

CHAPTER I

INTRODUCTION

1.1 INTRODUCTION

The transportation industry, considered as the lifeblood of global commerce, has long been responsible with economic growth and societal progress. However, this comes at a cost as increasing carbon emission accounts towards the deterioration of the environment. As the world stands in cross roads with progress and conservation, adopting policies that curb this fatal Issue is imminent. In the thick of this pursuit towards sustainability the concept of green logistic arises. Green logistics initiatives comprise a wide variety of strategies and measures to reduce carbon emissions. Some of this include, optimising for operations, embracing alternative fuels to implementing this optimization algorithm and exploring model shifts. Today the logistics industry has adopted a wide variety of solutions to mitigate their carbon emission. However, despite the strides Towards sustainability, the landscape of green logistics remains complex and multifaceted. Companies encounter loads of challenges ranging from technological constraints and financial barriers to regulatory and stakeholder pressures. With the efficiency of various sustainability strategies in question there is a need for empirical evidence and comparative analysis for discerning best practices and to create a meaningful impact.

In light of these challenges and opportunities, this comparative study seeks to undertake a comprehensive exploration of carbon emission reduction strategies within the transportation industry. By systematically analyzing and evaluating the effectiveness of various approaches, this study aims to shed light on the details of green logistics initiatives and identify pathways towards enhanced sustainability. Through a rigorous examination of existing research, industry reports, and case studies, this study endeavors to provide actionable insights and recommendations for transportation companies, policymakers, and other stakeholders striving to promote environmental sustainability in the transportation sector.

1.2 THEORETICAL FRAMEWORK

Green logistics is the new challenge facing logistics companies. This article will help give you a better understanding of this development. Definition, objectives, challenges, and implementation, we provide you with all the keys to developing green logistics in your company.

Green logistics: definition

As a company, you are certainly looking to reduce your environmental impact. Integrating an environmental approach with your logistics aims to strike a happy medium between energy and economic factors. This is of equal concern to storage, manufacturing, transport. There are numerous factors:

- Use green and renewable energies;
- Fill vehicles to the greatest extent possible to reduce the number of vehicles and mileage while optimizing journeys and the empty journey problem;
- Choosing environmentally friendly and recyclable raw materials and materials;
- Having an optimized distribution network;
- Put in place cross-docking for managing supplies;
- Use environmentally responsible transport resources;
- Recycle returned and end of life goods.

But that is not all, upgrading warehouses, which consume a lot of energy and produce a lot of waste, is part of sustainable development. This entails:

- Improving insulation to reduce energy consumption both in summer and in winter;
- Installing solar panels or wind turbines to provide green energy;
- Building using sustainable materials;
- Recovering rainwater both for toilets and green spaces;
- LED lighting and motion detectors.

By fully applying this green logistics logic you will reduce both your impact and operational costs.

Green logistics: objectives & challenges

What does the introduction and deployment of green logistics do for your company? How do you face the challenges? Let's look at this together.

Objectives

Introducing green logistics makes your Supply Chain more environmentally friendly. What that means is that everything you do (packaging, products, transport...) has a low environmental impact. This also entails improving the logistics chain to reduce soil, air, and water pollution. Route optimization is a major challenge and enables you to minimize costs with an efficient route plan in terms of vehicles used, mileage, number of customer deliveries, but also in terms of each driver's working hours. Introducing environmentally friendly measures enables you to measure your logistics operations' carbon footprint. To calculate it, refer to international standard UNE-EN 16258:2013.

The challenges

Embarking on green logistics requires you to confront numerous challenges, and it may be complicated to deploy certain measures:

- Consumers who do not understand the logic behind logistics: being very demanding, customers have certain delivery expectations (24 hr delivery). From a logistics perspective, adopting green logistics is complicated in terms of truck loading and the large transport flows this causes. Satisfying the customer in this respect is one of the priorities and provides real added value in this market where dissatisfaction is a major factor. Your entire business activity is made more sustainable by optimizing route tracking.
- A lack of resources: introducing environmentally friendly logistics entails certain costs, be they internalized or not.
- An ongoing shortage of infrastructure: there are still few new industrial buildings that comply with environmental regulations.
- Transport-related fossil fuels: motor fuel is the predominant freight transport energy source. Even if solutions exist (electric vehicles) they are not viable because of the high mileage involved.

- The consequences of the urban “last mile”: as explained in the opening point, the consumer demand for express deliveries is constantly increasing congestion in major built-up areas. This means that there are many more half-full trucks on the roads, thereby creating more pollution.

Green Logistics: Management

A company can adopt green logistics management practices. These include the following:

- **Cargo Consolidation:** Combining shipments from multiple sources and consolidating them as per destinations helps reduce the number of trips and decrease carbon emissions.
- **Use of cross docking facilities:** Through the use of cross-docking facilities, cargo is sorted and consolidated depending on their destinations. This enables route optimisation and ensures a reduction in carbon footprint.
- **Optimised distribution network:** Optimised distribution network enables maximising efficiency, minimising costs, and improving service levels along with reducing carbon emissions.
- **Managing reverse logistics:** Reverse logistics is not only an added cost but also requires double the amount of effort and additional journeys. Hence, it is best to ship cargo of the right quality and quantity to avoid returns and thereby journeys.
- **Collaborating with suppliers:** B2B companies can collaborate with their suppliers and encourage them to deliver goods in an eco-friendly manner. This may include delivery through e-vehicle, using sustainable packaging, etc.
- **Right logistics partner:** While choosing the logistics partner for your business, you can go through the guidelines of various logistics companies and consider their emphasis on sustainability. You can choose a partner that emphasizes a partner that follows green logistics practices rigorously. A list of some of the logistics companies following sustainability norms is given below in the article.

Advantages of Green Supply Chain Management

Moving towards adopting a green supply chain would be suitable for your business as it

- Minimize pollution: to minimize energy and pollution and hazardous products must not be disposed of in an open area.
- Reduced waste: by the adoption of lean policies and improved process management, managers can eliminate waste.
- Lower transportation cost: to reduce Greenhouse gas emissions, Singaporean companies will cut down shipments that will use fewer fuels and will minimize the tear and wear of trucks.
- Tax benefits and rebates: implementing solar panels and water heaters qualify for purchase price rewards and tax credits. This assistance would be provided by local municipalities, state governments, electric companies, and water districts.
- Decreased environmental impact: using long-lasting products, recycling paper, less electricity, reducing trash, and less water will benefit the environment and the business.
- Improved public image: generating positive Public Relations by promoting the environmental contribution of your organization through press releases. Including the green initiatives on ads and product packaging. It will earn you the customer attention who prefer green products.
- Reduced utility cost: using energy-efficient technology such as CFL/ LED bulbs, low-flow toilets and water conservation will result in cost savings.

Disadvantages of Green Supply Chain Management

Going green helps in protecting the natural system of the earth but for business, it means bearing extra prices

- Expensive: purchasing wind power electricity or switching to solar power can be costly for your corporation and may incur a premium price.
- Data risk: going completely paperless will directly risk your data Record Keeping. The system crash, theft of computers, viruses, and hacking of sensitive information can prove disastrous.
- Increased product prices: using green materials in your facility or production process can lead to a higher cost that is passed to the customers or have to be borne by the company's expense.

- Customer backlash: if consumers get aware of a company getting involved in greenwashing then it may harm its credibility. Greenwashing is the process by which the company can make a false claim of their product being environmentally friendly

How can efficient green logistics be implemented?

Green logistics affects a company's entire supply chain. This applies both in and outside the warehouse.

- **Green logistics inside the warehouse**

Green logistics involves optimising the storage space of warehouses. This allows the company to reduce the number of handling machinery movements and avoid unnecessary operations, which in turn reduces the pollution generated. It also facilitates the work of operators and increases the storage capacity of the warehouse.

Optimizing storage space also reduces the area that must be maintained at a certain temperature, for companies that store at a controlled temperature, and reduces air conditioning pollution and operating costs. Discover our AR Mobile storage solution, which optimises your warehouse storage space thanks to sliding racking mounted on rails, very useful in temperature-controlled areas.

To find out more about how to achieve a more sustainable warehouse, please read our article on the subject.

- **Green logistics outside the warehouse**

Green logistics is also implemented outside the warehouse, with the creation of a CSR (Corporate Social Responsibility) policy.

This indicates that the company applies certain social and environmental requirements and may involve choosing suppliers that agree to comply with an environmental charter prepared by the company. This charter may require that raw materials are of organic origin, that the packaging is made with biodegradable materials or that the supplier has certain environmental labels or certifications, such as the European Ecolabel or the ISO 14000 standard.