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The Role of Internal Quality Relations in Driving Sustainability Performance

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Abstract

There are contradictory debates about the impact of quality management and sustainability performance. By taking the internal dimensional view of quality management practices (management and employee), this study develops a research framework that investigates the relationships of internal quality relations and sustainability performance. Survey data were collected from 430 service and manufacturing firms from the UK. Structural equation modelling was used to test the framework. The results indicated positive relationships of all tested hypotheses. This study offers an integrated framework with empirical evidence that identifies the role of internal quality relations in driving the sustainability performance.

Keywords: Internal Quality Relations (IQR); Management Quality Relations (MQR); Employee Quality Relations (EQR); Sustainability Performance (SP)

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1. Introduction

Previous studies have generally come to an agreement of the importance of quality management (QM) system in positively driving the firms' performance [1, 2]. However, even firms with better QM systems cannot guarantee their business positions [3]. One of the contemporary business competitiveness is achieving better sustainability performance. Therefore, it is important to investigate how QM implementation is positively related to sustainability performance. This will allow companies to invest more in certain quality initiatives. The previous results on the relationships between QM practices and sustainability performance have been mixed [4-6]. The study provides evidence to support research that indicates a positive relationship between QM implementation and sustainability performance. The paper is structured as follows. The second section presents the theoretical background and hypotheses development. The third section presents the research methodology and design. The fourth section presents the findings, and the last section discusses the results and the implications. The final section presents the limitations and future suggestion.

2. Theoretical background

2.1. Quality management (QM) practices and Sustainability Performance

Prior research has emphasised on a possible potential relationship between various quality management practices and sustainability performance [e.g., 7, 8-10]. Siva, Gremyr, Bergquist, Garvare, Zobel and Isaksson [11] has addressed the role of QM in environmental performance and found that QM is suitable for sustainability consideration. However, they did not provide empirical evidence of this relationship.

Another example is Pipatprapa, Huang and Huang [12], they found a significant effect of QM on green performance. Pullman, Maloni and Carter [13] argued that the three dimensions of sustainability (e.g., social, environmental, and economic) are interrelated. Also, Golicic and Smith [14] found that being social and environmental sustainable allow for better performance. However, it is not clear or understood how quality management practices influence the sustainability performance. Although the sustainable organisations tend to focus on sustainability issues such as environmental issues, employee safety, health, and equity by integrating them in their quality plans [15], there is still a debate on how those practices affect the firm performance [16]. The goal of QM is to create consistency everywhere in the organisation, not just the internal level such as the production system or dealing with the humans inside the organisation, but also the external of the organisation that includes the behaviour of suppliers and customers [17].

By contrast, the link between QM practice and performance remains subject to debate, and the empirical evidence is mixed. For example, a study by Yeung, Cheng and Kee-hung [4] found that the impact of TQM implementation on financial performance is least significant. Moreover, previous studies [e.g., 5, 6] indicated mixed results. For example, Chaudhuri and Jayaram [6] found that the spillover effects of quality and sustainability management programmes on sustainability and quality performance are not supported. Also, a meta-analytic study by Nair (2006) reported a lack of relationship between product design management and product quality. Since these studies are more relevant for manufacturing organisations, it is essential to investigate if there are different results in service organisations.

For the scope of this study, we focus only on internal quality relations. The internal quality practices are management quality relations and employees quality relations. In this study, we introduce a set of hypotheses that link internal quality relations to sustainability performance in order to contribute to our knowledge and enrich the literature on quality management system and sustainability performance. The study will answer the following question:

H_1: Management quality relations have a positive effect on sustainability performance.

2.2. Management quality relations and employees quality relations

Parast and Adams [18] empirically shown that top management has a role in driving Corporate Social Sustainability (CSR) practices and firm performance. They found that there is a significant relationship between top management commitment and quality citizenship. They conceptualised quality citizenship as public issues which are related to health, safety and the environment. In this essence, Muller and Kolk [19] have addressed top management commitment to ethics as the intrinsic drivers that lead to higher corporate social performance. Also, other studies found that a lack of management commitment leads to sustainability failure [8, 20].

Nonetheless, there are also arguments for a contrary position; some studies have revealed that QM does not always improve sustainability performance [e,g., 8, 17, 20]. That might be because there is a lack of top management commitment or there is the improper implementation of QM standard [8]. Also, another contrary position is by de Menezes [21]. His view does not support potentials that quality and top-involvement managements may lead to higher organisational performance. He argued that negative results are due to that some organisations in the UK were unlikely to implement some basic operational features of QM, so a few organisations have the benefits of QM's advantages.

Previous research suggests that top management commitment is vital in driving firms' sustainability performance. The role of top management appears to be more critical in driving economic sustainability performance. Those research provide some insight into the relationship between strategic management and financial performance [22, 23].

As for the role of top management commitment to driving environmental sustainability performance, this research argues that it has a positive effect. Previous research support this position. For example, Daily and Huang [24] identified the role of top management support and found that it leads to environmental management system success. They claimed that when a new organisational culture is introduced, this requires the role of management to promote employees to the desired behaviour and influence the change. It also requires introducing reward programmes, quality training, and more effective communication between the entire organisation [24]. However, they did not test this relationship empirically, and they have conceptualised top management commitment from a human resource factor and based on ISO 14000 (Environmental management system) standard. This research is different as it will test this relationship. Also, this research conceptualises management relations (top management commitment) as a quality practice based on previous quality management literature. Dangelico and Pujari [25] stated that top management commitment is the primary driver of green product development.

The leadership' principle is involved in creating a trusted environment by inspiring, encouraging and involving employees [26]. By involving the employees, it is expected that the firm managers will stimulate ideas which can enhance sustainability performance. The challenge for today's firms is about the specific actions that managers can take in order to deal with the social responsibility issues and stakeholders issues effectively [27].

Based on the above discussion, we argue that top management commitment to quality affects sustainability performance. Thus, according to the above arguments and findings, this research has the following hypothesis:

H_2: Management quality relations have a positive effect on quality employees relations.

2.3. Employee quality relations and sustainability

Employee quality relations in this research includes different aspects related to employees' issues which have been covered in QM literature such as employee involvement, employee empowerment, teamwork and training. Employee relations as a QM practice refers to the employees' continuous development and growth. It is a practice that encourages team problem-solving. It also refers to how supervisors take the role of coaches rather than giving orders to enhance the employees' ability to solve problems [28].

Previous literature indicated the importance of considering employee involvement in driving sustainability performance. However, the findings are mixed. For example, a study by Jackson, Gopalakrishna-Remani, Mishra and Napier [29] found that quality management innovation (including employees issues) has a significant relationship with environmental performance, while it is not with economic performance. That contradicts with the

study of Rao and Holt [30] who found that firms' initiatives that are coupled with employee empowerment can boost economic performance.

Hutchins and Sutherland [31] discussed the importance of meeting the needs of employees and communities that companies interact with in order to achieve sustainability. They stated that firms could foster social impacts by going beyond meeting the basic needs and pay attention to other social requirements such as safety and equity [31]. Also, social sustainability emphasises the importance of managing social resources such as people's skills, abilities and social values that shape the societies [32]. Involving employees leads to make them socially oriented [33, 34]. Testing the relationship between workforce relations and sustainability performance is important. Accordingly, this study argues that the extent that firms step up more roles of employee quality relations, it is expected the firms become more accountable, fairer and sustainable. Based on the above arguments, the following hypotheses are formulated:

H_3: Employee quality relations have a positive effect on sustainability performance
H_4: Employee quality relations mediate the relationship between management quality relations and sustainability performance

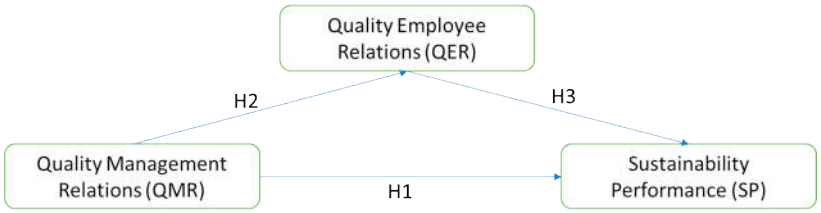

Figure 1. Summary of the research hypotheses and the research model

3. Methods

3.1. Research model

By considering the above arguments, Fig. 1 visualises the conceptual model used in this study to test the research hypotheses.

3.2. Instrument construction & content validity

In order to increase the generalizability of the research results and ensure validity, this study adopts a cross-sectional field survey approach. A five-point Likert scale ranging from (Strongly disagree) to (Strongly agree) is used. Based on the relevant QM literature [1, 35]; HR literature (Gutierrez-Gutierrez, Barrales-Molina and Kaynak [3]; and Sustainability literature Wiengarten, Wiengarten, Ahmed, Ahmed, Longoni, Longoni, Pagell, Pagell, Fynes and Fynes [36]), the items of this study were measured. The initial questionnaire was piloted and examined by ten experts of academic and managers.

3.3. Population

The targeted population for this study consisted of 2950 companies from the UK. The email sent to firms' managers. The procedures for data collection started by contacting the managers (CEOs, operation managers, quality managers, etc. by email explaining the research project. The email includes an online link to the survey

created by Qualtrics that enables them to complete the questionnaire online. The total number of responses we received was 457. After removing the unusable responses, the total is 430, with 14.5 % response rate.

3.4. Sample demographics

The responses came from service and manufacturing companies in the UK. The size of the companies is from 50 to more than 1000 (Table1) from both sectors, manufacturing and service (Table 2).

Table 1. Size of the companies

No. of Employees	Frequency	Percent
1-49	104	24.2
250-499	59	13.7
500-999	32	7.4
50-249	96	22.3
More than 1000	139	32.3
Total	430	100.0

Table 2 Sectors of the companies

Sector	Frequency	Percent
Manufacturing	137	31.9
Service	270	62.8
Other	23	5.3
Total	430	100

3.5. Statistical approach

In order to validate and analyse the framework mode, and test the measurement model and the structure model, SEM was used. Therefore, two steps approach to SEM were used, factor analysis using the measurement model, and imputed factor scores in doing structural model. The measurement model considers validity and reliability and determines how the latent variables are affected by the observed variables, while the structure model determines the causal effects and describes the explained and unexplained variance [37].

3.6. Validity and reliability

The study assessed the construct validity by, firstly, establishing the content validity of the scales which is achieved by executing a literature review. Secondly, in order to confirm the reliability, Cronbach's test was obtained (Table3). Then, the study tested the unidimensionality by running exploratory factor analysis using *maximum likelihood* extraction and *Promax* rotation technique. Next, the scales were evaluated by using AMOS 25 software and Confirmatory factor analysis (CFA).

Table 3 Reliability results

Construct	Number of Items	Cronbach's Alpha
Management quality relations	7	.957
Employee quality relations	7	0.944
Sustainability performance	7	0.903

The convergent and discriminant validity are analysed and achieved by using CFA and by comparing the squared correlation of each pair of factors to average variance extracted (AVE) for each factor. The results confirmed that the scored correlations are less than the AVE scores (Table 5).

4. Results

The hypotheses established in this study are tested using structural equation modelling by using AMOS 25. The results of the structural model showed that the paths are significant at P<0.01/ 0.05 (Figure 2). As for the goodness-of-fit indices, the results show that they are at a satisfactory level of fit (Table 4) [38]. Also, the model validity (Table 4) have shown a satisfactory result [38]. The results show that all of the hypotheses included in the model are supported.

Table 4 Model fit measures

Measure	Estimate	Threshold			Interpretation
		Terrible	Acceptable	Excellent	
CMIN	615.360				--
DF	185.000				--
CMIN/DF	3.326	> 5	> 3	> 1	Acceptable
CFI	0.950	<0.90	<0.95	>0.95	Acceptable
SRMR	0.072	>0.10	>0.08	<0.08	Excellent
RMSEA	0.074	>0.08	>0.06	<0.06	Acceptable

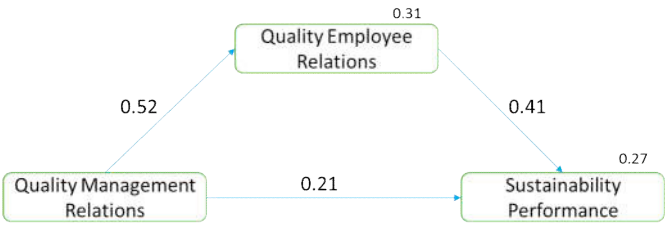

Figure 2 Path model

Figure (2) shows parameters estimates of the structural model and the causal relationships among the three key constructs. The figure indicates the results of running the SEM analysis to validate the model. QMR directly influences QER (β= 0.52), and QER had a direct effect on SP (β= 0.41). Also, there was a direct positive effect between QMR and SP (β=0.21).

Table 5 Descriptive statistics, bivariate correlations, composite reliabilities, AVE

Variable	Mean	SD	1	2	3	CR	AVE
Management quality relations	2.761	.661	0.870			0.956	0.757
Employee quality relations	2.888	.645	0.523***	0.851		0.948	0.724
Sustainability performance	2.216	.555	0.430***	0.523***	0.758	0.901	0.575

Table 6 Hypotheses testing results

			Estimate	S.E.	C.R.	P	Results
QER	<---	QMR	.523	.049	10.469	***	Supported
SP	<---	QMR	.215	.047	3.941	***	Supported
SP	<---	QER	.411	.053	6.708	***	supported

As for the mediation effect, the results show that employee quality relations partially mediates the relationship between management quality relations and sustainability performance. Table (7) shows that when the model was tested without the mediator, the effect of QMR on SS was 0.428 (P<0.001). When the mediator (QER) was added, the direct effect was 0.215 (p<0.001), and the indirect effect was 0.213 (P<0.001).

Table 7 Mediation effect results

Relationships	Direct without mediator	Both	Indirect (bootstrapping)
QMR QER SS	0.428 (0.001)	0.215 (0.001)	0.213 (0.001)

5. Conclusion

This study aimed to investigate the impact of internal quality relations on sustainability performance. Our results show that in service and manufacturing firms, management quality relations and employee quality relations have a positive impact on sustainability performance. However, this study has some limitations that should be pointed out: firstly, we have measured sustainability performance as a composite construct that includes social, environmental and economic dimensions. However, it could be measured from the three dimensions separately as different dimension could have a different result. Secondly, other aspects could be tested and might have different results such as the external quality factors.

Despite these limitations, our study makes some important contributions to the existing knowledge. First, we provide a study on the role of internal quality relations (management & employees) on sustainability performance. Second, this study has some implications for practical perspectives. The firms need to invest more long-term quality

improvement process and considering quality as a way to achieve short and long term profitability. Moreover, investing more in employees quality relations such employee's involvement in quality aspects, motivation, and encouraging employees to participate in decision making and planning.

6. Discussion

This study aimed to investigate the impact of the management quality relation on sustainability performance. The results show that management quality relations have a positive impact on sustainability performance. This means that implementing quality management of quality principles (e.g., supporting long-term quality improvement processes, taking responsibilities for achieving quality performance) leads to improvement in sustainability performance. This finding is in line with the findings of the previous studies [e.g., 8, 18]. This study, however, has contributed to the existing literature by showing that quality management contributes to sustainability performance through the effect of quality management relations on employee relations. The focus of management quality relations leads to improve the employees' relations as well as sustainability performance. H1, H2, H3, and H4 propose a positive relationship between internal quality relations and sustainability performance. These obtained results highlight the importance of internal quality relations for service and manufacturing organisations. This study offers empirical evidence supporting the line of research that affirms the existence of this positive relationship. The results of the mediation relationship suggest that management support is essential in driving environmental, social, and economic sustainability performance through the effect of employee quality relations. The management role of the managers to determine what the proper training programmes to establish helps in achieving better sustainability performance. The findings are line with the previous studies [e.g., 39, 40].

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8. Appendices

Appendix 1 Measurement items

Construct	Items
Quality Management Relations (QMR)	Our top management supports long-term quality improvement processes
	Our top management takes responsibility for achieving quality performance
	Our top management reviews relevant quality-related issues in top management meetings
	Our top management evaluates quality performance
	Our top management understands quality improvement as a way to focus on long-term profitability
	Our top management considers quality improvement as a way to achieve long-term profitability of our organisations
	Our top management considers quality improvement as a way to achieve short-term profitability of our organisations
Employee Quality Relations (QER)	Our company provides a collaborative environment' for employees
	Our company facilitates teamworking to solve problems
	Our company motivates, supports and involves employees in quality aspects
	Our company has a transparent and effective appraisal system for recognising and rewarding employees for their quality efforts
	Our company rewards employees when their suggestions lead to higher performance
	Our company provides employees with feedback on their quality performance
	Our company encourages employees to participate in decisions making and planning
Sustainability Performance (SP)	Our company strives to protect and restore the environment
	Our company has initiatives to reduce energy consumption
	Our company has initiatives to reduce water consumption/recycling and reuse of water
	Our company has initiatives to reduce waste and emissions from our facilities
	Our company has initiatives to reduce purchases of non-renewable materials, harmful, chemicals, components, etc.
	Our company strives to conserve the cultural heritage of local communities
	Our company builds and fosters a mutually beneficial relationship between the company and community