

Benefits of Green Supply Chain Management

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Abstract: As economies are increasingly embracing global supply chains, care must be taken urgently to reduce the environmental impact of these supply chains. A new paradigm that incorporates supply chain productivity and environmental concern, for example, is Green Supply Chain Management. This paper offers an extensive literature review and discussion of the management of the green supply chains (GSCM), covering the roots of the supply chain, its benefits and the challenge faced by the green supply chain management approaches.

Keywords—Green supply chain management, green design, reverse logistics, supply chain management, green purchasing

1 INTRODUCTION

We always overlook the importance of supply chains in our daily lives. Because of the ubiquitous supply chains that link consumers, suppliers, and manufacturers through a variety of paths, we can now buy anything from food to expensive electronics from a store nearby. A common misunderstanding is that supply chain as a term only applies to manufacturing. Even in service-dominated economies, supply chains now play a critical role. Supply chains can be found in every industry, including cars, FMCG, retail, IT, and product technology. It would be fascinating to trace the history and evolution of such a widely used term. Although the words "logistics" and "supply chain" were largely synonymous with army troops during the pre-war era, the concept-making by Henry Ford of the assembly line may be considered the source of supply chains, which continue to include the world economy today. Most manufacturers in the 1950s and 1960s were influenced by Henry Ford's influential approach to mass production. On the other hand, the pace of technological development was relatively slow, and incremental introduction of new product designs led to a greater inventory of Work in Process (WIP). In the 1970s manufacturing resource planning was launched, helping to handle all the capital, including materials, finance and manpower, effectively. With the world's economies welcoming globalization, markets had become highly competitive. This ultimately translated into the need for businesses to incorporate more versatility and dependability into their goods and manufacturing processes. As a result of this urgent need, a new inventory approach known as the Just-in-Time (JIT) technique was introduced. JIT aimed to keep inventory to a bare minimum, lowering costs. This technique enables the manufacture of goods where and where demand arises. The increasing globalization, which has marked the beginning of Supply Chain Management philosophy [1], has led manufacturers to realize the competitive advantage which could be obtained through strategic supplier ties. The theory of supply chain management has been highly emphasized over the past two to three decades due to the majority of businesses that tend toward global goods sourcing, customers requiring timely delivery of quality products and the ever-present dynamics and complexities of global markets. As a result, companies are becoming more interested in leveraging supply chains, which necessitates strategic and well-built relationships with suppliers. [2] The goods that are manufactured today are constantly changing, and the facilities that are provided are constantly changing as well. Customers today are far more inspired, informed, and conscious, and they have a multitude of choices from which to choose. In this sense, companies must concentrate on strategically leveraging their supply chains in order to stay competitive and stay afloat in the industry. This explains why supply chain management has grown in prominence as an area of study and research over the last three decades.

2 GREEN SUPPLY CHAIN MANAGEMENT EVOLUTION

What is green supply chain management?

The increase in green supply Chain Management as a strategy may be attributable to increasing public awareness and concern of individuals, governments and organizations about pollution, carbon emissions and deteriorating environmental conditions. In addition, the United Nations has led businesses and countries to innovate around their networks of supply chain, which are a vital factor in the manufacture of products and services, by placing increasing emphasis on sustainable development. One of the United Nations Sustainable Development Goals is to 'ensure sustainable consumption and patterns of production.' The control of solid wastes and toxic chemicals is also becoming more important. A lot of literature is available about how to describe the management of the environmental supply chain. GSCM is described as "integrating environmental thinking into supply chain management, including product design, material procurement and selection, manufacturing processes,

distribution of the final product to customers, and end-of-life management of the product after its useful life," according to one of the most detailed and widely cited definitions. [3]

Green supply chain management's reach

The concept of greening the supply chain (SCEM) is generally understood to be a screening supply chain, which enables only people who comply with the obligation of the producer to enter into business agreements. In addition, in line with general environmental management plans for reduction, reuse, refurbishment, recycling, remanufacture and reverse logistics, GSCM includes both reactive and constructing practices undertaken by separate 'Rs' [4] [5]. As per the guarantee The environmental management of the supply chain combines the management approach and corporate execution. The incorporation of content and knowledge across the supply chain is defined as meeting customer demand for green goods and services delivered by green processes. The management of green supply chain is believed to be an ecological breakthrough. The main focus of Green Supply Chain Management is integrating sustainability thought into supply chain management [6]. Green supply can be described as "the way in which environmental considerations in supply chain management and industrial purchasing are taken into account." Green supply can be thought of as a synthesis of three main elements: (i) a greater understanding of purchasing's strategic significance (ii) a focus on cooperative buyer-seller relationships (iii) acknowledging the relationship between buying and environmental performance decisions [7]. Preuss [8] emphasized supply chain management's boundary-spanning function, arguing it has an opportunity to bring about change within a company by implementing and incorporating environmental policies both upstream and downstream. The paper also suggested that by instilling environmental consciousness in supply chain decisions, businesses would trigger a "green multiplier effect," resulting in a massive increase in positive environmental effects. Such a picture of being environmentally conscious will lead to more company and new customers.

Factors behind management of the green supply chain

There are a variety of other factors driving corporations' growing tendency toward greener supply chains, in addition to environmental concerns. Increasing consumer expectations for quality, these are just a few of the reasons that fiercely competitive global markets and the financial benefits of greening the supply chain. Most researchers accept that businesses should encourage and ensure that GSCM practices are enforced in the supply Chain as they become more aware of customer demands on 'greener' goods (that is, products manufactured through production procedures which have little to no negative environmental impacts). Kushwaha [9] goes into great detail about the main factors for green initiatives. The key drivers are government regulation, better consumer and public relations, decreased fuel bills and improved financial returns through numerous supply chain programs, including reverse logistics.

3. MAJOR CONCEPTS ARISING FROM THE GREEN SUPPLY CHAIN MANAGEMENT LITERATURE

Green Purchasing, Green Design, Life Cycle Analysis, Reverse Logistics, Green Manufacturing, Green Packaging, and Waste Management are the main concepts from the GSCM literature that have been extensively discussed in a variety of research papers [3] [9].

Green Purchasing

The International Green Purchasing network (IGPN) is an international association to promote green procurement and to develop environmentally friendly product and service technologies. Green Purchasing, according to the IGPN, is a method through which "environmentally preferable products and services are selectively chosen." Green buying is seen as an effective way to promote the purchasing of goods and services which do not adversely affect the environment. It also aids in increasing market awareness of environmental issues. As compared to competing goods that serve the same function, the National Association of State Procurement Officials (NASPO) in Illinois describes Environmentally Preferable Purchasing (EPP) or Green Purchasing as a "process of purchasing a commodity that has a lesser or reduced negative impact or enhanced positive effect on human health and the environment." The implementation of management information systems and processes to evaluate providers taking account of their environmental impact is one of the most important aspects of Green procurement. [9]

Green Design

Green design, in its most basic form, is the method of creating goods and services that are environmentally friendly. Many companies are increasingly realizing that a positive environmental image is critical to their long-term success, and they are considering incorporating major environmental changes into product or service production. In the literature, green design is also known as Eco-design, design for the climate, and life-cycle design. One of the most common approaches to green design, according to Srivastava [3], is to substitute goods or processes that are harmful to the environment with

less harmful alternatives. He does warn, however, that such decisions can often result in the loss of limited resources or other environmental issues. "Environmentally Conscious Manufacturing and Product Recovery (ECMPRO)" is a term that can be used to describe green design. ECMPRO entails "incorporating environmental considerations into new product production, including design, material selection, manufacturing processes, and product distribution to consumers, as well as product end-of-life management after its useful life." [9] The essence of green design is to create recoverable, reusable products.

Life cycle analysis

The principle of life cycle analysis (LCA) is a subset of green design. All of the information gleaned from LCA is applied to the creation of environmentally friendly goods. LCA is a method for "assessing and evaluating the environmental, occupational health, and resource implications of a commodity during its entire life cycle, including raw material extraction and processing, manufacture, transportation and delivery, usage, remanufacturing, recycling, and final disposal." LCA findings can be used to create environmental laws and legislation, as well as product production, to ensure that environmental impact is minimal to non-existent. [9]

Reverse Logistics

When the main emphasis of conventional logistics is on the outward movement of raw materials, the reverse logistics center. It entails returning products from their point of use to their point of manufacture for reprocessing, re-filling, maintenance, recycling, or waste disposal [12]. When it comes to managing inventory returns in a cost-effective and reliable way, reverse logistics comes into play. Not only does this boost the company's sales, but also increase its customer support and retain its customers. The producer will take part in appropriate reverse logistics activities such as reproduction, rehabilitation, reconfiguration and recycling depending on the product life cycle phase to which the product has been returned. [13] The report is not available. The mechanism for preparation, implementation, and control of the successful inbound flow, inspection, and disposal of returned goods, together with the related information to recover value is defined as Reverse Logistics [13] by Srivastava. In addition, an integrated modeling system was proposed for an efficient reverse logistics network design (RLND). They claim that the patterns of product returns are important in quantity, accuracy and arrival time.

4. GREEN SUPPLY CHAIN MANAGEMENT PRACTICES AND ITS BENEFITS

Despite having become an important field of research over the last decade, the publication about the advantages of green supply chain management practices is still in its initial stages and is constantly developing. Many studies have examined the economic and ecological effects of GSCM in the various companies.

The practice of managing the supply chain leads to environmental and economic benefits.

Zhu and Sarkis[14] examined the relationship between GSCM activities and the financial and environmental effects of Chinese manufacturers. According to the results, GSCM activities and the positive economic and environmental results are clearly and positively linked. It was concluded that GSCM activities would provide China's manufacturing companies with significant "win-win" opportunities. Rao and BNHolt [15] conducted first empirical investigations in the South East Asian community examining the link between GSCM and improved efficiency and economic performance. The greening of various stages of the supply chain results in an integrated supply chain that, according to the study, leads to increased productivity and economic performance. Green and others [16] have collected data from 159 production managers to show the extent of collaboration with suppliers and customers to improve the environmentally-friendly sustainability of the supply chain to assess the impact of the Green Supply Chain management practices on business performance. The study found that the implementation of manufacturing companies' GSCM practices increases environmental and economic productivity, which has a positive impact on operating performance. As a result of improved operating success, organizational productivity increased.

The practice of green supply chains will lead to technological development

In improving the environmental impact of the manufacturing activities, Geffen and Rothenberg [17] examined the value of partnerships between original manufacturers of equipment (OEMs) and their supply chains in setting up strategic relationships with suppliers to optimize the supply chain and introduce GSCM practices. According to the study carried out among American auto assembly plants, strong partnerships with suppliers with support from the appropriate incentive programs led to efficient implementation of advancing environmental technology.

Financial benefits from green design

Diabat and Govindan [28] examined a range of factors affecting the establishment of green supply chains and found the important factor encourages product designers and suppliers to collaborate in order to reduce or eliminate the adverse environmental effects of government regulations and reverse logistics. Green design, which has a positive impact on the environmental performance of green supply companies without sacrificing costs, profitability or other features, has been found to have a positive impact, according to the study.

5. CONCLUSION

Green Supply Chain Management is an early-stage development concept. The literary review of GSCM and its benefits leads to a deeper understanding of the meaning and a study of the difficulties of the field indicates that a long way remains to be taken before the implementation of GSCM. GSCM activities are recognized and adopted as an essential player only as today's organisations are more aware of their environmental effects and the financial benefit of switching to "greener" supply chains.

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