

# "SUSTAINABLE TRANSFORMATION IN PAKISTAN'S TEXTILE INDUSTRY: A HOLISTIC APPROACH TO SUPPLY CHAIN MANAGEMENT"

**Muhammad Mamoon Shaikh** (Textile Institute of Pakistan),  
**Mubashir Ali** (Textile Institute of Pakistan),  
**Umair Nizami** (Textile Institute of Pakistan),  
**Afzal Adamjee** (Textile Institute of Pakistan)

## ABSTRACT

*The textile industry in Pakistan, a cornerstone of the nation's economy, faces a critical juncture in its evolution as it grapples with the imperative of sustainable supply chain management (SSCM). This study investigates the multifaceted challenges and opportunities embedded in the industry's transition towards sustainability, acknowledging its significant economic contributions while addressing environmental concerns. This study examines the industry's sustainability transition's complex challenges and opportunities, recognizing its economic and environmental impacts. The research examines backlash management, supplier distribution, sustainability verification, compliance, collaboration, corporate social responsibility (CSR), emissions management, renewable energy adoption, and supplier improvement using a robust framework from economics, environmental science, and sustainable development.*

*The findings highlight backlash and international suppliers. Positive trends include widespread sustainability verification and CSR engagement. The study emphasizes the need for tailored policy interventions to guide the textile sector towards sustainable practices that balance economic growth and environmental responsibility. The study offers comprehensive policy recommendations based on its findings. Manage backlash, promote supplier diversification, standardize sustainability verification, enforce compliance regulations, foster collaboration, incentivize renewable energy adoption, and support supplier improvement initiatives with these recommendations. To promote sustainability, the study recommends transparent communication and sector-wide standards. The proposed policy framework aligns with global trends and addresses the growing demand for eco-friendly products to help the industry transition to a more sustainable future. These recommendations can boost Pakistan's textile industry's competitiveness and create a more sustainable and ethical supply chain. The study concludes that policymakers, businesses, and stakeholders must work together to sustain Pakistan's textile industry.*

## INTRODUCTION

The textile industry in Pakistan plays a substantial role in the country's GDP and generates a diverse range of employment prospects, thereby becoming a vital component of the national economy. However, due to increasing environmental concerns and the necessity for sustainable practices, the industry is currently confronting a significant obstacle: incorporating sustainable supply chain management (SSCM) to advance environmental stewardship and economic prosperity. The emergence of SSCM results from the growing global recognition of the adverse impacts of industrial activities on the environment. The conventional practices employed in the textile industry supply chain face increasing scrutiny due to their contribution to environmental degradation. This analysis also considers the specific context of Pakistan, where the textile industry, despite its importance to the country's economy, faces challenges in maintaining competitiveness due to unfavourable legislation and ethical quandaries. The textile industry in Pakistan plays a significant role in the country's economy and is closely linked to various other sectors, such as trade and transportation. Due to its substantial contribution to the GDP, the industry undeniably impacts the economy considerably. However, there is a price to pay for this level of recognition: the ecological harm resulting from conventional supply chain methods. The industry has been scrutinized due to its contribution to greenhouse gas emissions, water pollution, and labour exploitation, as well as its failure to adopt more ethical and sustainable economic practices. Integrating Sustainable Supply Chain Management (SSCM) in Pakistan's textile business is crucial for the environment and strategically important for maintaining the nation's competitiveness in the global market. Pakistani textile companies face increasing pressure to implement environmentally sustainable practices in their supply chains due to growing worldwide awareness and customer demand for eco-friendly products. This is not solely a reaction to external influences but also a proactive approach aimed at enhancing operating efficiency, minimizing inefficiencies, and mitigating environmental harm.

Pakistan has lately implemented measures to enhance its textile sector's export performance and environmental sustainability (Seuring & Müller, 2008). These include promoting sustainable supply chain practices, enforcing international environmental regulations, and adopting more environmentally conscious production techniques. In this instance, the role of SSCM extends beyond reducing environmental harm to include developing an innovative value proposition for Pakistan's textile sector. Pakistani textile enterprises can improve their market position and reduce their environmental effect by using sustainable practices throughout the supply chain, including sourcing raw materials, manufacturing, and distribution. With the implementation of Supply Chain and Sustainability Management (SSCM), companies such as Soorthi and AGI may reassess their brand identity, align with international sustainability patterns, and tap into new markets with a strong interest in ethical and eco-friendly goods. Pakistan's textile sector is transitioning towards adopting more ecologically sustainable supply chain processes, a challenging yet imperative transformation. According to a study conducted by Mitra and Datta in 2014, achieving a balance between economic goals and environmental responsibilities is a complex task that necessitates collaboration among business participants, decision-makers, and consumers. Implementing Sustainable Supply Chain Management (SSCM) techniques is crucial for the industry's survival in a fast-changing global market, where achieving sustainability is becoming increasingly vital for success. Furthermore, it plays a role in the preservation of the ecosystem.

### **Purpose of the Study**

This research aims to examine the complexities associated with Sustainable Supply Chain Management (SSCM) in Pakistan's textile industry. The objective is to comprehend textile firms' diverse strategies and techniques to promote sustainable production across their supply chains. The study aims to establish the correlations between SSCM practices and their outcomes in terms of environmental and social performance metrics. The report provides a comprehensive understanding of how Pakistan's textile sector may align its operations with worldwide sustainability standards while enhancing its economic viability based on an analysis of the effectiveness of these practices.

### **Problem Statement**

The textile industry in Pakistan is confronted with the task of balancing its imperative for economic expansion with the mounting social and environmental obligations it faces (Bia et al., 2018). In order to tackle the distinct issues of this industry, it is necessary to examine their Supply Chain and Supplier Management (SSCM) initiatives separately. This research employs the modified Seuring and Müller framework to examine Pakistan's Textile sector (Seuring and Müller, 2008). To mitigate the industry's impact, it is crucial to ascertain the feasibility of implementing innovative methods in sustainable infrastructure and raw materials for accessible apparel. This article offers precise recommendations for the industry by applying Supply Chain and Sustainability Management (SSCM) principles from prior research to the specific setting of the textile industry.

### **Research Objectives**

- The aim is to determine the factors that motivate organizations to embrace Sustainable Supply Chain Management (SSCM).
- The goal is to analyze the connection between suppliers and companies through supplier evaluation based on risk and performance.
- To assess the influence of Sustainable Supply Chain Management (SSCM) on the production and distribution of sustainable products.

### **Research Questions**

- What factors motivate organizations to implement Sustainable Supply Chain Management (SSCM)?
- The relationship between suppliers and companies is established through supplier evaluation, which assesses the suppliers' risk and performance.
- What is the influence of Sustainable Supply Chain Management (SSCM) on the production and distribution of sustainable products?

### **Rationale for the Study**

The study is motivated by the pressing need to address the Pakistani textile industry's social and environmental challenges. The industry significantly contributes to the nation's GDP and jobs, thus making the adoption of sustainable methods imperative from both strategic and ecological perspectives. This study holds significance as it investigates the broader consequences of SSCM activities on environmental and social metrics while also assessing the current state of SSCM practices in the firm.

Engaging in this practice facilitates the development of strategies that bolster the industry's enduring economic viability and environmental responsibility by providing researchers, policymakers, and industry stakeholders with valuable insights. Furthermore, it aligns seamlessly with global sustainability trends.

### **Review of the Literature**

The discussion on Sustainable Supply Chain Management (SSCM) within the textile business is intricate and diverse, including a wide range of ethical, financial, and environmental factors. An essential aspect of this conversation revolves around the necessity for a fundamental change in supply chain management, encompassing operational efficiency and ethical and environmental stewardship (International Labour Organisation, 1998). The literature analysis emphasizes the ongoing transformation of supply chain management and the urgent requirement for sustainable practices in response to customer choices and increasing environmental concerns. Academic research on supply chain management (SSCM) in the textile sector indicates that there has been a significant shift in the way supply chains are seen (International Labour Organisation, 1998). The transition from a solely profit-driven approach to one that considers sustainability indicates the changing dynamics of the environment and the global economy. The literature on this topic emphasizes the increasing acknowledgment of ethical manufacturing, ecological sustainability, and enduring economic feasibility.

Given the pressing climate crisis and evolving consumer preferences, numerous studies examining Sustainable Supply Chain Management (SSCM) in the fashion industry have been published in recent years (Seuring & Müller, 2008; Li et al., 2014; Turker and Altuntas, 2014; Moretto et. al, 2017). The preeminent framework for delineating how companies oversee SSCM was formulated by Stefan Seuring and Martin Müller in their publication "From a Literature Review to a Conceptual Framework for Sustainable Supply Chain Management" in the *Journal of Cleaner Production*. Based on an analysis of 191 papers on Sustainable Supply Chain Management (SSCM) published between 1994 and 2007, this study identified three essential components of corporate SSCM strategies: 1) Factors that motivate companies to adopt SSCM practices, 2) Evaluation of suppliers for risk and performance, and 3) Management of the supply chain for sustainable products. This framework is particularly advantageous for analysing fashion supply chains due to the ambiguous legal regulations regarding sustainability. Consequently, each brand has the freedom to report their progress selectively based on their own set of metrics. This paper served as a foundation for subsequent research on Sustainable Supply Chain Management (SSCM) in the fashion industry. One such study, titled "Designing A Roadmap Towards A Sustainable Supply Chain: A Focus On The Fashion Industry," was conducted in 2018 by Moretto et. al. Nevertheless, these studies primarily concentrate on the luxury sector, which distinguishes itself from the fast fashion industry in terms of its target consumers and production methods.

The recent research has concentrated chiefly on the function of Sustainable Supply Chain Management (SSCM) in diminishing environmental pollutants and addressing climate change. The textile industry, which plays a significant role in emitting greenhouse gases and polluting water, must implement sustainable supply chain

practices to reduce its negative environmental impact (Hair et al., 2010). Empirical research conducted by Testa & Iraldo (2010) and Ikram et al. (2019) demonstrates the advantages of green supply chain methods, including reducing waste generation, enhancing resource efficiency, and diminishing carbon footprint. These advantages give textile producers a competitive advantage in a market with increasing customer demand for sustainable products, surpassing mere environmental preservation.

Furthermore, research indicates that the textile industry's implementation of SSCM requires a comprehensive approach that considers social, economic, and environmental factors. This comprehensive approach tackles issues about labour rights, equitable remuneration, and the community's well-being, all intricately linked to sustainability. The recurring theme in the literature is the problem of implementing SSCM in the textiles industry, which is internationally integrated and involves supplier networks that extend across many countries and cultures (Hair et al., 2010). Given its intricate nature, policymakers, consumers, and stakeholders in the textile industry must work together to facilitate the advancement towards a more sustainable future. Analyzing Supply Chain and Sustainability Management (SSCM) in the textile industry yields a wealth of scholarly investigations, empirical studies, and valuable perspectives. This literature review section explores several aspects of sustainable supply chain management, emphasizing essential topics and emerging trends in this domain.

The core of the SSCM discourse is supply chain management, which balances financial objectives and social and environmental responsibilities. The capacity of SSCM to lessen the adverse environmental effects of traditional supply chain activities is heavily stressed in the research. A study conducted by Ikram et al. (2019) highlights the importance of implementing green supply chain practices in Pakistan to mitigate environmental deterioration and maintain economic performance. Additionally, as the (EMF, 2020) notes, the integration of green supply chain activities is driven by customer demand for environmentally friendly products, highlighting the strategic significance of SSCM in the current market context.

Ethical manufacturing practices are a fundamental component of SSCM, particularly in industries like textiles, where labor exploitation and environmental problems are prevalent. Much research suggests that ethical production practices, such as fair labor regulations, safe working environments, and careful resource management, are becoming increasingly significant. A 2021 study on fast fashion firms highlights the challenges posed by high-volume, low-cost production practices, which often harm society and the environment (Al-Ghwayeen and Abdullah 2018). This study highlights the need to reevaluate current practices, which advocates for a shift to more moral and sustainable manufacturing methods. In Pakistan's textile industry, incorporating ethical manufacturing practices is not just a moral imperative but also a well-thought-out strategic move to increase the company's global competitiveness and bring it into compliance with international labor and environmental standards.

In sustainable supply chain management, recognizability and simplicity are crucial. These principles' central tenet is guaranteeing transparency and traceability across the supply chain. Transparency in SSCM demands clear disclosure of information

on sourcing, manufacturing processes, and labor practices. On the other hand, recognizability refers to the ability of customers and stakeholders to identify and understand the sustainability activities that companies participate in. Major Pakistani textile enterprises, are beginning to see the importance of these approaches. Providing them with thorough information about their supply chain practices enables stakeholders to comprehend and appreciate their commitment to sustainability. This move toward transparency seeks to win over customers who are growing more conscious of the origins and moral implications of the things they purchase in addition to honouring ethical commitments.

Collaboration and strong alliances are essential to SSCM's success in the textile industry. These collaborations are crucial for sharing best practices, maximizing synergies, and overcoming the challenges of implementing sustainable practices. Businesses in Pakistan, like Soorti, have been leading the way in forging strategic collaborations with regional and international organizations to bolster their sustainability activities. These alliances can take many shapes, like working with environmental organizations or setting international labour standards (Hair et al., 2010). Partnerships and collaborations include joint ventures with other industry players to develop sustainable materials and technologies. Businesses that work together can share resources, take on collective risks, and work for more significant, industry-wide improvements. These collaborative efforts assist individual companies in reaching their sustainability objectives. This significantly impacts broader developments within the textile sector and establishes industry standards.

Reporting and performance reviews are crucial components of SSCM. They comprise the methodical observation, evaluation, and recording of sustainability-related actions and outcomes. For example, Outfitters PK, a well-known brand in Pakistan's fashion industry, has incorporated sustainability studies into its business plan (Al-Ghwayeen and Abdullah 2018). Typically, these reports include data on energy use, waste disposal, environmental impact, and social responsibility initiatives. Efficient reporting and evaluation enable companies to track their progress, identify areas for improvement, and notify stakeholders of their achievements. This helps maintain accountability and is a tool for continuous improvement. Textile companies that effectively measure and disclose their sustainability performance stand to gain operational efficiency, improved connections with suppliers, and more informed decision-making.

### **Methodology**

The objective of the research is to analyze the Suering and Müller framework. The collection of data is crucial to fulfil the research purpose, and a methodology based on surveys is utilized. The research focuses on the textile industry in Pakistan. The selection of participants for this study is subject to specific criteria. First and foremost, they possess convenient internet connectivity. Furthermore, they possess expertise in the textile business, and additionally, they are employed in the supply chain department. Prior to delivering the online questionnaire through Google Forms in several groups, all participants were provided with information regarding the study's objective and their agreement was obtained. In order to assure the study's validity, the individual determinant constructs that will be examined are derived from prior research.

## **Research Instrument and Data Collection**

A tool utilized for gathering information from participants consists of closed-ended and structured surveys. The survey is sent online to several textile industries in a random manner. The questionnaire consists of two sections: The initial segment comprises of stimuli that encourage organizations to embrace Sustainable Supply Chain Management (SSCM) practices. Brands may initiate the implementation of SSCM for several motives, with one of the most prevalent being consumer complaints. Furthermore, the examination of suppliers for risk and performance serves two distinct objectives: safeguarding the reputation of a brand and monitoring the overall sustainability performance. Consequently, this category is divided into two parts: 1) risk avoidance and 2) enhancement of supply chain performance. Furthermore, the management of the supply chain for sustainable products encompasses several tasks related to the selection and adherence of suppliers. This may be further categorized into three key areas: enhancing the performance of suppliers, establishing effective communication channels with suppliers, and establishing specific criteria for selecting suppliers.

This study utilized a 5-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). To validate the questionnaire, a pilot study was carried out by seeking input from field specialists and research researchers.

The participant was selected based on their technical expertise and comprehensive comprehension of the research requirement. The questionnaires obtained from the pilot study were utilised to enhance the efficiency of the study by making specific modifications to its content and quality.

Data was gathered from 106 participants, with 12 responses being eliminated from the study due to their lack of relevance. Hence, the target sample exhibits a response rate of 88.6%

## **Results**

This research study delves into the sustainability practices and risk management strategies adopted by companies in their supply chain operations. The study examines key aspects such as the prevalence of backlash, regional supplier distribution, verification of sustainability, supplier compliance, collaboration with industry leaders, corporate social responsibility (CSR) initiatives, transparency about suppliers, emissions management, renewable energy adoption, and supplier improvement.

**Backlash:** 20 % of the respondents faced backlash, out of these 66 % faced backlash from the customers rest reported to be government. However, 80% of the respondents didn't face any backlash.

**Region of the Supplier:** most companies had suppliers from international and as well as domestic. While just 18% have domestic suppliers only. On the other hand, 8% have only international suppliers.

**Verification of Sustainability:** All respondents reported conducting external verifications of suppliers for sustainability. Additionally, 60% strongly believe and

conducting the verification, 33% conducted verification on average while the remaining had weak importance for verification.

**Supplier Compliance:** only 7% of respondents didn't have compliance, rest 93% do have supplier compliance. Out of these 40% have very strong compliance, 30% have strong, 24% have average and the rest have weak compliance.

**Collaboration with Industry Leaders for Joining Sustainability Campaigns, or Adhering to External Sustainability Standards:** 79% have been in collaboration with the industry leaders for joining sustainability campaigns.

Corporate social responsibility (CSR): all have CSR projects. 48% have conducted 3 projects annually, 22% 5 times and the rest at least 2 or once a year.

**Transparency about the Supplier:** all strongly believe that they should have transparency about the supplier.

**Emissions:** all have emissions, 40 % have direct, 40% have indirect and 20% have both.

**Focus on Reducing Emissions:** 86% have focused on reducing emissions. Out of these 90% rate their measures to reduce emissions on 8 out of 10 on an average.

**Success in Reducing Direct Emissions:** 90% claim to have been successfully able to reduce direct emissions from the previous level.

**Transparent about the Emissions Created by their Entire Supply Chain:** only 15% claim that they were not transparent about the emissions created by their entire supply chain.

**Renewable Energy:** All have renewable energy

**Supplier Improvement:** 66% believed that their supplier needs improvement, on the other hand 33% believed that there is no such need of improvement. Those who believed that their supplier needs improvement, 55% suggest 50% -75% improvement, 20% suggest 25-50% and 15% suggest 0-25% and only 10% suggest 75- 100% improvement is required.

**Standards of Selecting Suppliers:** all have standards for selecting suppliers. On average, each has at least 4 suppliers.

**Communication with the Supplier** (expect days of business): All have good communications with the supplier and even they visit their supplier office/site/warehouse.

### **Conclusion:**

The finding that 20% of companies faced backlash is noteworthy. Further investigation into the nature and reasons behind this backlash could provide valuable insights. Understanding whether the backlash originated from customers or government entities will help tailor risk mitigation strategies accordingly.



The reliance on both international and domestic suppliers is a positive aspect, contributing to a diversified supplier base. However, the relatively low percentage (18%) of companies with domestic suppliers warrants exploration into potential benefits or challenges associated with such a choice.

The high percentage of companies (100%) conducting external verifications is commendable. The variations in the importance placed on verification suggest a need for industry-wide standards to ensure consistency in sustainability practices.

The high level of supplier compliance (93%) is promising. A deeper analysis of the factors contributing to compliance levels and the specific areas where companies excel or struggle would enhance understanding.

The significant collaboration (79%) with industry leaders for sustainability campaigns indicates a positive industry trend. Further research could explore the impact of such collaborations on overall sustainability outcomes.

The frequency of CSR projects varies among companies. Understanding the rationale behind the chosen frequencies and the types of projects undertaken could provide insights into the depth and impact of CSR initiatives.

The commitment to emissions reduction (86%) is commendable. Examining the specific measures adopted and their effectiveness would offer valuable guidance for companies looking to enhance their environmental performance.

Identifying the criteria for supplier improvement and understanding the challenges faced by companies in achieving improvements will contribute to developing targeted improvement strategies.

While having standards for selecting suppliers is a positive finding, exploring the specific criteria and the rationale behind them would provide clarity on the factors deemed crucial in supplier selection.

Good communication practices are crucial. Investigating the impact of effective communication on overall supply chain performance and sustainability outcomes can provide actionable insights.

In conclusion, this research offers a comprehensive overview of sustainability practices and risk management in supply chains. Further exploration of the identified areas will contribute to refining strategies, promoting best practices, and advancing the sustainability agenda within the industry.

### **Policy Recommendation**

On the grounds of the results this study suggests developing industry-specific guidelines for managing backlash, emphasizing proactive communication strategies. Encourage companies to implement customer engagement initiatives and establish transparent channels for dialogue. Encourage companies to diversify their supplier base geographically, promoting a healthy mix of international and domestic suppliers.

Consider offering incentives for companies with a balanced regional supplier distribution. Standardize sustainability verification processes and establish minimum requirements for supplier sustainability assessments. Offer resources and support to companies to enhance the importance and effectiveness of sustainability verifications. Enforce mandatory supplier compliance regulations, emphasizing the importance of strong compliance. Develop a tiered compliance rating system to recognize and reward companies with exemplary compliance practices. Establish a platform for facilitating collaboration between industry leaders and companies in sustainability campaigns. Encourage the development of sector-wide sustainability standards to foster collective efforts. Introduce guidelines for CSR reporting, specifying the minimum frequency and depth of CSR projects. Recognize and incentivize companies that exceed the minimum requirements, promoting a culture of social responsibility. Advocate for transparency standards in supplier relationships. Develop guidelines for companies to disclose relevant information about their suppliers, promoting accountability and fostering trust among stakeholders. Implement emissions reduction targets and incentivize companies to adopt best practices in emissions management. Provide resources and support for companies to assess and improve their emission reduction strategies. Develop policies to incentivize and accelerate the adoption of renewable energy sources. Offer tax benefits or subsidies to companies investing in renewable energy, contributing to a sustainable energy transition. Facilitate supplier improvement programs, encouraging companies to collaborate with suppliers for mutual growth. Develop a framework for assessing and implementing improvement plans, considering the varying degrees suggested by companies. Establish a standardized framework for selecting suppliers, focusing on criteria that contribute to sustainability goals. Encourage companies to evaluate potential suppliers based on these standards. Advocate for transparent and open communication practices with suppliers. Develop guidelines for companies to maintain regular communication and foster positive relationships with their suppliers.

By implementing these policy recommendations, the industry can take significant strides towards building resilient and sustainable supply chains that benefit businesses, communities, and the environment.

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