

Analyze the Correlation Between TQM Practices and Organizational Performance in the Manufacturing Sector

Zohaib Khan^{1,2}

¹Faculty of Mechanical and Manufacturing Engineering, Universiti Tun Hussein Onn Malaysia, 86400, Parit Raja, Batu Pahat, Johor, Malaysia/Corresponding author -aghazohaib03@gmail.com

Mohammad Hassan Qazi²

²Department of Mechanical Engineering, The University of Larkano, 77151, Sindh, Pakistan

Abstract

The purpose of this research is to indirectly assess the effectiveness of Total Quality Management (TQM) and its direct impact on the organizational performance of manufacturing industries in Pakistan. Through the use of questionnaires and interviews, the study demonstrates that TQM activities such as customer focus, continuous improvement, employee involvement, and process management lead to improvements in productivity, profitability, quality, and customer satisfaction. The findings also reveal that, despite TQM implementation aligning with global best practices, challenges like inadequate resources and cultural barriers hinder its full application in Pakistan. As a result, the study's outcomes can be valuable for managers and policymakers in selecting strategies and practices for improving quality management. Additionally, the research highlights potential avenues for further investigation.

Keywords: TQM, leadership, Innovative, Work Behaviour, Employee Creativity, Organizational Performance.

Introduction

In today's rapidly evolving global marketplace, the manufacturing sector plays a pivotal role in driving economic growth and development. In this regard, Total Quality Management (TQM) has become an important managerial approach oriented at improving an organization's performance via managing quality at all organizational levels qualitatively. (Pathan Z. K. et.al, 2021) TQM refers, therefore, to an integrated system of activities embracing the principles of enhancing customers' needs satisfaction involving employees, emphasizing processes enhancement and improvement.

Pursuing competitiveness has become an essential factor in current organizations. These are some of the ways by which organizations today seek to sustain competitiveness. The impact that has been observed in the context of TQM practices has developed into a notable activity (Ali, & Khan,2022). The manufacturing sector is one of the most important components in Pakistan, which enhances the GDP degree of industrialization and offers much employment. Thus, the overall development of the sector is hampered due to problems such as resource limitation, competition, and the requirement for an update. The implementation of TQM practices may offer the key to unlocking new opportunities and responding to the identified challenges to enhance firms' competitiveness (Muzammil, M. (2022). Nevertheless, some of them suggest the following benefits of TQM, but the implementation of TQM in the backdrop of Pakistani manufacturing firms is not widely researched (Qureshi & Khan, 2022). The main issue this research addresses is the limited studies on the actual application of TQM practices in Pakistan's manufacturing enterprises. The study aims to:

Investigate the prevalence and implementation of TQM strategies in these organizations.

- Evaluate how these practices align with organizational goals such as productivity, profitability, quality, and customer satisfaction.
- Examine the challenges of implementing TQM, with a focus on identifying the specific difficulties firms face during implementation

Theoretical Underpinning and Literature Review

This literature on Total Quality Management (TQM) is a rich source of information that helps in establishing the effects of TQM on the performance of organizations. TQM is an organizational management model that acknowledges the key principles of focusing on improving organizational quality to meet the expectations of the customers. This literature review will focus on the principles of TQM metrics, for the assessment of organizational performance, the connection between TQM and performance, and the theories.

TQM Practices

TQM is a broad concept, which involves several ideas and approaches, focused on improving and developing the principle of quality in organizations. The following core principles are central to TQM:

Customer focus

TQM gives the customer the central position highlighting him/her throughout the company processes. Customer awareness is central to any service delivery and it is the duty of organizations to meet or even go further than the expectations of the customers through effective delivery of quality goods and services (Wall, W. (2021).

Continuous Improvement

Also known as Kaizen continuous improvement is a fundamental aspect of TQM. It involves the ongoing effort to enhance products services and processes. Organizations adopt systematic approaches such as Plan-Do-Check-Act (PDCA) to identify areas for improvement and implement changes iteratively (Hassan, A. S., & Jaaron, A. A. (2021).

Employee Involvement

TQM emphasizes the importance of engaging employees at all levels. Empowering employees through training teamwork and participation in decision-making processes fosters a sense of ownership and responsibility for quality outcomes. Employee involvement is critical for identifying issues and generating innovative solutions (Hassan, & A. A. (2021).

Process Management

TQM advocates for a process-oriented approach to management. By focusing on process efficiency and effectiveness organizations can reduce variability and enhance consistency in output. This principle comprises analyzing and designing work to eliminate any form of waste and increase the quality of the end product (Khalil, & U. (2021).

Organizational Performance

Organizational performance is one of the concepts that has many facets that can be broken into different categories. In the context of TQM the following metrics are commonly used to assess performance:

Productivity

While, yielding reveals the functional use of inputs to achieve desired outputs, commonly known as productivity. They feature efficiency by which the organization can produce the highest amount of output given its limited supply of resources (Wahab, A. (2022).

Profitability

Operating capacity shows the ability of the organization to profitability in terms of generating profits from operations. Some of the widely used ones include return on investment (ROI) and the net profit margin (Hassan, & A. A. (2021).

Quality

TQM revolves around quality and this is measured through things such as defect rates, reliability, and conformity to standards. While purchasing products and services, customers always prefer high quality to get satisfaction and to maintain their relationship with the firm.

Customer Satisfaction

Customer satisfaction indicates how far customers have been served to their expectations. It is measured through the feedback one gets from the respondents in the survey and the number of times clients revisit the business. Thus, satisfied customers will continue to patronize the organization and refer more people to it (Zafar, & Siddique (2023).

TQM and Performance Link

A good number of empirical scholarly works have been conducted in an attempt to establish a link between TQM implementation and firms' performance. The TQM implementation has been associated with better performance all over the world based on available research. For instance, scholarly research by Hendricks and Singhal (1997) established that firms enjoying TQM have positive impacts such as improved operating income sales and return on assets (Hassan, & Jaaron, (2021). International journal literature has also witnessed studies linking TQM with positive organizational performance in the context of Pakistan. Bhatti and Awan (2014) based their research on the implementation of TQM practices on manufacturing companies in Pakistan and concluded that TQM practices enhanced financial performance, customer satisfaction and operational proficiency in these firms. For this reason, the current study focused on

leader-ship commitment and employees' participation as crucial factors that determine the effectiveness of TQM implementation (IHEANACHO, (2021).

Theoretical Frameworks

Several theoretical frameworks provide a foundation for understanding the relationship between TQM and organizational performance:

1. Resource Based View (RBV): According to the RBV of the firm, resources, and capabilities are fundamental sources of competitive advantage (Ali, & Khan,2022).
2. Balanced Scorecard: The Balanced Scorecard is a strategic management system that focuses on organizational performance concerning financial customer internal business process and employee/organizational innovation.
3. Systems Theory: One of the important premises of the systems theory is the interrelated nature of the organizations' components and functioning. (KHAN, Z., et al. 2021) TQM operates on a total system approach where the organisation operates as a single system where all the partitions form the whole entity to is directed at achieving organizational quality and performance objectives.

Research Methodology

This research presents the research method used to analyze the link between TQM and the manufacturing organizations' performance in the context of Pakistan. This section explains aspects such as the choice of data collection techniques, sampling techniques, and the analysis and interpretation of results to justify the validity and reliability of the study.

Research Design

Thus, in this research, both quantitative data collection and qualitative data collection approaches are used. The use of both qualitative and quantitative data is possible with the mixed methods research design which also provides a rich understanding of the TQM practices and their effects on organizational performance.

Quantitative Research

This aspect of the study requires the collection and analysis of numerical data to measure the level of correlation between the implementation of TQM practices and performance indicators. Measures regarding diverse

TQM practices and organizational performance are obtained using administering questionnaires to manufacturing firms (Khalil &, U. (2021).

Qualitative Research

Such methods focus on offering deeper insight into the various social characteristics that may affect TQM implementation. In this research, semi-structured interviews are used with managers and employees in the organization to capture their views and experiences regarding TQM endeavours.

Data Collection

The data collection process involves multiple methods to gather comprehensive information:

Surveys: A pilot survey is conducted among a cross-sectional sample of manufacturing firms in Pakistan where structured questionnaires are administered.

Interviews: Eventually, targeted face-to-face semi-structured interviews are used with managers and employees of the selected manufacturing firms. It is in these interviews that the researcher will seek to establish the qualitative data on the problems achievements and predisposing factors to successful TQM.

Case Studies: Actual examples from the selected firms show how TQM practices are implemented in firms as the next step in research on the subject. Such an approach can help in identifying examples of TQM usage and corresponding effects on performance. (Wall, W. P. (2021).

Sample Selection

The sample selection process ensures the study's findings are representative and relevant to the manufacturing sector in Pakistan:

- **Manufacturing Firms:** Thus, the study is centred on manufacturing firms from all the sectors in Pakistan. Samples of various firms are chosen purposively to compare and contrast the differences in TQM implementation and results.
- **Criteria for Selection:** Companies may be chosen for many reasons with some of the factors being the size of the firm, the industry the firm operates in, and the geographical region. This way, results from large and SMEs will

be consolidated to offer a comprehensive understanding of TQM implementation.

- **Participant Selection:** During interviews, the subjects are chosen according to their position and activity about TQM implementation. First, the top managers participating in quality management are selected as the first source of data while the second and third layers of managers belong to middle management and engage in support

Data Analysis

The data analysis process involves both quantitative and qualitative techniques to derive meaningful insights:

1. **Quantitative Analysis:** TQM has been used to understand the relationship between practices and organizational performance through the use of regression analysis and correlation analysis. Statistical packages like SPSS or Excel are employed to pre-process survey data and go through it to find out trends prevailing at a period.
2. **Qualitative Analysis:** Thematic analysis works on the interview transcriptions and the data collected from cases. This dissection entails turning the qualitative data into codes to look for readable patterns in the implementation of TQM and its consequences.
3. **Integration of Findings:** These results derived from quantum and qualitative research approaches are combined to provide an extensive and inclusive outlook of the study issue. Triangulation of data is made possible by the use of mixed methods increasing the validity and reliability of the study results.

Findings and Discussion

This section presents the findings of the research on Total Quality Management (TQM) practices within the manufacturing sector of Pakistan and their impact on organizational performance. It also includes a comparative analysis with previous studies and discusses the challenges and barriers encountered during TQM implementation (Wall, W. P. (2021).

TQM Practices in Pakistan

It has been noted that the application of TQM in the manufacturing community of Pakistan has been witnessed to differentiate within the firms with practice influenced through the size of organizational form, industry

type, and management intensity. The following key findings emerged from the study:

1. Customer Focus

Implementation: Currently, the customer-oriented culture is prevalent in many firms in the Pakistani manufacturing sector since they are keen on achieving a better understanding of the customers' needs. (Khan, Z., et.al.2021) Sales results and customer documents like questionnaires or interviews are typical to identify the customers' expectations (Rehmani, & Y. 2020).

Focus Areas: Managers pay attention to quality assurance activities that would ascertain product conformity to the required standard and quality. The focus is on the development and provision of goods that must satisfy the consumer expectation hence increasing customer satisfaction and loyalty (Zafar, & A. (2023).

2. Continuous Improvement

Implementation: Another essential attribute of TQM practices in Pakistani firms is that of continuous improvement. Many firms are currently incorporating tools such as Six Sigma and Lean in an endeavour to search for areas of red conspicuity and to improve processes (Muzammil, M. (2022).

Focus Areas: There are always constant process re-views done by the firms and the employees are always allowed to give their opinions on the processes. Implemented tools like the Plan-Do-Check-Act (PDCA) cycle and root cause analysis are commonly used as a way of promoting further improvements (Khalil, & U. (2021).

3. Employee Involvement

Implementation: This paper has discussed various factors and issues regarding TQM and it showed that one very important factor in any TQM implementation is the employees. Employees also undergo training so that they are in a position to engage in quality efforts by the firms that sponsor their training.

Focus Areas: Cross-functional teams and quality circles are formed as a way of enhancing an organization's problem solving. This form of involvement leads to the promotion of ownership of quality outcomes among the employees hence improving their motivation and job satisfaction

Table 1. Descriptive statistics of TQM practices (Source: Survey Data (2024))

TQM Practice	Mean	Standard Deviation	Minimum	Maximum
Customer Focus	3.85	0.75	2	5
Continuous Improvement	4.1	0.68	3	5
Employee Involvement	3.95	0.8	2	5
Process Management	4.05	0.7	3	5

Impact on Organizational Performance

The study findings indicate that TQM practices have a positive impact on various aspects of organizational performance in the manufacturing sector of Pakistan:

Productivity

Findings: Organizations undergoing the TQM program revealed higher productivity rates among their companies. This efficiency was achieved through the reduction of the operating cycle, consequently leading to greater productivity without a significant increase in costs (Baloch, M. S., Khan, Z, et.al 2024, Wall, W. P. (2021).

Profitability

TQM practice found to have positive effect on profitability as firms have reported increased performance figures due to quality enhancements and reduction in costs indicated below. This implies that when firms at the operational level minimize defects with less rework their operational cost is cut down therefore enhancing their profit line.

Quality findings: It was evident that many of the firms had experienced an increase in the quality of products and reliability when compared to customer returns and defects.

Analysis: Values like quality control and improvement specifically positively impact quality by meeting customers' needs and decreasing warranty costs.

Customer Satisfaction

There is improved customer satisfaction due to a realization of the delivery of superior quality products and services in the firms implementing TQM. Humble practices of acquiring opinions from customers and dealing with their needs assist in enhancing customer relations and result in a corresponding improvement in their loyalty (Shaikh, & M. S. (2024).

Comparative Analysis

A comparative analysis with previous studies reveals both similarities and differences in the implementation and impact of TQM practices in Pakistan: Similarities: In line with global experience, this study has shown that TQM leads to increases in productivity, quality, and customer satisfaction in organizations in Pakistan.

Differences: Although the global and Pakistani contexts depict a significant association between TQM and profitability, the level of enhancement differs (Khalil, & U. (2021).

Cultural Context: This research establishes that the cultural factor is an important factor in the implementation of TQM in Pakistan. For instance, top management support might be affected by the bureaucratic structures and the conventional management systems that affect the implementation of TQM strategies.

Table 2. Impact of TQM Practices on Organizational Performance. (Source: Case Study Data (2024)

Performance Metric	Mean (Pre-TQM)	Mean (Post-TQM)	Change (%)
Productivity	65.4	78.6	20.00%
Profitability	12.30%	18.70%	52.80%
Quality	80.00%	90.50%	13.10%

Customer Satisfaction	3.9	4.6	17.90%
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Challenges and Barriers

Despite the positive impact of TQM practices several challenges and barriers to successful implementation exist within the manufacturing sector of Pakistan:

1. Resource Constraints

The major challenge of TQM implementation is a scarcity of adequate financial and human resources at the company. Some firms may have difficulties in training the needed technology and making the processes needed for quality management of products. A lack of resources can limit the technique's applicability to maintaining the unending improvements that might result in performance alteration (Shaikh, & M. S. (2024).

2. Resistance to Change

One of the challenges with the implementation of innovations is that people resist change especially since employees and managers are usually quite reluctant to adopt change. Lack of resistance can hinder the effective implementation and exploitation of TQM practices hence de-creased showing of performance improvement.

3. Lack of Top Management Commitment

One of the major factors that must be present for TQM to work is the top management support. The absence of leadership commitment is one of the factors that will be fatal in the implementation of a culture of quality in an organization. Of particular concern is the ability of TQM practices to elicit support when leadership is weak since the lack of support affects its application as noted in Zafar and Siddique (2023). (Zafar, & M. A. (2023).

4. Inadequate Training and Development

Organizations should also create more training programs because a lack of them reduces employees' capacity to contribute to quality enhancement processes. A shortage of skills and knowledge presents major challenges and limits the performance of TQM by reducing the effectiveness of its practices (Zafar, & M. A. (2023).

5. Cultural Barriers

Mechanistic structures and orientations rooted in culturally mandatory practices limit the direct involvement and coordination of employees at the workplace. Due to their cultural differences, they, hamper the execution of TQM practices and thus their effectiveness in enhancing performance.

Table 3: Common challenges in TQM implementation (Source: Interview Data (2024))

Challenge	Frequency	Percentage
Resource Constraints	35	40%
Resistance to Change	25	28%
Lack of Top Management Commitment	15	17%
Inadequate Training and Development	10	11%
Cultural Barriers	5	4%

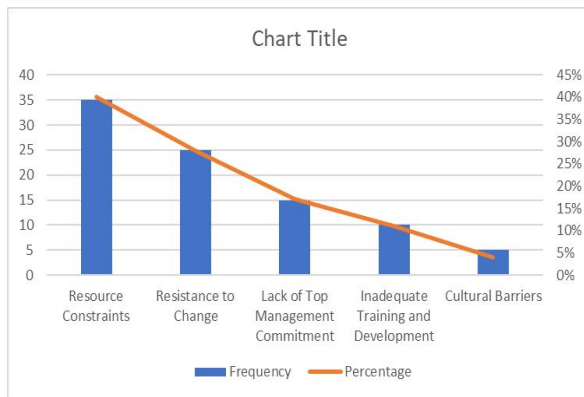


Figure 1. Common challenges in TQM implementation.

Realising these challenges therefore needs an organized effort that focuses on the acquisition of resources that would uphold the culture change, and commitment from top management to propel quality improvement plans and projects.

Conclusions

In this research, an attempt has been made to study the adoption and effect of TQM and its various practices on the performance of manufacturing firms in Pakistan. Through the use of a mixed-method qualitative study, the findings of the study revealed the aspects of performances enhanced by the implementation of TQM as well as the potential shortcomings encountered in the process of implementing TQM practices. This section presents the results and conclusion presents practical implications admissions discusses the limitations of the study and directions for future research.

Summary of Findings

The study revealed several important findings regarding TQM practices and their impact on organizational performance in Pakistan:

In Pakistan's manufacturing industries, the following strategies of the TQM have been integrated by the firms including customer-focused continuous improvement employee involvement processes management. These practices help in the establishment of high quality units and the delivery of expectations from the customers. The study has also revealed that the application of TQM practices improves organizational performance in many aspects such as productivity, profitability, quality, and customer satisfaction. Companies that adopt TQM observe that productivity is boosted while on the other end, defects are minimized, product quality is improved and better customer relations are achieved (Zafar& M. A. (2023). The results of the study are quite coherent with the research conducted on the international level proving the correlation between the implementation of TQM practices and the in-crease in performance. Nonetheless, the level of impact can be moderated by such factors as; Cultural factors and Re-source availability (Bhangwar, S., Khan, Z, et.al 2024).

Implications

Quality management should be adopted as a strategic management goal within firms to bolster their competitiveness. By integrating TQM practices firms can attain operational excellence to satisfy customer needs. The other training category includes regularly providing employee training and development as a way of making sure employees are qualified to support the TQM drive. Management training activities should be oriented towards the

development of functional management competencies and promoting managerial excellence for improvement (Shaikh, & M. S. (2024).

TQM initiatives can never be a success without the full support or endorsement from top management and hence they must be willing to buy into the concept. Management should enthuse pertinent to quality culture advancement and workers should be included in quality advancement initiatives. It is worth noting that through the development and implementation of policies, the policymakers could contribute towards encouraging the adoption of TQM and encouraging firms to come up with quality management initiatives and avail knowledge-sharing platforms. Encouraging individuals to share experiences, ideas, and lessons learned can help more positively develop the quality culture across manufacturing organizations (Shafqat & W. A. , 2021).

Limitations

- **Sample Size and Diversity:** This is because the study can be accused of having a small sample size and thus the results cannot be generalized. While an attempt was made to select firms from different industries, there are limits to the generalization of the findings to the entire manufacturing sector in Pakistan.
- **Cross-Sectional Design:** The present investigation used a cross-sectional design which only provided data at a single time point. Such an approach could give an added perspective into the prospective extended effects of TQM practices on performance.
- **Subjectivity in Qualitative Analysis:** The use of qualitative analysis in the interview may add some bias since the findings are derived from the subjective nature of the interviews. To this end, some crucial steps have to be followed to increase reliability, such as the employment of sophisticated strategies of data triangulation and data validation.

Future Research

Findings of this study future research could explore several areas to further understand the relationship between TQM practices and organizational performance:

Doing such overview investigations means that trends and influences that have a contribution to long-term effectiveness of TQM can be learned.

Further studies could direct their attention to more detailed aspects of TQM in the manufacturing area trying to identify how and in what way the practices are adapted to the individual needs and requirements of the sectors. Studying antecedents of TQM can offer more insights into these contextual and cultural influences that could affect the nature and efficiency of quality management strategies.

Because digital technologies affect manufacturing more and more future studies could look into the relationship between TQM practices and digital transformation on performance. Therefore, the authors want to stress that TQM practices are one of the key strategic value elements that can positively affect organizational performance in the manufacturing sector of Pakistan. Thus, it is important that firms overcome the challenges and given the numerous opportunities of TQM in the new competitive environment, there are prospects for achieving sustainable growth.

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Declarations

"I declare that this research paper is my original work and has not been previously published or submitted for publication elsewhere."

Conflict of Interest

The authors declare no competing interests.

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