lastly, conclusions with limitations of the study and future gaps have been presented.

In order to achieve a competitive advantage, sustainability is an essential, inimitable, and non-replaceable resource. The idea is to increase advanced practices in environmental management and organization productivity, for instance, by cutting costs, improving quality, and generating innovations related to manufactured goods and services (Chan, Sheu, Lin, & Yang, 2010) [14]. The market value benefits of firms can also be expected when they are announced to implement environmental management systems (Jacobs, Singhal, & Subramanian, 2010) [15]. Furthermore, to provide the economy with an improved financial performance, businesses that prioritize environmental problems can also attract better and more skilled staff capable of providing an overall period of change in efficiency (Hall & Wagner, 2012 [16], Renwick, Redman, & Maguire, 2013) [17]. Advanced environmental management practices like GSCM may, therefore, deliver numerous advantages.

Nevertheless, the organizations do not perform these tasks at the same level (Teixeira et al., 2019) [18]. Thus, studies have also shown that the QM concepts will increase environmental practices in organizations' level and maturity (Zhu, Cordeiro, & Sarkis, 2013) [19]. For example, when environmental management practices are heavily invested in quality management practices, for instance, Wiengarten and Pagell (2012) [20] found that businesses increase cost efficiency, flexibility, and delivery performance. Pereira-Moliner, Claver-Cortés, Molina-Azorín,

and Tarí (2012) emphasized using quality management approaches by companies in developing an integrated decrease and eradication method for every waste flow linked to the production, manufacturing, use, or disposal of materials and products.

Hasham and Karray (2025) [21] have explored the effect of total environmental quality management on environmental sustainability. The results were recently supported by research carried out on environmental management impacts, and sustainability is influenced by quality management (Pipatprapa, Huang, & Huang, 2017 [22]; Siva et al., 2016) [23]. Here, we stress Shiva's research as part of a literature review that has only included 22 documents to help the advancement of EM systems, as well as sustainable management (Scopus and ISI Science Web) and QM (Siva et al., 2016). So, we conclude that there is a lack of systematic studies into their contribution to the introduction of specific EM standards or procedures concerning specific QM standards. Additionally, according to Siva et al. (2016), empirical research is also important to achieve synergies among the integrated EM and QM and their environmental effects. Very less progress in the literature showed that, there are some constructs which can can intervene and thus need to be regulated in this relationship: (a) company size (de Sousa Jabbour, Jabbour, Latan, Teixeira, & de Oliveira, 2014) [24] (b) the time of existence of the size of the company (Suyol, 2008) [25] and (c) a certification namely ISO 14001 of the company (González-Benito, Lannelongue, & Queiruga, 2011) [26].

The ideology, such as constructs, can contribute towards the ecological debate, and is supported significantly; now it is to decide which variables may affect environmental management strategies or practices most. So, we selected those who received the researchers' key attention and who were taken into account in other papers. Nonetheless, based on the knowledge in the ISI and Scopus database queries of September 2018, research needs to quantitatively depict this fact, in particular in the case of companies based in an emerging country like Malaysia. For sustainable growth, it is important to understand how organizations, for example, can affect the emission dynamics of future generations in those countries to attain their economic goals (Jabbour, Jabbour, & Gunasekaran, 2014) [27]. This work is therefore intended to investigate this lacuna: Does quality management in Malaysian companies have a good environmental impact? Early implementation of quality management principles is therefore assumed to provide more constructive environmental practices. Such procedures include the excellent ideas provided

by Javier and Óscar (2006) [28]. They established that some environmental standards could be followed by companies.

2. Organizational and Planning Practices:

Organizational and preparation tasks guide an organization to address environmental issues proactively, including the development of environmental policies, processes for the implementation and selection of sustainable policies, and assessments of the success and assignment of obligations. Operational practices: adjustment of the manufacturing system for environmental sustainability. Environmental sustainability is divided into the following two main categories: a) goods design, namely environmentally friendly practices; b) design processes, i.e., practices to change processes to minimize environmental impacts; and Communication practices: the ones that inform society as a whole of the behavior of the environmental organizations. Their goal is the preservation of good relations with stakeholders. Practices cited by these writers, for example, Sihvonen and Partanen (2017) [29] and Teixeira, Jabbour, and de Sousa Jabbour (2012) [30], were supported in various studies. The environmental protection and quality control methods outlined in Table 1 have been implemented, accompanied by the method of study outlined in the following heading/section.

3. Research Methodology

This research aimed at analyzing the relationship structure described above, so that e-surveys are used by Malaysian companies in multiple sectors and sizes, was a quantitative approach to study. The environmental management and quality management practices mentioned under Table 1 were discussed in this questionnaire. The buildings that preceded the suggested steps of Synodinos (2003) [31]. All things are influenced by the works exploring the constructs and answering their questions. It should be noted that, in this analysis, the preliminary versions of the questionnaire were collected from 5 organizations and 5 academic experts who had a detailed knowledge of the topic of this research. Between November 2018 and February 2019, in order to improve rates of return, 913 companies and environmental managers were contacted via e-mail, of which some 280 were helped via telephone calls. The final rate was 30.09 percent with these methods (207 questionnaires). Before finalizing the fieldwork, we tested the suitability of the population, i.e., the statistically acceptable quality of the questionnaires.

So, following the recommendations of Cohen (1992) [32], the G-power program was used. The results showed that 85 questionnaires were the minimum number required. Data analyses were

therefore performed. Data have been analyzed through Partial Least Squares Path Modelling (PLS-PM), with the help of Smart PLS 3.0, for analyzing more complex structural models (Hair Jr, Hult, Ringle, & Sarstedt, 2016) [33]. The internal accuracy and validity of the measurements were evaluated as reflective (Hair Jr et al., 2016 [33] Noonan & Latan, 2017) [34]. Different measures included: composite reliability (CR), convergent validity (CV), and discriminant validity (to test model validity). The individual reliability measure was used to determine the CV and the average variance extracted (AVE).

In addition, Fornell–Lacker and HTMT were extracted to determine the discriminant validity (Noonan & Latan, 2017 [34], Sarstedt, Ringle, & Hair, 2017) [35]. Afterwards, Bootstrapping provided the structural model. We assess the determination of R^2 coefficients, f^2 the effect size, Q^2 the predictive relevancy, for this calculation, VIF the collinearity statistics, SRMR standardized root mean squared values, and NFI the standard fix index of the model. Lastly, the relationship between hypothesis testing was analyzed.

Table 1 Results of Measurement Model (Loadings, CR, AVE, and Rho-A)

Constructs	**Items**	**Factor Analysis**	**CR**	**AVE**	**Rho-A**
Quality Management	QM_1	0.842	0.934	0.756	0.996
	QM_2	0.771			
	QM_3	0.832			
	QM_4	0.893			
Environmental Management	EM_1	0982	0.973	0.712	0.990
	EM_2	0.951			
	EM_3	0.905			
	EM_4	0.783			
	EM_5	0.892			
	EM_6	0.751			
	EM_7	0.985			
	EM_8	0.856			
	EM_4	0.823			
	EM_9	0.795			
	EM_11	0.824			
	EM_12	0.983			

Table 2 Measurement Model (Fornell–Lacker showing Discriminant Validity)

Constructs	A	EM	ISO14001	S	QM
A	0.982				
EM	0.764	0.932			
ISO14001	0.432	0.783	0.765		
S	0.631	0.572	0.672	0.865	
QM	0.570	0.601	0.651	0.715	0.974

Note: A- Age, EM- Environmental Management, S-Size, QM- Quality Management.

Table 3. Measurement Model (HTMT Showing Discriminant Validity)

Constructs	A	EM	ISO14001	S	QM
A	0.890				
EM	0.144	0.834			
ISO14001	0.352	0.413	0.763		
S	0.231	0.372	0.232	0.875	
QM	0.430	0.101	0.321	0.215	0.834

Table 4 Results of the Structural Model (Bootstrapping)

Constructs	R2	(f^2)	Q2	VIF	SRMR	NFI
A				1.431		
QM		0.144		1.657		
ISO14001		0.163		1.453		
S		0.432		2.320		
EM	0.545		0.445		0.062	0.976

5000 Subsamples have been used, and the author checked 't,' and the p-value is a 5 percent significance point (Table 5). The following section presents all these calculations and their coefficients.

4. Research Results

The business sample included for analysis builds subsequent features: 72.80 percent of businesses in the industrial subdivision and 5 separate segments of the other sample industries – storage and transport, 5.60 percent, communication and information, 5.94 percent, construction, 6.76 percent, mining, 6.73 percent, and alternative services and activities, 2.17 percent. From overall statistics, 21.50 percent were small businesses, 20.12 percent micro-enterprises, 53.21 percent large-sized organizations, and 5.17 percent were medium-sized organizations. According to the survey of the population, 65.55 per cent of the companies had over 25 years of subsistence, 9.63 per cent between 21 and 25 years, 14.44 per cent had between 11 and 15 years, 5.79 per

cent between 6 and 10 years, and 9.61 per cent between 16 and 20 years. In addition, 54.30 percent were multinationals and 46.70 percent had ISO 14001 certification. The results started to be reported once the sample had been characterized correctly.

In order to process the data, modelling pathway schemes were generated that should be analyzed with the previous relationship. In order to confirm the path generated, if it was relevant, therefore the internal validity and consistency of the data were significant, it was then converted into a measurement model (Sarstedt, Ringle, Smith, Reams, & Hair Jr, 2014) [37]. It was found that every load was greater than 0.6; the environmental management and quality management, AVE was exceeding 0.50, rho-A was exceeding 0.90, and composite reliability was also in an acceptable range. Therefore, the quality criteria for the measurement model were satisfactory. Results from Table 1 show that the CR and AVE of the quality management and environmental management constructs were very good for the reflective measurement model. The question of whether the model has discriminant validity is yet to be decided. Discriminant validity indicates whether the variables measure concern the overall meanings of the same variables or other variables and can be verified in two ways, namely, in HTMT (Table 3) and Fornell and Larcker (Table 2). In the first instance, an evaluation of discriminating validity is the most conservative approach. It contrasts the AVE square root with the latent variables' correlations. The AVE's square root must therefore be greater than that of any other constructs, in other words, in its variable than in correlations (Latan & Noonan, 2017) [32]. The rationale of this approach lies in the idea of building more accurately with its indicators rather than any other constructs (Latan & Noonan, 2017).

The convergent validity fornell-lackar (AVE square roots) are usually positioned diagonally for easy reading. The results show the validity of the model as well. Recently, a new case, namely, the HTMT, is one of the requirements to determine discriminant validity, as its resultant with the bootstrap confidence intervals and its value is suggested to be less than 0.90 (Henseler, Ringle, & Sarstedt, 2015) [38].

From the review below (Table 3), the result can be seen. This means that the latent constructs of this study have a discriminant validity, which is the product of Fornell-Lacker parameters. The confidence interval HTMT is lower in the model than 0.90. The structural model, consisting of translating the path diagram into a graphical relation among constructs (Loehlin & Beaujean, 2016) [39], is estimated in the calculation. Six methods were performed in this procedure as

indicated above: R^2 determination of coefficient, effect size, predictive validity, and the fitness index with the help of the SRMR and NFI standardized fit index. The value of R^2 is called the coefficient of determination by exogenous variables towards their endogenous variable.

According to Cohen, the R^2 value is acceptable and satisfactory, with 0.13 standing for average and is greater when equal to 0.26, finally, 0.02 stands for medium (Cohen, 2013) [40]. Thus, the coefficient of determination value of the current study stands at 0.545, which stands under sufficient level. Q^2 for the predictive relevance of the model, it tests how consistent the model is. The Q^2 value should be greater than zero (Cohen, 2013). From the Table above, the results show Q^2 is 0.445 for the current study.

Table 5 Bootstrapping Testing Hypotheses at 5 percent Significance Level.

Constructs	OS	SA	SE	t value	p value	Decision
A>EM	0.002	0.045	0.30	0.040	0.094	Rejected
QM>EM	0.132	0.143	0.071	1.857	0.032	Accepted
ISO14001>EM	0.354	0.462	0.080	3.553	0.000	Accepted
S>EM	0.442	0.343	0.078	2.820	0.000	Accepted

Therefore, broad and strong R^2 with predictable validity (Q^2) were also found to be fine. This means that the model constructs have described variance through dependent constructs. Moreover, f^2 assesses the favorability of each variable to change the value of 0.350, 0.150, and 0.02, respectively, which stands for large, average, and small amounts (Hair et al. 2014). So, this study shows that a high f^2 is used to ensure construction is relevant to the model for the quality management 0.175 and for the ISO 14001 0.415 variables (Table 4). VIF is, in turn, an indicator of the consequences of the normal regression error by other independent variables. Whilst values below 5.0 are suitable (Noonan & Latan, 2017), values below 3.3 are considered appropriate. In this analysis, the findings were considered appropriate: VIF A 1.431, quality management 1.657, VIF ISO 1.453, and VIF of S 2.320 (table 4), which meant that the independent variables do not present problems of collinearity.

The SRMR and NFI metrics, which are measures of model fitness for Bentler and Hu (1999) [41], are to be equal to or equivalent to or less than 0.08 and equivalent to or greater than 0.85, and the results are found to be NFI 0.976 and SRMR 0.062 (Table 5), which indicates that a good improvement is considered. Finally, P values and T values were evaluated to decide whether the path coefficients of variables are significant. Ideally, the t value is $\geq$ 1.96; meanwhile, the t values near 1.96, 2.58, and 1.65 are classified as significant levels with 1 per

cent, 10 per cent, and 5 per cent, respectively (Sarstedt et al., 2017). The hypothesis was evaluated by the one-tailed test instead of the two-tailed test. We also observe the product of a 95 per cent confidence interval for stability. It is evident from the findings in Table 5 that, except for the company's age group, all others had 't' above 1.857, thus displaying a significant positive impact on environmental management. It was worth noting that a 2000 sub-sample at a 5 per cent significance level, which showed one-tailed, was used for the hypothesis's observability.

5. Discussion and Conclusions

This study offered a quantitative analytical structure, using the e-survey methodology, which has not been studied by companies based in Pakistan. The purpose of the research is to examine if QM significantly relates to the adoption of Malaysian EM practices, along with identifying key quality management and environmental management activities, and whether the company size is important to the relationship between ISO 14001 and business age. Therefore, 209 companies replied to the questionnaire, and the data collected were analyzed with the help of Smart PLS 3.0 software. The validity and reliability requirements need to be met for this model to be considered appropriate.

According to Hair Jr et al. (2016), the reliability is the level of consistency between a variable and what needs to be assessed. Validity, in effect, is not about what should be weighed, but about the measurement. Our study model has been considered satisfactory in the Malaysian context, and it was also determined that the association between QM and EM practice was positive and important. Thus, in companies in Malaysia, the hypothesis has been verified that the previous application of the QM principles may have a positive effect on the practices of EM. In addition, as suggested by our literature, ISO 14001 and company size have a positive and significant impact on the practices of EM (González-Benito et al., 2011; Murillo-Luna, Garcés-Ayerbe, & Rivera-Torres, 2011 [42] Surroca, Tribó, & Waddock, 2010) [43]. It should be noted that the aim of this research was also to recognize quality management practices that influence the practices of EM.

Therefore, it was necessary to learn about practices like quality requirements and complete quality management, which are the basis for certifying suppliers. Long-term environmental management targets, full-time environmental management-dependent staff, and an environmental management policy aligned with business goals were, on the other hand, the most important environmental management activities.

Our findings also confirm, as found by Pereira-Moliner et al. (2012) [44] and Wiengarten and Pagell (2012), that quality management influences environmental management practices, Also propose first hand to start green creativities in businesses, particularly for long-term green environmental management types of goals, the certification of suppliers based on quality standards and implementation of total quality management, environmentally management full-time workforce and a sustainability agenda aligned with the priorities of the organization will pave the way towards a more environmentally friendly society.

As for the implications of this study, for businesses and their policy makers, they help us to properly define actions, tactics, and prioritize and invest in activities that allow better environmental sustainability results in organizational settings. For the current state of the art, it is also important because, in an evolving state, this provides more empirical evidence towards quality management and environmental management practices. The present work has certain limitations that could be cited: (a) the sample size was smaller, considering all its efforts, for example, in (Sarkis, Gonzalez-Torre, & Adenso-Diaz, 2010) [45]. Nevertheless, the adoption of environmental management practice might be contingent on different factors, and not just on QM, like legal and regulatory criteria and on the implementation of environmental management practices or human resources management practices such performance evaluation and reward systems (Jackson, Schuler, & Jiang, 2014) [46], training (Teixeira, Jabbour, de Sousa Jabbour, Latan, & De Oliveira, 2016) [47], and the relative weakness of the QM and EM constructs related to the e survey-like research variables.

Future inquiries are therefore recommended to perform several case studies so that "how" and "why" this relationship is better understood and new perspectives on the subject can be given. Furthermore, alternative new research with complex frameworks, along with a lot of variables that could impact environmental management activities or their effects on organizations' financial, environmental, and operational performance.

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