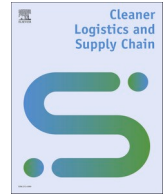




Contents lists available at ScienceDirect

Cleaner Logistics and Supply Chain

journal homepage: www.journals.elsevier.com/cleaner-logistics-and-supply-chain

Impact of Total quality management on cleaning companies in Finland: A Focus on organisational performance and customer satisfaction

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ARTICLE INFO

Keywords:

Total quality management
Employee and communication management
Customer satisfaction
Organisation's performance
Finnish cleaning industry
Correlation analysis
And hierarchical multiple regression analysis

ABSTRACT

The importance of TQM in cleaning companies in Finland is investigated in this study. The theoretical framework, TQM practices, and the relationship between TQM implementation and customer satisfaction among cleaning companies in Finland were all examined. It was discovered that employee and communication management increases service quality and boosts organisational performance. The study also discovered that in cleaning organisations, organisational performance has a favourable and significant relationship with customer satisfaction, as well as a positive correlation between employee, communication management, and customer satisfaction. Meanwhile, according to the results of a correlation analysis based on the Pearson correlation coefficient, the only factor limiting the implementation of Total Quality Management in Finnish cleaning organisations was resistance to change, as there were no preliminary signs of multicollinearity based on the two variables of the correlation coefficient criteria (r 0.70). Furthermore, the study adopted hierarchical multiple regression analysis to analyse the relationship between Total Quality Management and Organisational Performance. The results revealed that the two entities have a substantial association, providing valuable insights into the cleaner aspects of the study, particularly when considering organisational performance and customer satisfaction in the Finnish cleaning industry.

Subject classification: Total Quality Management, Organisational Performance, Customer Satisfaction.

1. Introduction

An increase in global competitiveness has led to significant changes in the way businesses operate in today's world. Looking inwardly at the global economy, beating competition is one of the most important factors when running a business. Almost every product or service discharged has more than one organisation trying to make a sale. Therefore, ensuring customers' satisfaction is an important fact that should not be taken with levity. Customer satisfaction entails ensuring products or services meet the taste or expectations of customers. This means that the service being rendered conforms to the terms of the contract. It could also mean that those services meet the expected standard and are delivered according to schedule. Because trading barriers are changing every day in the economic world, the issue of satisfying the customer has taken centre stage, and organisations must

seek ways to offer their respective customers better services. Most organisations that cannot offer better services become extinct over time.

Total Quality Management (TQM) has been viewed as strong strategic action of business management, which is directed toward the harmonisation, and gradual improvement of all functional aspects of a business organisation with the sole intention of meeting the customer needs (Oakland, 2014). Moreso, one of the most significant management tools that support the achievement of any business excellence is TQM (Satis & Srinivasan, 2010). The service sector has continuously developed, influencing global business practices and transforming them in terms of competitive dimensions, customer expectations, and technological innovations. Customer satisfaction and loyalty are considered as some of the key indicators of the economic developments of a cleaning company, which contributes to the sustainability of the company (Dewan et al., 2014).

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<https://doi.org/10.1016/j.clscn.2024.100139>

Received 27 August 2023; Received in revised form 1 January 2024; Accepted 1 January 2024

Available online 3 January 2024

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TQM has been one of the strategic efforts that could help direct towards the conformity and continuous improvement of functional aspects of an organisation with the sole aims of meeting customers' expectations and improving productivity. Lakhal et al., (2006) reported that TQM is an action plan that is aimed at producing or delivering commodities and services, which are in accordance with customers satisfactions or as a form of requirements for better, cheaper, faster, safer, easier processing than the counterpart competitors with the contributions of all employees under the strategic management leadership. TQM is a management method that incorporates a variety of values, methods and tools to meet the needs of multiple stakeholders, according to (Bergman & Klefsjö, 2003).

There have been numerous studies that examine the relationship between TQM, organisational performance and business sustainability. Despite of the positive relationship dictated by some studies, Matsuo (2006) and Balkin et al., (2000) show a negative relationship between TQM and business sustainability. However, other researchers do not show any significant relationship between the two (Greeve, 2003). From other relevant journals reviewed, Saidu & Zainab (2021) in their study, were able to analyse the cost of applying the adequate TQM principles for the efficient delivery of good maintenance of the cleaning services in public hospitals in Nigeria. They found out that the major procedures that are needed for the excellent maintenance of cleaning operations in public hospitals are: the practices for cleaning should be employed to reduce waste, the hospital management should get to know more about the needs of both patients and the staff should have effective maintenance in cleaning operation. Moreso, the coordination of information should be more effective from the top management to the lower part of the hospital staff. Their study focuses only on the cleaning activities taking place in public hospitals in Nigeria as a case study.

Likewise Kumar & Shanmuganathan (2019) examined the structural relationship between TQM and organisational performance using an auto component manufacturing company as their case study. In their study, implementation of TQM practices has a significant influence on employee performance and quality performance. However, the organisational commitment toward the adoption of TQM does not significantly influence employee performance and quality performance. Their study did not mention the intention of implementing TQM in value creation and customer satisfaction. Similarly, Zahari & Zakuan (2016) investigated TQM's positive effects on employee performance. Over 350 questionnaires were distributed to 10 different manufacturers. Seven factors were selected as independent variables top management participation, human resource development, management policies and strategy, customer focus, employee empowerment, information analysis and education and training. In contrast, employee performance stands as the dependent variable, measured through employee satisfaction. Their findings showed that TQM implementation has a positive and significant relationship among employee performance variables but did not examine the impact of implementing TQM concerning innovative management.

The cleaning business is one of the labour-intensive industries in Finland. It has always required many employees willing to work and possess professional skills to give good service. This is one of the most ranked industries valued at €3.2bn and ranked 10th out of 24 select industries in entire Europe in 2023. It was also reported that the industry rank has kept rising since 2017 (IBISWorld, 2023). Meanwhile, out of the entire industries that IBIS World tracks identified, the cleaning business in Finland is the 37th largest industry out of 289 total industries as reported by (IBISWorld, 2023). This shows the significance of the cleaning business in the Finnish economy. Therefore, maintaining customer satisfaction in the cleaning business becomes imperative to enhance the sustainability of the industries and facilitate a more significant contribution to the Finnish economy. The TQM philosophy is more frequently utilised in the manufacturing sector than in any other sector Magd et al., (2021), so little attention has been made to its implementation and, more importantly, its impacts on the

organisational performance in business operations, particularly in labour-intensive industries, such as the cleaning industry.

The primary focus of this study is to investigate the impact of TQM on customer satisfaction in the cleaning business in Finland. It is hypothesized that the cleaning service providers are not complying with TQM practices; an oversight that might have an implication for their survival as a business venture. It is also agreed that customer satisfaction is an essential objective of any organisation interested in achieving business growth, and this is why TQM's focus is customer satisfaction. Thus, this study aims to determine the relationship between the implementation of TQM practices and customer satisfaction among cleaning companies in Finland. The study determines if TQM significantly impacts organisational performance and assures customer happiness among cleaning companies. To this end, the following research questions and the answers to them gave insight into the impact of TQM practices on customer satisfaction among cleaning companies: (i) how does TQM implementation impact customer satisfaction in the cleaning industry in Finland? (ii) To what extent do employee and communication management practices influence an organisation's performance in terms of customer satisfaction? (iii) What are the primary barriers to the effective implementation of TQM in the context of cleaning companies in Finland?

2. Review of empirical literature

There are some studies that have examined the effect of TQM on organisational performance. Hence, this section provides the review of some of the previous studies. Al-Qahtani, Alshehri, & Aziz (2015) examined the contribution of TQM to organisational performance using selected factors of TQM, which include quality control, quality assurance, and continuous improvement. They concluded that implementing TQM concepts in business could have two significant effects: either promoting the success of an organisation or contributing to its failure. Furthermore, Mirza & Khushnood (2020) generated numerous hypotheses based on TQM implemented measures to assess the influence of TQM practice on the operational performance of the service sector (Hotel). A positive association between the TQM elements and the organisation's performance was established using regression analysis. Likewise, Mahboob et al., (2015) did a Pareto study of important success elements of comprehensive quality management on service industry performance. According to the findings, an organisation's performance is an important determinant of customer happiness. Other authors Sin, Jusoh & Sim (2022) investigated the relationship between TQM practices and sustainable performance. Data were collected from 4- and 5-stars hotels in Malaysia. The study found that TQM practices have significant and positive impacts on sustainable performance, encompassing economic performance, environmental performance and social performance.

Selvan & Kumar (2020) investigated the structural relationship between TQM and Corporate Sustainability (CS) and as well examined how TQM practices can facilitate firms to achieve their corporate sustainability objectives. The study used secondary data from various sources and employed conceptual research approach to develop concepts based on analyses, understanding and reasoning through which conclusions were made. The study found that TQM in organisations has an impact on the customer satisfaction promoting corporate sustainability. The study also found that TQM and corporate sustainability concepts are both interrelated organisational goals.

Kristianto Y. et al., (2012) employed TQM to improve customer satisfaction in a wheat flour milling sector in their study. According to their findings, customer satisfaction has consistently improved over the last three years as a result of the Quality Function Deployment (QFD) strategy. TQM has been adopted by the majority of industrial companies, and its value has been recognized. To deal with all of the company's activities, the TQM strategy's effectiveness is critical. Their research combines data from a variety of sources to provide quality assurance

specialists with a single starting point and knowledge foundation. Therefore, it is evident that a relationship exists between an organisation's performance and TQM, which could influence customer satisfaction.

Abbas (2020) investigated the structural relationship between total quality management (TQM) and corporate sustainability (CS), and also examined how TQM practices can facilitate firms to achieve CS objectives. Six TQM practices were taken from The Malcolm Baldrige National Quality Award (MBNQA) model; CS was comprised of environmental, social, and economic sustainability, and KM was measured through knowledge creation, acquisition, sharing, and application. The study obtained data from medium and large-sized organisations from the manufacturing and services firms located in Pakistan. The theoretical model and hypotheses were tested through structural equation modelling (SEM). The results indicated that TQM has a significant and positive impact on CS, and KM partially mediates the relationship between them. The dimensional level analysis indicates that TQM has an insignificant relationship with knowledge creation and KM has an insignificant relationship with environmental sustainability.

Zaid & Sleimi (2023) examined the explanatory link of green supply chain management practices (GSCMPs) between TQM and business sustainability (BS) in Palestinian small- and medium-sized enterprises (SMEs). A total of 287 manufacturing SME's owners, top managers and legal representatives participated in the study, and the survey instrument was analyzed using the partial least square structural equation modelling (PLS-SEM). The findings showed that TQM had a positive influence on GSCMPs and BS. The study also found that GSCMPs plays a mediating role between TQM and BS.

Guillergan (2021) explored the effect of TQM on manufacturing industry. The study used a flexible design single case study on a water treatment company in the south-eastern United States to facilitate the examination of the phenomenon using real-life, present-day context, and multiple perspectives from participants. The single bounded case study collected and integrated many forms of qualitative data ranging from interviews, observations, and quality-related archived documents to answer the research questions. The study showed that the firmness of TQM methodology, orientation of the organisation culture, type of leadership style, and highly competitive strategies and operational targets affected the sustainment of TQM in the site. Furthermore, Wassan et al., (2022) proposed a conceptual model to investigate the relationship between TQM practices, sustainability, and organisational performance and to demonstrate the impact on organisational performance. They obtained data through a questionnaire survey in the manufacturing industries. The study used factor analysis and confirmatory factor analysis (CFA) for the analysis. The results showed that TQM and sustainability have a positive impact on organisational performance.

The analysis of existing studies reveals that numerous research efforts have collectively indicate a positive relationship between TQM and organisational performance across diverse industries. However, there is a noticeable absence of investigations into the impact of TQM on the cleaning industry. This absence underscores a gap in the current body of literature. Consequently, this application of this research addresses the identified gap by investigating the impact of TQM on cleaning companies in Finland. The study has contributed meaningful insights that would improve the overall quality of service delivery among prominent cleaning companies in Finland (Table 2).

3. Research Methodology

This section provides information about research design, location of study, measurement of the variables, the population size and sampling techniques, and the data analysis technique used to investigate TQM and organisational performance among Cleaning Companies in Finland.

3.1. Research design

Researchers can use quantitative, qualitative, or hybrid methodologies in their scientific investigations. Any data gathering tool (e.g., questionnaire) or procedure (e.g., graphs or statistics) that uses or produces numerical data is referred to as quantitative research methods (e.g., numbers). Qualitative methods, on the other hand, refer to non-numerical data collection techniques (such as interviews) or procedures (such as data categorization) (e.g., words). While some authors see these two tactics as separate and oppositional Bryman, (2012); Creswell (2003), others see them as complementing rather than antagonistic Bryman & Bell (2011), and a third group claims that distinguishing between them is pointless (Layder, 1993). The quantitative research methods adopted are deemed suitable for the study due to its alignment with the research objectives, which involve the use of questionnaire as the primary data collection tool. The questionnaires, as a data collection tool used in this study, offer several benefits in the context of this research. It help the research for the collection of standardized and structured data, facilitating the comparison of responses across respondents. The questionnaires adopted enables the efficient gathering of the data used. The numerical nature of the data obtained from the administered questionnaires further supports the application of various statistical techniques by enhancing the rigor and precision of the research outcome. The quantitative approach adopted offers the opportunity to employ statistical analyses, such as the regression or correlation analysis in the results presentation, to explore relationships between variables. The choice of quantitative research methods, specifically the use of questionnaires, is well founded for this study. Despite the academic debate about the relevance and significance of distinguishing between the aforementioned methodological viewpoints, the quantitative research method is appropriate for the study because it uses questionnaires to collect responses from samples.

3.2. Location of the study

The research work was carried out in the Northern European country Finland, in City Vaasa city, which is located in the Ostrobothnia region of Finland, populated by around 113 382 people. Worker proportions have been increasing by 61.3 % within the (15 – 64) age group. Another interesting factor is that the Vaasa region is a city with 62 foreign nationalities and 65 different spoken languages by foreigners (Statistics Finland, 2023). The choice of Vaasa as the study location was intentional and driven by various factors that make it suitable for investigating cleaning businesses. Vaasa serves as a diverse urban environment with a range of businesses, including a significant number of cleaning service providers. This diversity facilitates a thorough examination of different types and sizes of cleaning businesses, leading to a nuanced understanding of the industry. Additionally, Vaasa's economic landscape, demographic makeup, and regional characteristics contribute to its relevance. The city's industrial and commercial activities influence the demand for cleaning services. Furthermore, the selection of Vaasa was influenced by the presence of pertinent institutions, such as business associations and training facilities for cleaning professionals, particularly those catering to immigrants, given Vaasa's designation as a university city. Access to these resources enriches the study by providing insights into industry trends, challenges, and best practices without replicating existing content.

3.3. Measurement of variables

The study examined three key variables: TQM practices, customer satisfaction, and organisational performance. TQM practices, encompassing strategies like employee and communication management, were treated as independent variables, while customer satisfaction and organisational performance served as dependent variables. A questionnaire, self-administered to some of the cleaning workers in the service

industry, provided the primary data for the study. TQM entails diverse management practices geared toward enhancing overall service quality within an organisation. These practices, such as strategies related to employee management and communication, are considered independent variables in this study, representing managerial approaches implemented by the organisation. Investigating these practices allows the study to understand their impact on critical aspects, including customer satisfaction and organisational performance. The study reveals how effective TQM practices positively influence customer satisfaction. Customer satisfaction serves as a metric for evaluating how well an organisation's services align with or surpass customer expectations. Its crucial role as a dependent variable in this research stems from its direct reflection of the success of TQM practices. The assumption is that heightened levels of customer satisfaction contribute positively to the performance of cleaning businesses. Organisational performance, defined as an organisation's ability to achieve goals and optimize results, is another dependent variable in the study. It acts as a foundational element for attaining customer satisfaction. The underlying assumption is that TQM practices significantly contribute to the overall organisational performance of cleaning businesses in Finland.

3.4. Population, sample size and sampling techniques

The study focused on employees from three prominent cleaning companies in Finland, namely SOL – Palvelut Oy, RTK – Palvelut Oy, and N – Clean Oy for their distinctive attributes and significant contributions to the service industry. SOL Palvelut Oy, a longstanding Finnish family business, has a workforce of 14,746, with 72 % being Finns and 28 % from foreign subsidiaries. The gender distribution further emphasizes inclusivity, with 64 % women and 36 % men (SOL, Responsibility Report, 2022). The selection of SOL Palvelut Oy stems from its unwavering commitment to values, vision, customer satisfaction, environmental responsibility, and safety made it an ideal choice. RTK-Palvelu Oy, a Finnish multi-sector company with over 3,000 employees, operates in five industries. Gender distribution is 60 % women and 40 % men, with 1,726 part-time personnel, mainly comprising students (RTK, Responsibility Report, 2022). The company's diverse presence and substantial workforce were key factors in its selection. N-Clean, with a storied history since the 1980 s and a predominant focus on hotel cleaning, employs over 2,000 individuals. The company's specialization and long history in the industry contributed to its selection. The criteria for participant selection include six months of work experience and direct involvement in cleaning projects. SOL Palvelut Oy, RTK-Palvelu Oy, and N-Clean were chosen for their extensive industry experience and substantial workforce. The six-month work experience criterion aligns with the observation that employment in the cleaning industry often involves training, and the six-month probation period is common before permanent job confirmation. This ensures that participants have meaningful experience in the field. Direct involvement in cleaning projects adds validity to the study, as it ensures participants are active personnel in their respective companies, providing first hand insights into their experiences and perspectives within the cleaning industry. This comprehensive approach aims to capture a diverse range of experiences and insights from employees with varied backgrounds and roles within the Finnish cleaning sector.

3.5. Method of data collection

The method employed in data collection was in line with the research approach. Hence, the study explored an aspect of an organisation's performance toward customer satisfaction. Closed-ended questionnaires were used to collect data from respondents. There were four sections in the questionnaires (A: Demographic Information, B: The Impact of using TQM on Organisational Performance by Cleaning Companies in Finland C: TQM on customer satisfaction; Section D: Perception on Barriers to TQM. In the process of gathering data, a combination of paper and

online methods was utilized. The questionnaire, comprising questions relevant to the study, was distributed to 100 respondents through each company's supervisor and online links. Considering the busy schedules of the respondents due to their academic commitments, a timeframe of three weeks was designated for the data collection phase. A total of 55 questionnaires were retrieved from both the paper version and online links. Upon preliminary review, only 40 of the questionnaires were deemed acceptable, while 15 were rejected due to issues related to clarity. Table 6 presents an overview of the demographic characteristics of the respondents and the assessment of the importance of total quality management practices.

4. Data analysis and results

4.1. Data analysis techniques

The study used a 5 – point Likert scale to assess the importance of various factors related to the organisation's performance. The respondents were asked to rate factors based on their perceived view, providing a quantitative measure for analysis and the factors were then ranked based on the average score obtained from relevant Likert scale questions. For a more in-depth exploration of the relationships between respondents and these success factors, the study conducted additional correlation analysis using SPSS (Statistical Package for Social Science). This software's inclusion in the study bolstered statistical rigor, allowing for advanced correlation analyses and enhancing the overall depth of understanding regarding the relationships between the examined factors and organisational performance. In summary, the study employed a combination of Likert scale measurement, factor ranking, and SPSS-driven correlation analysis to thoroughly investigate the connections between the analyzed factors and organisational performance. This approach provided a well-rounded understanding to effectively address the research questions.

4.2. Descriptive statistics of the sample

The analysis starts with descriptive statistics of the sample. The descriptive statistics is presented in Appendix, Table 6. The descriptive statistics of the sample describe the main features of the sample and provide information about the sample. It also provides the first view of the sample. Table 6 indicates that the gender distribution of the sample is not equal. The male respondents are greater than the female

Table 1
An overview of Existing definitions of TQM*.

Definitions of TQM	References
TQM is an organisational norm dedicated to ensuring the utmost customer satisfaction by gradually improving products and services. TQM has a system that focuses on the engagement of management, employees, recipients, and even customers to meet or exceed customer satisfaction.	Raza et al., (2015)
TQM is a systematic quality management approach used by companies to effect positive changes in performance, promoting quality, customer satisfaction, and business growth.	Sadikoglu, E., & Olcay, H. (2014)
TQM involves the systematic management of employee and business processes to ensure comprehensive customer satisfaction at every stage. Customer satisfaction stands as a key metric within TQM, guiding organisational performance toward the objectives of Total Quality Management.	Bon, A. T., & Mustafa, E. M. (2013)
TQM is one of the quality management strategies aimed at achieving long-term success through customer satisfaction.	Riaz, H. et al., (2023)

counterpart. The male respondents constitute 65 % of the respondents while the female respondents constitute 35 %. This might suggest that we have more male employees in the cleaning organisations. Regarding the educational status of the respondents, 40 % of the respondents studied vocational courses while 45 % of the respondents possess bachelor’s degrees. Table 6 in the appendix also shows that few of the respondents possess postgraduate degrees as the respondents that have masters’ degrees and PhD which constitute 15 % of the respondents. The possible reason might be that people that have higher certificates prefer more skilful employments rather than working in the cleaning companies.

On the working experience of the respondents, 40 % of the respondents have less than 6 months of working experience while 32.5 % of the respondents have between 1 and 2 years of working experience. Only 2.5 % of the respondents have worked between 2 and 3 years, 5 % of the respondents have worked between 3—4 years and 15 % of the respondents have above 4 years of working experience. Table 6 in the appendix also presents the job status of the respondents. For instance, 37.5 % of the respondents are full-time workers while 60 % of the respondents are part-time workers. Workers who constitute 2.5 % of the respondents failed to indicate job status. This statistic suggests that more than half of the respondents are part-time workers. The information on the quality initiatives implemented in the company is also indicated in Appendix. As shown, 20 % of the respondents confirm that their cleaning company has adopted developing strategies for TQM while 7.5 % of the respondents confirm that employee management to improve quality strategy has been implemented in the cleaning company they belong to.

5 % of the respondents indicate that a communication process improvement strategy has been implemented in their respective companies. In addition, 10 % of the respondents confirm that customer satisfaction initiatives have been initiated in their company. Concerning establishing measures of quality progress strategy, only 5 % of the respondents indicate that this strategy has been implemented in their company. It’s also worth noting that 5 % of the respondents fail to indicate any strategy. Finally, 32.5 % of respondents claim that their organisation has implemented TQM practices, while 55 % indicated that their company has not. 10 % of respondents are undecided about whether or not their company has implemented TQM.

4.3. Construct of validity test and reliability test

It is essential to conduct a construct validity test to ensure the validity of all employed instruments. The reliability assessment uses Cronbach’s alpha (α), and it is considered reliable when the Cronbach’s alpha value exceeds 0.60, as specified by (Ghozali, 2009). Cronbach’s of the reliability analysis yielded a Cronbach’s Alpha of 0.849 for a scale consisting of 7 items, indicating a high level of internal consistency reliability.

4.4. Correlation analysis

The correlations between the variables have been investigated using

Table 2
Correlation Results (Pearson’s r).

	Customer Satisfac–ion	Communicat–ion Management	Employee Management	Competitive–ness	Efficiency	Low turnover	Resistance
Customer Satisfaction	1						
Communicat–ion Management	0.331*	1					
Employee Management	0.343*	0.450**	1				
Competitive–ness	0.180	0.467**	0.439**	1			
Efficiency	0.263	0.412**	0.549**	0.559**	1		
Low turnover	0.266	–0.090	0.156	–0.264	0.016	1	
Resistance	–0.374*	–0.447**	–0.037	–0.280	–0.101	0.207	1

Note: N = 40, **p < 0.01 and *p < 0.05 (two-tailed).

correlation analysis. In this study, the Pearson correlation coefficient is utilised to measure and describe linear correlations. According to Pallant (2010), the most appropriate measure for examining the interval data at hand is Pearson correlation. The correlation coefficient (r) shows the degree and direction of the association between variables in a range of 0 to 1. However, because it is unlikely that all of the independent factors will have a positive relationship with the dependent variable, a two-tailed test was considered appropriate. Multiple regression analysis should have at least a moderate correlation ($r = 0.332$) between the predictors and the response variable, according to (Pallant, 2010). However, a high relationship ($r > 0.70$) between the independent variables may provide undesired multicollinearity in the final model. The correlation result is presented in Table 2.

The correlation results in Table 2 shows that some of the association between the variables are positive while some are negative. It also shows that some of the correlations are significant at $p < 0.01$, others are significant at $p < 0.05$ while others are not significant. Specifically, communication and employee management are significantly correlated with customer satisfaction. However, competitiveness, efficiency and low turnover which are used to capture organisation performance are positively correlated with customer satisfaction but insignificant. Customer satisfaction and resistance to change have a negative relationship and, one possible explanation is that the fear to accept practices that could affect customer experiences might lead to their customer turnover. There was no evidence of multicollinearity between the variables in the correlation using the correlation coefficient criteria ($r < 0.70$).

4.5. Regression results

To examine the impact of TQM and organisation’s performance among cleaning companies in Finland, thus, this study employs hierarchical multiple regression analysis. A reason for choosing this dependence technique is that it describes and quantifies the strength of linear relationships between many independent variables (predictor variables) and one dependent variable (response variable) while also giving an assessment of the relative importance and predictive power of the independent variables (Hair et al., 2010). The regression analysis is employed to look at the relationship between one or more independent variables and a dependent variable. The objective is to represent and measure the degree of the linear correlation between these variables. Regression analysis has been used in this research study’s context to determine how changes in the independent variables relate to changes in the dependent variable. This study attempts to give a hazy knowledge of the impact that total quality management has on an organisation’s performance within the cleaning industry in Finland by using regression analysis.

4.6. Relationship between organisation performance and customer satisfaction

The first research question of this study is to determine how an organisation’s performance affects customer satisfaction. The

organisation’s performance is measured in terms of competitiveness, efficiency and turnover. This implies that model 1 of this study has three independent variables. As a result of this, there is a need for assessing the assumptions behind multiple regression analysis. As a first step, the SPSS multicollinearity diagnostics are performed. No problematic correlations are observed among independent variables. As an example, both Tolerance and VIF values are within the critical limits ($TOL > 0.10$, $VIF < 10$). This suggests that all predictors are sufficiently independent of each other. The results of the relationship between an organisation’s performance and customer satisfaction are presented in Table 3. In Table 3, the value of the coefficient of determination (R^2) is 0.514 while the value of adjusted R^2 is 0.203. This implies that the value of R^2 is greater than that of adjusted R^2 . The significance of the F-test in the model (4.315; $p < 0.05$) indicates that the measures of organisation performance have a very strong correlation with customer satisfaction.

Two of the three predictors significantly contribute to customer satisfaction. For instance, organisation performance in terms of competitiveness has a coefficient of 0.332 and is significant at $p < 0.05$ while the coefficient of organisation’s performance in terms of low turnover is 0.357 and significant at $p < 0.05$. In other words, for each unit increase in competitiveness, customer satisfaction increases by 0.332 units. Therefore, the organisation’s performance in terms of efficiency has a positive relationship with customer satisfaction but it is insignificant. The practical implications of these results suggest that cleaning companies in the region needs to explore more additional factors or aspects related to efficiency that could impact customer satisfaction.

4.7. Role of employees and communication management on the Customers’ satisfaction

The second research question is to investigate the roles of Employees and Communication Management in Customer Satisfaction. The results of the roles of employees and communication management on customer satisfaction are presented in Table 4. The upper part of Table 4 presents the role of communication management on customer satisfaction while the lower part of the Table presents the role of employee management on customer satisfaction. Starting with the role of communication management, the value of R^2 is 0.331 while the value of adjusted R^2 is 0.086. The F-test is also statistically significant at $p < 0.05$ and it suggests that communication management is highly correlated with customer satisfaction. The coefficient of communication management is significantly positive at $P < 0.05$. This implies that communication management enhances customer satisfaction. The free flow of information between the management and employees is vital to the customer’s satisfaction as the employees can get information from the customers about the services of the organisation and relate the information to the management for better services.

On the results of the employee management on customer satisfaction, the value of R^2 is 0.343 and the value of adjusted R^2 is 0.094. The value of the R^2 is greater than the adjusted R^2 . The F-test (4.679) is also significant at $p < 0.05$ which indicates that there is a strong relationship between employee management and customer satisfaction. The

Table 3 Relationship between Organisation Performance and Customer Satisfaction.

Variable	Std. Coefficient	t-Value	Significance
Competitiveness	0.332**	2.238	0.032
Efficiency	0.236	1.588	0.121
Low turnover	0.357**	2.487	0.018
F	4.315**		0.022
R^2	0.514		
ΔR^2	0.264		
Adjusted R^2	0.203		

Note: **p < 0.05.

Table 4 The Role of Employee and Communication Management on Customer Satisfaction.

Variable	Std. Coefficient	t-Value	Significance
Communication Management	0.331**	2.163	0.037
F	4.679**		0.037
R^2	0.331		
ΔR^2	0.110		
Adjusted R^2	0.086		
Employee Management	0.343**	2.247	0.031
F	5.050**		0.031
R^2	0.343		
ΔR^2	0.117		
Adjusted R^2	0.094		

Note: **p < 0.05.

coefficient of employee management is 0.343 which is significant at $p < 0.05$. This suggests that employee management contributes to customer satisfaction.

4.8. Factors limiting the adoption of Total quality management in organisations

The third research question is to identify the barriers to the adoption of TQM in cleaning organisations. The results of the factors limiting the adoption of TQM in an organisation are presented in Table 5. The coefficient of determination (R^2) is 0.457. The value of adjusted R^2 is 0.115 is lower than R^2 as expected. Like in earlier Tables, the F-test is statistically significant (2.238; $p < 0.10$) and implies that independent variables are strongly related to the dependent variable. The coefficient (-0.451) of resistance to change is negative and statistically significant at $p < 0.05$ which is an indication that resistance to change has a negative relationship with the adoption of TQM in cleaning organisations. The coefficient (-0.161) of lack of understanding is negative but it is insignificant even at the lowest significance threshold of $p < 0.10$. Likewise, the coefficient of lack of top management commitment is positive but it is statistically insignificant. Lack of customer focus with the negative coefficient of -0.108 is not also statistically significant. These findings indicate that among the four factors, the resistance to change produces a significant relationship with the adoption of TQM in the cleaning organisation. The other factors produce an insignificant relationship with the adoption of TQM in the cleaning organisation. In the context of the fear of customer turnover in cleaning organisations, the incorporation of training and retraining initiatives among employees will be a strategic move. This ensures that employees are equipped with the necessary skills and knowledge to adapt to industry trends, and the successful implementation of TQM practices.

5. Discussion

This study found that organisational performance has a positive and significant association with customer satisfaction. This is due to the

Table 5 Factors Limiting the Adoption of Total Quality Management in Cleaning Organisation.

Variable	Std. Coefficient	t-Value	Significance
Resistance to Change	-0.451**	-2.325	0.026
Lack of understanding	-0.161	-0.907	0.371
Lack of top management commitment	0.341	1.352	0.185
Lack of customer focus	-0.108	-0.458	0.650
F	2.238*		0.085
R^2	0.457		
ΔR^2	0.208		
Adjusted R^2	0.115		

Note: **p < 0.05 and *p < 0.10.

Table 6
Descriptive Characteristics of the Sample.

GENDER		
	Frequency	Percentage
Male	26	65 %
Female	14	35 %
EDUCATION STATUS		
	Frequency	Percentage
Vocational course	16	40.0 %
Bachelor degree	18	45.0 %
Master's degree	3	7.5 %
PhD	3	7.5 %
YEARS OF WORKING		
	Frequency	Percentage
Below 6 months	18	45.0 %
1—2 years	13	32.5 %
2—3 years	1	2.5 %
3—4 years	2	5.0 %
above 4 years	6	15.0 %
JOB STATUS		
	Frequency	Percentage
Full-Time worker	15	37.5 %
Part-Time worker	24	60.0 %
Invalid	1	2.5 %
QUALITY INITIATIVES IMPLEMENTED		
	Frequency	Percentage
Developing Strategies for TQM	8	20.0 %
Employee Management to Improve Quality	3	7.5 %
Communication Process Improvement	2	5.0 %
Customer Satisfaction Initiatives	4	10.0 %
Establishing measures of Quality progress	2	5.0 %
0.00	2	5.0 %
Implemented Total Quality Management Practice		
	Frequency	Percentage
Implemented	13	32.5 %
Not Implemented	22	55.0 %
Invalid	4	10.0 %

company's competitiveness and minimal turnover, which improves customer satisfaction tremendously. This finding is in line with other research (e.g., [Ambroz, 2008](#); [van der Wiele, Paul, & Martijn, 2001](#); [Zakari & Ibrahim, 2021](#)) who found a positive association between organisational performance and customer satisfaction. Customer satisfaction is linked to market share growth, the ability to charge a higher price, and better customer loyalty, all of which lead to higher profitability and lower transaction costs. The attempt of the organisations to maximise their profits motivates them to satisfy their customers in every way. This finding suggests that staff and management of the organisation understand that being competitive as a service organisation necessitates being fully involved in service delivery, having a clear vision of what service entails for customers, and being flexible in all service delivery situations.

Customer satisfaction and employee and communication management are favourably associated, according to this study. This finding is consistent with earlier studies like [Aburayya et al., \(2020\)](#), [Ammari et al., \(2017\)](#), [Obeidat et al., \(2019\)](#), and [Turkyilmaz et al., \(2011\)](#) who found that employee management through communication increased organisational commitment and employee performance and loyalty. The positive connection between employees and communication management is possible because good communication improves employees which in turn improves customer satisfaction. Good communication and employee management promote employee loyalty and low staff turnover which will enhance the productivity and quality of services rendered to customers.

In the dynamics of an organisation, communication and personnel management are critical. Communication within an organisation internally allows it to collaborate with different divisions with the same vision, work together in the same direction, and be more productive overall. Free flow of communication between the management and employee enables the employee to get information about the organisation's service from the customers. When the employee makes the information available to the management, it will enable both the management and employee to work together to improve the quality of service of the organisation. Communications management bridges the gap between the management and the employee and as well between the organisation and the customer. The elimination of gaps can easily allow the organisation to know the needs and expectations of the customers and areas needing improvement which the organisation can easily target to satisfy the customers better. Good employee management can propel a positive change in employee attitudes, which will lead to positive changes in customer satisfaction according to ([Kurdi, Alshurideh & Alnaser, 2020](#)).

The study found resistance to change as the only factor that significantly limited the implementation of TQM in cleaning organisations. This finding is in line with [Mosadegh Rad, \(2006\)](#), who discovered that a barrier to overall quality management is the organisation's inflexibility in the face of environmental and technological change. It is also in line with the findings of [Soltani et al., \(2003\)](#) and [Wysocki, \(1990\)](#), as quoted in [Dainty et al., \(2002\)](#), who concluded that lack of management commitment is a barrier to the implementation of TQM.

Several other variables have been mentioned in the literature as barriers to TQM implementation. [Somerville \(2006\)](#), for example, cited a lack of coordination among employees as a hurdle to implementing TQM. A lack of knowledge and comprehension of quality management principles was recognized as a barrier to TQM by ([Temponi et al., 2006](#)).

6. Conclusions

This study examined the Impact of Total Quality Management on Cleaning Companies in Finland. The study made use of quantitative research method which involves the use of questionnaires to collect responses from samples. Simple random and stratified sampling techniques were used to select workers across the major three cleaning companies (RTK – Palvelut, N – Clean Oy and SOL Palvelut) in Finland. The technique was employed to provide an equal chance for every cleaning worker in the selected population, eliminating bias and ensuring that each individual has an equal opportunity to be part of this study. It ensures that the selected sample is a fair reflection of the entire employee population within each company. A hierarchical multiple regression analysis is employed to address i) how organisation's performance impact customer satisfaction ii) how employee and communication management influence an organisation's performance towards customers' satisfaction iii) identify the factor(s) limiting the implementation of TQM in cleaning organisation. The findings from this study show that organisational performance has a positive and significant association with customer satisfaction. This is based on the positive association between organisational performance and customers' satisfaction.

Moreover, considering that Finland has been rated among the world's leading countries in many international comparisons of environmental protection standards, its socially acceptable and clean environment has enhanced higher productivity among cleaning companies. The study also found that employee and communication management enhanced customer satisfaction. Finally, the study found that resistance to change as a factor that significantly limited the implementation of TQM in cleaning organisations.

Based on the findings from this study, some recommendations can be made. First, since this study found that organisational performance has a positive and significant effect on customer satisfaction, this study recommends that customers must be often included in the service delivery

process by advocating for the development of customer feedback mechanisms and the regular conduct of customer satisfaction surveys using modern technology tools. When adopting any plan to achieve customers' pleasure, the firm must have a customer-oriented management approach and recognize customers as their first priority. The customer is the justification for any organisation's existence and profitability; therefore, the organisation must ensure that the satisfaction of the customers must be a priority.

Second, as a result of the positive connection found between employee and communication management and customer satisfaction, this study recommends that the organisational goal must be conveyed and understood by employees. The management should, therefore, meet with all employees to discuss and clarify the organisation's objectives. To facilitate this communication, it is better to use such as face-to-face meetings, regular town hall meetings, or the use of digital platforms for internal communication and adoption of English language and other forms of communication and discussion, and criticism should be encouraged among the employees. This is crucial because, without well-functioning feedback systems, employees will not obtain the information they need to make appropriate changes to their performances and please customers.

Third, since this study found that employee resistance to change is a barrier to the implementation of TQM in the cleaning industry, this study recommends that employees must receive sufficient training to overcome their reluctance to change. Basic training should be offered to teach quality ideas as well as training in quality tools, procedures, teamwork, and problem-solving should be supplied. Also, individual training should be provided to guarantee that each employee develops the necessary technical skills. As a result, management must provide sufficient training for staff for them to make informed decisions. This could involve instruction on how to use analytical tools like fundamental quality control tools and the management and planning tools. Also, the management must ready to adopt and implement changes in their policies and services in response to changes in technology, environment and in satisfy customers better. In conclusion, this study has made a valuable contribution to understanding the impact of Total Quality Management (TQM) on cleaning companies in Finland.

7. Limitations and future research directions

Despite the fact that this study furnishes valuable insights for service providers, customers, entrepreneurs, and researchers, some certain limitations were still acknowledged. Primarily, the geographical scope was confined to Finnish cleaning companies, suggesting future studies might broaden their horizons to encompass emerging industries in different regions. A comparative analysis could delve into the TQM practices' contributions across various sectors within the considered country. Moreover, this study's findings were restricted to three prominent cleaning companies, emphasizing the need for researchers to explore other emerging companies in diverse sectors such as transportation, paper processing, metal industries, and food providers. An encountered challenge involved respondents' hesitancy to share confidential information, affecting the study's depth. Time and financial constraints, common in many studies, were additional hindrances. The distribution of questionnaires proved challenging, with some companies refusing participation and certain departments opting out, adversely impacting the response rate and resulting in a limited number of respondents. Future researchers are encouraged to overcome these challenges, ensuring broader participation and adopting a mixed-methods approach to enrich outcomes with both qualitative and quantitative insights. A few suggested topics for future research include exploring how the integration of technology, such as digital platforms or smart cleaning solutions, within TQM frameworks could influence customer satisfaction. Another suggested topic could be investigating how organisational culture can influence the successful integration of TQM principles and its subsequent impact on customer satisfaction.

CRedit authorship contribution statement

Rasheed Kola Olayiwola: . **Ville Tuomi:** Supervision. **Jörgen Strid:** Supervision, Funding acquisition. **Rosmeriany Nahan-Suomela:** Project administration, Funding acquisition.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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