GREEN LOGISTICS – A TOOL FOR ECO-FRIENDLY AND SUSTAINABLE SUPPLY CHAIN MANAGEMENT FOR INDIAN COMPANIES

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Abstract

The Liberalization, Privatization & Globalization of India in early 90s provided a number of opportunities for foreign companies to venture onto Indian soil. It provides a right platform for the companies to tap into the potential with the markets. As a result, there was an economic growth which created a huge demand for various goods and services resulting in the increase in the production and thereby the logistics activities like Inventory, Material Handling, Packaging, Storage and Transportation and impacted the goods and services consumed by customers. However, this also led to environmental problems like Global Warming resulting in large scale emissions which prompted the Government, Corporates, and Social Groups to take proactive actions to counter this threat.

Green Logistics is the right platform for solving the problems of Manufactures and Corporates and reducing the emission levels. Green Logistics can also help the Logistics Manager to focus on overall efficiency of Supply Chain Management.

Keeping in the mind the research objectives of this study, this paper uses exploratory and a descriptive research design. A Survey Method is used by personal interaction. The Personal Interaction is limited to administration of questionnaires to collect data. The statistical tools like z-test were used for statistical analysis.

Keywords: Commercial Products, Green Logistics, Sustainable Products

1.0 Introduction

Green Logistics helps in delivering raw materials, Parts, Sub Assembly, Assembly and Original Equipment Manufacturers, where the major objective is to lower costs but also to bench mark quality and reduce the environmental impact.

Green Logistics involves processes from point of origin to point of consumption and hence plays a vital role in Supply Chain Management. It also ensures a reduced impact on the ecosystem. Hence the primary goal of Green Logistics is to positively impact the sustainability of the systems- both environmental and economic. As a result, most of the companies are adopting Green Logistics as part of their Supply and Logistics operations.

Logistics involves both Inbound and Outbound Logistics, which includes the arrival of raw materials into the manufacturing unit and to the movement of finished goods out from manufacturing unit to the consumers using appropriate distribution channels whereby it integrates with Supply Chain Management.

Green Logistics assesses the impact on the environment. It is not only about dealing with Distribution Channels, Transportation, Warehousing, Packaging and Inventory Management, but also focusing on recycling, disposal of waste, conservation of energy and fuel consumption.

In the 21st century, Green Logistics has gained considerable popularity within the various sectors, and these sectors are putting lots of efforts toward conserving an environment. Right now only small portion of corporates are hiring suppliers who are also aware of environmental issues. By 2020, 56% of Multi-National Companies will hire professionals who focus on Green Logistics. This will be supported by eco-friendly rules and regulations globally across the sectors. Hence, Green Logistics will focus on integrating all the activities within the supply chain for the beneficiaries like Government, Customers and Consumers, Employees, Society, Companies and Channel Members. Additionally, issues like Global Warming, Climate Change, Dumping hazardous wastes, pollution, packaging waste, noise, soil degradation will also be addressed. Consequently, the Government has to come up with various policies, rules and regulations and make efforts to implement them so that the impact on environment could be reduced to a larger extent.

Ideally, the Customers and Consumers should be aware of the product or services which they are consuming and they should consume only eco-friendly products that involve green logistics process.

The employees should have a conscious effort on preserving the natural climate and should work in environment in such a way that they should provide something in return to the society or community at large.

The Society or the public should guide the companies to change their policies so that the companies should work together and they should be environment friendly.

The companies should motivate their employees to adapt to new policies and practices whereby Green Logistics can be implemented successfully leading to Sustainability Development.

2.0 Advantages of Green Logistics

Major advantages of Green Logistics are reducing overall cost efficiency in supply chain management, reducing the environment risks, strategic sourcing and improving reputation and market share.

An economic benefit of Green Logistics is the reduction of waste from suppliers, thereby reducing the costs in waste disposal. From the company's point of view, thanks to Green Logistics, it decreases the consumption of energy, water and fuel. Hence companies can save lots of money.

When companies implement Green Logistics, there is a scope of usage of new technologies in waste reduction, Hence both the suppliers and buyers could work together toward contributing to a healthy environment.

Green Logistics enhances the reputation of the company and it also improves public image as consumers use products which is eco-friendly. Due to implementation of Green Logistics in the company, new technologies will be adopted by using various policies, rules and regulations wherein all the internal and external stakeholders like investors, employees and customers are satisfied resulting in a positive impact on the environment and sustainable development.

3.0 Disadvantages of Green Logistics

Issues or challenges might arise if Green Logistics has not been implemented by company effectively.

When companies want to go green and do so by changing the policies and the technology rapidly, the initial costs will be expensive.

The Green Logistics works on one platform i.e. the products should be delivered on time in perfect conditions. In reality it does not work like that. For example; In terms of Modes of Transportation- if we opt for ships or railways which might be less polluting and damaging to the environment, it is less reliable in terms of on-time delivery and safety. But when we consider trucks and planes, these can be more reliable mode of transportation but is less eco-friendly.

4. 0 Concept of Green Logistics in India

Due to recent Emission Standards set for the companies worldwide, it is observed that in developing companies, the CO2 emissions from transport Sector is around 4.5% in India as per CAGR, when compared to 1.16% in OECD countries and 1.04% in North America.

Hence it is evident that in Developing Countries like India the emission percentage is very high when compared to Global emissions standards. The current issues like global warming, environmental issues and pollution have not been created from transport sector only.

In India Green Logistics is not only confined to transportation. It is also a sub sector of logistics, which also includes Material Handling, Packaging, Warehousing, and finally Transportation to the Distributors.

In India, to implement Green Logistics successfully, we need to address three levels- i.e. Public Policy, Business and Individuals.

The companies have shifted from fossil fuel to bio-fuel based alternatives like CNG Hybrid. Due to increase in e-commerce in India, there is a substantial rise in packaging waste. However, since e-retailers don't provide paper receipts, it impacts waste management positively and improves their green image. Thanks to our Honorable Prime Minister Sh. Narendra Modiji, who initiated the Swach Bharat Abhiyan, this had led to positive impact on waste managements and the image of the country alike. Additionally, most of the companies have integrated these programs into their CSR activities.

Due to the advent of Green Logistics most of the corporates are focusing on their supply chain, wherein the objective is to reduce costs and ensuring the product to be dispatched on-time. The companies have adopted new technologies like data analytics, whereby they can easily assess the environmental and social impacts pertaining to materials and products. Hence Green Logistics is an ideal platform to provide Sustainable Development, preserving the natural environments like forests, mines, agricultural lands and farms. Many Food and Beverages companies have also established association with growers for sustainable business Practices. Examples: Coca- Cola, General Mills.

5.0 Challenges ahead for Manufacturing Units in India

Only 38% of India's top companies have disclosed the data on GHG emissions, while 83% of the companies have started initiating on setting up the targets in relation to global emission standards.

Most of the manufacturing companies do not have GHG monitoring mechanism in their premises and the midsized companies are yet to take the initiative. However, few companies from IT and Banking sectors have provided report on their indirect emissions.

Few measures have been adopted for preventing wastage of electricity and trees have been planted to reduce the carbon dioxide accumulation within the environment. Few of the banks have started providing funds to firms for investing in renewable energy.

Figure: 1

Figure 1 clearly indicates that 23% of the companies set targets to suppliers to reduce the carbon footprint. Only 24% of the companies conducted environmental audit on new suppliers.

Green Logistics: a way forward

Green Logistics provides more opportunities for companies to reduce GHG emissions. It also helps the companies to analyze and monitor their Transportation and Key Logistics Activities.

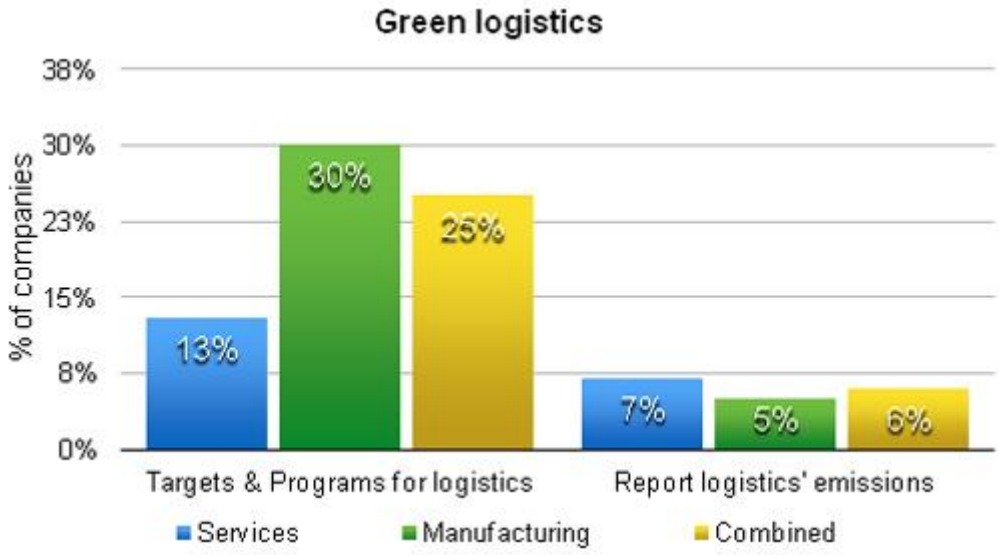

Figure: 2

Figure 2 clearly indicates that 25% of companies have executed Logistics in their program successfully and only 6% of the companies have revealed information related to emissions from logistics.

Figure: 3

Figure 3 clearly indicates that 70% of the companies are manufacturing the products that are environmentally sustainable

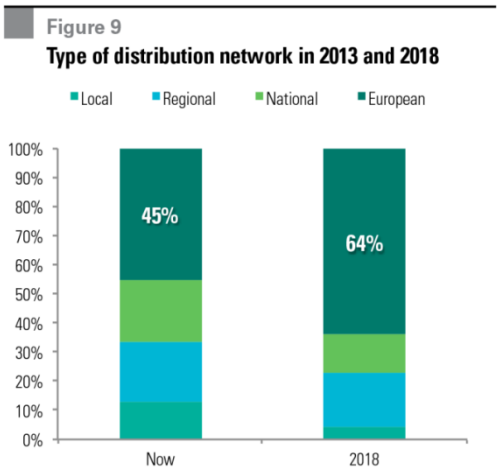

Figure: 4

Figure 4 clearly indicates that in 2018, 64% of manufacturing companies in Europe have implemented Green Logistics in their distribution network.

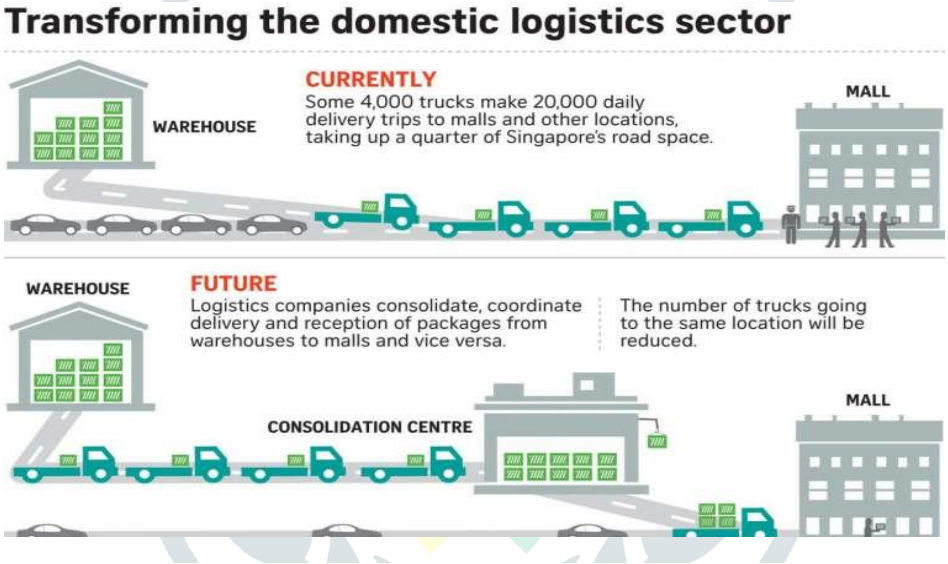

Figure: 5

Figure 5 clearly indicates that the future of distribution network from Warehouse to Mall will reduce the frequency of traffic through advanced Transportation Management System.

6.0 Objectives of the Study

1. To identify the significance of Green Logistics
2. To assess the advantages of Green Logistics
3. To identify the disadvantages of Green Logistics
4. To analyze the perception of the consumers towards sustainable products and Commercial Products towards Green Logistics.

7.0 Methodology of the Study

Research Design: Exploratory and Descriptive Research Design.

Data Sources

Primary data has been used by administering questionnaire to the customers.

Secondary data has been used through appropriate websites, Magazines, E-Journals, Newspaper articles.

Procedure: The questionnaire was administered to 100 customers who are actively involved while purchasing of Products/Services in and around Mysuru, Karnataka region during March, 2019 and their responses/ information was collected back.

Questionnaire: Self structured questionnaire was prepared with the help of the experts to analyze the perception of the consumers towards sustainable products and Commercial Products and towards Green Logistics.

The questionnaire consisted of 15 questions of which 5 questions each is used for 3 parameters as described below:

Parameters: Commercial Products, Green Logistics, Sustainable Products

Definition of Terms:

Commercial Products:

Sustainable Products:

Statistical Tool: To fulfill the objectives of the study z-test was used.

8.0 Limitations

The study had to be completed in a short span. The study is restricted to Green Logistics as a Modern Tool for companies to showcase their products or services.

Analysis:

To fulfill the objective of the study following statistical hypothesis was constructed and tested subsequently.

Statistical Hypothesis:

H_O: P = 0.5 The proportion of customers who prefers equally for Commercial Products and Sustainable Products.

H_1: P ≠ 0.5 The proportion of customers does not prefers equally for Commercial Products and Sustainable Products.

Where P = Proportion of customers, who prefers Sustainable Products.

To test above hypothesis, z-test was used and

$$z = \frac{p - P}{\sqrt{\frac{PQ}{N}}}$$

Where $p = \frac{X}{N} = \frac{63}{100} = 0.63$

X = Number of customers who preferred Sustainable Products

N = Total number of Respondents

Therefore, **z = 2.6**

Since calculated z-value was greater than 1.96, the test was significant at 5% levels i.e. Sustainable Products has a significant impact on consumers than Commercial Products while purchasing the product/services offered by companies implementing Green Logistics (at 5% levels).

9.0 Conclusions

Environmental issues have taken center stage this past decade. As part of the mitigation strategies, emission standards were set for the companies worldwide.

However when compared to Developed countries, the companies in the Developing Countries are far behind in terms of going green and adopting sustainable development strategies to control emissions. As per the CAGR Report, the CO2 emissions from transport sector is around 4.5% in India when compared to 1.16% OECD countries and 1.04% in North America. Hence it is evident that in India emissions levels are very high when compared to Global Emission Standards. Hence government and the corporates should collaborate together for reducing the emission levels by implementing Green Logistics through formulating Polices, Rules & Regulations, wherein current issues like Global Warming, Environmental Issues and Pollution Levels are acknowledged and can thus be reduced to the larger extent through the use of appropriate sustainable practices.

The government should initiate programs pertaining to the various environmental issues and involve communities or society who could then educate and create awareness amongst both Internal and External Stakeholders, so that a feasible and sustainable eco system can be maintained.

The government should encourage the midsized companies in Go Green initiative by providing them appropriate facilities and funds support from banks for investing in renewable energy as most of the manufacturing companies don't have GHG Monitoring Mechanism in their plant.

Hence it is evident that Indian companies have to implement Green Logistics in their Supply Chain since Green Logistics enhances the reputation of the company and it also improves public image in the minds of the consumers since they are purchasing sustainable products that are eco-friendly. 21st Century consumers are very much aware of the company's products and services, and they would like to be associated and support companies that care for the environment. Hence successful implementation of Green Logistics within the companies will help both internal and external stakeholders.

The Indian companies should choose right suppliers who are environment friendly. Ideally, the companies should also train their existing suppliers so that they are responsible for the wellbeing of the environment. The major impetus should focus on significant improvements to be achieved within the shortest time. The companies would have to engage and motivate their suppliers to adapt Go Green Initiatives. To achieve this, the companies can also collaborate with their suppliers in order to frame policies, rules & regulations. Additionally they should encourage both internal as well as external stakeholder participation as well to develop innovations to curb environmental challenges.

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