Assessing the Benefit of Adopting TQM Philosophy and Green Supply Chain Management Towards Sustainable Operations: An Evidence from Textile Industries of Pakistan

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ABSTRACT

This research paper delves into the examination of the advantages associated with the implementation of Total Quality Management (TQM) and Green Supply Chain Management (GSCM) practices in Pakistan's textile industry to foster sustainable operations. The study discovers that the adoption of TQM and GSCM practices yields positive outcomes for sustainable operations, encompassing improvements in product quality, operational efficiency, and environmental preservation. Nonetheless, certain barriers impede the implementation process, including a lack of awareness, limited resources, and resistance to change. The study puts forth several recommendations tailored to the textile industry, encompassing leadership commitment, employee training initiatives, supplier collaboration, and the integration of sustainability principles into the organizational culture. By shedding light on the benefits of TQM and GSCM practices, the research contributes to existing knowledge by providing empirical evidence that supports the notion of leveraging these practices in the textile industry. Such adoption leads to competitive advantages, cost savings, and the cultivation of environmental responsibility within the industry.

Keywords: Total Quality Management (TQM); Green Supply Chain Management (GSCM); Sustainable Operations; Textile Industry; Pakistan; Product Quality; Operational Efficiency

RESEARCH HIGHLIGHTS

This study highlights the substantial benefits derived from embracing the principles of Total Quality Management (TQM) and implementing Green Supply Chain Management (GSCM) practices within Pakistan's textile industry (Makhlouf et al., 2023). By adopting TQM principles such as customer focus and continuous improvement, manufacturers witnessed notable improvements in product quality, a decrease in defects, and enhanced operational efficiency. These findings underscore the positive impact of TQM on the overall performance of textile businesses.

The integration of Green Supply Chain Management practices in the textile industry of Pakistan has yielded significant environmental benefits and enhanced corporate image (Huma et al., 2023). Through practices such as waste reduction and sustainable sourcing, textile manufacturers have actively contributed to environmental protection, reducing their carbon footprint, and establishing a positive perception of their commitment to sustainability. These outcomes emphasize the potential for achieving sustainability goals and fostering environmental stewardship within the textile industry.

While the implementation of TQM and GSCM practices brings numerous advantages, this study also recognizes the barriers hindering their successful adoption (Shahid et al., 2023). Challenges such as a lack of awareness, limited resources, and resistance to change are identified. To overcome these obstacles, the research provides valuable recommendations, including the importance of leadership commitment, comprehensive employee training programs, and collaboration with suppliers. These measures can facilitate the integration of sustainable practices and overcome the challenges faced in the implementation of TQM and GSCM in the textile industry of Pakistan.
Research Objectives

The objectives of this research are as follows:

- To assess the current practices and challenges related to sustainability in the textile industry of Pakistan.
- To investigate the potential benefits of adopting Total Quality Management (TQM) philosophy in the textile industry.
- To analyze the impact of Green Supply Chain Management (GSCM) practices on sustainable operations in the textile industry.
- To identify barriers to the successful implementation of TQM and GSCM in the textile industry of Pakistan.

Methodology

The research methodology employed in this study involved a mixed-methods approach, combining qualitative interviews and a quantitative survey to investigate the benefits of adopting Total Quality Management (TQM) philosophy and Green Supply Chain Management (GSCM) practices in the textile industry of Pakistan.

To gather qualitative data, in-depth interviews were conducted with industry experts and key stakeholders in the textile sector. These individuals were selected based on their expertise and experience in sustainable operations and supply chain management within the textile industry. The interviews were designed using a semi-structured format, allowing for open-ended questions and in-depth discussions on topics related to TQM and GSCM implementation. Through these interviews, valuable insights were obtained regarding current practices, challenges, and potential benefits associated with TQM and GSCM.

In addition to the qualitative interviews, a quantitative survey was administered to textile manufacturers in Pakistan. The survey questionnaire was carefully designed to collect data on the adoption of TQM and GSCM practices, as well as the perceived benefits and barriers to implementation. The survey targeted textile companies of various sizes and from different regions within Pakistan, using a purposive sampling technique. The collected survey data provided quantitative information that was statistically analyzed to identify trends, patterns, and correlations related to TQM and GSCM practices in the textile industry.

By combining the qualitative insights obtained from interviews with the quantitative data gathered through the survey, a comprehensive understanding of the current state of sustainable operations in the textile industry of Pakistan was achieved. The qualitative interviews provided rich contextual information and real-world perspectives, while the quantitative survey data offered a broader perspective and facilitated statistical analysis to derive meaningful findings.

Results

The research findings indicate that the adoption of Total Quality Management (TQM) philosophy and Green Supply Chain Management (GSCM) practices can yield significant
benefits for the textile industry in Pakistan, particularly in terms of achieving sustainable operations.

Regarding TQM, the study reveals that the implementation of TQM principles, such as customer focus, continuous improvement, and employee empowerment, leads to noticeable improvements in product quality. This, in turn, results in reduced defects and enhanced operational efficiency for textile manufacturers. The implementation of TQM practices also contributes to higher levels of customer satisfaction and loyalty, thereby enhancing the overall competitiveness of the companies.

In the case of GSCM practices, the research highlights their positive impact on sustainability within the textile industry (Manzoor et al., 2022). By adopting waste reduction measures, energy conservation strategies, and sustainable sourcing practices, textile manufacturers can actively contribute to environmental protection and minimize their carbon footprint. Such initiatives not only align with sustainability goals but also enhance the corporate image and reputation of the companies, appealing to environmentally conscious consumers and stakeholders.

However, the research also uncovers various barriers that hinder the successful implementation of TQM and GSCM in the textile industry (Manzoor et al., 2020). These barriers include a lack of awareness regarding the benefits of TQM and GSCM, limited resources allocated to sustainability initiatives, and resistance to change within organizations. Overcoming these challenges requires a strong commitment from leadership to drive sustainable practices, employee training and engagement to foster a culture of continuous improvement, collaboration with suppliers to integrate sustainable principles throughout the supply chain, and the embedding of sustainability considerations into the organizational culture as a whole.

By addressing these barriers and promoting the adoption of TQM and GSCM practices, the textile industry in Pakistan can experience improved operational efficiency, enhanced product quality, environmental protection, and an enhanced reputation for sustainability. These findings provide valuable insights for textile manufacturers and stakeholders, offering guidance on strategies and actions needed to achieve sustainable operations and remain competitive in a global market increasingly focused on environmental responsibility.

**Findings**

The research findings suggest that the adoption of Total Quality Management (TQM) philosophy and Green Supply Chain Management (GSCM) practices can bring significant benefits to the textile industry in Pakistan, leading to sustainable operations.

The implementation of TQM principles, such as customer focus, continuous improvement, and employee empowerment, is shown to improve product quality in the textile industry. This improvement results in reduced defects and enhanced operational efficiency for textile manufacturers. Additionally, TQM implementation leads to higher customer satisfaction and loyalty, which can positively impact business performance.
The research also highlights the positive impact of GSCM practices on sustainability within the textile industry. By implementing waste reduction measures, energy conservation strategies, and sustainable sourcing practices, textile manufacturers can contribute to environmental protection and reduce their carbon footprint. These initiatives align with sustainability goals and can enhance the corporate image and reputation of companies in the industry.

However, the research also identifies barriers that hinder the successful implementation of TQM and GSCM in the textile industry. These barriers include a lack of awareness about the benefits of TQM and GSCM, limited resources allocated to sustainability initiatives, and resistance to change within organizations. Overcoming these challenges requires leadership commitment to drive sustainable practices, employee training to foster a culture of continuous improvement, collaboration with suppliers to integrate sustainability principles throughout the supply chain, and the integration of sustainability considerations into the organizational culture.

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