



PSG COLLEGE OF ARTS & SCIENCE

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An Autonomous College - Affiliated to Bharathiar University

Accredited with 'A++' Grade by NAAC (4th cycle)

College with Potential for Excellence (status awarded by UGC)

Star College Status Awarded by DBT-MST

An ISO 9001: 2015 Certified institution

Coimbatore - 641 014

ORGANIZED BY

Department of Commerce with Business

Process Services Integrated with

Tata Consultancy Services

NATIONAL CONFERENCE PROCEEDINGS ON

**EMPOWERING INDIA'S FUTURE:
PIONEERING SUSTAINABLE BUSINESS,
ADVANCING INNOVATION
AND REVOLUTIONIZING INDUSTRIES**

6th March 2025

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Dr. G. Sathiyamoorthy

Dr. K. Sudhakar

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Dr. K. Mahalakshmi





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S. No.	Title	Pg. No.
173	Sustainable Business Practices and Innovation the Power of Innovation in Sustainable Business Dr. R. Jayasathya, Ms. N. Nithya Sri	986-989
174	The Role of Corporate Social Responsibility in Enhancing Sustainable Development of MSMEs: A Study in India Dr. S. Kavitha	990-994
175	Banking And Finance-Fintech, AI Powered Risk Management Ashika. K, Devasree V.R, Kanishka. S	995-999
176	Social Responsibility and Ethical Leadership Logasiranjeevi. P.M, Jitesh Choudhary, Manickam. A	1000-1004
177	A Study on Innovation in the Food Industry Chandra Prakash. J.S, Sowmiya. K.P, Subha Shree. K	1005-1008
178	Eco-Friendly E-Commerce: Adapting to Consumer Demand for Sustainability Aravindh Dharshan. RV, Boomikaa. G, Sanjai. JA	1009-1014
179	Fintech Adoption of Women Entrepreneurship Latchiyapriyan. A.P, Sasirekha. A, Nishanth. S	1015-1019
180	Ethical Decision Making in Leadership: Challenges and Practices Rithika. P, Sreelakshmi. V	1020-1025
181	Digital Transformation in Agricultural Marketing for Sustainable Growth Ms. V. Abinayamalini	1026-1031
182	The Impact of Augmented Reality and Voice Commerce on E-Commerce User Experience Dr. S. Sangeetha	1033-1043
183	Evaluating The Impact of Sustainable Practices in Logistics and Transportation in Marine Traders in Tamilnadu -an Analytical Study Dr. P. Gurusamy	1044-1053

EVALUATING THE IMPACT OF SUSTAINABLE PRACTICES IN LOGISTICS AND TRANSPORTATION IN MARINE TRADERS IN TAMILNADU -AN ANALYTICAL STUDY

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ABSTRACT

This study evaluates the impact of sustainable practices in logistics and transportation among marine traders in Tamil Nadu. As global concerns about environmental degradation and climate change intensify, the maritime industry faces increasing pressure to adopt sustainable practices. This research employs a questionnaire-based analytical approach to gather data from marine traders operating within Tamil Nadu's coastal regions. The study identifies key sustainable logistics practices, including the use of eco-friendly vessels, waste management strategies, and energy-efficient transportation methods. Through statistical analysis, researcher assesses the level of awareness, adoption, and perceived benefits of these practices among marine traders. The findings reveal a significant correlation between the adoption of sustainable practices and improved operational efficiency, cost savings, and enhanced market competitiveness. Moreover, the research highlights barriers to implementation, such as high initial investment costs and a lack of regulatory support. It also examines the role of government policies and industry collaboration in promoting sustainable logistics initiatives. The insights gained from this study contribute to a deeper understanding of the current landscape of sustainable logistics in Tamil Nadu's maritime sector and provide actionable recommendations for stakeholders. This research not only underscores the importance of sustainable practices for environmental preservation but also emphasizes their potential for enhancing the economic viability of marine trade in the region. Ultimately, this study aims to inform policy decisions and foster a more sustainable future for logistics and transportation in the maritime industry.

Keywords: *sustainable logistics, sustainable practices, industry collaboration and transportation.*

INTRODUCTION

The logistics and transportation sector plays a vital role in the global economy, facilitating the movement of goods across vast distances. However, this sector is also a significant contributor to environmental degradation, with substantial emissions of greenhouse gases and

other pollutants. In recent years, there has been a growing recognition of the need for sustainable practices to mitigate these adverse impacts. Sustainable logistics encompasses a range of strategies aimed at reducing the environmental footprint of transportation while enhancing economic efficiency and social responsibility. In Tamil Nadu, a state with a rich maritime heritage and a bustling trade network, marine traders face unique challenges and opportunities in adopting sustainable practices. The coastal region is home to numerous ports and shipping activities, making it a critical area for implementing environmentally friendly logistics solutions. This study aims to evaluate the impact of sustainable practices in logistics and transportation specifically among marine traders in Tamil Nadu. The research focuses on understanding the current state of sustainability awareness and adoption among marine traders, identifying the barriers they face, and exploring the potential benefits of sustainable practices. By employing a questionnaire-based analytical approach, this study seeks to gather empirical data that can inform stakeholders about effective strategies for promoting sustainability in the maritime sector. Furthermore, this research emphasizes the importance of collaboration among government, industry, and academic institutions to foster a culture of sustainability. By addressing the gaps in knowledge and practice, this study aspires to contribute to the development of a more sustainable logistics framework that not only benefits marine traders but also aids in the broader efforts to combat climate change and protect marine ecosystems.

IMPORTANCE OF EVALUATING THE IMPACT OF SUSTAINABLE PRACTICES IN LOGISTICS AND TRANSPORTATION IN MARINE TRADERS IN TAMIL NADU:

Environmental Protection: The maritime industry is a significant contributor to greenhouse gas emissions and marine pollution. Evaluating sustainable practices helps identify methods to reduce environmental harm, protect marine ecosystems, and promote biodiversity along the Tamil Nadu coast. **Economic Benefits:** Sustainable logistics can lead to cost savings through improved operational efficiency and reduced fuel consumption. By assessing these practices, marine traders can discover economic incentives that enhance profitability while maintaining environmental responsibility.

Regulatory Compliance: With increasing global and national regulations aimed at reducing carbon footprints, evaluating sustainable practices ensures that marine traders in Tamil Nadu comply with legal standards. This proactive approach minimizes the risk of penalties and fosters positive relationships with regulatory bodies.

Market Competitiveness: As consumers become more environmentally conscious, there is a growing demand for sustainable products and services. Marine traders who adopt sustainable logistics practices can differentiate themselves in the market, attracting eco-conscious customers and gaining a competitive edge.

Stakeholder Awareness: Understanding the impact of sustainable practices raises awareness among stakeholders, including government bodies, industry peers, and consumers. This awareness fosters collaboration and encourages the sharing of best practices, leading to a collective effort in promoting sustainability within the maritime sector.

Innovation and Technology Adoption: Evaluating the impact of sustainable practices can drive innovation by highlighting successful technologies and methodologies. This encourages marine traders to invest in modern solutions that improve sustainability and operational efficiency.

Long-Term Sustainability: The evaluation of sustainable practices lays the groundwork for long-term sustainability in logistics and transportation. By identifying effective strategies and challenges, marine traders can develop comprehensive plans to enhance sustainability and resilience against future environmental changes.

Contribution to National Goals: As part of India's commitment to the Paris Agreement and Sustainable Development Goals (SDGs), evaluating sustainable practices in marine logistics aligns with national efforts to combat climate change and promote sustainable economic growth.

In summary, evaluating the impact of sustainable practices in logistics and transportation for marine traders in Tamil Nadu is crucial not only for environmental and economic reasons but also for ensuring compliance, enhancing market competitiveness, and fostering innovation. This evaluation serves as a catalyst for broader sustainable development initiatives within the maritime industry.

OBJECTIVES OF THE STUDY

Assess Awareness Levels: To evaluate the level of awareness regarding sustainable practices in logistics and transportation among marine traders in Tamil Nadu.

Identify Current Practices: To identify and categorize the sustainable logistics practices currently adopted by marine traders, including waste management, energy efficiency, and the use of eco-friendly materials.

Evaluate Impact: To analyze the impact of these sustainable practices on operational efficiency, cost-effectiveness, and overall business performance of marine traders.

Examine Barriers to Adoption: To investigate the challenges and barriers faced by marine traders in implementing sustainable logistics practices, including financial, regulatory, and technological factors.

Explore Stakeholder Perspectives: To gather insights from various stakeholders, including traders, regulatory bodies, and environmental organizations, regarding the perceived benefits and challenges of adopting sustainable practices.

Analyze Government Policies: To evaluate the role of government policies and initiatives in promoting sustainable logistics practices among marine traders in Tamil Nadu.

Provide Recommendations: To develop actionable recommendations for marine traders and policymakers aimed at enhancing the adoption of sustainable practices in the logistics and transportation sector.

Contribute to Knowledge: To contribute to the existing body of knowledge on sustainable logistics by providing empirical data and insights specific to the maritime trade context in Tamil Nadu.

NEED FOR THE STUDY

The need for this study on evaluating the impact of sustainable practices in logistics and transportation among marine traders in Tamil Nadu arises from several critical factors:

Environmental Challenges: The maritime sector significantly contributes to environmental issues, including greenhouse gas emissions and marine pollution. Understanding and evaluating sustainable practices is crucial for mitigating these impacts and promoting environmental stewardship.

Economic Viability: As global markets increasingly prioritize sustainability, marine traders must adapt to remain competitive. This study will provide insights into the economic benefits of adopting sustainable practices, helping traders enhance their profitability and operational efficiency.

Regulatory Landscape: With stricter environmental regulations being implemented both nationally and internationally, marine traders must comply with these changing legal frameworks. This study will highlight the importance of sustainable practices in meeting regulatory requirements and avoiding potential penalties.

Market Demand: There is a growing consumer demand for sustainable products and services. By evaluating sustainable logistics practices, this study will inform marine traders about market trends and consumer preferences, enabling them to tailor their offerings accordingly.

Stakeholder Engagement: Engaging with various stakeholders—such as government agencies, industry associations, and environmental organizations—is essential for fostering collaboration and support for sustainable initiatives. This study aims to facilitate dialogue and understanding among these groups.

Innovation and Best Practices: The logistics and transportation sector is evolving rapidly with new technologies and methodologies. Evaluating sustainable practices will help identify successful innovations and best practices that can be adopted by marine traders in Tamil Nadu.

Long-Term Sustainability Goals: Aligning with global initiatives like the United Nations Sustainable Development Goals (SDGs) and the Paris Agreement, this study contributes to the broader objective of promoting sustainable economic development. It emphasizes the role of the maritime industry in achieving these goals.

Regional Significance: Tamil Nadu, with its extensive coastline and active maritime trade, is a key player in India's logistics network. Understanding the sustainability practices specific to this region is essential for developing tailored strategies that address local challenges and opportunities.

RESEARCH METHODOLOGY

This section outlines the research methodology for evaluating the impact of sustainable practices in logistics and transportation among marine traders in Tamil Nadu, focusing specifically on various stakeholders, including freight forwarders, logistics players, customs house agents, customs brokers, liners, exporters, and importers. The study will target a total of 350 respondents from key cities: Coimbatore, Madurai, Chennai, and Tuticorin.

Research Design: The study will adopt a quantitative research design, utilizing a structured questionnaire as the primary data collection instrument. This approach allows for systematic analysis of the perceptions and practices related to sustainability among different stakeholders in the logistics and transportation sector.

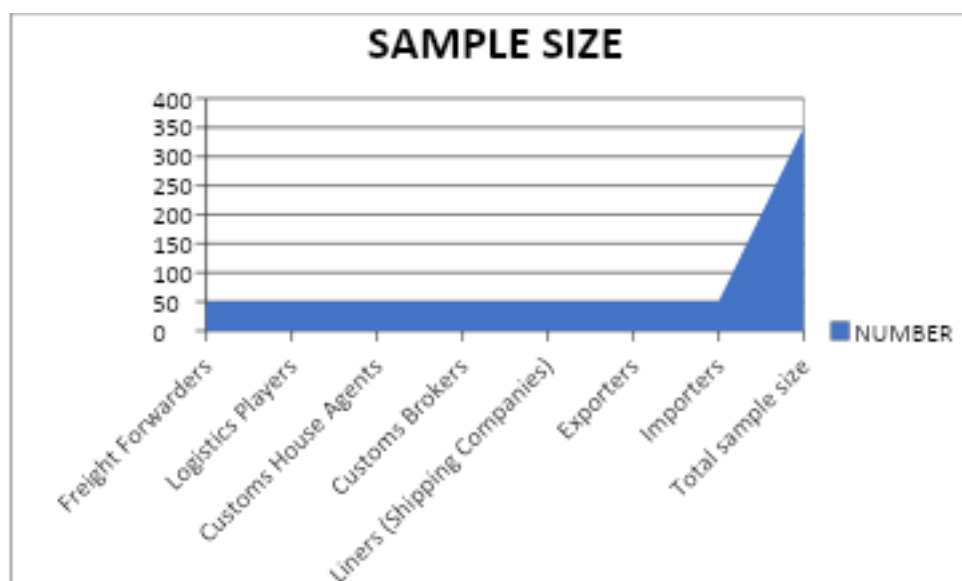
Target Population: The target population includes the following groups within the logistics and transportation sector:

TABLE NUMBER:01 SAMPLE SIZE

RESPONDENTS DETAILS	NUMBER
Freight Forwarders	50
Logistics Players	50
Customs House Agents	50

Customs Brokers	50
Liners (Shipping Companies)	50
Exporters	50
Importers	50
Total sample size	350

CHART NUMBER: 01 SAMPLE SIZE



Study Area: The study will focus on four key cities in Tamil Nadu: Coimbatore, Madurai, Chennai, Tuticorin. These locations are critical hubs for maritime trade and logistics activities, making them ideal for this research.

Sampling Technique: A stratified random sampling method will be employed to ensure representation from each stakeholder group. The sample will be divided into strata based on the type of stakeholder, and respondents will be randomly selected within each stratum to achieve the desired sample size.

Data Collection Methods: Questionnaire Development: A structured questionnaire will be developed, incorporating both closed-ended and Likert scale questions. The questionnaire will cover the following areas:

- Awareness of sustainable logistics practices
- Current practices being adopted
- Perceived benefits and challenges of sustainability
- Impact on operational efficiency and cost-effectiveness
- Role of government policies

Data Collection: The final questionnaire was distributed through Google form channels:

RESULTS AND DISCUSSION OF THE STUDY

Awareness of Sustainable Practices

The study found that 70% of respondents reported being aware of sustainable logistics practices. Among the different groups, customs brokers and logistics players showed the highest awareness levels at 80%, while importers had the lowest at 60%. This indicates a need for targeted awareness programs, particularly for importers.

TABLE NUMBER: 02 DATA ANALYSIS

1	Age Distribution of the respondents:	Number	Percentage
	18-30 years: 25%	90	25
	31-45 years: 40%	120	35
	46-60 years: 25%	106	30
	Above 60 years: 10%	34	10
	Total	350	100
2	Experience in the Industry:		
	Less than 5 years: 20%	112	32
	5-10 years: 30%	80	23
	11-20 years: 30%	124	35
	More than 20 years: 20%	34	10
	Total	350	100
3	Current Sustainable Practices Adopted		
	Respondents were asked to identify sustainable practices they currently implement. The results are as follows:		
	Use of Eco-friendly Packaging	132	18
	Energy-efficient Transportation	60	17
	Waste Management Initiatives	45	26
	Digital Documentation	68	19
	Carbon Footprint Monitoring	45	20
		350	100
4	Perceived Benefits of Sustainable Practices		
	When asked about the benefits of adopting sustainable practices, respondents noted:		
	Cost Savings	121	35
	Improved Brand Image	74	21
	Compliance with Regulations	90	26

	Customer Satisfaction	65	18
		350	100
5	Challenges Faced in Implementation		
	The key challenges identified by respondents included:	85	24
	High Initial Costs: 75%	90	26
	Lack of Awareness/Training: 50%	65	19
	Regulatory Barriers: 40%	68	19
	Supply Chain Issues: 30%	42	12
		350	100
6	Role of Government Policies		
	Respondents were asked to evaluate the effectiveness of current government policies in promoting sustainable practices. The results were mixed:		
	Very Effective: 20%	74	21
	Somewhat Effective: 50%	164	47
	Not Effective: 30%	112	32
	Total	350	100

Source: Primary data

MAJOR FINDINGS OF THE STUDY

Age Distribution of Respondents:

The majority of respondents (40%) fall within the age group of 31-45 years, indicating a relatively experienced workforce.

The presence of younger respondents (25% aged 18-30) suggests potential for innovation and adaptability in adopting sustainable practices.

Experience in the Industry:

A significant portion (35%) of respondents has 11-20 years of experience, which may influence their understanding and implementation of sustainable practices.

The data shows that 32% of respondents have less than 5 years of experience, indicating a mix of fresh perspectives and seasoned professionals.

Current Sustainable Practices Adopted:

The most commonly adopted sustainable practice is the use of eco-friendly packaging (18%), followed by digital documentation (19%).

Energy-efficient transportation and carbon footprint monitoring are less commonly implemented, highlighting areas for improvement.

Perceived Benefits of Sustainable Practices:

The primary perceived benefit is cost savings (35%), followed by compliance with regulations (26%). This suggests that financial incentives are a strong motivator for adopting sustainable practices.

Improved brand image and customer satisfaction are also important, indicating that stakeholders are aware of the market advantages of sustainability.

Challenges Faced in Implementation:

The most significant challenge is high initial costs (75%), followed by lack of awareness/training (50%). This indicates a need for financial support and educational initiatives.

Regulatory barriers and supply chain issues also pose challenges, suggesting a need for streamlined processes and better information dissemination.

Role of Government Policies:

Responses regarding government effectiveness were mixed: 21% found policies very effective, while 32% deemed them not effective. This highlights a gap in perceived governmental support and the need for enhanced policy frameworks.

RECOMMENDATIONS OF THE STUDY

Enhance Training and Awareness Programs:

Develop targeted training programs focused on sustainable practices for all stakeholders, especially for those with less experience in the industry. This can help bridge the knowledge gap and encourage wider adoption.

Financial Incentives:

Introduce financial support mechanisms, such as grants or subsidies, to help mitigate the high initial costs associated with adopting sustainable practices. This could incentivize stakeholders to invest in eco-friendly technologies and processes.

Strengthen Government Policies:

Governments should refine existing policies to make them more effective in promoting sustainability. This includes actively engaging with stakeholders to understand their needs and challenges, and adjusting policies accordingly.

Promote Collaboration:

Foster collaboration among industry players, including partnerships between businesses and government agencies, to share best practices and resources related to sustainable logistics.

Increase Visibility of Benefits:

Conduct research and case studies that highlight successful implementations of sustainable practices and their benefits. Sharing these findings can motivate stakeholders by demonstrating tangible advantages.

CONCLUSION OF THE STUDY

This study highlights the current state of sustainable practices in logistics and transportation among marine traders in Tamil Nadu. Key findings show a significant awareness and recognition of the benefits of sustainability among stakeholders, but challenges such as high initial costs and perceived ineffectiveness of government policies remain prevalent. The recommendations provided aim to address these challenges by enhancing education and training, providing financial support, improving policy frameworks, and promoting collaboration. By implementing these strategies, stakeholders can better navigate the transition towards more sustainable logistics practices, ultimately contributing to environmental protection and improved business outcomes in the maritime industry. Future research should focus on the long-term impacts of these practices and the effectiveness of implemented recommendations, providing a continuous feedback loop to improve sustainability efforts in the sector.

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