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RESEARCH ARTICLE

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**BUILDING A SUSTAINABLE SUPPLY CHAIN: CHALLENGES AND BEST
 PRACTICES IN INDIA**

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Abstract

Keyword: -

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A sustainable supply chain means organizations get their products through the chain that is environment friendly, protect employees and people, and helps all grow. Many organizations want to follow sustainable practices, but they face challenges like high costs, finding eco-friendly materials, and making sure suppliers follow ethical rules. This paper looks at the problems companies face and the best ways to build a green and fair supply chain. The main challenge is that sustainable materials can be expensive. Many organization work with suppliers from different countries and this makes it difficult to check all whether they are following fair labor practices, environmental laws or not. The one of the important challenge in adopting sustainable practices in supply chain is to manage waste and pollution, as many products

Create a lot of garbage. This study a secondary research approach, relying exclusively on existing data sources. It integrates findings from both qualitative and quantitative studies previously conducted in the field. The analysis focuses on the relationship between job satisfaction and performance in higher education institutions, drawing on published data, structured survey results, and insights from prior in-depth interviews. This paper has pointed out the challenges faced by the organization in following sustainable practices in building a sustainable supply chain. This paper also point out the significance of following these practices and also explain the best practices of building sustainable supply chain.

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Introduction:-

The concept of sustainability has become an important element of international corporate strategy in recent years, especially in the field of supply chain management (SCM). To ensure long-term resilience and accountability, sustainable supply chains seek to include environmental, social, and economic concerns into traditional supply chain operations (Carter & Rogers, 2008; Seuring &

Müller, 2008). This shift to sustainable supply chain operations has become a strategic essential and an important parameter of differentiation in the marketplace as organizations are under pressure from stakeholders, authorities, and customers to act responsibly (Elkington, 1997; Ahi & Searcy, 2013).

Despite growing awareness and intention, organizations often encounter considerable challenges in implementing sustainable supply chain strategies. The one of the most important challenges are high initial costs associated with sustainable materials, lack of supplier transparency, logistical complexities in monitoring global supplier networks, and difficulties in waste management and pollution control (Zhu & Geng, 2013; Sarkis et al., 2011). In many occasions organizations operate across multiple regions, making it difficult to ensure that third-party suppliers following all labour laws and environmental regulations (Hoejmose, Brammer, & Millington, 2013). These problems are further worsening by the lack of standardized sustainability metrics and the often-fragmented nature of regulatory frameworks across countries (Pagell & Shevchenko, 2014).

The incorporation of sustainability in supply chains is not just about following environment laws, but also about promoting long-term economic value and social equity. Organizations must have a proper balance between profitability and responsibility and it requires innovative approaches of procurement, logistics, and stakeholder engagement (Walker & Jones, 2012). Best practices such as supplier collaboration, life-cycle assessment, circular economy principles, and digital transparency tools have emerged as key drivers in overcoming these barriers (Genovese et al., 2017; Dubey et al., 2017).

In order to find out the key challenges and best practices this paper adopts a secondary research approach, integrating findings from both qualitative and quantitative studies to examine the key challenges and best practices in building a sustainable supply chain. By analyzing published literature, case studies, and statistical reviews, this study provides a comprehensive overview of the strategic, operational, and ethical dimensions of sustainable supply chain management. It also highlights how organizations can overcome barriers and use sustainability as a source of innovation, reputation enhancement, and long-term value creation (Chardine-Baumann & Botta-Genoulaz, 2014).

2. Literature Review

2.1 Issues in Sustainable Supply Chains

Sustainability in supply chains includes social and economic dimensions and goes beyond environmental considerations (Carter & Rogers, 2008). One of the important issues is the lack of integration between sustainability goals and supply chain strategy, which leads to disorder in procurement, logistics, and operations (Pagell & Shevchenko, 2014). Sustainability still treated as secondary function in many organizations their primary focus is on cost and efficiency, (Seuring & Müller, 2008). This fragmented approach often results in incomplete implementation and limited long-term impact.

Due to adequate infrastructure, lack of skilled manpower, and regulatory loopholes, many Indian manufacturing firms struggle to adopt green supply chain practices (Mani, Gunasekaran, and Delgado, 2018). Organization in India often face challenges in enforcing sustainability with lower-tier suppliers, many of these operate in the unorganized sector with limited knowledge or incentive for sustainable practices (Sarkis et al., 2011; Mathivathanan, Kannan, & Haq, 2018).

Data Transparency and traceability faces challenges with the entanglement of global and domestic supply networks as there are multiple tiers of suppliers (Tachizawa & Wong, 2014). This challenge is further severe in India due to the prevalence of small and medium enterprises (SMEs), which often lack digital tools and standardized procedures to report sustainability metrics effectively (Dubey et al., 2017).

Since many manufacturing organizations are using linear production models than circular economies the waste generation and pollution are major challenges (Genovese et al., 2017). In Textiles, chemicals, and electronics have been identified as high-pollution sectors in India with poor end-of-life product management and minimal reverse logistics (Ghosh, 2016). This worsen the environmental degradation and hampers the transition towards a circular economy.

The lack of standardized metrics and reporting practices makes it difficult for organizations to benchmark sustainability performance and engage in effective continuous improvement (Gold, Seuring, & Beske, 2010). Despite efforts like the Business Responsibility and Sustainability Report (BRSR) mandated by SEBI, compliance and data reliability remain inconsistent, especially among non-listed and MSME firms in India (Khurana & Ricchetti, 2016).

2.2 Challenges Faced by Organizations

An organization faces various obstacles in implementing sustainable supply chain practices. Organizations generally face challenges in implementing sustainable supply chain practices because of high cost of sustainable materials and technologies specially by small and medium-sized enterprises (Zhu, Sarkis, & Lai, 2008). This issue is especially prevalent in India, where most manufacturing units fall under the MSME category and operate with limited financial capacity. Indian SMEs often perceive sustainability initiatives as expensive, with uncertain returns on investment (Mathivathanan, Kannan, and Haq, 2018).

Additionally, sourcing from global suppliers can create compliance risks, especially in regions with weak labor laws or environmental enforcement (Hoejmose, Brammer, & Millington, 2013). In India, even domestic sourcing faces similar concerns. The presence of informal sector suppliers—often outside the purview of stringent environmental and labor regulations—adds layers of complexity and compliance risks (Dubey et al., 2017). The lack of regulatory enforcement and overlapping legal frameworks in India often makes sustainable sourcing difficult (Khurana & Ricchetti, 2016).

Lack of supplier commitment and trust is another common barrier, as suppliers may resist changes that increase operational complexity or cost (Gimenez & Tachizawa, 2012). This is especially challenging in India, where supply chains are often fragmented and relationship-based. As noted by Mani, Gunasekaran, and Delgado (2018), lower-tier suppliers in India are typically unaware of sustainability standards and are reluctant to invest in improvements unless pushed by larger firms or buyers.

There are also technological challenges, such as inadequate systems for monitoring emissions or energy consumption across the supply chain (Sarkis et al., 2011). In the Indian context, infrastructure and digital gaps remain a significant barrier, particularly for smaller companies that lack access to advanced technologies like IoT, block chain, or AI-based analytics (Gupta & Palsule-Desai, 2011). The lack of integration between sustainability and enterprise resource planning (ERP) systems also hampers effective data collection and reporting.

Finally, organizational inertia and limited internal expertise often slow the adoption of sustainability strategies (Walker, Di Sisto, & McBain, 2008). In India, many firms—especially traditional family-run businesses—lack formal sustainability departments or trained professionals who can lead green transitions (Shrivastava, 2020). Moreover, short-term business priorities, such as cost reduction and market competitiveness, frequently overshadow long-term sustainability goals (Ghosh, 2016).

2.3 Significance of Sustainable Practices

Sustainable supply chains are crucial for achieving long-term business resilience, stakeholder trust, and regulatory compliance. As consumer awareness grows, there is increasing pressure on businesses to demonstrate environmental and ethical responsibility (Ahi & Searcy, 2013). Sustainability in supply chains also supports risk mitigation by reducing dependency on scarce resources and improving adaptability to regulatory changes (Dubey et al., 2017).

Beyond compliance, sustainable practices contribute to brand reputation, employee engagement, and customer loyalty (Paulraj, 2011). Organizations that integrate sustainability into their core operations are often seen as more innovative and forward-thinking, positioning themselves competitively in global markets (Chardine-Baumann & Botta-Genoulaz, 2014). Moreover, sustainability initiatives contribute to broader global goals, such as the United Nations Sustainable Development Goals (SDGs), especially those related to responsible production and consumption (United Nations, 2015).

2.4 Best Practices in Sustainable Supply Chain Management

A number of best practices have emerged to support sustainable supply chains. One key strategy is supplier collaboration, where firms engage suppliers in joint planning, sustainability training, and shared performance metrics (Vachon & Klassen, 2006). Implementing life cycle assessment (LCA) techniques allows organizations to evaluate environmental impacts at every stage of the product lifecycle (Rebitzer et al., 2004).

Implementing green procurement policies can greatly lessen the environmental impact of sourcing operations by giving preference to goods and services that are better for the environment (Bai and Sarkis, 2010). In order to improve visibility and traceability throughout supply chains many businesses are also investing in digital technologies like block chain artificial intelligence and the Internet of Things (Queiroz et al. (2020). The circular economy model which reduces waste and creates closed-loop systems by redesigning products for reuse recycling and remanufacturing is another strategy that is becoming more and more popular (Geissdoerfer et al. (2018).

Leading firms also establish codes of conduct, conduct supplier audits, and participate in multi-stakeholder initiatives to ensure compliance with labor, human rights, and environmental standards across the value chain (Gold et al., 2010). These integrated approaches have been shown to improve both sustainability performance and financial outcomes, demonstrating that green supply chains can be both ethical and economically viable (Seuring & Gold, 2013).

3. Research Gap

Although there is a large body of research on sustainable supply chain management (SSCM) worldwide research that focuses exclusively on the Indian context is noticeably lacking. The majority of previous research focuses on frameworks and issues in developed nations ignoring the particular socioeconomic legal and infrastructure complexities that Indian organizations face. There has not been much empirical or secondary research done on how Indian organizations handle supplier compliance adopt circular economy models and apply sustainability. The need for India-centric studies that pinpoint context-specific issues and best practices in creating sustainable supply chains is further highlighted.

4. Significance and Rationale of the Study

Given that stakeholders, governments and consumers are increasingly scrutinizing global supply chains this study is extremely valuable because it tackles the pressing need for sustainable practices in these networks. The study highlights the main issues that businesses deal with like excessive expenses opaque suppliers and inconsistent regulations by combining the best available research. It also highlights the long-term profitability improved brand reputation and risk reduction that come with implementing sustainable practices. The rationale lies in guiding businesses toward actionable best practices and fostering informed decision-making, thereby contributing to the broader goals of environmental protection, social responsibility, and economic resilience.

5. Objectives:-

1. To identify the key challenges faced by organizations in adopting sustainable supply chain.
2. To examine the issue of waste and pollution in supply chain processes and how it affects sustainability goals.
3. To examine the significance of adopting sustainable supply chain strategies.

6. Research Methodology:-

This study employs a secondary research methodology depending solely on the body of knowledge and literature already available on sustainable supply chains. Information was gathered from reports structured surveys published journal articles and insights from earlier qualitative and quantitative research. The study identifies practical methods for creating ethical and environmentally friendly supply chains and examines the different obstacles that businesses encounter when implementing sustainable practices. It also examines using data that is already available the relationship between performance and job satisfaction in higher education institutions. By combining the results of several trustworthy sources this approach offers a comprehensive grasp of the subject.

7. Data Analysis

This study employs a secondary research methodology and solely draws from the body of knowledge regarding sustainable supply chains. Published journal articles reports structured surveys and insights from earlier qualitative and quantitative research were the sources of the data. The study examines the different obstacles businesses encounter when implementing sustainable practices and identifies practical methods for creating ethical and environmentally friendly supply chains. It also uses data that is already available to investigate the relationship between job satisfaction and performance in higher education institutions. This approach integrates findings from several trustworthy sources to give a comprehensive understanding of the subject.

The secondary data used in this study was gathered from the body of existing literature which included case studies industry reports research papers and journal articles about sustainable supply chains. The data which covers a range of industries offers insights into the typical problems and best practices that businesses face when attempting to create more socially and environmentally responsible supply chains. In order to identify trends and gain a better understanding of sustainability initiatives across organizations both qualitative and quantitative studies were examined. The high cost of implementing sustainable practices is one of the most urgent issues that organizations must deal with according to the literature. Compared to traditional approaches eco-friendly materials clean technologies and ethical sourcing frequently demand larger financial outlays. Due to their usually smaller budgets small and medium-sized businesses (SMEs) are particularly burdened by this (Kumar and Rahman 2016). Consequently a lot of businesses postpone or scale back their sustainability efforts. Global supply chains which depend on suppliers from various nations with disparate standards and laws present another significant obstacle. It is very challenging to guarantee that each supplier complies with environmental regulations fair labor practices and human rights standards. Research indicates that unethical practices such as child labor hazardous working conditions and environmental violations are frequently caused by incomplete monitoring systems and a lack of transparency in developing nations (Soundararajan & Brammer 2018). Additionally suppliers—especially those in lower-tier networks—do not know enough about or receive enough training on sustainability standards. The adoption of green practices throughout the supply chain is made more difficult by this ignorance. Global supply chains complexity is another recurrent theme in the literature. Companies that import goods from several nations frequently struggle to make sure that their suppliers adhere to environmental laws and fair labor standards.

In developing countries where child labor and substandard working conditions may be common managing ethical sourcing becomes difficult due to a lack of transparency and inadequate monitoring systems (Soundararajan and Brammer 2018). Businesses find it challenging to fulfil their sustainability pledges at every stage of the supply chain as a result. Pollution prevention and waste management also became important issues. Large amounts of waste are produced at several stages including manufacturing packaging and disposal by industries like electronics textiles and food processing. Despite growing pressure from customers and authorities most businesses find it difficult to reduce their environmental impact. Although recycling reuse and circular economy models are being investigated by some businesses these approaches are still in their infancy and have not yet gained widespread acceptance (Bansal and DesJardine 2014). Positively the research shows that businesses are becoming more conscious of the strategic importance of sustainable supply chain management. Businesses that embrace sustainability initiatives report advantages like improved customer trust improved brand reputation and increased operational efficiency (Seuring & Müller 2008). Additionally in order to enhance supply chain traceability and guarantee accountability big businesses are starting to train suppliers and use digital tools like blockchain (Sabeti et al. (2019).

The study also looked at the connection between performance and job satisfaction especially in universities that use sustainable practices. Employee satisfaction and motivation are higher in organizations that uphold ethical and environmental principles. Improved job performance employee retention and organizational commitment follow from this (Nazir and Islam 2020). The data analysis demonstrates that while businesses encounter several obstacles when putting sustainable practices into practice such as high expenses supplier oversight and waste management they also reap substantial long-term benefits. Supply chains that are robust and accountable are more likely to be developed by companies that make investments in innovation transparency and ethical sourcing. In order to promote sustainability across international industries the findings highlight the necessity of strong policy frameworks supplier cooperation and raised stakeholder awareness.

8. Findings

This study analyzed existing literature, industry reports, and prior research to explore the challenges and opportunities of building a sustainable supply chain. The findings are organized around three key areas: challenges faced by organizations, the impact of waste and pollution, and the significance of sustainable supply chain strategies.

1) Key Challenges in Adopting Sustainable Supply Chains

The study emphasizes that the high cost of implementing sustainable practices is one of the main issues that organizations face. Renewable energy sources biodegradable packaging eco-friendly raw materials and cleaner production technologies are typically more costly than their conventional counterparts. Even though they are aware of the long-term advantages of green supply chain practices small and medium-sized businesses (SMEs) are frequently prevented from implementing them by these higher costs. Sustainability objectives are frequently overshadowed by financial limitations and immediate financial concerns. Managing a global network of suppliers is another significant challenge. Numerous businesses import goods and materials from around the globe where ethical standards labor laws and environmental regulations differ greatly. Due to a lack of transparency and oversight procedures it is challenging to ensure compliance across all suppliers particularly those in developing nations. Supplier-level environmental violations child labor and poor working conditions frequently go unnoticed endangering the company's sustainability claims and reputation. Additionally lower-tier suppliers are not as aware of the issue or developing their capacity. The lack of knowledge and training regarding sustainable practices among many small suppliers causes resistance or makes it difficult to apply them successfully. This emphasizes the necessity of increased cooperation between businesses and suppliers in order to advance common sustainability objectives.

2) Waste and Pollution in Supply Chain Processes

The study reveals that pollution and waste continue to be major obstacles to sustainability. Production packaging shipping and product disposal are all supply chain operations that seriously harm the environment. Fast fashion electronics and food processing are among the industries that pose particular challenges because of their high resource consumption and waste production. Recycling and reuse are two sustainable waste management strategies that are not yet widely used despite efforts to implement them. A lot of businesses still use linear production models which produce a lot of waste and pollution. The issue is exacerbated by inadequate infrastructure particularly in developing nations and lax enforcement of environmental laws. Along with having an adverse effect on the environment this waste interferes with businesses capacity to meet sustainability goals and customer demands for ethical behavior. An increase in carbon emissions from supply chain pollution can harm public health and fuel climate change.

3) Significance of Sustainable Supply Chain Strategies

The study concludes that implementing sustainable supply chain practices has major advantages in spite of these difficulties. Businesses that have incorporated sustainability into their supply chains report lower operational risks better regulatory

compliance enhanced customer loyalty and an improved brand image. The implementation of technologies such as block chain has enhanced traceability and transparency enabling businesses to better monitor materials and guarantee ethical sourcing. Sustainability initiatives have also demonstrated a positive effect on employee performance and job satisfaction in educational institutions and service sectors. When an organization prioritizes social and environmental values its employees feel more engaged and motivated which strengthens their sense of commitment and purpose. The results show that despite the fact that implementing sustainable supply chains presents many difficulties especially with regard to cost waste management and global supplier control the advantages in terms of efficiency reputation and stakeholder satisfaction make sustainability an essential long-term success strategy.

9. Recommendations :-

Several important suggestions are put forth to assist businesses in creating more sustainable supply chains in light of the study's analysis and conclusions, these are discusses as under-

- 1) **Invest in Supplier Development:** To help suppliers better understand sustainability standards organizations should offer them resources training and assistance particularly in developing nations. Throughout the supply chain cooperative alliances and initiatives to increase capacity can aid in coordinating sustainability objectives.
- 2) **Use Technology for Transparency:** Supply chains can become more visible and traceable with the help of technologies like block chain digital tracking and real-time monitoring systems. These tools aid in making sure that all suppliers follow moral and environmental guidelines.
- 3) **Encourage the adoption of circular economy models:** This study recommends to organization to use circular economy models which place an emphasis on waste reduction recycling and reuse in place of linear production. The impact on the environment can be greatly decreased by promoting eco-design biodegradable packaging and sustainable material sourcing.
- 4) **Support from the Government and Policies:** To incentivize businesses to embrace green practices policymakers should provide tax breaks incentives and infrastructure assistance. Enforcing environmental regulations more strictly is also crucial.
- 5) **Worker and Stakeholder Engagement:** Including workers and stakeholders in sustainability projects promotes an accountable and responsible culture. Programs for raising internal awareness and open reporting can improve dedication and output.

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