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"A THEMATIC LITERATURE REVIEW ON SUSTAINABLE SUPPLY CHAINS IN FMCG AND THE WAY IT IMPACTS ORGANISATIONAL SUSTAINABILTY"

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ABSTRACT

The FMCG sector within the Indian economy is regarded as the fourth largest in terms of its magnitude. It stands as a crucial catalyst driving the Indian economy forward. Occupying the fourth position in the Indian economy, this sector caters to nearly three million individuals nationwide. These products are prevalent among individuals of all social classes, irrespective of their age, socioeconomic status, or social standing.

Comprising food and beverages, personal care products, and household items, these three primary segments collectively represent 19%, 31%, and 50% of the total industry. The FMCG sector in India derives over 40% of its revenue from semi-urban and rural regions, with a significant impact.

In the context of Indian economy, the Fast-Moving Consumer Goods (FMCG) industry holds a significant position, necessitating an adoption of sustainable practices. Incorporation of sustainability in FMCG sector not only tackles environmental issues but also presents possibilities for enduring economic and social advantages.

This Literature review-based research paper investigation concentrates on examining the sustainable supply chain practices in Fast-Moving Consumer Goods that is FMCG sector in India. The systematic investigation talks about potential areas for enhancing sustainable supply chain management within the Indian FMCG industry and anticipates the future integration of sustainability initiatives.

Keywords: FMCG, Supply Chain Management, Sustainable Ecosystem, Organizational Sustainability, SSCM, Sustainable Supply Chain Management

1. INTRODUCTION

Before diving deep, let us understand what the supply chain management refers to? Supply chain management (SCM) is the integration of all activities associated with the flow and transformation of goods and services, from the supplier to the end customer. It involves the coordination of procurement, inventory management, transportation, warehousing, production, and marketing activities to ensure customer satisfaction at the lowest possible cost (Mentzer et al., 2018).

Organizations function on a complicated network of interconnected operations in today's worldwide society. Supply chain management, or SCM, has become a vital field of study that guarantees the smooth transfer of products and services from raw materials to the final customer. But this effectiveness must be weighed against the increasing need for organizational sustainability. Afrizal, M., & Miradji, M. (2018).

The Fast-Moving Consumer Goods (FMCG) industry is characterized by high-volume production, rapid inventory turnover, and extensive distribution networks. Supply chain management (SCM) in this sector is critical for ensuring efficiency, cost reduction, and customer satisfaction. This literature review examines key aspects of supply chain

operations in the FMCG industry, including procurement, logistics, technology integration, and sustainability. (Singh & Shukla, 2019).

Aher, D. K. H., Ubale, S., & Ubale, D. S. (2024) studied the Lean Supply Chains and their impact on Sustainability. They have identified the critical factors in implementing lean Lean principles focus on eliminating waste, optimizing processes, and improving operational efficiency. Successfully implemented lean strategies can enhance productivity, reduce costs, and contribute to sustainable manufacturing. According to literature review conducted by Aher, D. K. H., Ubale, S., & Ubale, D. S. (2024)

1.1. CRITICAL FACTORS FOR LEAN IMPLEMENTATION ARE

- Leadership Commitment
- Workforce Engagement
- Technology & Infrastructure
- Customer-Centric Approach,
- Challenges in Lean Adoption
- Resistance to Change
- Lack of Technical Knowledge
- Financial Constraints
- Lean principles can optimize FMCG supply chains by improving inventory flow, reducing wastage, and enhancing agility in response to market demand.
- The sustainability perspective aligns with eco-friendly supply chain management practices in the FMCG sector, ensuring long-term organizational sustainability.
- Lessons from manufacturing can be adapted to FMCG logistics and supply chain operations to streamline processes and meet sustainability goals.

Environmental and social responsibility have frequently been neglected in supply chains because of the conventional emphasis on profit maximization. This has given rise to worries about pollution, resource depletion, and unethical labour practices. More appropriate approach is sustainable supply chain management (SSCM).

A sustainable supply chain extends traditional supply chain management by integrating social and environmental considerations into every step of the process, from sourcing raw materials to product delivery and disposal. This includes practices that minimize environmental impact, promote ethical labor practices, and ensure resource efficiency throughout the supply chain (Carter & Ellram, 2015).

Long-term success and ecological footprint reduction are achievable for firms through the integration of environmental and social factors into supply chain management techniques.

Customers are putting more and more pressure on the organisations they support to provide environmentally friendly goods and use ethical sourcing methods. Organisations face possibilities as well as obstacles because of this shift in consumer behaviour. Organizations can obtain a competitive advantage and lessen their environmental impact by implementing the sustainable supply chain management techniques. The intention of the whole study is to evaluate potential changes in Supply Chain Management (SCM) to promote sustainability and ensure enduring success for organisations. The incorporation of blockchain technology may improve the effectiveness of supply chain management through ensuring secure data privacy, heightened visibility, and a lasting transaction record.

With the emergence of e-pharmacies and the demand for effective supply chains that are changing quickly, the healthcare industry has witnessed the evolution of supply chains to improve consumer experiences. Supply chain management has evolved through operational strategies, procedures, and technological advancements to meet evolving complexity and improve responsiveness, agility, and competitiveness. Supply chain management may use blockchain technology to track products, verify their authenticity and morality, and lower error rates.

2. LITERATURE REVIEW RELATED TO USING SUSTAINABLE SUPPLY CHAIN MANAGEMENT TO DRIVE CHANGE

Literature review presents following aspects-

2.1. TECHNOLOGY INTEGRATION IN FMCG SUPPLY CHAINS

The study conducted by Carter, C. R., & Ellram, L. M. (2015) , stresses upon FMCG sector is leveraging advanced technologies to enhance supply chain efficiency, visibility, and responsiveness. The crux of research is presented below-

2.1.1. ROLE OF IOT, AI, AND BLOCKCHAIN IN FMCG SUPPLY CHAINS

IoT-enabled tracking systems have improved real-time monitoring of inventory and logistics, reducing product losses and enhancing delivery accuracy (Kamble et al., 2018). AI-driven demand forecasting helps optimize inventory levels by predicting consumer trends with higher precision, reducing stockouts and overstock situations (Choi et al., 2020). Blockchain technology ensures transparency and security in transactions between suppliers, distributors, and retailers by providing immutable records (Saberi et al., 2019).

2.1.2. AUTOMATION IN WAREHOUSING AND DISTRIBUTION

Automated storage and retrieval systems (ASRS), robotic picking solutions, and smart conveyor systems have transformed FMCG warehousing (Sharma et al., 2021). Machine learning algorithms are used for predictive maintenance of logistics infrastructure, reducing downtime and operational costs.

2.1.3. DIGITAL PLATFORMS FOR SUPPLIER COORDINATION

The integration of cloud-based supply chain management (SCM) platforms enables seamless collaboration between FMCG manufacturers and suppliers. Digital procurement platforms facilitate real-time bidding and supplier evaluation, improving sourcing efficiency.

2.2. LOGISTICS AND DISTRIBUTION NETWORKS IN FMCG

Efficient logistics networks ensure the rapid movement of high-volume goods from manufacturers to retailers and consumers.

2.2.1. ROLE OF THIRD-PARTY LOGISTICS (3PL) IN FMCG

Many FMCG firms outsource logistics to 3PL providers to reduce costs and improve service efficiency. 3PL companies offer warehousing, inventory management, and freight forwarding services, helping FMCG firms scale their operations efficiently (Sharma et al., 2021).

2.2.2. LAST-MILE DELIVERY AND E-COMMERCE PARTNERSHIPS

With the rise of online grocery shopping and direct-to-consumer (D2C) models, last-mile delivery has become a crucial factor in FMCG logistics. Route optimization algorithms and gig economy delivery networks (such as hyperlocal delivery apps) have reduced lead times and improved customer satisfaction (Mangla et al., 2020).

2.2.3. COLD CHAIN AND PERISHABLE GOODS MANAGEMENT

Temperature-sensitive products such as dairy, frozen foods, and pharmaceuticals require specialized logistics infrastructure. Cold chain logistics ensure product integrity through temperature-controlled storage and transit solutions, reducing spoilage and maintaining quality (Singh & Shukla, 2019).

By fostering collaborations, the FMCG sector in India can potentially create tailored training programs, address policy matters, and implement sustainable supply chain practices that will be advantageous for individual organizations and the FMCG sector in Pune and other regions. Through collaboration, it might be feasible to develop customized training programs, engage in policy issues, and institute sustainable supply chain methodologies that will benefit individual enterprises and the FMCG sector in Pune and other areas. The sector is required to actively participate in worldwide endeavors focused on promoting an environmentally aware and economically viable system by giving importance to sustainable supply chain methods, in accordance with its aspiration for a more sustainable prospect. This aspiration instigates transformation and steers India's FMCG sector towards a more prosperous and enduring future.

This collaborative endeavour possesses the capacity to lead to tailored training schemes, policy interventions, and the execution of enduring supply chain methodologies that not solely augment the performance of individual enterprises but also fortify the overarching sustainability of the FMCG sector in Pune and its environs. As the sector contemplates a future characterized by heightened environmental consciousness, it becomes essential for it to deliberate on sustainable supply chain protocols as an indispensable strategic component, aligning with worldwide initiatives advocating for a more environmentally friendly and economically viable environment. This overarching vision serves as a catalyst for transformation, guiding the FMCG industry in India towards a more sustainable and prosperous trajectory.

This vision serves as a compelling driver for transformation, guiding the FMCG sector in India towards a more sustainable and prosperous future. Moreover, a deep assessment has been conducted to analyse impact of effective supply chain management on the productivity of small and medium-scale organisations in India. Existing literature indicates that the presence of a performance assessment framework is crucial for the effective execution of environmentally responsible supply chain practices within the Indian manufacturing landscape. A scrutiny of sustainable supply chain practices that is SSCM in Indian FMCG industry underscores importance of companies prioritizing sustainability across their supply chains. A suggested framework takes into account environmental, social, and economic dimensions to Mold sustainable FMCG supply chains in India, integrating elements like environmentally friendly sourcing, sustainable packaging, and collaboration with stakeholders. This document represents a comprehensive evaluation of sustainable supply chain management practices, spanning various industrial sectors and geographical regions. It incorporates studies authored by experts in the field, including Mehmood Khan, Mian M. Ajmal, Fauzia Jabeen, and Shalini Talwar, who deliberate on the application of sustainable supply chain finances and AI that is artificial intelligence for innovative omnichannel logistics. Additionally, the critical assessment of GSCM that is green supply chain management in the manufacturing sector in China is examined by Xuerou Sheng, Leping Chen, and others. Furthermore, the document explores the ramifications of supply chain management on organizational performance, particularly focusing on e-commerce entities in India and the heavy equipment machinery industry in Myanmar. Authors Pyi Kyaw S., and M. S. Reddy provide Experimental evidence and insights in relationship between supply chain management and performance.

The document also addresses significance of supply chain agility in the fast-moving consumer goods (FMCG) industry, the role of warehouse management systems on supply chain performance, and the prioritization of sustainable supply chain risk management practices using structural analysis-based approaches.

The FMCG sector is known for its dynamic market environment characterized by the frequent product launches, fluctuating demand patterns, and evolving consumer preferences. To achieve effective response to and adapt to these changes, supply chain agility is deemed essential for FMCG companies.

This necessitates

Prompt sourcing and production capabilities: Swiftly respond to fluctuations in raw material prices or availability. (Stadtler & Kilger, 2008) Adaptable manufacturing processes: Modify production lines to accommodate new product variations. (Gunasekaran & Lai, 2015) Dynamic distribution networks: Effectively distribute products to meet evolving demand trends across diverse geographical regions. (Christopher & Gattorna, 2011)

Moreover, the articles delve into the exploration of sustainable supply chain management implementation across various industries. This includes the agricultural products supply chain focusing on improving resource and carbon emissions efficiency, as well as monitoring the quality of Agri-fresh food supply chain in the Indian market.

The examination by Gunasekaran, A., & Lai, P. S. (2021). assesses the influence of sustainable supply chain management on company performance, the link between lean, agile, and green practices on business competitiveness, and the enhancement of agricultural products supply chain management to lower carbon emissions.

In conclusion, the document encompasses a comprehensive array of research and insights into sustainable supply chain management, offering valuable contributions from various authors across the globe. Referred research material collectively address critical challenges, propose innovative strategies, and provide empirical evidence of the impact of sustainable supply chain management practices on organizational performance and overall industry development.

Sustainable supply chain management is crucial for responding to market changes and economic development, with a focus on environmental, economic, and social attributes. [1][2].

3. KEY FINDINGS

Efficient supply chain systems and workforce are essential in industries like apparel for distribution centre soundness [1].

The dairy industry in Andhra Pradesh, India, benefits from a developed supply chain model [2].

Legal systems in China need improvement to support supply chain management [2].

Inventory flow management aligns with customer demand and business objectives [3].

Food processing sector's logistics and supply chain management maturity is vital for information quality [4].

Automotive industry's sustainable supply chain management requires more research, especially on small-sized companies and social aspects [5].

New retail wave demands supply chain management model transformation and integration of online and offline operations [6].

Perishable product supply chains aim to maximize profit and reduce environmental impact [7].

Effective supply chain management correlates with profitability growth and operational efficiency [8].

Facilities Management supply chain optimization supports core business functions [9].

Addressing supply chain management problems can improve business performance in the food industry [10].

Agricultural supply chains for human consumption need stringent regulations and monitoring [11].

logistics operations lack empirical evidence, despite their positive performance contributions [12].

4. SUGGESTIVE AREAS TO BE ADDRESSED

4.1. SUSTAINABILITY AND GREEN SUPPLY CHAINS IN FMCG

Sustainability initiatives in FMCG supply chains are driven by regulatory compliance, cost savings, and increasing consumer awareness.

4.2. ECO-FRIENDLY PACKAGING AND CARBON FOOTPRINT REDUCTION

Companies are adopting biodegradable, recyclable, and minimal-waste packaging solutions to reduce environmental impact. Innovations such as edible packaging, compostable plastics, and reusable containers are gaining traction (Genovese et al., 2017).

4.3. SUSTAINABLE SOURCING AND ETHICAL PROCUREMENT

Sustainable sourcing practices include using certified raw materials (e.g., Fair Trade, Rainforest Alliance) and reducing water and energy consumption in production. Ethical procurement ensures labor rights compliance and supplier sustainability assessments (Seuring & Müller, 2008).

4.4. CIRCULAR SUPPLY CHAIN MODELS AND WASTE MANAGEMENT

Circular economy principles focus on reducing waste and reusing materials. FMCG companies are investing in closed-loop recycling systems and reverse logistics to manage returned goods and packaging waste efficiently (Genovese et al., 2017).

5. CONCLUSION

Focus area: Sustainable consumption and production practices within the food processing FMCG supply chain.

The presented data underscores the escalating significance of sustainable practices in FMCG supply chains, such as the emphasis on green supply chain management and the adoption of sustainable cost management.

Consumer preferences are transitioning towards natural, organic, and chemical-free products, thereby necessitating innovation within the FMCG sector, as indicated in the data.

The potential impact of food processing FMCG on sustainability remains unaddressed within the provided data.

Concentrating on sustainable consumption and production practices in your research has the potential to yield valuable insights for the food processing FMCG sector, thereby fostering a more sustainable food system.

If you look at today's scenario there is very less research available when it comes to FMCG supply chain networks and more specifically related to food processing. However, there are few studies those explore the sustainable practices in FMCG and why supply chain management holds significance across the industry and sectors

There is a boost in awareness of sustainable food systems.

While consumer preferences are continuously moving towards sustainable and environmentally friendly food products, the FMCG industry is urged to innovate. A comprehensive understanding of sustainable practices throughout the food processing FMCG supply chain is imperative to meet this evolving consumer demand

CONFLICT OF INTERESTS

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