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Strategic for Reducing Carbon Emission and Promoting Eco - friendly Transportation in Logistics Industry

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Abstract: ***The logistics sector is important in reducing carbon emissions and promoting environmentally friendly transportation. This study examines the implementation of strategic plans aimed at limiting carbon emissions and promoting eco - culture at OM Logistics Ltd., a large logistics company. The study examines many issues such as the company's current carbon footprint, current transportation practices, legal frameworks, information on technological developments and cooperation with stakeholders. This study used a combination of quantitative and qualitative methods to identify strategies appropriate to OM Logistics Ltd unique situation. These strategies include the use of alternative fuels, improved planning, use of environmentally friendly technologies, advanced shipbuilding and environmental friendliness. Additionally, the study demonstrates the importance of management commitment, employee training and organizational culture for the success of sustainability projects. The results of the study show that OM Logistics Ltd. and other business operations staff will provide analysis and recommendations to help them balance profit and competitiveness with environmental sustainability in their work.***

1. Introduction

International trade is essential to the movement of goods and is the basis of modern trade and commerce. However, their activities have an impact on the environment, mainly due to carbon emissions from transportation. As concerns about climate change and environmental sustainability increase, logistics companies need to immediately implement plans to reduce their carbon footprint for the environment and support the transportation system. This study aims to evaluate the measures taken by OM Logistics Ltd., an important player in the logistics industry, regarding the transportation environment in order to reduce carbon emissions and promote sustainable development. OM Logistics Ltd operates in a dynamic and competitive environment. It must balance its environmental responsibility with meeting customers' needs for fast delivery services. It is important to solve the carbon emission problem in the logistics sector as soon as possible. The International Conference on Climate Change estimates that transportation accounts for approximately 25% of global carbon emissions, with transportation playing a significant role. Logistics companies are also under pressure to change the way they operate as governments step up efforts to combat climate change and introduce stricter regulations around the world. Ohm Logistics Co., Ltd. Understand the importance of managing operational profitability and efficiency while integrating business operations with sustainability goals. The purpose of this study is to find and evaluate the solutions offered by OM Logistics Ltd. It can be used to reduce carbon footprint and support transportation in the environment. By doing this, OM Logistics Ltd. It can improve its reputation, increase competition and have a positive impact on environmental protection. Evaluation of the strategic plan will address many issues such as technological development, operational development and integration. The use of advanced technologies such as electric vehicles, alternative fuels and improved efficiency can reduce emissions and increase efficiency. Sustainability performance can also be improved through strategic initiatives such as change, integration and optimization.

Objective of the Study

- The primary objective of the study is to comprehensively assess the current carbon emission levels associated with the logistics operations at OM Logistics Ltd.
- To evaluate existing and emerging eco - friendly transportation technologies and strategies suitable for implementation.
- To evaluate the economic and environmental impacts of implemented carbon reduction measures.
- To conduct a comprehensive cost - benefit analysis of implementing the identified carbon reduction strategies.

Scope of Study

- The scope of the study will primarily revolve around the logistics industry, encompassing various sectors such as transportation, warehousing, and distribution.
- This Research will delve into analyzing and evaluating existing and potential strategies aimed at reducing carbon emissions within the logistics sector.
- The scope will encompass an investigation into innovative technologies applicable to logistics operations, including route optimization software, IoT - enabled tracking systems, and autonomous vehicles, which can contribute to emission reduction and eco - friendly practices.

2. Literature Review

1) **(Behrends et al., 2022) Eco - Friendly Transportation Technologies:** Advancements in technology offer promising solutions for reducing carbon emissions in logistics operations. Electric vehicles (EVs), hydrogen

fuel cells, and biofuels are emerging as viable alternatives to traditional diesel - powered vehicles (UNCTAD, 2021). Research has shown that adopting these technologies can significantly decrease emissions while also offering economic benefits.

2) **(Zhao et al., 2020), (Fernandez et al., 2021) Sustainable Supply Chain Management Practices:** Effective supply chain management practices are essential for promoting sustainability in logistics operations. Collaborative initiatives such as green procurement, consolidation of shipments, and route optimization can lead to reduced carbon emissions and improved efficiency. Integrating sustainability criteria into supplier selection processes has been identified as a key strategy for fostering environmental responsibility throughout the supply chain.
3) **(Kara et al., 2019), (Walker et al., 2020) Green Packaging Solutions**: Packaging plays a significant role in the environmental footprint of logistics operations, contributing to carbon emissions through material production, transportation, and disposal. Adopting eco - friendly packaging solutions, such as recyclable, biodegradable, or reusable materials, can help reduce emissions and minimize waste generation. Furthermore, lightweighting packaging designs and optimizing packaging dimensions can decrease transportation - related emissions while still ensuring product protection and safety.
4) **(Wang et al., 2021), (Pandit et al., 2020) Technological Innovations in Transportation:** Technological advancements have the potential to revolutionize transportation in the logistics industry, offering more sustainable alternatives to traditional modes of transport. For instance, autonomous vehicles (AVs) and drones are being explored for last - mile delivery, offering reduced energy consumption and emissions compared to conventional delivery trucks. Furthermore, innovations in vehicle telematics and tracking systems enable real - time monitoring of fuel consumption and driver behaviour, allowing companies to identify inefficiencies and optimize routes for emissions reduction.
5) **(Lloyd et al., 2017), (Hunkeler et al., 2008) Life Cycle Assessment (LCA) and Carbon Footprinting:** Life cycle assessment (LCA) and carbon footprinting methodologies provide valuable insights into the environmental impacts of logistics activities across the entire supply chain. By quantifying emissions associated with transportation, warehousing, packaging, and other operations, companies can identify hotspots and prioritize areas for emissions reduction. LCA can also inform decision - making processes, enabling companies to select environmentally preferable transportation modes, materials, and packaging solutions.
6) **(Wang et al., 2019), (Li et al., 2018) Green Logistics Practices:** Green logistics practices focus on minimizing environmental impact throughout the entire supply chain, from sourcing raw materials to delivering finished products to customers. Strategies such as modal shift, which involves shifting freight from road to rail or sea transport, can significantly reduce carbon emissions, particularly for long - distance shipments. Additionally, the implementation of just - in - time (JIT) and lean logistics principles can reduce inventory levels, transportation distances, and associated emissions while improving overall supply chain efficiency.

3. Problem Statement

Trade is important for international trade because it facilitates the transportation of goods over long distances. But this important work often comes at a high environmental cost because transportation causes carbon emissions that contribute to air pollution and climate change. In recent years, there has been an urgent need to reduce environmental impact and move the logistics industry to better practices. Despite the awareness of sustainable development and some efforts in this regard, the effective reduction of carbon emissions and the promotion of environmentally friendly transportation technologies is still an important issue of business logistics. Due to heavy dependence on fossil fuels, traditional transportation such as ships and trucks causes significant emissions per unit cargo. Inadequate vehicle maintenance, underutilization of capacity and poor road design will have an impact on the environment.

There are also many obstacles to the widespread use of environmentally friendly vehicles such as hydrogen fuel cell vehicles, electric vehicles (EVs) and EVs. Biofuels. These challenges include high startup costs, inadequate infrastructure, limited availability, and unpredictability of technology. In addition, the complex system and the impact of international procurement have brought about more problems that require the cooperation and collaboration of various parties. Moreover, the effectiveness of these strategies depends not only on technological development but also on the management process, financial support, customers' behaviour and social relations. Therefore, there is an urgent need for research to identify the nature of the problem and find solutions that balance environmental, economic and social security.

4. Research Methodology

Research Design: The method of random sampling has been utilised, and the number of clients included in the sample for this investigation is Ninety - two. Additionally, this sample includes both male and female customers. The purpose of the research is to determine how customers feel about Strategic for Reducing Carbon Emission and Promoting Eco - friendly Transportation in Logistics Industry.

- Primary data was collected through a survey.
- Secondary data is collected from journals, online platform, research paper and the company records for the purpose of the study and knowledge.

Data Collection Method: The questionnaire filled by enumerators Google Form POPULATION The number of 92 people we choose to include in our sample will vary depending on a variety of variables, including the population’s size, variability, and research approach.

Sampling Method: Probability sampling: Since every member of the population has a chance of being chosen, probability sampling refers to the methodology we used in our research. Mostly quantitative research uses it. We want to

produce results that cover the entire population, sampling may be the best option.

Data Source and Collection Instrument – Google Questionnaire and survey, Document reviews, online platform.

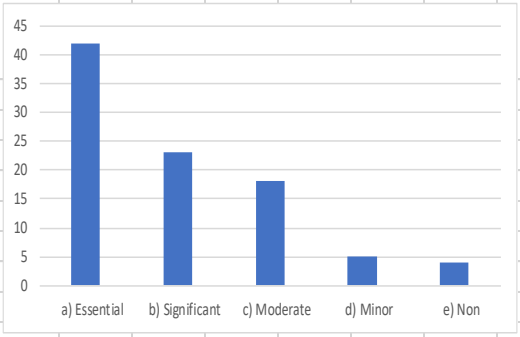
5. The Findings and Discussion

Table 1: Findings Results

Sr	Finding	Accepted or rejected
1.	Does Role and do partnerships and collaborations with other stakeholders (e. g., suppliers, customers, government agencies) play in your sustainability efforts (Essential, Significant, Moderate) can affect in carbon emission reduction!	Accepted
2.	Main challenges faced by logistics companies in adopting eco - friendly transportation methods (Cost of implementation Lack of infrastructure, Regulatory hurdles.)	Accepted
3.	Cost - effectiveness Factors consider while evaluating the feasibility of adopting sustainable transportation method.	Accepted
4.	Does it should believe technology plays in facilitating the transition to sustainable transportation in the logistics sector.	Accepted

1) Does Role and do partnerships and collaborations with other stakeholders (e. g., suppliers, customers, government agencies) play in your sustainability efforts (Essential, Significant, Moderate) can affect in carbon emission reduction!

1. What role do partnerships and collaborations with other stakeholders (e.g., suppliers, customers, government agencies) play in your sustainability efforts?	no. of responders	persentage	
a) Essential	42	45.65217391	210
b) Significant	23	25	92
c) Moderate	18	19.56521739	54
d) Minor	5	5.434782609	10
e) Non	4	4.347826087	4
	92	100	370
accepted if above 70%			
formula is total sum/500*100	74		

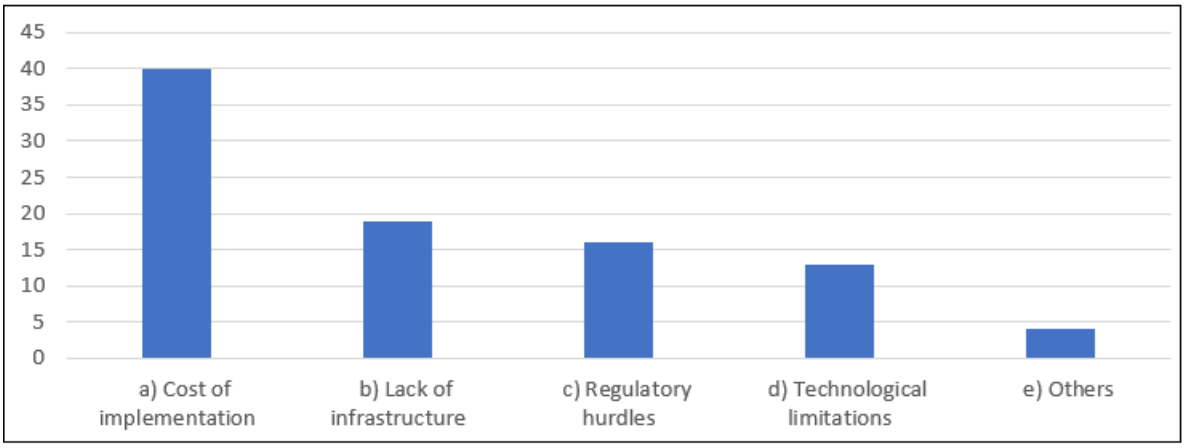


Discussion

As above a given figure, we can conclude the hypotheses are accepted with 74% of approval and proven. By working with suppliers, customers and government agencies, companies can use their collective resources, knowledge and influence to implement sustainable practices. These partnerships encourage the sharing of best practices, innovations and technologies that lead to more efficient and effective solutions to reduce carbon emissions as this discussion says the hypotheses is “Accepted”.

2) Main challenges faced by logistics companies in adopting eco - friendly transportation methods (Cost of implementation Lack of infrastructure, Regulatory hurdles.)

2. What are the main challenges faced by logistics companies in adopting eco-friendly transportation methods?	no. of responders	persentage	
a) Cost of implementation	40	43.47826087	200
b) Lack of infrastructure	19	20.65217391	76
c) Regulatory hurdles	16	17.39130435	48
d) Technological limitations	13	14.13043478	26
e) Others	4	4.347826087	4
	92	100	354
accepted if above 70%			
formula is total sum/500*100	70.8		

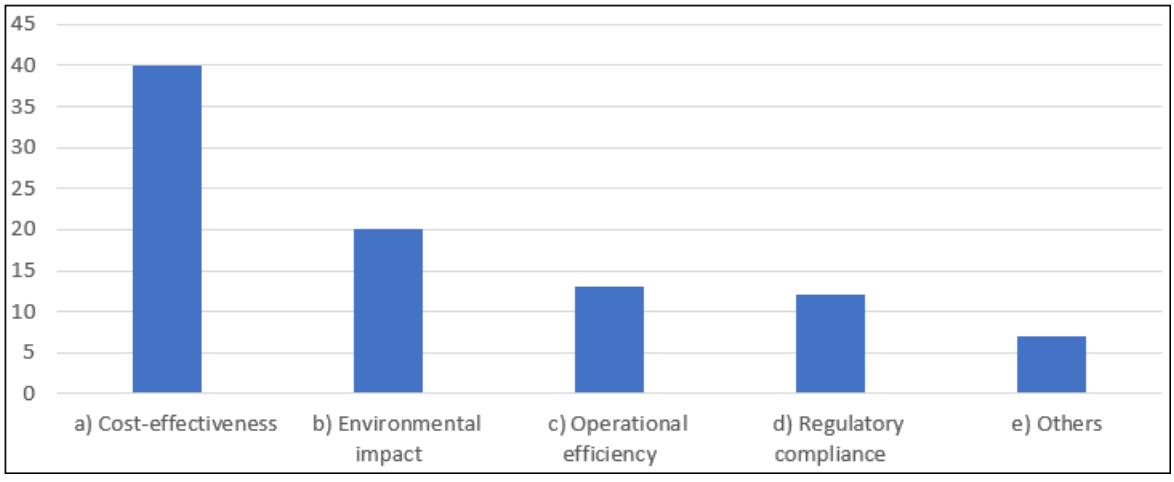


Discussion

In graph says more over focusing on Cost of implementation, Lack of infrastructure, Regulatory hurdles can help to reduce the carbon emission which leads to the focusing more efficient and reduced carbon emission reduction as well as the viewpoint of consumers and other clients of service industries also it can be as can conclude with this data in a rating of 5 to 1 [top to bottom] will lead data and positive and as 70.8 percentage can say more over - focusing on Cost of implementation, Lack of infrastructure, Regulatory hurdles this will provide reduction in carbon emission as this discussion says the hypotheses is "Accepted".

3). Cost - effectiveness Factors consider while evaluating the feasibility of adopting sustainable transportation method.

3. What factors do you consider when evaluating the feasibility of adopting sustainable transportation methods?	no. of responders	persentage	
a) Cost-effectiveness	40	43.47826087	200
b) Environmental impact	20	21.73913043	80
c) Operational efficiency	13	14.13043478	39
d) Regulatory compliance	12	13.04347826	24
e) Others	7	7.608695652	7
	92	100	350
accepted if above 70%			
formula is total sum/500*100	70		

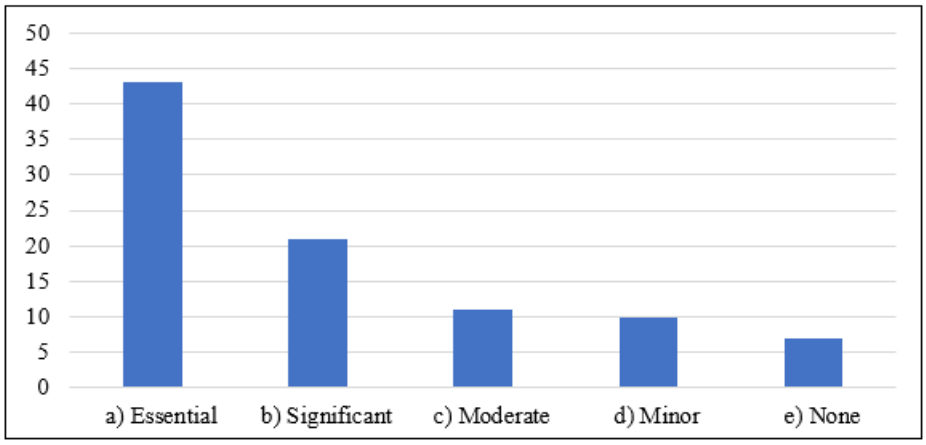


Discussion

In graph says more over focusing on Cost - effectiveness Factors can help to reduce the carbon emission which leads to the focusing more efficient and reduced carbon emission reduction as well as the viewpoint of consumers and other clients of service industries also it can be as can conclude with this data in a rating of 5 to 1 [top to bottom] will lead data and positive and as 70 percentage can say more over - focusing on Cost - effectiveness Factors this will provide reduction in carbon emission as this discussion says the hypotheses is "Accepted".

4). Does it should believe technology plays in facilitating the transition to sustainable transportation in the logistics sector.

4. What role do you believe technology plays in facilitating the transition to sustainable transportation in the logistics sector?	no. of responders	persentage	
a) Essential	43	46.73913043	215
b) Significant	21	22.82608696	84
c) Moderate	11	11.95652174	33
d) Minor	10	10.86956522	20
e) None	7	7.608695652	7
	92	100	359
accepted if above 70%			
formula is total sum/500*100	71.8		



Discussion

In graph says more over focusing on the transition to sustainable transportation can help to reduce the carbon emission which leads to the focusing more efficient and reduced carbon emission reduction as well as the viewpoint of consumers and other clients of service industries also it can be as can conclude with this data in a rating of 5 to 1 [top to bottom] will lead data and positive and as 71.8 percentage can say more over - focusing on Cost - effectiveness Factors this will provide reduction in carbon emission as this discussion says the hypotheses is “Accepted”.

Conclusion

In Conclusion, the implementation of strategies and measures to reduce carbon emissions and promote environmentally friendly transportation in the logistics sector is essential to prevent climate change and promote stable development. It is clear that, through research and good analysis, it is important to use new technologies, develop quality distribution systems and support cooperation between stakeholders. A great idea. Logistics companies can reduce their carbon footprint and contribute to a cleaner environment by using alternative fuels such as electricity, hydrogen or biofuel. Additionally, data analysis and the use of digital technology can improve the planning and operation of vehicles and transportation to reduce emissions and maximize efficiency.

Also, collaboration with suppliers, customers and government agencies can promote good practices throughout the supply chain. This collaboration can facilitate the development of green policies, promotion plans and management processes to promote public transport options.

Overall, although the transition to a sustainable economy can be challenging, the long - term benefits outweigh initial cost savings, investments in environmental protection and public health. The logistics industry can play an important role in creating a safe and convenient environment for the future by taking important steps to reduce carbon emissions and promote environmentally friendly transportation.

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