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Sustainable Logistics: Market Analysis, Challenges, and Business Opportunities

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Abstract

The growing importance of logistics and transportation services has created new opportunities for business development, market innovation, and sustainable business practices in India. This study focuses on market research and business model development in the intercity logistics sector, with particular attention to identifying market gaps, understanding customer requirements, and examining operational challenges. The research follows an exploratory and descriptive approach, using primary research activities such as field observations, customer and traveller surveys, along with secondary information from government reports, industry publications, and competitor websites.

The study examines important factors influencing logistics services, including transportation costs, delivery reliability, customer convenience, parcel safety, market demand, and service accessibility. It also includes competitor analysis, customer problem identification, business opportunity assessment, and preliminary financial considerations such as cost structures, pricing strategies, and potential revenue opportunities. The findings highlight the importance of effective coordination, transparent pricing, reliable delivery systems, and customer-focused service models in improving logistics operations.

The study aims to provide a preliminary understanding of business opportunities and challenges in the logistics sector and recommends further market validation, operational planning, and financial evaluation for developing practical and sustainable logistics solutions.

Keywords: Market Research, Business Model Development, Intercity Logistics, Competitor Analysis, Customer Behaviour, Sustainable Transportation, Financial Feasibility.

1. Introduction

1.1 Background and Context

Logistics and transport in general is very important for the growth of businesses, E-commerce, manufacturing processes and moving goods between regions. Within recent years, with the growth of online businesses and smaller businesses, there has been a high demand for cheap, efficient and reliable logistics services.

However challenges exist within logistics. These include high logistics costs, long delivery times, high use of fuel, inefficient coordination and difficulties in providing quick deliveries and end delivery. These issues may lead to poor customer satisfaction, and difficulties in small businesses receiving cost efficient transport.

Creating sustainable logistics is becoming increasingly important within businesses. Improving efficiency within transport, maximising resources and reducing excess costs can be achieved by incorporating different forms of transport, improving digital coordination and creating customer focussed business models.

Conducting market research allows businesses to understand consumer requirements, identify competition within the market, understand trends within industries and identify business opportunities. It can also allow businesses to understand appropriate pricing strategies, requirements in operation and financial feasibility of creating a business.

This study aims to understand inter-city logistics within the market. Market research, field observations, customer and traveller surveys, competitor analysis and initial financial feasibility analysis has been conducted. Issues in the current logistics industry have been identified and opportunities within logistics have been explored in order to create efficient, cheap and sustainable logistics solutions.

1.2 Problem Statement

As there is increasing demand for inter-city transportation and parcel delivery, there is a need for efficient, cheap and reliable logistics services. However, many challenges arise for customers and small businesses. These include high costs, long delivery times, lack of visibility within shipments, difficult collection/delivery times and concerns for parcel safety.

Challenges have also been identified within current logistics services. These include difficulties in coordinating transport, managing goods within transport, end delivery and transparent pricing. These issues can lead to increased costs within delivery, and therefore reduced customer satisfaction.

Small businesses and new entrepreneurs often face difficulty in finding suitable logistics services. It is important to identify customer expectations, analyse competitors, find gaps in the market and consider financial requirements for any business models. Therefore this study aims to analyse the current inter-city logistics market, identify operational and consumer issues and look into opportunities to create efficient, customer orientated, financially feasible and sustainable logistics solutions.

1.3 Research Objectives

To analyse the inter-city logistics market and identify key operational issues.

To identify customer requirements, preferences in logistics services.

To identify competitors in the inter-city logistics market, their services, pricing strategies and position within the market.

To identify gaps in the market and opportunities in logistics.

To identify costs relating to transport, pricing strategies, revenue opportunities and financial considerations within logistics to create sustainable business models.

To produce recommendations to improve efficiency within logistics, customer satisfaction and sustainable business models.

1.4 Significance of the Study

This research is significant in identifying the issues and opportunities within inter-city logistics. The research provides an understanding of customer requirements, competitor strategies, efficient operations, and gaps within the market.

It also demonstrates the importance of conducting market research in creating a business. Financial factors within logistics services have been analysed including cost, variable costs, pricing strategies and revenue opportunities to understand financial requirements of potential business models.

2. Literature Review

2.1 Theoretical Framework

The present study is based on four important concepts: Supply Chain Management, Multimodal Transportation, Logistics Service Quality, and Cost-Based Pricing. These concepts help understand how logistics businesses operate, manage costs, meet customer expectations, and develop sustainable services.

1. Supply Chain Management

This involves transporting goods, information and resources between suppliers and consumers. It includes transporting, storing, managing and distributing goods. Good coordination throughout this process can reduce delays in transport, reduce costs and improve efficiency.

2. Multimodal Transportation

Multi-modal transport involves multiple methods of transport such as road, rail, air and water transport. Businesses will be able to consider various forms of transport depending on cost, distance and delivery time.

3. Logistics Service Quality

Logistics Service Quality focuses on how well a company meets customer expectations. Timely delivery, safe handling, reasonable charges, shipment tracking, and proper communication are important factors that influence customer satisfaction.

4. Cost-Based Pricing and Financial Feasibility

Good service quality within logistics will help meet the expectations of customers. Quick delivery, safe handling of goods, reasonable cost, visibility of goods and good communication will all impact customer satisfaction.

2.2 Thematic Review

2.2.1 Sustainable Transportation and Logistics Efficiency

The growing demand for delivery services has increased the need for efficient and sustainable transportation. Businesses must manage operating costs while also considering environmental responsibilities.

DPIIT and NCAER (2025), in their report *Assessment of Logistics Cost in India*, examined different logistics expenses, including transportation, warehousing, and material handling. Similarly, Al Mazrouei and Demir (2025), in their review of 138 research articles, discussed the role of technology, innovation, operational efficiency, and sustainability in parcel delivery.

These studies show that sustainable logistics requires better resource utilization, cost management, and coordination among service providers.

2.2.2 Multimodal Transportation and Operational Coordination

To create efficient transport, appropriate multi-modal transport should be used and coordination should occur between different parts of delivery.

A study completed by Dua and Sinha (2019) looked at multi-modal transport for containerised exports. It highlighted the importance of good quality within services and coordination between transporters. In 2023, a Joint Parcel Product has been created by India Post and Indian Railways. This includes collection, train transport and delivery.

This therefore highlights that good coordination between different forms of transport can improve logistics operations. However, correct handling, documentation and timely transitions of goods is required.

2.2.3 Customer Satisfaction and Logistics Service Quality

Customer satisfaction in logistics services is very important. Customers typically desire quick delivery, secure handling, reasonable prices and good visibility of goods.

Within a sample of 226 customers in India, Khan (2023) found timely delivery to be the most important factor in customer satisfaction in instant food deliveries. Within last mile deliveries in e-commerce, Kumar & Chidambara (2024) identified challenges in delivering goods to customers, particularly in urban areas.

Studies have shown that reliable delivery, good communication and quality of services are important in creating customer trust.

2.2.4 Digital Integration and Logistics Management

Technology has become an important factor in logistics management in modern businesses. Technology can be implemented to allow booking, tracking of goods, optimal routing and communication between customers and service providers.

A review of 169 research papers was completed by Gonzalez-Romero et al (2024). They identified the importance of considering stakeholders when looking to improve last-mile transport and delivery. This study highlights it is important to consider different stakeholders within logistics in order to improve services.

However, in order to solve issues within operations, correct infrastructure, accurate data and good coordination must also be put in place.

2.2.5 Logistics Costs and Financial Considerations

Logistics businesses face different expenses, such as transportation, packaging, storage, handling, and final delivery. Understanding these costs is necessary for setting suitable prices and maintaining profitability.

DPIIT and NCAER (2023), in their report *Logistics Cost in India: Assessment and Long-Term Framework*, discussed the difficulties in measuring logistics expenses and the need for systematic data collection. Their 2025 assessment further examined different components of logistics costs.

These reports indicate that businesses must consider the complete delivery cost rather than focusing only on transportation charges.

2.3 Research Gap

Studies have been completed in various areas within logistics. However, they were often considered individually within each study. Therefore there is a need to understand how customer requirements, demand in the market, challenges faced in operations, transport costs and sustainability can be considered together in order to identify business opportunities.

This study attempts to fill this gap in knowledge. Field observations, customer and traveller surveys, competitor analysis and financial considerations have been completed to understand the sustainable logistics market in India. This study aims to provide an initial understanding of the challenges faced in this industry, and business opportunities in India.

3. Data and Methodology

3.1 Research Design

The study follows a mixed-methods approach, combining qualitative and quantitative research methods. It uses a descriptive and exploratory research design to understand the sustainable logistics market, identify industry challenges, and explore potential business opportunities. Qualitative information was collected through field observations and competitor analysis, while quantitative information was gathered through surveys.

3.2 Data Collection and Sources

The study is based on both primary and secondary data.

Primary Data: Primary information was collected through field observations, customer and traveller surveys, and discussions related to logistics services. The survey focused on customer expectations, delivery challenges, transportation preferences, and service requirements. Competitor analysis was also conducted to understand existing services and identify market gaps.

Secondary Data: Secondary information was collected from government reports, research papers, industry publications, official websites, and online sources related to logistics, transportation, sustainability, and market trends.

3.3 Sample Profile and Study Period

The primary research included customers and travellers who could provide information about delivery requirements and transportation-related experiences. The study also considered observations from selected locations.

The research activities were conducted during **[Month–Month, Year]**. A total of **[Number] respondents** participated in the survey, including **[Number] customers and [Number] travellers**. The study focused on understanding their preferences, experiences, and expectations regarding logistics services.

3.4 Analytical Tools and Techniques

The collected information was analysed using basic descriptive and qualitative techniques. Survey responses were organised and compared to identify common preferences and challenges. Field observations helped understand practical problems, while competitor analysis was used to compare existing services, pricing approaches, and market opportunities.

Secondary information was reviewed to understand industry trends and sustainability practices. Cost components and pricing considerations were also examined to understand the financial feasibility of potential logistics business opportunities.

4. Results and Analysis

4.1 Data Presentation

The collected data was organised and analysed to understand customer requirements, transportation-related challenges, and opportunities in the sustainable logistics market. Survey responses and field observations were used to identify common patterns and problems.

The results can be presented through tables, charts, and graphs to make the information easier to understand.

4.2 Survey Findings

The survey focused on customer expectations and traveller experiences related to logistics services. The responses were examined to identify important factors such as delivery cost, delivery time, parcel safety, convenience, and service reliability.

The findings are presented below based on the actual survey responses:

- **Customer Preferences:** The responses helped identify the factors customers consider important when selecting a delivery service.
- **Transportation Challenges:** Survey responses and field observations helped identify difficulties related to transportation, delivery delays, coordination, and parcel handling.
- **Traveller Participation:** The survey explored travellers' willingness and concerns regarding carrying parcels during their journeys.
- **Market Opportunities:** Competitor analysis helped identify differences in existing services, pricing approaches, and possible areas for improvement.

4.3 Field Observations and Competitor Analysis

Field observations provided practical information about transportation and delivery-related problems. Competitor analysis was conducted to understand the services, pricing methods, and features offered by existing logistics companies.

The collected information was used to identify possible gaps in service quality, affordability, convenience, and coordination.

4.4 Overall Analysis

The analysis considers three major areas: customer requirements, operational challenges, and business opportunities. These areas help explain the factors that may influence the development of sustainable logistics services.

The results are based on the primary and secondary information collected during the study. No statistical relationship or hypothesis is claimed unless supported by actual survey data and statistical testing.

4. Results and Analysis

4.1 Data Presentation: Logistics Cost in India

According to the DPIIT–NCAER report (2025), India's total logistics cost was estimated at ₹24.01 lakh crore for 2023–24. It accounted for 7.97% of GDP. The report also highlights differences in logistics costs across transportation modes and business sizes.

DPIIT+1

Table 1: Key Logistics Cost Indicators in India (2023–24)

Indicators	Government data
Total logistics cost	₹24.01 lakh crore
Logistics cost as % of GDP	7.97%
Logistics cost as % of non-services output	9.09%
Small firms' logistics cost as % of output	16.9%
Large firms' logistics cost as % of output	7.6%

Source: DPIIT–NCAER, Assessment of Logistics Cost in India, September 2025.

Analysis: The data shows that small firms bear a higher logistics cost compared to large firms. This difference indicates that logistics expenses can be a significant challenge for smaller businesses.

4.2 Transportation Cost Comparison

Table 2: Average Freight Cost by Transportation Mode

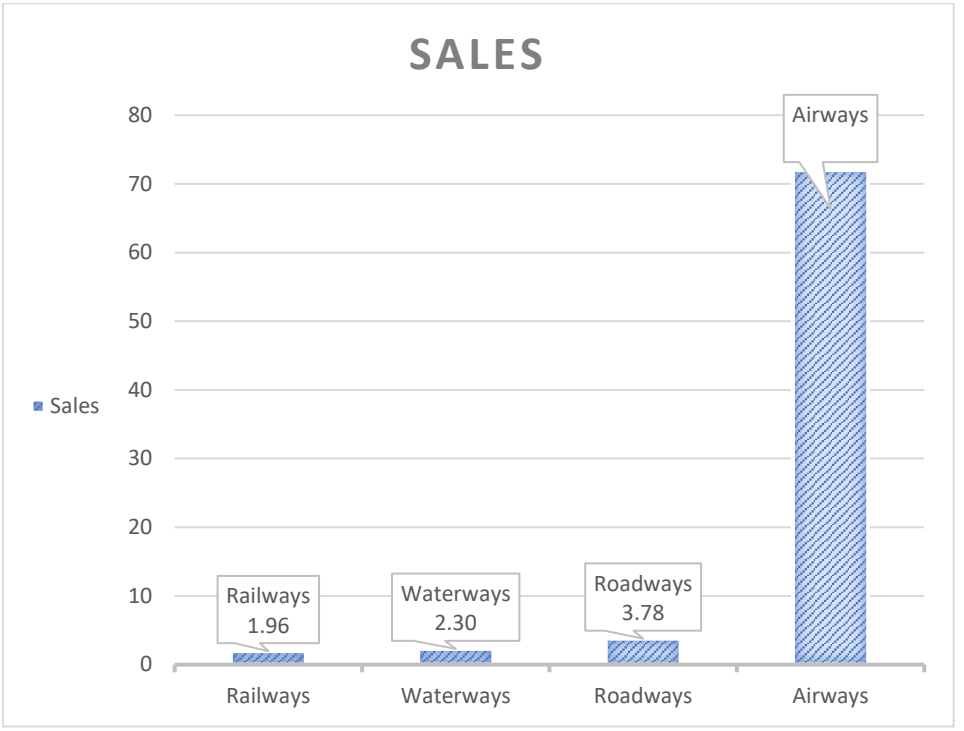
Cost in ₹ per tonne-kilometre (PTPK)

Transport mode	Cost (₹)
Rail	1.96
Waterways	2.30
Road	3.78
Air	72.00

Source: DPIIT–NCAER, 2025.

Figure 1: Transportation Cost Comparison in India

Average freight cost in rupees per tonne-kilometre, based on the DPIIT–NCAER 2025 report.



Analysis: Rail and waterways have lower average freight costs compared with road and air transport. Air transport is significantly more expensive. This highlights the importance of selecting suitable transportation modes according to cost, distance, and delivery requirements.

4.3 Road Transportation Cost Structure

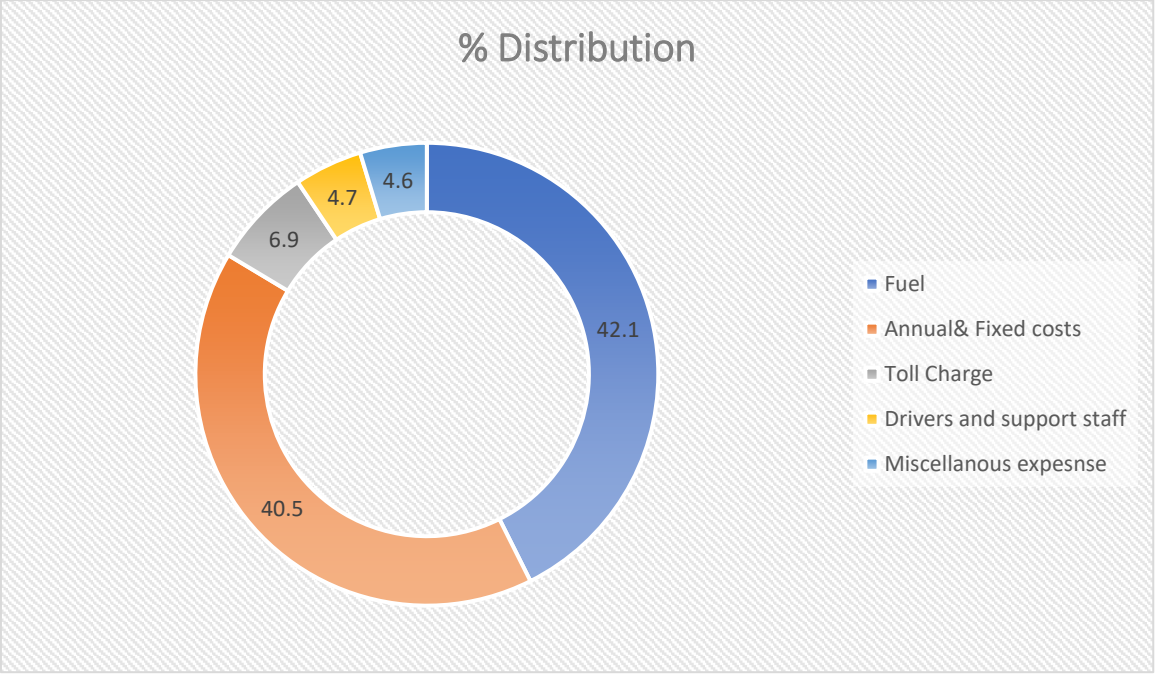
Table 3: Major Components of Road Transport Cost

Cost component	Percentage
Fuel	42.1%
Annual and fixed costs	40.5%
Toll charges	6.9%
Drivers and support staff	4.7%
Miscellaneous expenses	4.6%

Source: DPIIT–NCAER, 2025.

Figure 2: Road Transportation Cost Distribution

Percentage distribution of road transportation costs in India.



Analysis: Fuel and annual fixed expenses together account for 82.6% of road transportation costs. This indicates that fuel consumption and fixed operating expenses are major cost factors in road logistics.

4.4 Overall Findings

The government data indicates three important points:

1. Small firms face a higher logistics cost burden than large firms.
2. Rail and waterways have lower average freight costs than road and air transport.
3. Fuel and fixed expenses form a major part of road transportation costs.

4.5 Company Analysis

The following logistics companies were studied to understand their services, business models, and sustainability practices.

Company	Main Services	Key Focus
Delhivery	Parcel and freight delivery	Technology and automation
Blue Dart	Express and air delivery	Speed and reliability
Mahindra Logistics	Transportation and warehousing	Supply chain management
TCI	Road, rail and multimodal transport	Transportation efficiency
DHL	Global logistics and freight	Sustainable logistics

4.6 Key Observations

1. **Delhivery:** Uses technology and automation to improve delivery efficiency.
2. **Blue Dart:** Focuses on fast and reliable parcel delivery.
3. **Mahindra Logistics:** Provides integrated transportation and supply chain services.
4. **TCI:** Offers multimodal transportation through road, rail and waterways.
5. **DHL:** Focuses on global logistics and sustainable transportation.

Overall Analysis: The comparison shows opportunities for affordable delivery, better digital tracking, improved transportation coordination, and sustainable logistics practices.

5. Discussion

From this investigation, it is understood how significant costs are in logistics in India. Within the government data, it is clear that logistics costs are very significant within India, accounting for 7.97% of GDP. Efficient transport and cost management within logistics is therefore important for businesses.

It is clear from this analysis that small businesses face greater logistics costs than larger businesses. This could be problematic for pricing, profitability and competitiveness within the market. If affordable and well co-ordinated logistics services can be developed, it may allow small businesses to more efficiently manage their transport costs.

From comparison of transport methods it is evident that train and water transport have cheaper average freight costs than road and air. Therefore multi-modal transport is important in creating efficient cost management. However, depending on delivery time, distance, accessibility and type of goods being delivered, different transport methods may be necessary.

In terms of road transport, it is clear that fuel and fixed costs make up a large proportion of costs. Therefore efficient routing, good vehicle usage and fuel efficient transport should be prioritised.

Findings from this study are largely supported by literature in section 2. The reports by DPIIT and NCAER highlight the importance of understanding logistics costs. Studies by AlMazrouei and Demir (2025) and Dua and Sinha (2019) demonstrate the importance of efficient operations and coordination in transportation.

It is notable that air freight has a significantly higher cost than other transport methods. This may not be surprising, as air transport generally delivers quicker and has different capabilities. It is therefore important to consider both cost and requirements of services when comparing transport methods.

6. Conclusion and Policy Implications

6.1 Conclusion

From this study, it has been identified that within the sustainable logistics market in India, there are many challenges facing businesses. It has been found that costs within logistics, fuel costs, and differences in transport methods influence business operations.

If efficient coordination, efficient resource management and appropriate pricing strategies are used, more affordable and sustainable logistics services can be developed. Small businesses may benefit from improved logistics solutions to better manage operating costs.

6.2 Implications

The conclusions from this study can be useful to many groups.

Government bodies: DPIIT and other relevant bodies may be able to improve logistics infrastructure, improve multi-modal transport and provide reliable data on logistics costs.

Logistics Companies: Businesses can improve routing, vehicle

6.2 Practical and Policy Implications

The findings provide useful insights for different stakeholders:

1. **Government Authorities:** DPIIT and other relevant authorities can support better logistics infrastructure, multimodal connectivity, and reliable logistics cost data.
2. **Logistics Companies:** Businesses can improve route planning, vehicle utilisation, shipment tracking, and transportation coordination to control operating costs.
3. **Financial Institutions:** Banks and financial institutions can consider providing suitable loans and financial support to small logistics businesses investing in efficient vehicles, technology, and sustainable operations.
4. **Small Businesses:** MSMEs can explore cost-effective transportation options and better logistics partnerships to improve their distribution activities.

6.3 Limitations of the Study

This study had several limitations. Information was collected from secondary sources (government reports and specific research publications) and primary research (field observations and surveys). Data from government sources is only estimations for the whole country and therefore may not be entirely representative for individual cities. Additionally, this study only covered a limited amount of locations. There was also a lack of detailed financial analysis on each logistics business model.

6.4 Future Scope

Larger surveys can be carried out in multiple cities and states in order to analyse how logistical needs vary between regions. Additional research can be conducted to understand the difference in costs, customer preference and environmental impacts between different transport methods. Further research can be conducted to understand the financial viability of sustainable logistics business models, and the impact digital technology has on increasing efficiency of deliveries.

Declaration of Conflicting Interests

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References

1. AlMazrouei, W., & Demir, E. (2025). *Value creation in parcel delivery: A systematic literature review and research agenda*. Sustainable Futures, 10, 101557. https://doi.org/10.1016/j.sftr.2025.101557
2. Dua, A., & Sinha, D. (2019). *Assessment of quality of multimodal transportation for containerized exports*. Verify the journal volume, issue, page numbers, and DOI from the original publication before submission.
3. González-Romero et al. (2024). *A stakeholder-led sustainability framework for analysing last-mile transport and delivery*. https://doi.org/10.1080/13675567.2024.2412240
4. Khan, M. Z. (2023). A study of logistics service quality dimensions impacting customer satisfaction in instant food delivery: The Indian perspective. *International Journal of Logistics Economics and Globalisation, 10*(2), 109–123. https://doi.org/10.1504/IJLEG.2023.132332
5. Kumar, I., & Chidambara. (2024). A systematic literature review and bibliometric analysis of last-mile e-commerce delivery in urban areas. *Urban, Planning and Transport Research, 12*(1). https://doi.org/10.1080/21650020.2024.2357577
6. Munjal, P., Pohit, S., Baruah, P., Khattar, Y., Mondal, S., & Hussain, A. (2025). *Assessment of logistics cost in India*. National Council of Applied Economic Research (NCAER), sponsored by the Department for Promotion of Industry and Internal Trade (DPIIT).
7. Department for Promotion of Industry and Internal Trade (DPIIT) & National Council of Applied Economic Research (NCAER). (2025). *Logistics cost in India: Assessment and a long-term framework*. Verify the exact publication details from the report before submission.
8. Press Information Bureau. (2023, January 12). *India Post & Indian Railways launched Joint Parcel Product scheme*. Government of India.
9. Delhivery Limited. (2025). *Annual Report 2024–25*. Company report
10. Blue Dart Express Limited. (2025). *Business Responsibility and Sustainability Report 2024–25*. Company report
11. DHL Group. (n.d.). *Sustainability*. Official website
12. Mahindra Logistics Limited. (n.d.). *Official Website*. Company website
13. Transport Corporation of India Limited. (n.d.). *Official Website*. Company website
14. Gati Limited. (n.d.). *Official Website*. Company website