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# THE FUTURE OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT THROUGH GREEN SUPPLY CHAIN MANAGEMENT INITIATIVES

**VISHWANATH KUMBAR**
**PGCSCM (IIM TRICHY), MBA, MCOM, PGDRM, MPHIL, NET (UGC), (PHD).**
**ASSOCIATE PROFESSOR**
**SINDHI INSTITUTE OF MANAGEMENT BANGALOREMOBILE: 8123811950**

**SHASHANK M HIREMATH**
**DISM, MBA, MCOM, NET (UGC), PHD.**
**ASSOCIATE PROFESSOR,**
**CMS BUSINESS SCHOOL, JAIN DEEMED-TO-BE UNIVERSITY, BENGALURU, KARNATAKA, INDIA**

**TOJO THOMAS**
**DMM, MBA, PHD.**
**MANAGEMENT CONSULTANT**
**KEERTHI K**
**MBA**
**MANAGEMENT CONSULTANT**

**VANAJA V**
**MBA (PHD)**
**ASSISTANT PROFESSOR**
**SINDHI INSTITUTE OF MANAGEMENT BANGALORE**

**ABSTRACT:**

The past decade has seen the unequivocal demand and development of supply chain management (SCM), and competition between enterprises has come to centre on SCM, with intensifying rivalry among businesses and rapid advances relating to Internet technology, production techniques, logistics systems, and so on, in the global market. Simultaneously, an increase in environmental consciousness has resulted in a gradual increase in ideas of environmental protection and resource conservation in the context of SCM around the world. In the

face of increasingly fierce global competition, enterprises, MNCs, small medium enterprises, are continually looking for strategies to improve their supply chain systems for the purpose of cutting costs, improving quality and productivity, considering environmental protection initiatives as well as achieving sustainability in the long run. Green supply chain can reduce the environmental pollution and production costs and it also can spur economic growth, create competitive advantage in terms of greater customer satisfaction, positive image and reputation and provide better opportunity to export their products in pro-environmental countries. Many companies are thinking and rethinking about the advanced green supply chain management initiatives to manage the existing and future sustainable supply chain management. Organizations are increasingly concentrating on the design and development of sustainable green supply chain management solutions resulting in maximum supply chain surplus benefiting both manufactures and end customers.

**Keywords**: Green Supply Chain Management, Sustainable Management, Logistics Management.

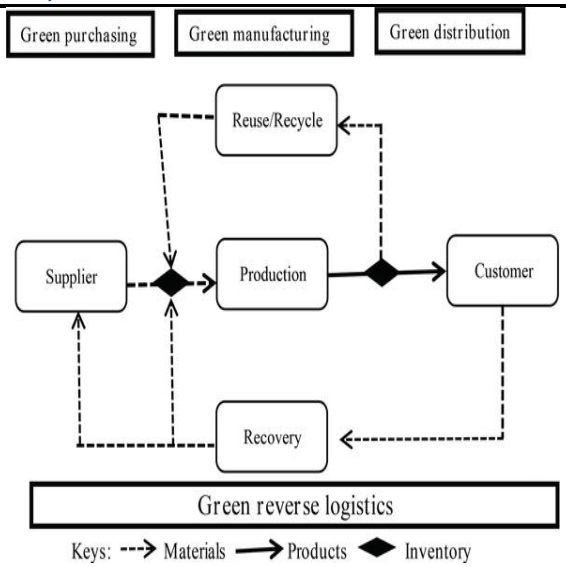
## I. INTRODUCTION:

The term "supply chain management" was first introduced by Oliver and Webber in the early 1980s (Delfmann and Albers, 2000). The concept has traditionally been regarded as a process of converting raw materials into final products which will then be transferred to the end users. In addition to this focus on tangible product flow, some researchers have also stressed the intangible value of the information flow through the supply chain, which includes an emphasis on market needs exchange, trust building, product development, supplier base reduction, strategic positioning leverage and operating efficiency improvement (Berry et al., 1994; Bowersox et al. 2002) within the enterprise and across the chain, which leads to a more complex supply chain structure. Furthermore, Welford (2002) proposed that the supply chain relationship has definitely become more critical in today's globalised world, in light of the growing notion of environmental responsibility from all over the world. It is important to note that we are entering into an era where green issues and sustainability have become an important element in business practices.

**The term sustainable or green supply chain** refers to the idea of integrating sustainable environmental processes into the traditional supply chain. This can include processes such as supplier selection and purchasing material, product design, product manufacturing and assembling, distribution and end-of-life management. Instead of mitigating harmful impact of business and supply chain operations, green supply chain involves value addition and/or value creation through the operations of whole chain (Syed Abdul Rehman Khan 2018).

Undeniably, reducing air, water and waste pollution is the main goal of green supply chain, while green operations also enhance firms' performance in terms of less waste manufacturing, reuse and recycling of products, reduction in manufacturing costs, greater efficiency of assets, positive image building, and greater customer satisfaction.

Green supply chain makes the applications of the key sustainable development strategy outstand. It emphasizes how green practices can be adopted in firms to mitigate the environmental degradations and increase the economic and operational performance of firms, while Figure 1 illustrates a simple model of green supply chain. (Khan 2018) has explained the concepts of sustainable and green supply chain management:




Green supply chain are integrating eco-friendly concept into supply chain management to improve environmental sustainability with different green practices including, green purchasing, green distribution and warehousing, green transportation with usage of biofuels, green manufacturing processes and the products' end-of-life management.

In the World, as the environmental awareness is increasing, firms are facing heavy pressure from different stakeholders including government and customers to mitigate their harmful effect on the environment. Indeed, corporate sector needs to consider integrating their business practices in service and manufacturing industry with sustainability and reducing end-to-end supply chain costs to achieve competitive advantage. Since last couple of decades, growing impacts of global warming, climate change, waste and air pollution issues have involved increasing world-wide attention of experts to think more eco-friendly and find optimum possible solution. towards "Green". (Rath 12) identified GSCM (green supply chain management) plays a part in motivating organizational sustainability. With the environmental concerns rising continuously, GSCM deserves a persistent community concern in developed nations. Further, it has recently woken up the developing nations to the green movement.

**Green Practices in supply chain management:**

With numerous green practices adopted, companies in their business and supply chain operations improve their productivity with better environmental growth. While, some well-known green practices are as follows;

**1. Green Material Sourcing:**

Green sourcing means purchasing materials and components which have such enviable eco-friendly characteristics as reusability, recyclability and non-use of hazardous/dangerous chemicals. With more and more concerns on environmental protection, procurement professionals have been motivated to reconsider their existing sourcing, purchasing strategy and their impact on environmental sustainability.

**2. Green Marketing:**

The actions directed to all incorporates and consumers comprise green marketing, a broad range of marketing activities (e.g., planning, production,, process, price, promotion and after-sale service) designed to illustrate the goal of organization to mitigate the harmful effects of their products. Green marketing practice

promotes the products with environmental friendly properties. It contains the activities that can satisfy human desires of minimum negative effects on the environmental beauty.

**3. Green Management:**

Green management practices (GMP) provide a firm with supplementary sources of information that can enhance their business and environmental objectives. Adoption of green management practices help with improved firm image, increased efficiency, environmental compliance improvement, cost savings, achievement of societal commitment and reduction of carbon emissions etc.

**4. Green distribution and warehousing:**

Green distribution and warehousing can reduce the waste and play an important role in energy reduction and value addition of green products in warehousing significantly improve overall performance of organization with better corporate image. Green distribution helps enterprises to obtain superior financial and environmental performance.

**5. Green Manufacturing:**

Green manufacturing practices are to implement socially and environmentally accountable practices to mitigate harmful effects of manufacturing and increased profitability of firms. Green practices in production improve efficiency of processes. This practice involves the application of the green resources, which may lead towards competitive advantage through reduction in products' cost and improvement in products' quality. Lean and green manufacturing industry both are working for eliminating waste and improving the efficiency of manufacturing processes. Baines et al. highlighted the benefits of green manufacturing: green practices in production processes mitigate the bad effects of manufacturing processes on environmental sustainability, while green manufacturing improve operational, environmental and financial performance of firms.

**6. Ecological Design:**

Luthra et al. (2016) highlighted that 80% impacts on environment from product and process related could be controlled with the adoption of ecological design in supply chain management. Ecological design incorporates many ideas such like using cleaner technology processes, green raw material and components. Green design of products reduces ecological impacts of products during their life. In addition, green design of products also supports reusing, recycling and remanufacturing of products, which not only helps firms to improve their environmental performance but also provide opportunity to reduce their costs.

**7. Green transportation and reverse logistics:**

Green transportation and reverser logistics practices provide opportunity to organizations, to improve their image and reduce their costs. Logistics overheads can be saved through promoting transportation system's efficiency and enhancement of customer association also can be obtained to create more profitability. The logistics activities integrated with rehabilitation comprise the practice of reverse logistics (reusing, recycling, and remanufacturing), which can produce the products that can be used again for customers. Green logistics practice helps firms to reduce their environmental impacts with improved quality and cost reductions.

**8. Renewable energy biofuels:**

Undeniably, global logistical and supply chain operations mainly depend on energy as well as fossil fuel, which are the main cause of climate change, global warming and pollution with greater carbon and greenhouse gas emissions. Renewable energy and biofuels are required in supply chain operations so as to obtain sustainable environmental and economic growth. Anable et al. (2017) highlight that logistics related activities consume greater energy to accomplish their task. Renewable energy and biofuels improve economic performance of firms and also reduce carbon emissions. In addition, fossil fuel is more expensive than biofuels and green energy sources.The strict governmental policies together with customer awareness build pressure on corporate sector to use biofuels and environmental friendly energy in their supply chain operations. The bioenergy mitigates the carbon emissions and also improves profitability of enterprises with better image and reputation building

## II. LITERATURE REVIEW:

From the literature review and the empirical findings, this research provides contributions to knowledge, as well as managerial implications. It contributes to knowledge by providing conceptual and empirical insights into how green supply chain management is viewed and developed among small medium enterprises, manufacturers, clarifying the conceptions relating to sustainability, and incorporating stakeholder theory and the theory of industrial ecology in examining green supply chain management development. This study also provides practical implications by providing suggestions and guidance to governments, the public, suppliers and customers across the chain, as well as the managers of small medium enterprises, and proposing an optimised model for the selected case for improved green supply chain management performance.

**Sustainability** has become a common topic of discussion amongst policy makers, journalists, scientists, academics and citizens in many parts of the world and in various research fields. In order to show a sense of the development of sustainability and its interdisciplinary characteristics, Linton et al. (2007) provided a summary of the number of articles in different study fields which discuss sustainability or sustainable management based on statistics from Scopus from 6 August 2006

According to Adams (200 6), the idea of sustainability dates back more than half a century to the mandate adopted by the International Union for Conservation of Nature (IUCN) in 1969. The conception was then extended as a key topic in the United Nations Conference on the Human Environment in Stockholm in 1972. During the next several decades, the core discussion on the development of sustainability progress took place within the World Conservation Strategy of 1980, the Brundtland Report of 1987 and the United Nations Conference on Environment and Development in Rio in 1992. It is worth noting that involvement from governmental and non-governmental p arties, as well as engagement from businesses, also made contributions to the development of sustainability and sustainable management in these decades.

Bagheri and Hjorth (2007) argue that sustainability is an evolutionary process ofunderstanding, knowledge and management, rather than a fixed definition. According to Linton et al. (2007), the concept of sustainability has been transmitted from many ancient cultures to more recent economic- and management-related topics, and the number of management studies concerning sustainability dramatically increased

between 1990 and 2005, increasing by 30 times. However, the most far-reaching and widely accepted definition of sustainability comes from the famous Brundtland Report, also known as the book of Our Common Future (WCED, 1987). Sustainability is appropriately using resources so as to achieve developments that meet the needs of the present without compromising the ability of future generations to meet their own needs. The vagueness surrounding this definition are obvious but understandable, given that it captures the three central dimensions of sustainability – environmental, economic and social issues. The three dimensions have been defined in different ways, as "pillars" (VDA, 2002), or "overlapping circles" (IUC N, 2005).

However, many have proved that GSCM can help to improve economic performance by reducing cost via advanced technologies, and that social progress can be made through such innovations as well (Zhu and Sarkis, 2006). Therefore, this study argues that GSCM integrates environmental concerns into the operations of the supply chain of an enterprise, thereby obtaining economic, environmental and social achievements simultaneously because the three dimensions experience interactions without isolation within SCM.

As discussed above, G SCM is different from SSCM in terms of taking only environmental considerations into the process, rather than all three perspectives. The study agrees with Groznik and Erjavec (2012) on this matter, but emphasises the sustainable improvements/sustainability potentials contributed by GSCM This understanding of the relation between GSCM and sustainability is similar to the model for sustainable supply management proposed by Ageron et al. (2012), in which the green supply chain is viewed as one of the blocks from which to build a sustainable supply management system. Greening the supply chain within an enterprise or in a global context is used as a strategy to achieve sustainable development.

The pressures from employees and managerial stakeholders to proactively implement environmental management practices can create a virtuous cycle which leads to additional pressures from internal stakeholders. According to Reinhardt (1999), if there is a prevalence of environmental concerns throughout an enterprise, it is more likely to recruit talented applicants who have a strong preference to work in enterprises with proactive environmental management philosophies.

## III. CONCLUSION:

The cost minimization is considered as the most important factor for firms to implement green practices in their supply chain operations. The implementation of green supply chain initiatives would help to cut down the costs of packaging, components and materials due to use of reused, recycled and remanufactured products. Khan et al. (2016) highlighted that green practices provide opportunity to capture new markets and export to pro-environmental countries, while polluted firms are unable to export their products in pro-environmental countries such as India, USA, Germany, UK and Poland. Undeniably, green supply chain management practices have been a tool for firms to decrease their products' cost, enhance profitability and increase market share.

On the other hand, to improve social performance, firms also adopt green practices in their business activities. Social performance indicates improvement of people's quality life standard without compromising on environmental beauty. In addition, social performance includes the enhancement of firm image and the improvement of environmental sustainability, as well as reduction in environmental risks by adopting GSCM

practices, firms may enhance their operational performance through improving products quality and improving delivery service.

Green supply chain management initiatives also help organizations to improve their environmental performance such as reduction in carbon emissions, elimination of waste from end-to-end supply chain, effective and strong collaboration with suppliers would decrease their communication costs and easily promote reuse, recycling and remanufacturing. Environment management system (EMS) integrated into firms' manufacturing strategy will assist the firms to enhance its ecological performance.

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