BUSINESS CLUB

KSHITIJ2024
THE TECHNO-MANAGEMENT FEST

Indian Case Challenge 2024

Finals

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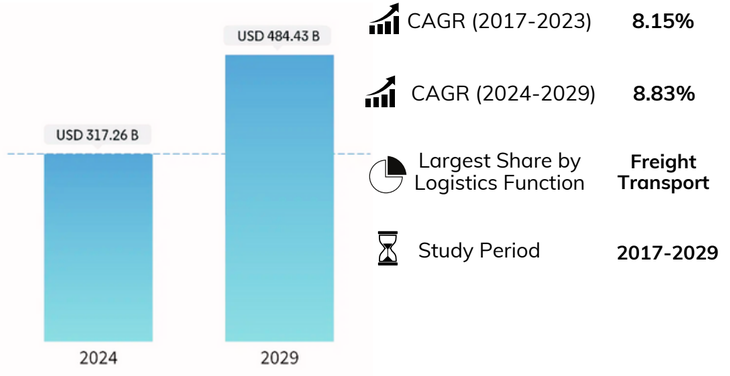
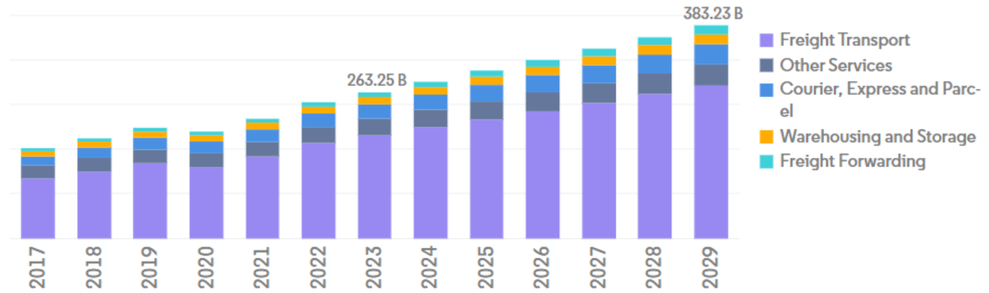
Industry Overview Indian Logistics Market

Indian Freight and Logistics Market



CAGR (2017-2023)	8.15%
CAGR (2024-2029)	8.83%
Largest Share by Logistics Function	Freight Transport
Study Period	2017-2029

Value of Freight and Logistics market by logistics function, 2017-2029



This graph clearly states that the logistics market is highly fragmented and unorganized

Types of services

- Transportation
  - Domestic
    - Road
    - Air Express
    - Rail
  - Cross Border
- Warehousing

Indian Logistics Market

Types of solutions

- Point Solution
  - 1 PL
  - 2 PL
- Supply chain Solution
  - 3 PL
  - 4 PL
  - Integrated

Largest Segment by End User Industry

33.29%

Value Share, 2022

WHOLESALE AND RETAIL TRADES

India Freight and Logistics Market Leaders

DB SCHENKER, कॉनकॉर CONCOR, KUEHNE+NAGEL, Deutsche Post DHL, DELHIVERY

Fastest Growing Segment by Mode of Transport

13.07%

Projected CAGR, 2023-2029

AIR

Largest Courier, Express and Parcel (CEP) Segment by Destination Type

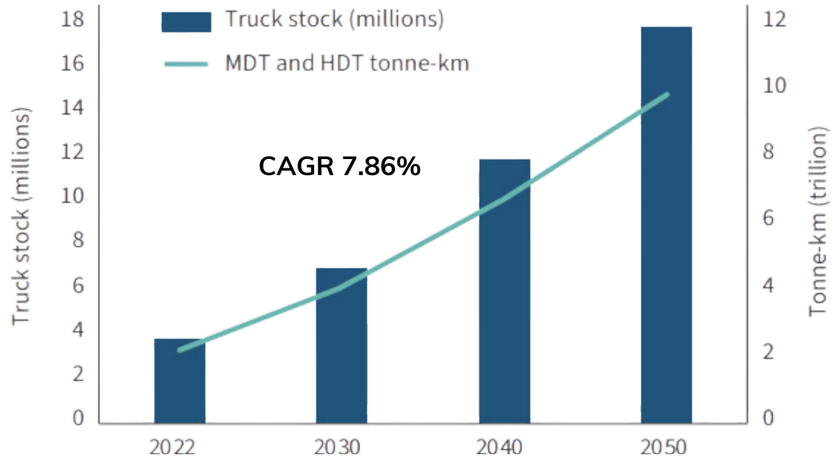
66.33%

Value Share, 2022

DOMESTIC

Industry Overview- Indian Truck Industry

Growth of India's truck stock and road freight market through 2050



Light Duty Vehicle

Capacity: 3.5 Tons

Tata Ace, Bolero Pick up

Medium Duty Vehicle

Capacity: 3.5 - 16 Tons

Tata 407, Mahindra Furio 7

Heavy Duty Vehicle

Capacity: >49 Tons

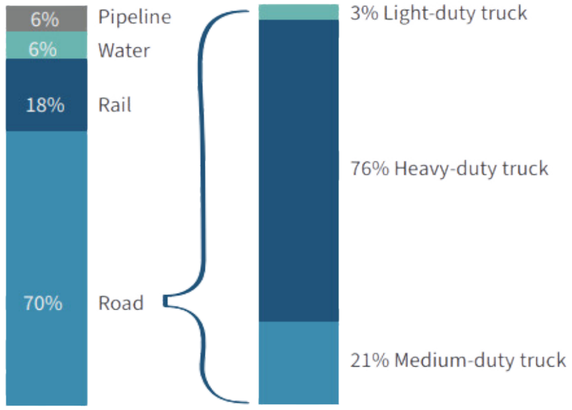
Tata 1618, Mahindra Blazo, Tata Signa 4923

Trailer Trucks

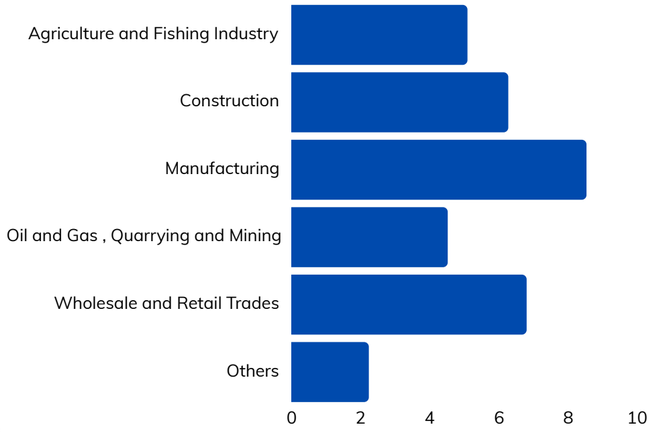
Capacity: 20 - 100 Tons

Tata Signa 5530, Mahindra Blazo X 55

Modal split for freight movement in India in 2022



India Road Freight Transport Market, CAGR %



- India currently transports 4.6 billion tonnes of freight annually at a cost of **₹9.5 lakh crore**, primarily through road transport, meeting **70%** of domestic demand and handling 2.2 trillion tonne-km.
- Projected growth by 2050 foresees heavy-duty trucks constituting **83%** of road freight travel (8.4 trillion tonne-km), while medium-duty trucks play a role in short intrastate and regional movement, amounting to 1.2 trillion tonne-km.
- The total number of trucks on Indian roads is expected to **quadruple** from 4 million in 2022 to around 17 million by 2050.

Growth drivers

- E-Commerce growth
- Digitization of fleets
- Government Schemes
- Increased FDI
- Increased EV Adoption

Strategic Fleet Management: Ownership vs. Leasing

Capital Investment and Financial Considerations & Industries to target

 **Owning**	• Involves purchasing and maintaining a fleet of your own • Provides long-term control & potential asset appreciation • Higher upfront costs, potential financing challenges • Full control over maintenance, timely repairs and upgrades
 **Leasing**	• Renting vehicles with monthly payments • Offers a cost-effective and flexible alternative to ownership. • Lower financial risk compared to owning • Maintenance costs included in lease agreement
 **Partnership**	• Works on revenue sharing model with small fleet operators • Limited control over the fleet composition and condition • Shared financial risk, potential for quick adjustments • Maintenance taken care by the fleet operator

2 Phase Strategy

- Initiate with a leasing model/Partnership model for cost-effective fleet access, flexibility, and financial ease.
- Transition to ownership, leveraging revenue from leasing for long-term control and strategic autonomy in logistics.

Partnership Model (3W 1H Framework)

Why?

Tap into the unorganized sector's regional expertise and capacity. This would also decrease the operational costs.

Whom to partner with?

Collaborate with small, unorganized fleets, serving B2B clients in sectors such as automobile, retail, and construction.

Model

What should be the agreement points?

- Earning Mechanism
- Operational Framework
- Time Period
- Asset Allocation

How to convince them?

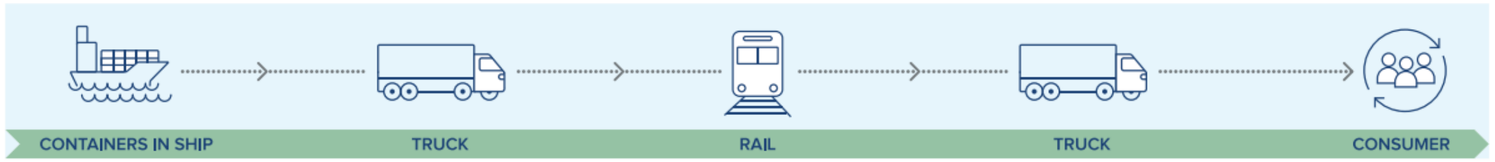
- More business
- Streamlined operations
- Regular payment rollout
- Reduce accidents

Pitfalls

- Limited scalability
- Less control on operations
- Dependency Risks
- Difficult to convince fleet owners

Introducing Intermodal Logistics

Suggesting optimal locations based on intermodal



What is Intermodal Transport?

- Goods move in containers/trailers across modes without handling.
- Integrates road and rail for optimized transportation.
- Enables seamless transfer for cost-effective freight movement.

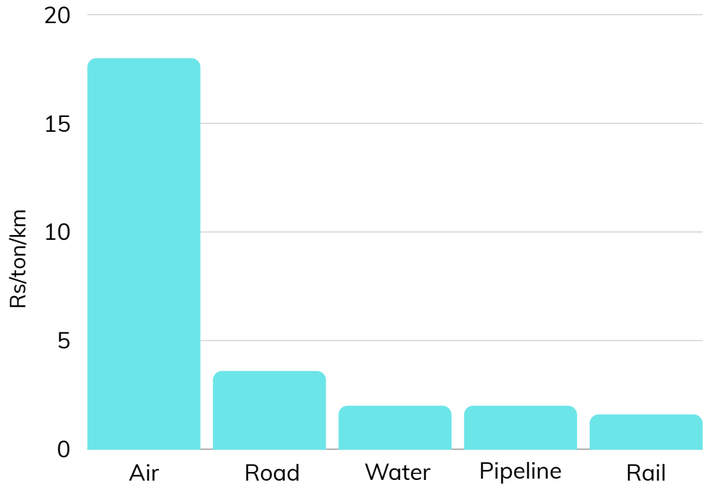
Why Intermodal Transport?

- Utilize strengths of different modes, reducing costs by 40-50%
- Rail is a greener transport system as truck emits 111 gm CO2 while train emits 17 gm CO2 per TKM
- Improve reliability and transit times by integrating modes.

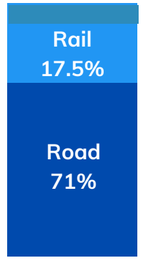
Factors for Location in Intermodal Transport

Tax costs & government policies	Market Dynamics of that area	DFC (Direct Fleet Cooridor) System	Close proximities to MMLPs
Assessing the tax costs and govt policies is critical for understanding the financial implications on transportation costs. It helps in budgeting and pricing strategies.	Evaluating the truck logistics market provides insights into the demand for services, competitive landscape, and potential for growth.	Considering the presence of Dedicated Freight Corridors is important as it can enhance the efficiency and speed of transportation, reducing transit times and costs.	It contributes to efficient and integrated logistics operations. They provide facilities for various transportation modes, including road, rail, and sometimes air.

Per metric ton km cost of different modes



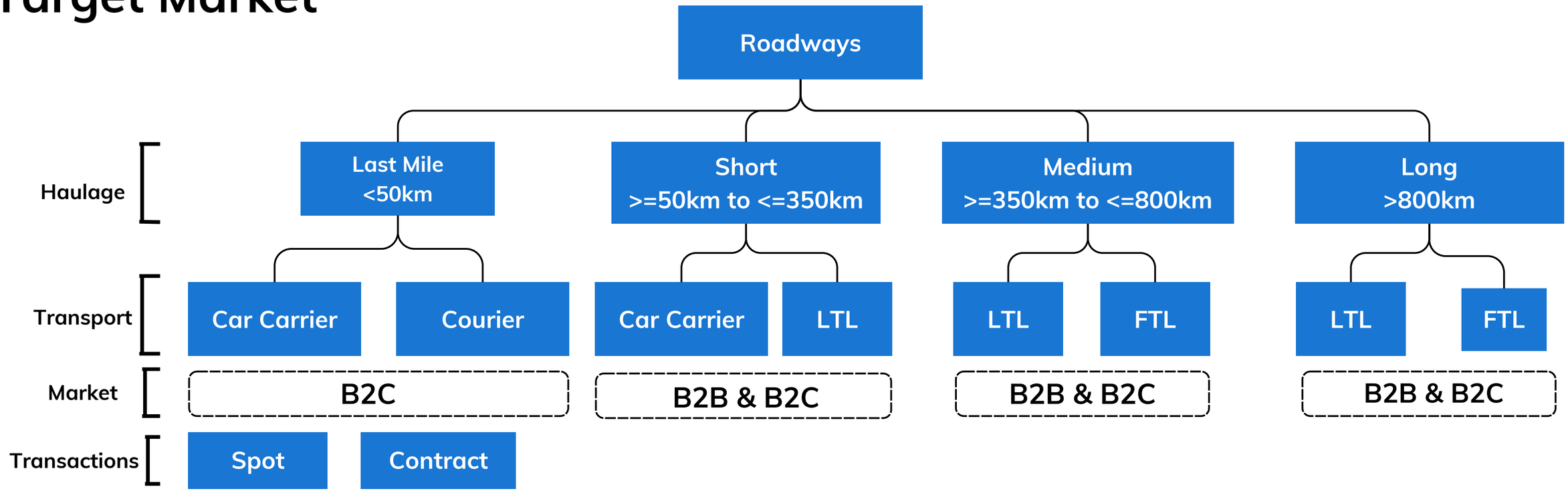
- Rail is by far the most economical way of transporting goods with cost of **Rs 3.6 per metric per ton per km** which is the lowest compared to other modes
- Still Rail just contributes **17.5%** of the total transports in India



Conclusion

- Employing a hybrid logistics strategy wherein truck logistics play a predominant role, complemented by the supportive integration of train logistics.
- Locations of this modal will be determined based on the four specified factors.

Target Market



Market

B2B

Types of Services

Inbound

Involves the movement of goods and materials into a business or production facility,

Outbound

It focuses on the distribution of finished products from a business to customers or end-users.

Finance

Spot

Working on Immediate basis with the client mostly prevalent in fluctuating demand

Contract

Working on contract basis in a specific period of time mostly prevalent in relatively stable sectors

Why B2B?

Consistent Demand	More Business
Large Volume Shipments	Higher Revenue
Low Competition	Better margin profiles
Sticky Cliental	Long term Business

Distribution Model

Factors to be considered

1. Optimized Transportation Routes
2. Cost Efficiency
3. Improved Service Levels
4. Network Flexibility
5. Technology Integration
6. Scalability

Distribution Models

Hub & Spoke Model

Manufacturer ships bulk loads to nearby hub
Results in efficient distribution with less trucks required
It helps to reduce empty returning trucks
Eliminates the need for distributors and commissions

Point to Point Model

Direct transportation from origin to destination without intermediate stops.
Efficient for short distances and when speed is crucial.
Each delivery follows a specific route
Commonly used in courier services and express shipping.

Cross Docking Model

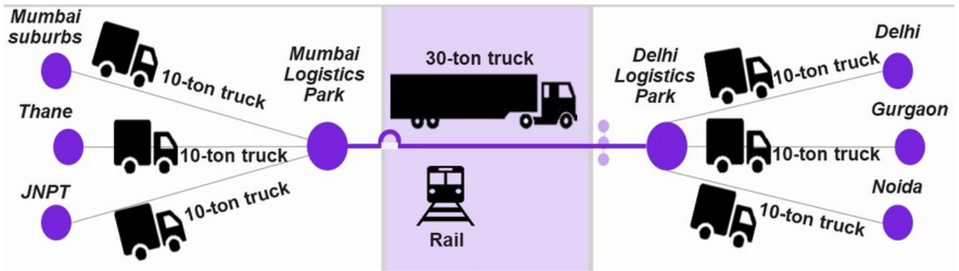
Goods are received, processed, and redistributed without being stored in a warehouse.
Minimizes inventory holding times
Ideal for FMCG and time-sensitive products.
Reduces storage costs and improves overall logistics

Zone Skipping

Goods are Shipped directly to specific geographic zones.
Involves bypassing intermediate distribution points for more efficient delivery.
Cost-effective for bulk shipments
Enhances speed and reduces transportation costs

Our Recommendations

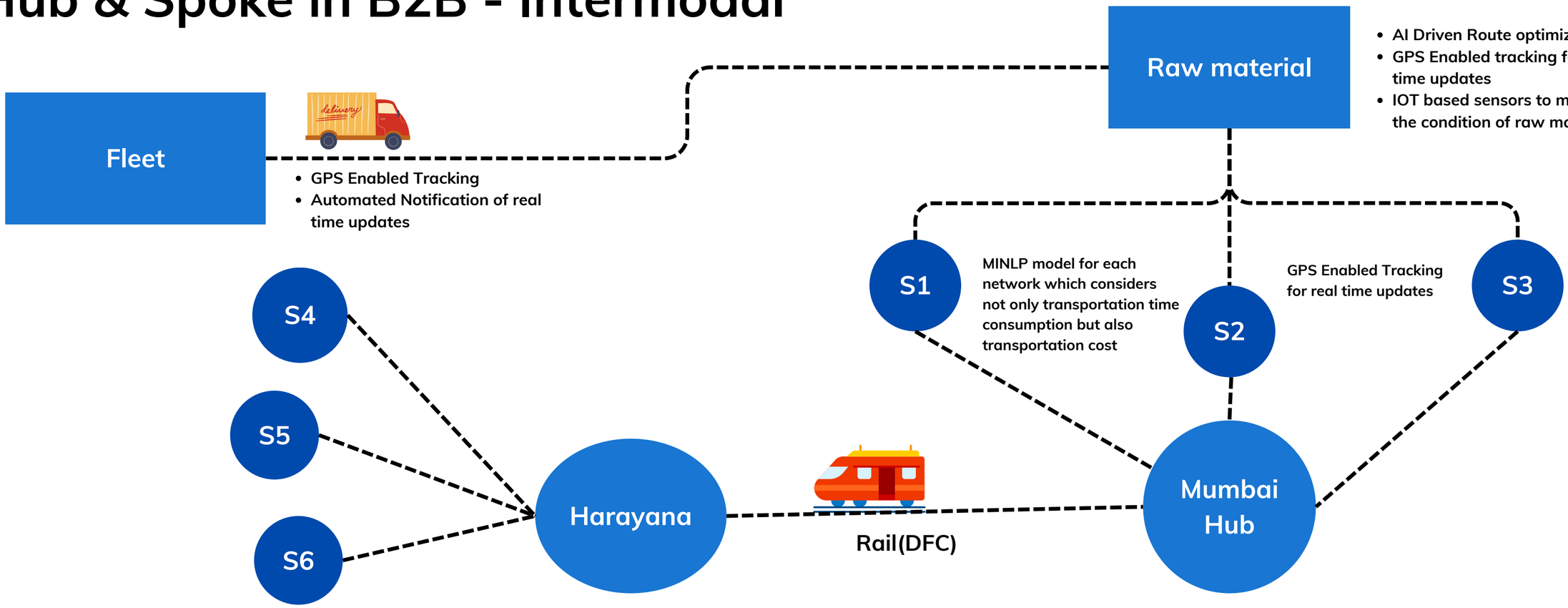
Hub & Spoke Model



Why Hub & Spoke?

- Centralized Operations
- Efficient Routes
- Cost-Effective
- Flexibility and Scalability
- Improved Service Levels
- Industry Standardization

Hub & Spoke in B2B - Intermodal



Risks

- Unforeseen delays in road or rail transportation
- Inaccurate inventory levels leading to shortages or overstock.
- Adverse weather impacting transportation schedules.
- Breakdowns or failures in transportation infrastructure.
- Cybersecurity threats to the digital systems
- Changes in regulations affecting transportation and logistics.

Mitigations

- Implement real-time tracking and alternative route planning
- Deploy advanced inventory management systems with real-time updates.
- Adverse weather impacting transportation schedules.
- Regular maintenance, diversified transportation routes, and backup pla
- Unforeseen delays in road or rail transportation
- Unforeseen delays in road or rail transportation

Problems in unorganized Trucking industry

How to solve these pressing issues using tech

PROBLEMS

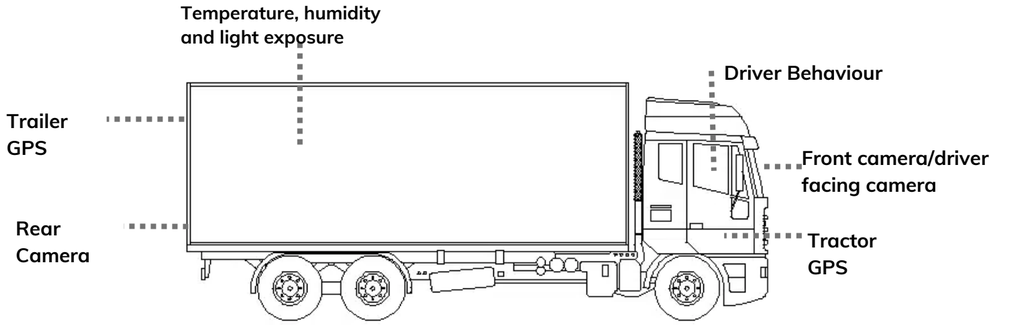
SAFETY

Consignment safety.

- Consignment theft.
- Consignment spoilage.

Driver's safety.

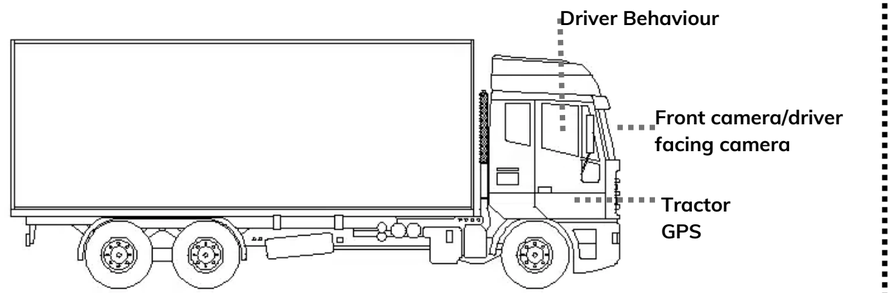
- Fatigue-induced sleep.
- Health emergency.



WELL BEING

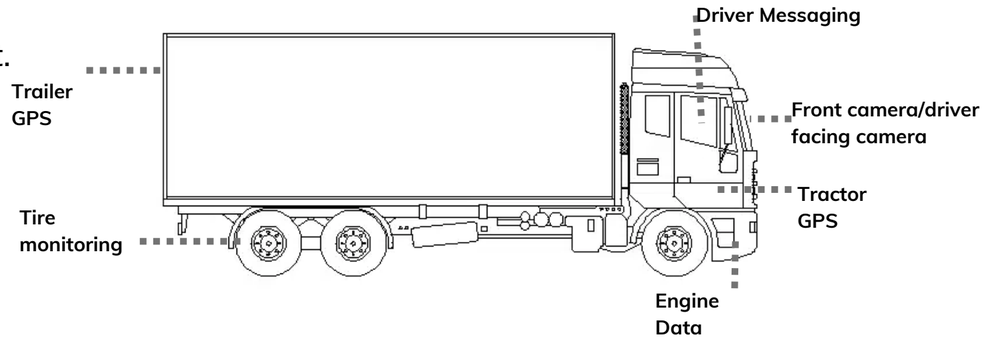
Driver's Well-being

- Long working hours.
- Unfixed wages.
- Unhealthy Eating Habits.



OPERATIONS

- Inefficient Fleet management.
- High fuel consumption.
- Vehicle damage.
- Poor Driver- Shipper communication



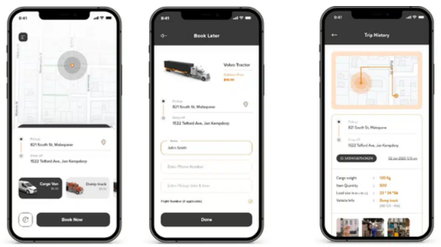
Truck driver onboardng

- Recruitment of Drivers
  - XYZ logistics will lease trucks from small fleets who would help us get drivers
  - XYZ Logistics Recruits
  - Recruitment Process
    - **Hunting**
      - Job Posting
      - Local Networking
      - Referrals
    - **Screening**
      - Documentation and Experience
      - Background Check
      - Interview
    - **Training**
      - Orientation
      - Technical Training
      - Safety Training
    - **Retention**
      - Competitive Compensation
      - Work-Life Balance
      - Growth Opportunities

Technical Training

- XYZ Logistics aims to revolutionize the trucking industry by leveraging technology to create an efficient supply chain.
- It is crucial for truck drivers to receive technical training and be familiar with the app and its features.

Drivers and Shippers side App



Drivers side

- Vehicle Tracking
- Shipping Details
- Billing and Invoices
- Multilingual Interface
- Automated Payments

Shipper's side

- Shipment Information
- Online Documentation
- Real-time Tracking
- Multilingual Interface
- Automated Payments

Truck Segmentation

	Purpose	Industries	Specs	Key Players
Light Duty Truck Segment	Employed for medium-sized cargo transport, suitable for regional distribution and logistics	Retail & E-Commerece; Agriculture; Small Business	• Payload Capacity typically up to 3.5 tons. • Higher fuel efficiency for urban use. • Variable cargoo ften with options for customization. • It Costs around 10L	TATA MOTORS; Mahindra; ASHOK LEYLAND
Medium Duty Truck Segment	Employed for medium-sized cargo transport, suitable for regional distribution and logistics	Construction; Material Handling; Oil &Gas	• Payload Capacity typically up to 3.5 to 16 tons. • Balanced fuel efficiency for regional transpor • It Costs around 12L - 15L	TATA MOTORS; FORCE MOTORS; BHARATBENZ
Heavy Duty Truck Segment	Designed for long-haul transportation and heavy-duty applications.	Mining; Automobile; Aviation	• Payload Capacity typically up to 50 Tons • Optimized for long-distance transport. • Larger chassis for extensive cargo capacity.	TATA MOTORS; BHARATBENZ; ASHOK LEYLAND
Specialized Truck Segment	Tailored for efficient and secure transport of specific cargo types in logistics.	Food & Beverages; Pharmaceuticals; Pharmaceuticals	• Payload Capacity typically carry 3.5 and 7 tons • Telescopic cranes capable of 370-degree rotationy.	TOYOTA; KION GROUP; ASHOK LEYLAND

Targeting the Right Truck

Less than Truck Load

It combines shipments from multiple businesses into one full truckload

LTL is used when your shipment doesn't fill the entire truck

- Good weighs : 150lbs-15000lbs
- 6 or few handling units

Medium & Heavy Duty trucks generally used

- Less Expensive
- Time delays are common
- More prone to breakage and loss
- Cost effective for the shipper with small volume & size of consignments

Full Truck Load

Moves freight from one shipper to a single destination

FTL is used when your shipment fills the entire trailer

- Good weighs : > 20000lbs
- 10 or more handling units

Heavy Duty trucks generally used

- More Expensive
- Faster & with minimum time delay
- Less prone to damages
- Cost effective for the shipper with large size of consignments

Specialized Truck Load

Tailored for efficient and secure transport of specific cargo types in logistics.

Design capability to handle perishable & critical goods

- Good weighs : > 10000lbs
- Depends on the end use case.

All three categories of truck can be used used

- Normally Expensive
- Safety is the primary objective
- Less time delay & more efficient as the organized sector handles these shipments

Our Recommendations

LTL>FTL>Specialized

XYZ Logistics should start majorly with LTL trucks in order to achieve it's main objective to organize the truck market in India, as other type of trucks are currently handled majorly by the organized sector

As the unorganized sector mostly works with small and medium-sized consignments, LTL should be our consideration

INDUSTRIES TO TARGET

E-Commerce **Retail** **Automotive Parts**

Electric vs Diesel Trucks

Key Factors determining EV growth in Truck Logistics Market

- Government Policies and Incentives
- Charging Infrastructure
- Total Cost of Ownership (TCO)
- Fleet Requirements & Operational Patterns

Major EV Fleet Operators

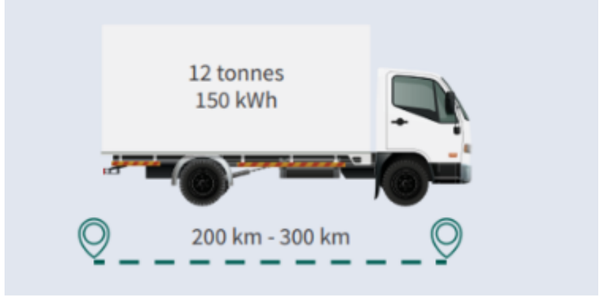
EVEREST FLEET

Cell Propulsion

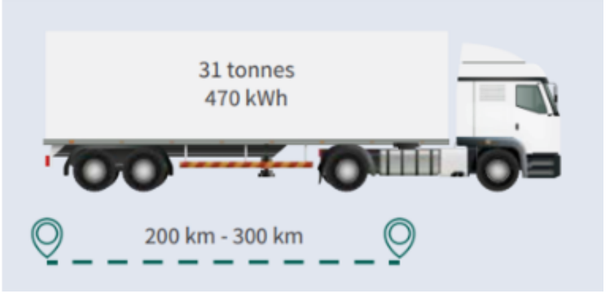
TRESA

Case 1 MDTS FOR SHORT INTERSTATE MOVEMENT

Case 2 MDTS FOR REGIONAL HAUL



Case 3 HTDS FOR REGIONAL HAUL



Case 4 HTDS FOR LONG HAUL

Fuel Type Truck	Diesel Truck	Battery Electric Truck	Fuel Cell Electric Truck
Advantages	• Conventional Technology • Faster Fueling • Time efficient	• Lower Operating Costs • Up to 82% tank to wheel efficiency • No tailpipe emissions	• Equivalent Payloads as Diesel Trucks • Up to 45% tank to wheel efficiency • No tailpipe emissions
Disadvantages	• Adverse effect on Carbon Footprint • High Operating Costs (fuel) • Up to 18% tank to wheel efficiency	• Limited range due to battery • Longer charging hours (1-8hrs) • Battery reduces payload capacity	• Nascent Technology • Higher cost of producing Hydrogen • Not that environmental friendly

Electric vs Diesel Trucks

Key Factors determining EV growth in Truck Logistics Market

Cost Components	Case 1	Case 2	Case 3	Case 4
Capital Cost	2.3x Diesel cost	3.1x diesel cost	3.7x diesel cost	6.6 x diesel cost
Operational Cost Savings	~₹9/km	₹7/km	₹18/km	₹9/km
Total savings(over vehicle life)	₹55 lakh	₹1 crore	₹1.3 crore	₹1.5 crore
Total Cost of Ownership(TCO)	~16% cheaper	~12% cheaper	At parity	1.5x expensive
Break Even Time(Yrs)	5.2 Years	6.4 Years	10.6 Years	18.6 Years

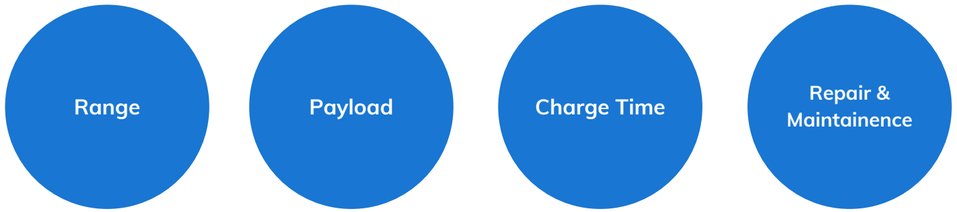
A we have decided to operate on the b2b model using LTL we recommend using MDT's on the following model:

1. **Lease purchasing and as-a-service models :**
   Leasing adds flexibility to the business model and helps fleet operators increase vehicle utilisation.

2. **Battery leasing or financing:**
   The battery can be financed separately so that the battery can remain a liability for the OEM, and operators lease the battery from the OEM

Operations

Major factors to consider while setting up an EV Truck fleet



MDT Operation

- Range: 100-300km
- Payload: 6-8 tons
- Charge Time: 6-7 hrs
- Maintenance: Electric vehicles tend to have lower maintenance costs

These operational factors are prominent for an efficient LTL B2B logistics

GTM Strategy

Phase 1 : Market Analysis & Location setup

Major Activities:

1. Analysis of the Truck logistics Market
2. Analyzing & Choosing Locations for setup
3. Choosing between Leasing vs Owning
4. Choosing Target Industries
5. Analyzing different logistics Modal
6. Choosing LTL, FTL & Specialized Trucks

Locations:

Mumbai

Chennai

These locations are suggested considering all parameters mentioned earlier like :

- Market attractiveness,
- Industry setup,
- access to other modes of transport
- They are the part of the golden quadrilateral

Phase 3 : Drivers Onboarding

- Spreading awareness about Drivers vacancy through various ways such as spreading in personal connections, local fleet and networks
- Hiring drivers with experience and clean background
- 1 week compulsory training for drivers to get them familiarized with the tech infrastructure
- Assigning consignments to the drivers on the basis of their experience

Phase 2 : Fleet setup and Integration

1. Purchasing land for establishing fleet
2. Find Clients & Partners
3. Leasing the trucks for the first consignment
4. Setting up our Tech infra into the trucks
5. Setting up Multimodal integration trucks & train

How to setup a intermodal?

- Getting sorted with some licenses/certificates
- Strategic partnership with rail operators
- Feasibility to integrate with the IDS of national Logistics policy

Target:

Reaching out and building connections with atleast 5 small fleet operators for future consignments

Industries to target:

Automobile

Offline Retail

Pharmaceuticals

GTM Strategy

Phase 4 : EV Introduction

1. Fleet compatibility study
2. Partnership with EV fleet manufactures
3. Leasing MTD EV trucks
4. Technically Integrate EV truck with existing system
5. Partnership with EV charging and battery swaping companies
6.

Types of Charging Infrastructure

- In-house Charging
- Battery Swapping
- En - route charging
- Hybrid Charging

We Suggest 2 models:

En-route Charging:

- 👍 Enables longer travel with low capital investment
- 👎 Long waiting time

Battery Swaping

- 👍 Less time to swap
- 👎 Different battery pack would lead to additional cost

Phase 5 : Expansion to other Services & Cities

Current Positon

Current B2B logistics using LTL with majority least assets

→

3PL

Warehousing and distribution, inventory management, returns processing

→

4PL

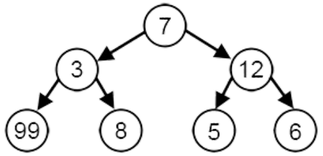
Strategic Supply Chain consulting, network optimization, IT Integration/Analytics

Bonus Question- Daily Schedule for the operation of each truck

The methodology used to create a daily schedule for the operations of each truck

Greedy's Algorithm

A greedy algorithm is a computer science algorithm that solves to find the optimal solution



As the algorithm can achieve this by making locally optimal choices at each step, sometimes it misses the constraints. Manual correction is needed for the same

We have used LLM that is trained use Grredy's algorithm to find the optimal solution

Key assumptions taken

Each Truck is been Driven for 14 hours a day

Constraints fulfilled

- ✓ Monthly Running Requirement of min. 200 hrs
- ✓ Weekly Running Requirement of min. 50 hrs
- ✓ Min, and max. hrs of each good
- ✓ Overall monthly Travel limit of 27000 hours
- ✓ Optimized Break and Continuous Operation Patterns
- ✓ Maximized Revenue

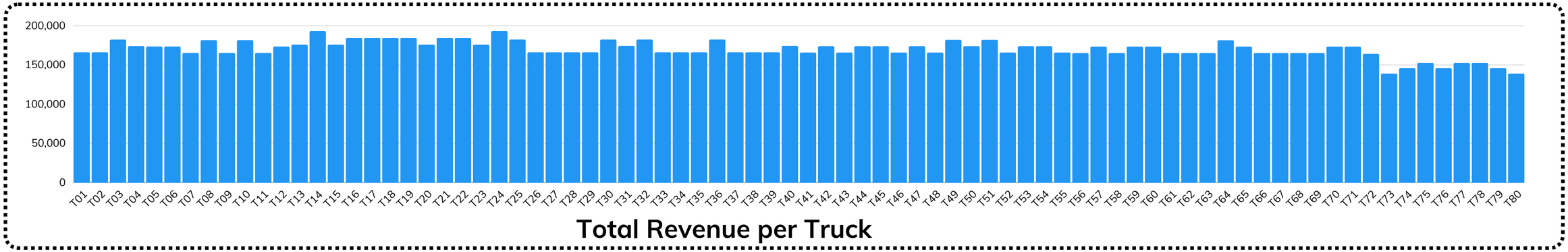
Daily Schedule of Trucks Report

₹1.36 Cr
Total Revenue

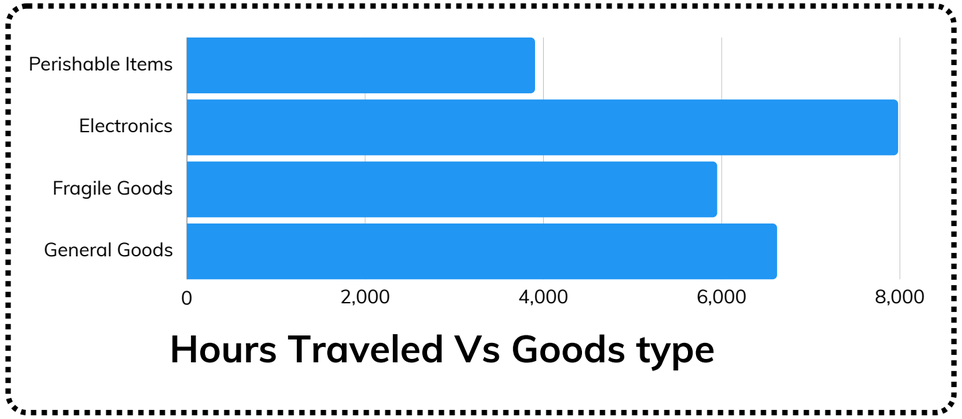
24,458
Total Hours Traveled

7.6
Avg. breaks/month

₹1.7 Lakhs
Avg. Revenue/Truck

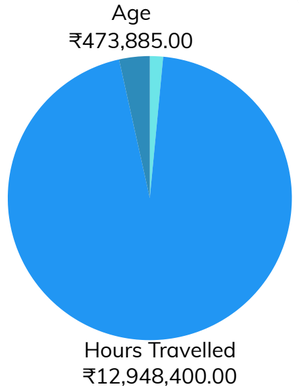


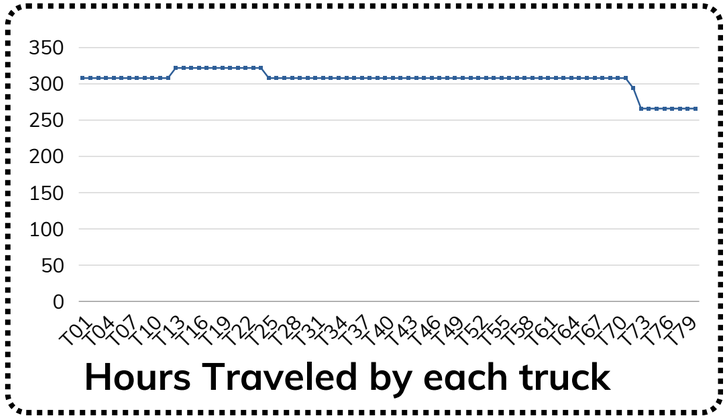
Total Revenue per Truck



Hours Traveled Vs Goods type

Revenue Split





Hours Traveled by each truck

Glimpse of Daily Schedule of Trucks

Truck ID	Age	Day1	Day 2	Day 3	Day 4	Day 5	Hours Worked					Revenue			
							Perishables Item	Fragile Goods	Electronics	General Goods	Total Hours	Based on hours	Based on Good	Based on age	Total Revenue
T01	9	Perishable Items	General Goods	General Goods	Perishable Items	Break	70	84	98	56	308	163100	3036.922	0	166136.922
T02	10	Perishable Items	General Goods	General Goods	Perishable Items	Break	70	84	98	56	308	163100	3036.922	0	166136.922
T03	2	Perishable Items	General Goods	General Goods	Break	Fragile Goods	56	98	98	56	308	163100	2991.254	16310	182401.254
T04	3	Perishable Items	General Goods	General Goods	Break	Fragile Goods	56	84	98	70	308	163100	2808.582	8155	174063.582
T05	3	Perishable Items	General Goods	General Goods	Break	Fragile Goods	28	56	126	98	308	163100	2214.898	8155	173469.898
T06	3	Perishable Items	General Goods	General Goods	Break	Fragile Goods	28	56	126	98	308	163100	2214.898	8155	173469.898
T07	6	Perishable Items	General Goods	General Goods	Break	Fragile Goods	28	56	126	98	308	163100	2214.898	0	165314.898
T08	1	Perishable Items	General Goods	General Goods	Break	Fragile Goods	28	56	126	98	308	163100	2214.898	16310	181624.898
T09	10	Perishable Items	General Goods	General Goods	Break	Fragile Goods	28	56	126	98	308	163100	2214.898	0	165314.898
T10	2	Perishable Items	General Goods	General Goods	Break	Fragile Goods	28	56	126	98	308	163100	2214.898	16310	181624.898
T11	7	Perishable Items	General Goods	General Goods	Break	Fragile Goods	28	56	126	98	308	163100	2214.898	0	165314.898
T12	3	Perishable Items	General Goods	General Goods	Break	Fragile Goods	28	56	126	98	308	163100	2214.898	8155	173469.898
T13	9	Fragile Goods	Fragile Goods	Fragile Goods	Fragile Goods	Breaks	42	112	84	84	322	172900	3001.544	0	175901.544
T14	1	Fragile Goods	Fragile Goods	Fragile Goods	Fragile Goods	Breaks	42	112	84	84	322	172900	3001.544	17290	193191.544
T15	7	Fragile Goods	Fragile Goods	Fragile Goods	Fragile Goods	Breaks	42	112	84	84	322	172900	3001.544	0	175901.544
T16	4	Fragile Goods	Fragile Goods	Fragile Goods	Fragile Goods	Breaks	42	112	84	84	322	172900	3001.544	8645	184546.544
T17	4	Fragile Goods	Fragile Goods	Fragile Goods	Fragile Goods	Breaks	42	112	84	84	322	172900	3001.544	8645	184546.544
T18	3	Fragile Goods	Fragile Goods	Fragile Goods	Fragile Goods	Breaks	42	112	84	84	322	172900	3001.544	8645	184546.544
T19	4	Fragile Goods	Fragile Goods	Fragile Goods	Fragile Goods	Breaks	42	112	84	84	322	172900	3001.544	8645	184546.544
T20	8	Fragile Goods	Fragile Goods	Fragile Goods	Fragile Goods	Breaks	42	112	84	84	322	172900	3001.544	0	175901.544

Link to complete schedule

Thank You