

Examining Manufacturing Companies Integrity towards Sustainability in Supply Chain Process & Impact on Overall Performance

Dr. Anoop K G ¹, Dr Jitendra Sharma ², Dr. Raji Rajan ³, Mr. Subharun Pal ⁴, Maulik Chandnani ⁵

¹Assistant Professor, Department of Commerce, Sree Vivekananda College,
Kunnamkulam, Thrissur, Kerala

²Professor, Department of Business Management, Sankalchand Patel College of Engineering, Sankalchand Patel University, Visnagar, Mehsana, Gujarat

³Assistant Professor, School of Commerce Studies,
JAIN (Deemed-to-be University), Bangalore, Karnataka, India

⁴PG Scholar, Dept. of Computer Science and Engineering,
Indian Institute of Technology, Jammu, Jammu & Kashmir (UT), India

⁵Assistant Professor, Faculty of Commerce and Management,
RNB Global University, Bikaner, Rajasthan

Abstract

Companies that make things and are very committed to being sustainable and honest in their supply chain processes tend to do better generally in many ways. The reasons for sustainability integrity and the subsequent boosts in performance show why sustainable practices are becoming more important in the industrial sector. Sustainability is now one of the most important things for businesses to think about. More and more manufacturing businesses are realizing how important it is to incorporate sustainability principles into their supply chain processes. This study looks into how honest manufacturing businesses are when they try to be sustainable throughout the supply chain. It does this by looking at the strategies and best practices they use. The study takes a multidimensional method by looking at both quantitative and qualitative data. The data comes from a group of manufacturing companies with smaller businesses. The research's goals are to find the best practices in sustainability ethics and figure out how well these practices work to make the world a better place for people and the environment. It also talks about the problems and difficulties that manufacturing companies face as they try to construct supply lines that are more environmentally friendly.

Keywords: Manufacturing, Sustainability, Supply Chain, Performance, Small Enterprises

Introduction

The incorporation of sustainability principles into the process of the supply chain has developed into a primary concern for manufacturing enterprises in the modern landscape of business. Manufacturing companies have been forced to review their commitment to sustainability as a result of the convergence of heightened awareness

of environmental issues, shifting preferences among consumers, stricter laws, and the requirement to ensure the long-term profitability of their businesses. This study investigates the integrity that manufacturing businesses maintain in their efforts to achieve sustainability throughout the supply chain, as well as the significant effect that this integrity has on the companies' overall levels of performance. The supply chain is a complicated web of interconnected activities that include the acquisition of raw materials, the processes of manufacture, distribution, and either recycling or disposal of products after they have been used by consumers. These entangled processes have far-reaching implications, which not only affect the financial success of the corporation but also the environment and society as a whole. Therefore, it is impossible to place enough emphasis on how important it is for manufacturing organizations to demonstrate integrity in their approach to sustainable standards across the supply chain.

In this day and age of increased environmental consciousness, manufacturing organizations have come up against an increasing number of factors that influence the integrity of their efforts toward sustainability in the supply chain. Regulatory demands have increased, and as a result, businesses are being forced to embrace methods that are both environmentally friendly and socially responsible. In recent years, there has been a change in consumer preference toward companies and goods that align with ethical and environmental principles. Companies are coming under increasing amounts of pressure to incorporate sustainable practices into their operations from a variety of stakeholders, including investors and advocacy groups. The commitment to sustainable practices along the supply chain is an endeavor that encompasses many different facets. It includes the use of ethical labor practices, responsible sourcing, energy efficiency, waste reduction, transparency, and the building of a corporate culture that reveres sustainability as a fundamental value. In order for manufacturing companies to maintain their credibility in the fight for sustainability, it is vital for them to measure and evaluate the impact of the various strategies they employ.

It is important to note that the relationship between a manufacturing company's commitment to sustainability in its supply chain and the company's overall success is dynamic and complex in many different ways. The positive association between sustainability practices and financial performance has been illuminated by research, revealing that eco-friendly and socially responsible activities frequently lead to cost savings, advances in operational efficiency, and, ultimately, greater profitability. In addition, maintaining the integrity of the supply chain and being transparent about its operations can increase stakeholder trust, which in turn helps the company's reputation and its long-term financial performance. This study sets out to conduct an exhaustive investigation into the complex dynamic that exists between manufacturing businesses, the level of commitment such organizations have to environmental responsibility, and the effect that this commitment has on overall performance. This study aims to contribute to a deeper understanding of the integrity of manufacturing firms in their efforts toward sustainability by evaluating the various dimensions of sustainability in the supply chain and investigating the influencing elements. This will allow for a better understanding of how manufacturing companies are working toward sustainability. In addition, it seeks to provide beneficial insights and direction for manufacturing businesses, politicians, and other stakeholders that are interested in promoting sustainable practices and enjoying the numerous benefits associated with responsible supply chain management. In the following sections, we will go into an in-depth analysis of the factors impacting manufacturing businesses' integrity towards sustainability in the supply chain, the performance metrics used to measure these endeavors, and the significant impacts on numerous aspects of overall performance. In addition, we will discuss the performance metrics used to measure these activities. The research that is about to follow will shed light on the complex relationship that exists between sustainability and financial success, transparency and the trust of stakeholders, operational efficiency, and the viability of the organization over the long run. With the help of this in-depth analysis, hope to make a positive contribution to the ever-changing landscape of sustainable practices in the supply chain and motivate a dedication to responsible and environmentally friendly business procedures in the manufacturing industry.

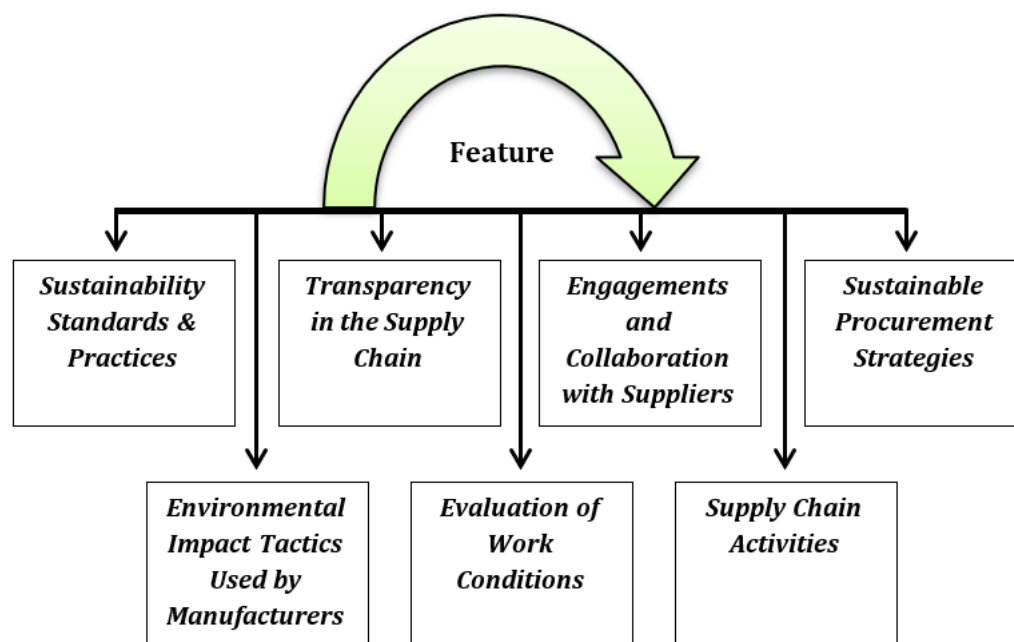


Figure 1: Major Features of Sustainability in Supply Chain Process

Essential features of manufacturing companies' integrity towards sustainability in supply chain process:

- *This paper examines the sustainability frameworks and standards employed by firms in their supply chain operations. The inclusion of ISO 14001, ISO 26000, and several industry-specific requirements is observed.*
- *This study examines the transparency strategies employed by manufacturing businesses in order to disclose information regarding their supply chain operations. This include strategies for the documentation, monitoring, and communication of environmental and social ramifications (Afework, Y, et.al., 2020).*
- *Manufacturers bear the responsibility of actively engaging and partnering with their suppliers to uphold sustainable standards. This involves the assessment of manufacturers' strategies in promoting and assisting their suppliers in aligning with sustainable objectives.*
- *This study aims to examine sustainable procurement tactics, encompassing the acquisition of environmentally friendly products, ethical sourcing practices, and the integration of circular economy principles.*
- *The strategies employed by manufacturers to mitigate their environmental footprint. This entails efforts to enhance energy efficiency, minimize waste, and govern emissions.*
- *This study aims to assess the working conditions and equitable labor practices across the entire supply chain, encompassing strategies to mitigate child labor, forced labor, and other infringements on human rights (Kumar , 2022).*
- *The dedication of manufacturing enterprises to fostering the well-being of local communities and addressing social issues through their supply chain operations.*

Explores the challenges and barriers faced by manufacturing companies towards sustainable supply chains

Manufacturing enterprises encounter a multitude of obstacles and impediments in their endeavor to establish sustainable supply chains. The obstacles encountered in supply chain management might exhibit variability contingent upon the industry, geographical location, and distinctive characteristics of the supply chain.

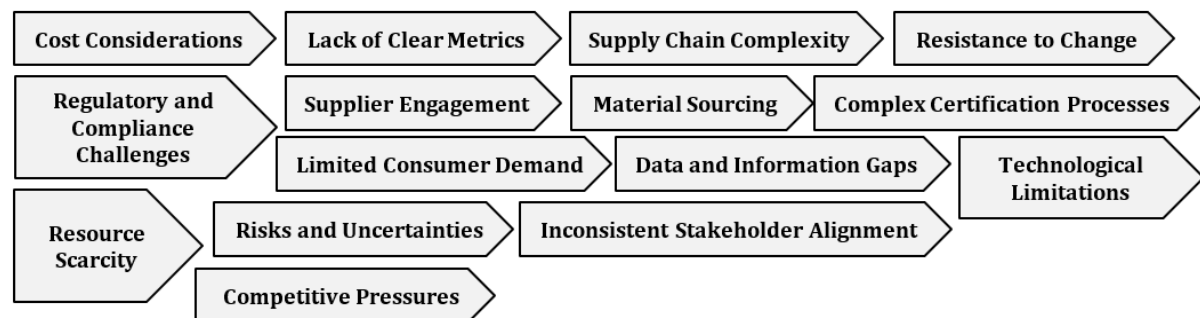


Figure 2:Challenges And Barriers in Sustainable Supply Chains

However, there are certain prevalent issues and barriers that are frequently encountered:

- One of the foremost problems lies in the perceived notion of exorbitant initial expenses associated with the adoption and implementation of sustainable practices. Organizations may find it necessary to allocate resources towards the acquisition of novel technologies, processes, and materials, hence exerting financial pressure, particularly for smaller-scale businesses (Al-Adwan, 2019).
- The assessment of sustainability performance within the supply chain might present a multifaceted and intricate undertaking. Manufacturers frequently encounter challenges in formulating significant measurements and key performance indicators (KPIs) for the purpose of effectively monitoring development.
- The increasing globalization and complexity of supply chains present significant challenges in achieving sustainability across all levels of suppliers, especially in nations with diverse regulatory standards and environmental policies.
- The successful implementation of sustainable practices necessitates substantial modifications to both the corporate culture and operational processes. The hindrance of progress can occur when employees, suppliers, or other stakeholders exhibit resistance towards change.
- Navigating the multifaceted and dynamic landscape of legislation and compliance standards pertaining to environmental conservation, labor practices, and equitable trade poses a formidable challenge, particularly for enterprises with operations spanning across many geographical areas.
- One of the primary obstacles lies in the task of guaranteeing that suppliers possess a shared dedication to sustainability and are amenable to embracing sustainable practices. Certain suppliers may exhibit reluctance or have constraints when it comes to making investments in implementing changes (Singh, J., et.al., 2014).
- The identification of sustainable sources for materials presents a formidable challenge, as it necessitates potential alterations to the existing supply chain framework or the establishment of novel supplier associations.
- The process of attaining and upholding sustainability certifications and standards can be both resource-intensive and financially burdensome.
- In certain instances, producers may perceive a restricted level of consumer demand for sustainable products, hence diminishing their incentive to allocate resources towards sustainability initiatives.
- Obtaining precise data regarding the environmental and social consequences throughout the supply chain might provide challenges, particularly in cases when suppliers are not willing in disclosing relevant information.
- In certain sectors, the absence of technological advancements may hinder the implementation of sustainable practices, either due to their nonexistence or lack of cost-effectiveness and scalability.
- Manufacturers may have challenges in achieving alignment among diverse stakeholders, encompassing shareholders, consumers, employees, and environmental or social advocacy groups.

- *The implementation of sustainability efforts may give rise to novel risks and uncertainties, shown by the possibility of encountering supply chain interruptions stemming from the dependence on alternative, sustainable resources or providers.*
- *In light of global resource scarcity, manufacturers may encounter difficulties in ensuring their access to vital resources necessary for their operational processes.*
- *Companies may exhibit reluctance to assume a pioneering role in sustainability initiatives if they perceive a lack of comparable endeavors among their competitors.*

Review Literature

Sustainability in the supply chain is becoming increasingly important for manufacturers, as has been noted in the literature. Sustainable activities are motivated by a wide range of objectives, and incorporating sustainable principles can improve financial performance, stakeholder trust, and operational efficiency. Manufacturers must negotiate these aspects to strengthen their supply chain integrity as the importance of sustainability grows. In recent years, there has been a lot of focus on incorporating sustainability into the supply chain. Environmental, social, and economic concerns must be taken into account at every stage of the supply chain (Walker et al., 2008). As a result of shifting consumer preferences and increased pressure from shareholders, several manufacturers have begun implementing sustainable strategies (Sarkis, 2012). Regulatory pressures, market demand, stakeholder influence, and the pursuit of competitive advantage all contribute to the supply chain's dedication to sustainability (Carter & Rogers, 2008). Manufacturers' approaches to sustainability are shaped by a variety of factors, the impact of which varies among sectors and geographic locations. It might be difficult to determine how to evaluate supply chain sustainability performance. Measures of sustainability include carbon emissions, waste reduction, and ethical sourcing (Govindan et al., 2014). The efficacy of sustainability practices can only be evaluated through accurate performance measurement. Sustainability initiatives have been linked to improved bottom lines, according to the research. Energy efficiency and waste reduction are two examples of sustainable supply chain activities that can help businesses save money and increase profits (Handfield et al., 2013). This connection strengthens the economic case for sustainability. Supply chain transparency is critical for gaining the confidence of all parties involved. Ethical sourcing, reporting on environmental and social implications, and openness about supplier connections all contribute to greater openness (Vermeulen & Seuring, 2009). Gains in operational efficiency are often a side effect of adopting more eco-friendly supply chain strategies. Improved performance and lower operational expenses are the result of cutting down on waste, improving energy use, and streamlining processes (Kannan et al., 2015). Manufacturers are under increasing pressure from shareholders and customers to implement environmental safeguards. Companies that adapt to these trends have a better chance of long-term profitability, according to research by Muller and Kolk (2010).

Research methodology

This study looks into the integrity of manufacturing firms in their pursuit of supply chain sustainability by analyzing the methods these firms use. The research uses a multi-pronged strategy, incorporating both quantitative and qualitative analysis. Information is collected from a cross-section of manufacturing firms across a range of sizes. The study's overarching goal is to pinpoint sustainability integrity's gold standard procedures and evaluate how well they propel beneficial environmental and social outcomes. It also delves into the obstacles that manufacturers encounter on their path to more eco-friendly supply chains. This study's overarching goal is to conduct a factor analysis of small manufacturing companies. Seventy participants were surveyed using a random convenience sampling technique and a quantitative methodology. SPSS has been utilized for data analysis and outcomes.

Objective of the study

- To study the integrity of manufacturing companies towards sustainability throughout the supply chain
- To analyse the factors for checking integrity of manufacturing companies towards sustainability throughout the supply chain process & impact on overall performance

Table 1: Reliability Statistics

Cronbach's Alpha	Number of Items
.789	15

Cronbach's Alpha reliability score was determined to be 0.789, somewhat higher than the expected value of 0.7 as indicated in table 1.

Table 2: “KMO & Bartlett's Test”

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.823
Bartlett's Test of Sphericity	Approx. Chi-Square	417.343
	Df	68
	Sig.	.000

Since Table 2's value outcome was 0.823, over the allowed limit of 0.5, the “KMO” measure validated sample sufficiency. We can see that the variables share a lot of information. Thus, factor analysis makes sense. A chi-sq. results of 417.343 at 0.000 in “Barlett's Test of Sphericity” suggests factor analysis.

Table3:Summary of factor Loadings (FL)

Factor (s)	Items Description	Communalities	Factor loading (FL)
Sustainability	Sustainability Frameworks and Standards	0.523	0.843
	Environmental Impact Mitigation	0.489	0.774
	Social Responsibility Initiatives	0.497	0.726
	Access to New Markets	0.912	0.648
	Sustainable Procurement	0.704	0.611
Supply Chain	Supply Chain Transparency	0.621	0.794

	Supplier Engagement	0.588	0.779
Integrity Towards Overall Performance	Cost Savings	0.663	0.729
	Operational Efficiency	0.611	0.722
	Enhanced Reputation	0.689	0.603
	Long-Term Viability	0.541	0.564
Accountability	Supplier Accountability	0.678	0.752
	Regulatory Environment	0.682	0.647
	Corporate Social Responsibility (CSR) and Brand Image	0.596	0.796
	Stakeholder Pressure	0.632	0.681

Key Findings of the study

- Strong environmental and social regulations and policies encourage industrial enterprises to implement sustainable supply chain strategies. Law and regulation compliance drives sustainability efforts.
- Consumer awareness and demand for sustainable and ethically manufactured products motivate manufacturing enterprises. Meeting consumer demand for eco-friendly and socially responsible products is crucial.
- Supplier sustainability affects manufacturers. Suppliers who use sustainable materials or practises might inspire manufacturers.
- The expense of sustainable measures can help or hinder. Some sustainability programs demand large investments, but energy efficiency and waste reduction can make them profitable.
- Since reputation is valuable, companies with a strong CSR commitment and a positive brand image may feel pressured to align their supply chain operations with their public image.
- Manufacturers may adopt sustainability and supply chain integrity due to pressure from investors, shareholders, and NGOs.
- Sustainability may encourage organizations to differentiate and compete. This is important in industries where consumers value sustainable products.
- Manufacturing company management and founders' ethical beliefs can substantially influence sustainability. Morally driven companies prioritize sustainability
- Through energy savings, trash disposal savings, and resource efficiency, sustainable practices improve financial performance.
- Supply chain integrity through sustainability can reduce supply chain interruptions, environmental regulations, and reputational damage, protecting the company's finances.
- Sustainability-focused brands increase brand loyalty and customer trust.
- Sustainability may extend the company's client base and income streams by opening new markets and customer groups.

- Sustainable supply chain practices improve operating efficiency, waste reduction, and process effectiveness.
- Sustainability may help companies attract and retain top personnel, resulting in a more competent and motivated staff.
- Environmental, social, and governance (ESG) aspects are increasingly considered by investors. Sustainability-focused companies attract responsible investors.
- By lowering environmental impact and encouraging ethics, sustainability strategies help industrial companies survive.

Conclusion

The objective of this study is to offer valuable information and recommendations for manufacturing companies, policymakers, and stakeholders who are interested in improving sustainability throughout the supply chain. Through a comprehensive comprehension of the intricate dynamics surrounding integrity within the realm of supply chain sustainability, manufacturing enterprises possess the capacity to modify and enhance their operational approaches. Consequently, this enables them to make valuable contributions towards the establishment of a more sustainable and ethically accountable global manufacturing environment. The resolution of these obstacles and barriers necessitates the implementation of a comprehensive and multifaceted strategy. Manufacturers may initiate the process by establishing unambiguous sustainability objectives and formulating a well-defined strategic plan. Engaging in collaborative efforts with suppliers, governments, non-governmental organizations (NGOs), and other relevant stakeholders can effectively facilitate the management of regulatory and supply chain intricacies. Furthermore, the allocation of resources towards research and development, the utilization of advanced technology, and the consistent monitoring and reporting of sustainability advancements can serve as effective strategies for surmounting these challenges in the pursuit of sustainable supply chains.

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