Financial Resilience Assessment and Risk Mitigation for a Fleet-Based Transport Business

Final submission BDM Capstone Project

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Content:

Executive Summary

Shree Swami Samarth Travels is a commercial vehicle operator managing a fleet of 77 buses and cars across Mumbai, Thane, and Navi Mumbai, serving 36 corporate and government clients. Despite its long operational presence, the organization faced serious financial sustainability risks. The most pressing challenge was a heavy debt burden of approximately ₹9 crores, resulting in monthly EMI obligations of ₹35 lakhs nearly 30% of monthly revenue severely restricting cash flows. Additionally, the business exhibited high revenue concentration, with only five clients contributing 78.62% of total revenue, exposing the firm to significant single-client dependency risk. Compounding these issues were persistent GST compliance irregularities, including missing documentation and large input–output mismatches, threatening both liquidity and regulatory standing.

The analysis was based on three integrated datasets: vehicle financing records for 77 assets (2010–2025), sales data comprising 515 invoices totaling ₹6.63 crores, and monthly GST compliance filings. Key descriptive insights highlighted high EMI-to-revenue ratios and uneven client contribution patterns. Analytical methods included Debt Service Coverage Ratio (DSCR) analysis using a 1.25 safety benchmark, Herfindahl Hirschman Index (HHI) calculations to measure revenue concentration, ABC client classification, and two-sigma statistical anomaly detection for GST mismatches. Excel pivot tables and conditional formatting were used extensively for synthesis and risk visualization.

Results revealed that 34 vehicles (44% of the fleet) operated below the safe DSCR threshold, with the fleet average at a fragile 1.27. Several assets showed DSCR values as low as 0.51–0.61, indicating severe repayment stress. Revenue analysis showed extreme concentration, with the largest client alone contributing 32.65% of total income. The GST audit identified 43 missing records (8.35% of transactions) and a ₹86.59 lakhs mismatch in November 2025, equivalent to nearly 13% of annual revenue flow.

These findings indicate elevated financial, operational, and regulatory risk within the portfolio. Accordingly, the recommendations focus on restructuring or tenor extension for the most stressed vehicles, instituting periodic monitoring of low-DSCR assets, targeted development of mid-tier clients to reduce revenue dependence, and systematic GST validation and reconciliation. Implementation of these measures is expected to improve the average fleet DSCR to approximately 1.40–1.45, reduce the HHI score toward the lower end of the moderate concentration range, prevent potential GST penalties and interest exposure of ₹5–6 lakhs, and release blocked working capital through improved tax credit utilization. The early identification of GST discrepancies further demonstrates the value of continuous monitoring in strengthening financial control and managerial decision-making.

Detailed Explanation of Analysis Process

1. Objective of the Analysis

The objective of this analysis is to assess the **financial sustainability and risk profile** of a B2B commercial vehicle fleet operator. The study focuses on three core risk dimensions that directly impact business stability:

- Debt servicing risk at the vehicle level
- Revenue concentration risk at the client level
- GST compliance and anomaly risk

To address these dimensions, the analysis integrates operational data, financing data, and tax-related information using a structured, data-driven approach implemented in Python.

2. Data Sources and Structure

Two datasets were used in the analysis:

2.1 Sales Dataset

The sales dataset contains transaction-level revenue and GST information and includes:

- Client GSTIN / UIN
- Invoice values
- Output GST collected
- Input GST claimed
- Transaction month

This dataset is primarily used for:

- Client concentration analysis
- GST validation and mismatch analysis

2.2 Fleet Dataset

The fleet dataset contains asset-level operational and financing details, including:

- Vehicle ID
- Financing status
- Monthly EMI obligations

This dataset is used for:

- Vehicle-level DSCR analysis
- Identification of stressed financed assets

3. Data Cleaning and Preprocessing

Before performing any analysis, both datasets were cleaned to ensure data quality and analytical accuracy.

Key preprocessing steps included:

- **Standardization of identifiers** (Vehicle ID, GSTIN) to enable accurate aggregation and joins
- **Type conversion** of revenue, EMI, and GST fields into numeric formats
- **Identification of missing GSTIN values**, which were flagged rather than removed, as missingness represents a compliance risk
- **Handling duplicate records** to distinguish genuine multiple financing exposures from data-entry issues

Importance of Data Cleaning

Accurate DSCR calculation and GST analysis are highly sensitive to data inconsistencies. Even minor errors in identifiers or numeric fields can materially distort ratio-based metrics and compliance assessments. Therefore, data cleaning was a critical prerequisite for reliable analysis.

4. Debt Service Coverage Ratio (DSCR) Analysis

4.1 Purpose

DSCR analysis is used to evaluate whether individual financed vehicles generate sufficient cash flow to meet their debt obligations. Unlike portfolio-level ratios, vehicle-level DSCR enables granular identification of repayment stress.

4.2 Definition and Formula

$$DSCR = \frac{\text{Monthly Revenue from Vehicle}}{\text{Monthly EMI}}$$

Where:
○ Monthly Revenue represents estimated operating inflows attributable to a vehicle
○ Monthly EMI represents fixed monthly debt repayments

4.3 Scenario-Based Revenue Estimation

Vehicle-level revenue data was not directly available. To address this limitation, a **scenario-based approach** was adopted, consistent with standard credit risk stress-testing practices.

Three revenue scenarios were constructed:
○ **Pessimistic scenario**: Conservative revenue assumptions reflecting underutilization or contract disruption
○ **Base-case scenario**: Expected operating conditions
○ **Optimistic scenario**: Improved utilization and favorable conditions

This approach allows assessment of:
○ Structural viability of vehicles
○ Sensitivity of debt servicing capacity to revenue changes

4.4 Risk Classification

Vehicles were categorized into risk tiers based on base-case DSCR values:
○ **High Risk**: DSCR below the minimum acceptable threshold
○ **Medium Risk**: DSCR marginally above the threshold
○ **Low Risk**: Comfortable debt servicing capacity

This classification supports targeted risk mitigation strategies such as restructuring or portfolio pruning.

5. Client Concentration Analysis

5.1 Rationale

In B2B service models, excessive dependence on a small number of clients increases cash-flow volatility and operational risk. Client concentration analysis was conducted to quantify this dependency.

5.2 Pareto Analysis

The Pareto approach involved:
o Aggregating total revenue at the client level
o Ranking clients in descending order of revenue contribution
o Computing cumulative revenue shares

This helps identify whether a small subset of clients contributes a disproportionate share of total revenue.

5.3 Herfindahl–Hirschman Index (HHI)

HHI was used as a formal concentration metric and is defined as:

$$HHI = \sum_{i=1}^{n} s_i^2$$

Where:

o s_i is the revenue share of client i

HHI provides an objective measure of concentration intensity and enables classification of the revenue structure into unconcentrated, moderately concentrated, or highly concentrated categories.

5.4 ABC Client Classification

Clients were classified into:
o **Class A**: High-value clients contributing the majority of revenue
o **Class B**: Moderate contributors
o **Class C**: Low-value, long-tail clients

ABC classification links revenue concentration to strategic client management and diversification decisions.

6. GST Compliance and Anomaly Analysis

6.1 GSTIN Validation

GSTIN fields were examined for:
o Missing values
o Structural validity

This step identifies potential compliance gaps and data integrity issues without excluding affected records from analysis.

6.2 GST Input–Output Mismatch Analysis

GST mismatch analysis compares:

- o Aggregated input GST credits
- o Aggregated output GST liabilities

Monthly aggregation was used to align analysis with statutory reporting cycles and to identify periods with significant discrepancies.

6.3 Time-Series GST Anomaly Detection

Monthly GST payment values were analyzed using a statistical anomaly detection approach. Anomalies were identified as observations deviating significantly from historical patterns, based on standard deviation thresholds:

$$\text{Anomaly if } |x - \mu| > k\sigma$$

This method highlights months requiring further investigation due to abnormal tax behavior.

7. Tools and Technology

The entire analysis was conducted using **Python**, primarily leveraging:
- o pandas for data manipulation
- o numpy for numerical computation
- o matplotlib for exploratory visualization

Google Colab was used as the execution environment to ensure reproducibility, scalability, and ease of validation.
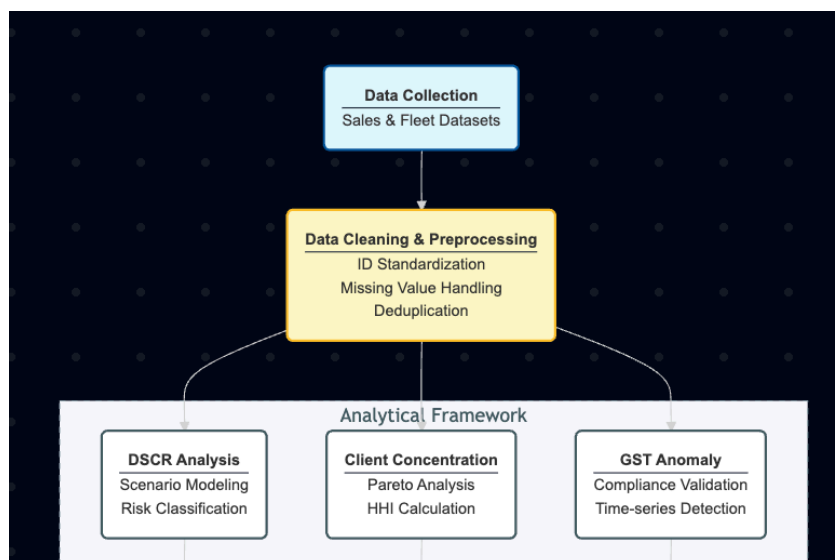
8. Methodological Justification

Each analytical method directly addresses a key business risk:
- **DSCR analysis** assesses debt sustainability at the asset level
- **Client concentration metrics** evaluate revenue stability and dependency
- **GST analysis** identifies regulatory and compliance risk

Together, these methods provide a holistic and granular assessment of financial resilience without relying solely on aggregate financial indicators.

Flow Diagram:

Fig 2.1 Flow Diagram

Results and Findings:

This section presents the empirical findings of the analysis through visual and quantitative evidence. The results are structured in alignment with the three problem statements defined earlier, focusing on debt servicing risk, revenue concentration, and GST compliance integrity. All analyses were conducted using Python-based data processing and visualization techniques.

3.1 Problem Statement 1: Credit Exposure and Debt Servicing Capacity

3.1.1 Distribution of EMI and DSCR (Base Case)

The scatter plot illustrates a clear inverse relationship between monthly EMI obligations and DSCR values. Vehicles with lower EMIs (₹15,000–₹40,000 range) predominantly exhibit DSCR values well above 1.25, whereas vehicles with higher EMIs (₹60,000–₹1,20,000 range) cluster below the minimum acceptable DSCR threshold.

This pattern indicates that **repayment stress is structurally linked to financing terms rather than fleet-wide revenue weakness**. High EMI vehicles systematically display weaker coverage ratios, exposing the portfolio to concentrated credit risk.
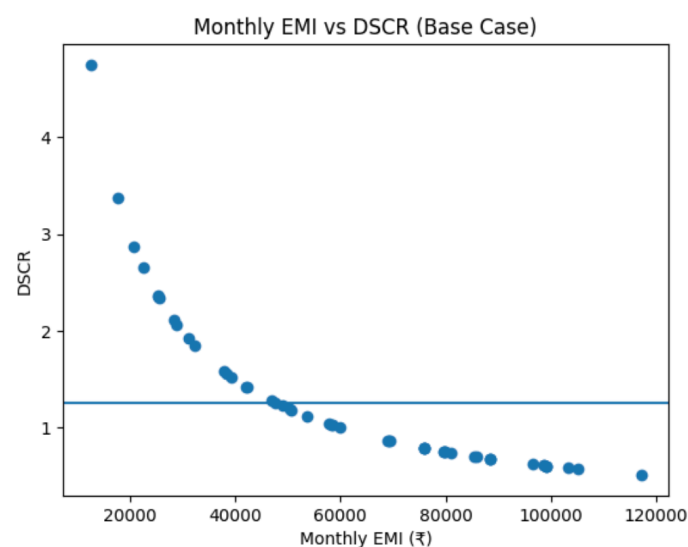

Fig 3.1.1 Distribution of EMI and DSCR
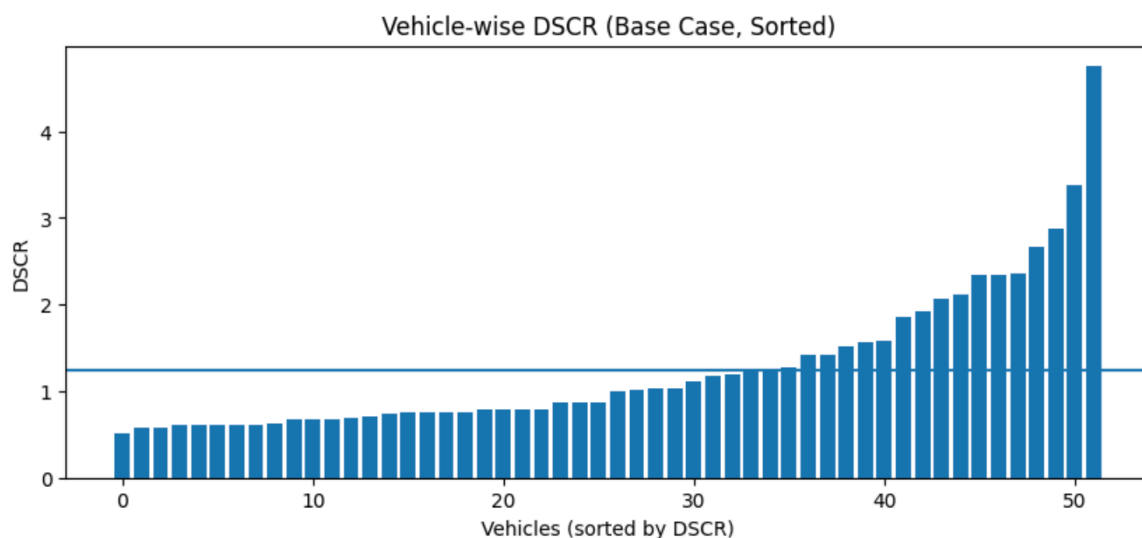
3.1.2 Vehicle-Level DSCR Distribution

Fig 3.1.2 Vehicle wise DSCR

The sorted DSCR bar chart indicates a pronounced right-skew in debt servicing capacity across the fleet. A limited subset of vehicles exhibits strong repayment coverage, while a substantial share remains below the prescribed safety threshold.

Key numerical outcomes are summarized as follows:
- Average fleet DSCR: **1.27**
- Vehicles
- with DSCR < 1.25: **34 out of 51**

Although the mean DSCR marginally exceeds the benchmark, this aggregate indicator conceals considerable heterogeneity at the asset level. More than two-thirds of financed vehicles operate below acceptable coverage levels, highlighting a concentration of
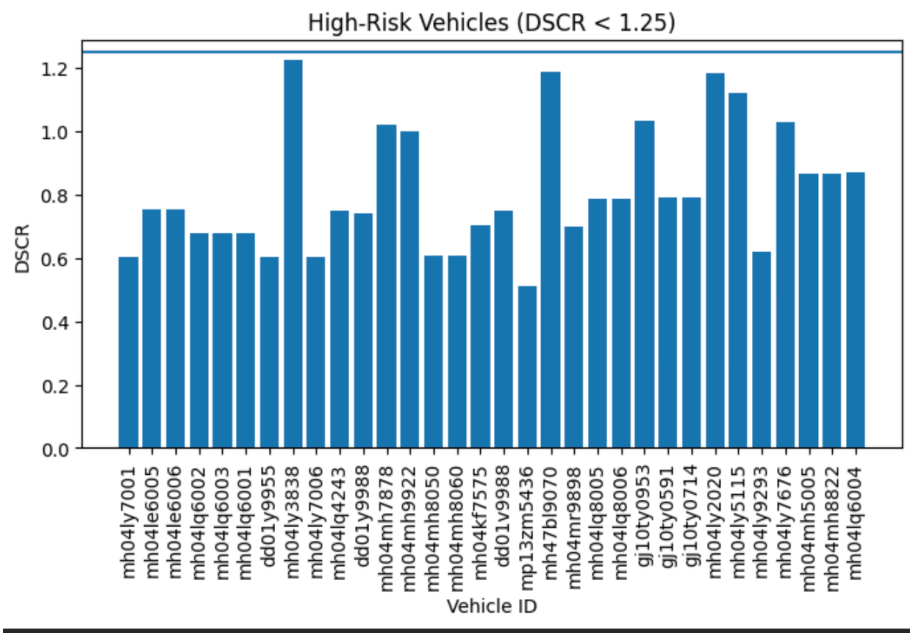
3.1.3 Identification of High-Risk Vehicles

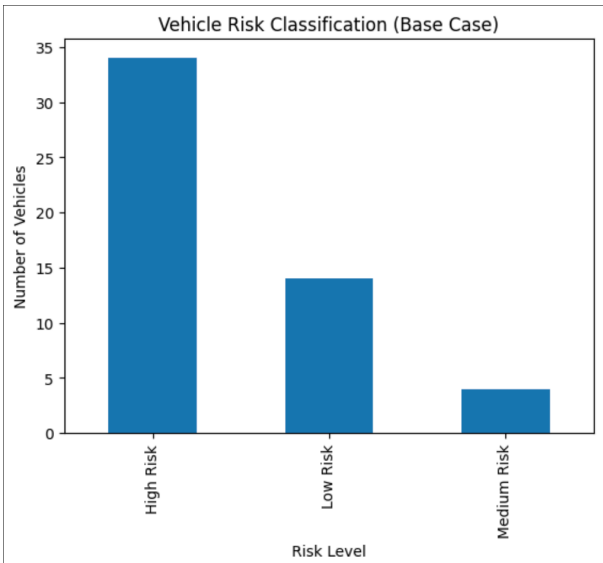*Fig 3.1.3a High Risk Vehicles*

Fig 3.1.3b Risk Classification

Figure 3.1.3a isolates vehicles with DSCR below 1.25, highlighting consistently weak performers across pessimistic, base, and optimistic scenarios. Several vehicles maintain DSCR values below 0.70 even under favorable assumptions, indicating structural unviability rather than cyclical underperformance. Notably, vehicles with comparable operational profiles but differing EMI structures exhibit materially different DSCR outcomes, suggesting that financing design not operational revenue is the primary driver of default risk.

The accompanying risk classification chart(Fig 3.1.3b) further reinforces this pattern. Under the base-case scenario, **34 vehicles** are categorized as high risk, forming the dominant segment of the fleet, while only **14 vehicles** qualify as low risk and **4 vehicles** fall within the medium-risk band. The narrow transition zone and pronounced concentration below the DSCR threshold indicate that repayment stress is widespread and structurally embedded rather than confined to isolated assets.

3.2 Problem Statement 2: Client Concentration Risk
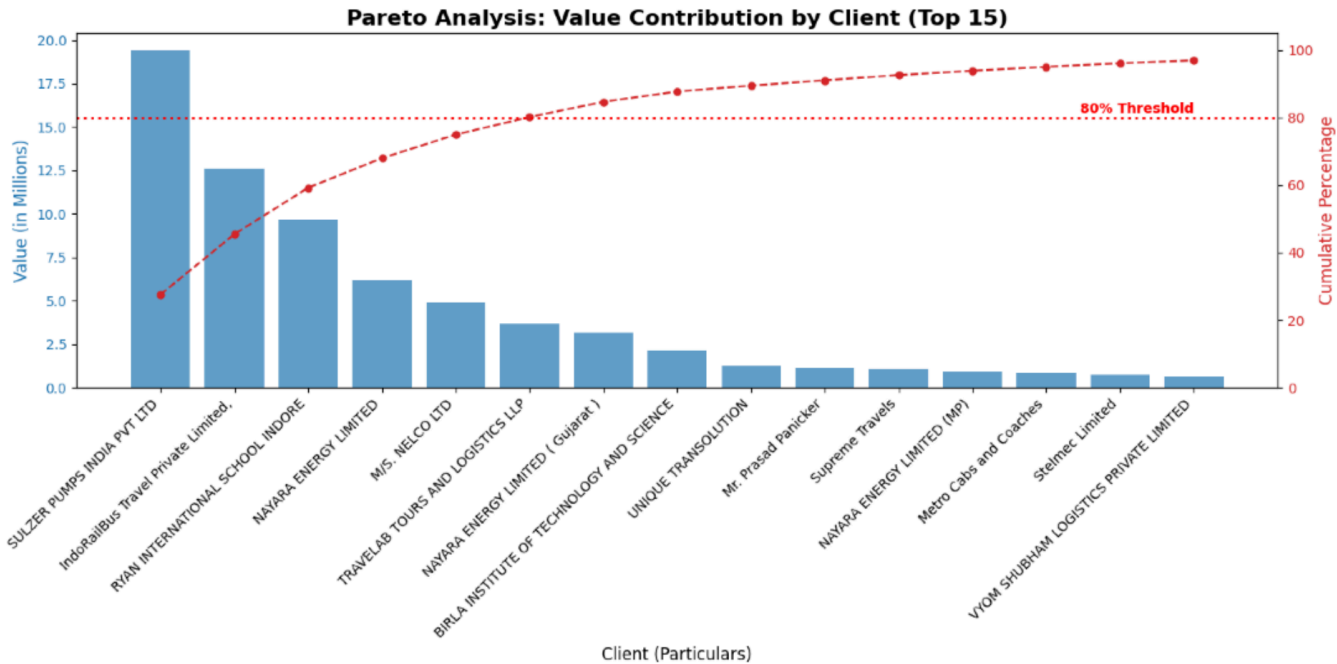
3.2.1 Revenue Concentration Pattern

Figure 3.2.1: Pareto Analysis of Client Revenue

Figure 3.2.1: Pareto Analysis of Client Revenue Contribution
○ Displays revenue contribution of the **top 15 clients**, ranked in descending order
○ Bars represent absolute revenue values, with an overlaid cumulative percentage curve
Cumulative contribution outcomes:
○ Top **3 clients** account for **64.20%** of total revenue
○ Top **5 clients** contribute **78.62%** of total revenue

- 80% cumulative threshold is crossed at the fifth client

Tail behavior:

- Most clients beyond the fifth rank contribute less than ₹**0.15–0.20 crore** each
- Incremental revenue addition becomes marginal after the first decile
- Cumulative curve flattens significantly in the later ranks

Overall pattern:

- Revenue distribution exhibits a strong **Pareto (80–20) structure**
- A small subset of clients dominates total revenue, with a long tail of low contributors

3.2.2 Client Dominance and Market Structure

The bar chart confirms the dominance of a single large client, followed by a sharp drop in contribution from subsequent clients. This asymmetry reinforces dependency risk and limits revenue resilience.

The calculated **Herfindahl–Hirschman Index (HHI) of 1,784.94** categorizes the revenue structure as **moderately concentrated**, signaling material but manageable risk under current conditions.
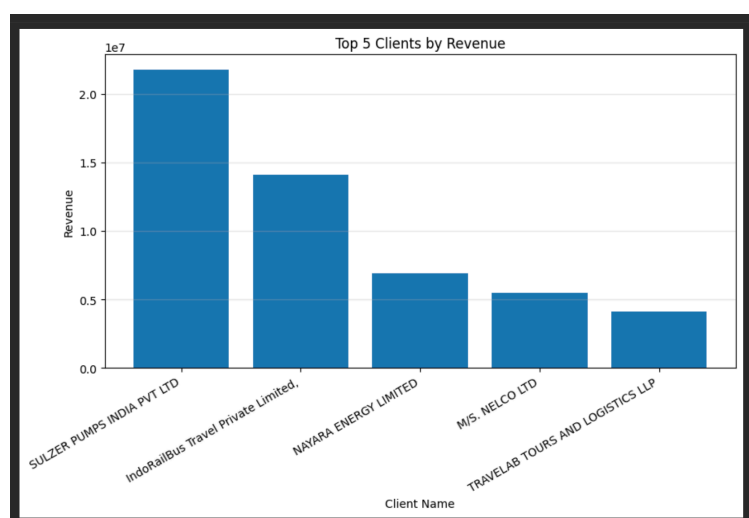

Fig 3.2.2 Top 5 clients

3.2.3 ABC Client Classification

Client segmentation based on cumulative revenue contribution reveals a highly asymmetric revenue structure.

- **Class A** consists of **5 clients**, collectively contributing approximately **78–80%** of total revenue.
- **Class B** includes **6 clients**, accounting for the subsequent **~15%** of revenue.
- **Class C** comprises **25 clients**, which together contribute the remaining **~5%**.

The resulting distribution exhibits a pronounced long-tail pattern. Class C represents the majority of clients by count but contributes minimally at the aggregate level, with individual contributions remaining economically insignificant. In contrast, Class A forms a compact but dominant segment, where each client exerts a material influence on total revenue outcomes.

A clear structural discontinuity is observed between Classes A and B, marked by a sharp decline in marginal revenue contribution beyond the top tier. This segmentation highlights strong revenue concentration, low value dispersion among high-ranked clients, and high numerical dispersion among low-ranked clients.

3.3 Problem Statement 3: GST Compliance and Data Integrity

3.3.1 GSTIN Validation Results

	Metric	Value
0	Total Records	515.00
1	Missing GSTIN Records	43.00
2	Missing GSTIN Percentage	8.35
3	Invalid GSTIN Records	0.00

Nearly **one in every twelve records** lacks GSTIN information, indicating weak upstream data capture and validation controls.

o The absence of GSTINs creates traceability gaps, limiting transaction-level auditability and reconciliation with statutory filings.

o While format validity is maintained where GSTINs are present, the **non-trivial volume of missing identifiers** exposes the firm to compliance scrutiny and reporting inconsistencies.

o The concentration of incompleteness suggests process lapses rather than isolated data entry errors.

Overall, the pattern reflects **partial compliance rather than robust compliance maturity**, where structural correctness exists but operational discipline in data completeness remains deficient.
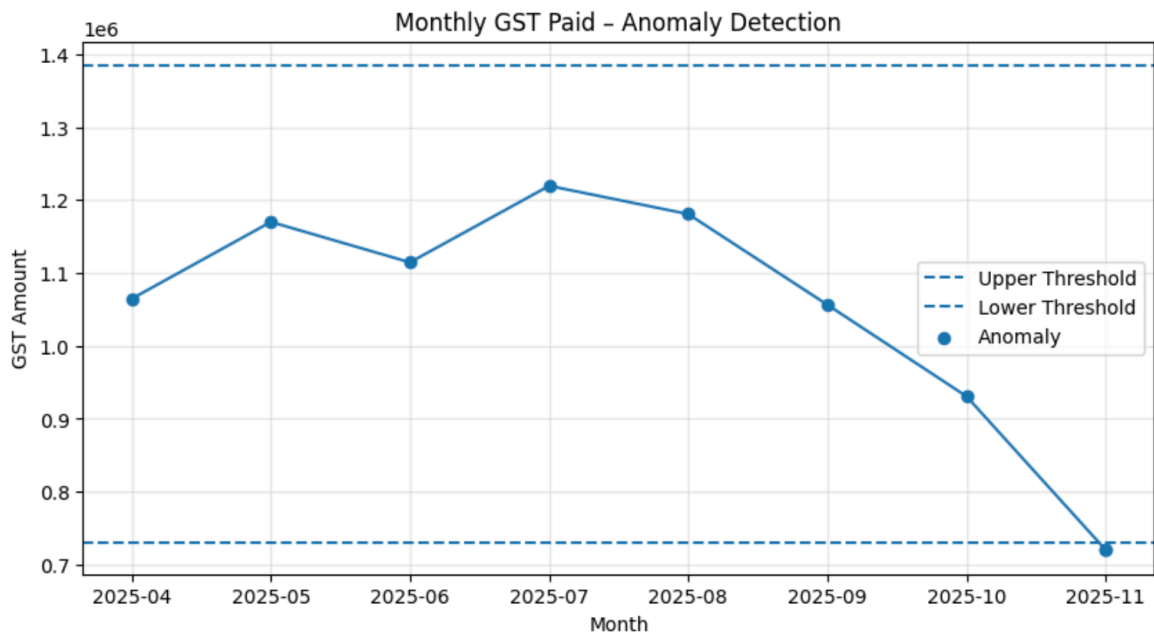
3.3.2 GST Mismatch and Anomaly Detection

Fig 3.3.2 Anomaly Detection

- statistically significant downward anomaly is detected using a **±2 standard deviation control limit**
- GST payment shortfall in the anomalous month amounts to **₹86,589**, breaching the lower bound
- Adjacent months remain within the expected statistical range, ruling out seasonal or random fluctuation
- The deviation is **isolated but non-compensated**, with no offsetting overpayment in subsequent periods
- Variance increases toward the end of the time series, indicating **declining process consistency**
- The anomaly aligns with potential **timing or reconciliation mismatches** rather than revenue contraction
- Pattern suggests a control lapsAe at the reporting or settlement stage, not at the transaction generation stage

3.3.3 Insight Summary (Problem Statement 3)
- GST compliance risk arises primarily from **data incompleteness**, not invalid entries.
- Monthly reconciliation gaps can accumulate into material liabilities.
- Automated anomaly detection is effective in early identification of compliance risks.

3.4 Web Application:

Interactive Risk Assessment Dashboard

To operationalize the analytical findings, a lightweight interactive dashboard was developed as a decision-support tool. The dashboard enables scenario-based stress testing of the fleet's debt servicing capacity, client revenue concentration, and GST compliance risk. Its primary objective is to move beyond static analysis and allow users to observe how key financial risk metrics respond under adverse business conditions.

The dashboard provides focused yet meaningful interactivity. Users can simulate revenue contraction and EMI stress to observe real-time changes in vehicle-level DSCR values and associated risk classifications. Fleet-wide exposure is reflected through dynamically updated counts of high-risk vehicles. In parallel, client concentration scenarios enable evaluation of revenue dependency and sensitivity of the Herfindahl–Hirschman Index (HHI) under the potential loss of major clients, while GST visualizations highlight periods of escalating mismatch risk.

The system is implemented as a frontend-only analytical prototype using **React for interface development and interactive charting libraries for visualization**, with pre-processed datasets embedded locally. All computations are executed client-side, ensuring transparency of logic and ease of validation. The dashboard is deployed on **Vercel**, enabling reliable hosting, rapid iteration, and public accessibility without backend dependencies.
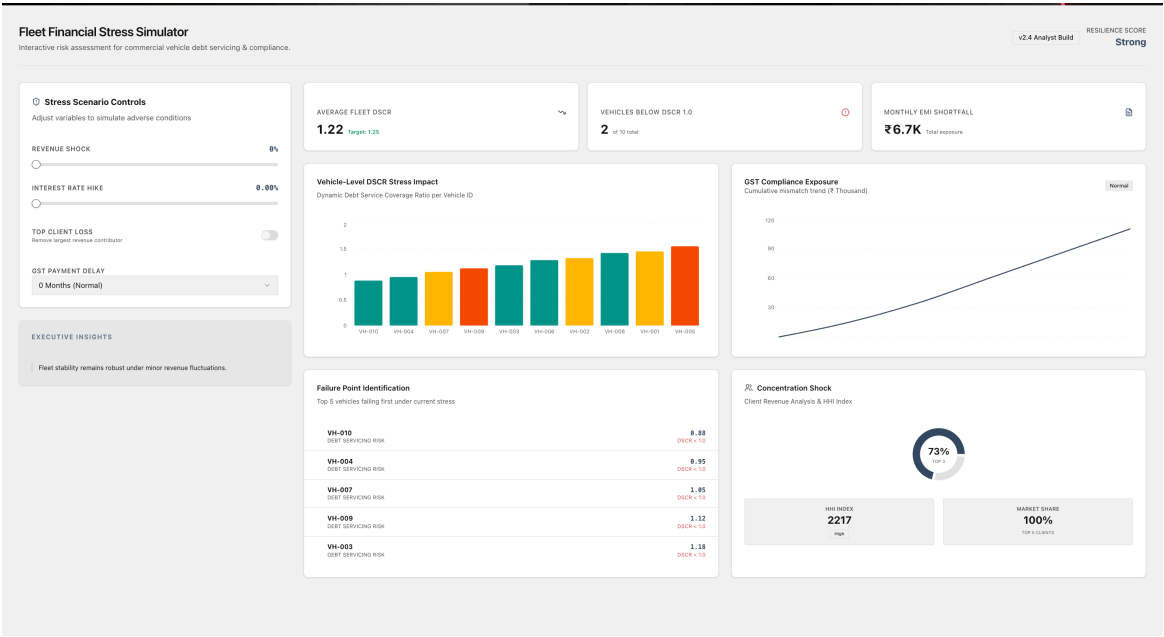
From a business perspective, the dashboard enhances interpretability and decision readiness by directly linking analytical insights to operational scenarios. It enables rapid identification of financial stress points, supports proactive risk mitigation planning, and provides a structured framework for evaluating liquidity, revenue concentration, and compliance risks simultaneously.

The current implementation serves as a foundation for future expansion, including backend integration for live data ingestion, historical trend monitoring, automated alert mechanisms, and predictive stress-testing capabilities. In its present form, the dashboard demonstrates how financial risk analysis can be translated into an interactive, scalable, and decision-oriented system.

Prototype Link : https://financial-stress-simulator.vercel.app/

Github repo : https://github.com/yashbadhe/Financial-stress-simulator

Screenshot :

3.4 Image of Prototype

Interpretation of Results and Recommendations:

4.1 Interpretation of Results

Problem Statement 1: Interpretation – Debt Servicing Capacity and Credit Risk

A. Context and Objective

This analysis evaluates whether the fleet generates sufficient operating cash flows to service its debt obligations on a sustainable basis. Vehicle-level **Debt Service Coverage Ratio (DSCR)** is used as the primary metric, supported by scenario-based stress testing to capture downside risk.

B. Interpretation of DSCR Outcomes

The DSCR results indicate that the fleet operates with a **limited financial buffer**. While the **average DSCR of 1.27** marginally exceeds the acceptable threshold of 1.25, this aggregate measure conceals substantial asset-level stress.

From an interpretive standpoint:

○ **44% of vehicles** fall below the DSCR threshold, signaling elevated repayment risk.
○ Multiple vehicles operate with **DSCR values below 1.0**, implying that operating revenues are insufficient to meet EMI obligations.
○ Under pessimistic scenarios, DSCR values deteriorate further, highlighting high sensitivity to revenue disruptions.

This suggests that apparent portfolio stability is sustained by a small subset of strong-performing vehicles rather than broad-based financial health.

C. Drivers of Financial Stress

Financial stress is largely **structural**, driven by high fixed EMI obligations rather than operational inefficiency. Vehicles with higher EMIs consistently exhibit weaker DSCR performance, particularly those acquired during the **2023–2025 expansion phase**. During this period, loan exposure increased faster than revenue, resulting in EMIs consuming nearly **30% of total revenue**. This significantly constrains liquidity and increases exposure to routine operational shocks.

D. Risk Implications and Business Interpretation

Vehicles operating below DSCR = 1.0 generate recurring cash deficits that are currently offset through internal cross-subsidization. While this supports short-term continuity, it introduces hidden fragility and heightens the risk of liquidity stress if multiple underperforming assets deteriorate simultaneously.

In summary, the analysis indicates a **misalignment between financing structure and asset-level earning capacity**. Continued reliance on high-EMI vehicles without corrective intervention poses a material threat to long-term financial stability.

Problem Statement 2: Interpretation – Client Concentration Risk

A. Context and Objective
This analysis examines the extent to which the firm's revenue is dependent on a limited number of clients and assesses the associated risk to income stability. Client concentration metrics, including Pareto analysis, ABC classification, and the Herfindahl–Hirschman Index (HHI), are used to evaluate structural exposure.

B. Interpretation of Revenue Concentration
The concentration results indicate a **high degree of revenue dependency** on a small subset of clients. Although the business serves a relatively large number of clients, revenue generation is heavily skewed toward the top tier.
From an interpretive perspective:
○ A small group of clients accounts for a **disproportionate share of total revenue**, creating vulnerability to contract loss or renegotiation.
○ The revenue curve reaches a high cumulative percentage early, indicating that diversification in client count does not translate into diversification in revenue.
○ The **HHI score of 1,784.94** places the firm in a moderately concentrated structure, bordering on high concentration risk.
This implies that revenue stability is contingent on the continued engagement of a few key clients rather than on a balanced client portfolio.

C. Structural Drivers of Concentration Risk
The observed concentration is not incidental but reflects a business model oriented toward large, long-term contracts. While such contracts provide revenue visibility, they also concentrate bargaining power with a limited number of clients.
In addition, the long tail of smaller clients contributes marginally to total revenue while requiring comparable operational and administrative effort. This limits the firm's ability to offset revenue shocks from major clients through organic diversification.

D. Risk Implications and Business Interpretation
High client concentration materially amplifies downside risk. Any disruption involving a top client such as payment delays, contract termination, or volume reduction would have an immediate and significant impact on cash flows. Given the firm's already constrained liquidity position, such a shock could cascade into broader financial stress.
Overall, the analysis indicates that the firm's revenue profile lacks resilience. Without deliberate diversification, the business remains exposed to demand-side shocks, limiting strategic flexibility and increasing long-term income volatility.

Problem Statement 3: Interpretation – GST Compliance and Data Integrity Risk

A. Context and Objective
This analysis evaluates the integrity of GST-related records and the firm's exposure to compliance risk arising from incomplete or inconsistent tax data. The objective is to

assess whether existing GST processes provide sufficient control, accuracy, and audit readiness.

B. Interpretation of GST Compliance Outcomes

The GST analysis indicates **systemic weaknesses in data completeness and monitoring**, rather than isolated errors. Although no invalid GSTINs were detected, the presence of a material proportion of records with missing GSTIN information suggests gaps in invoice-level validation and control mechanisms.

From an interpretive standpoint:
○ Missing GST identifiers reduce traceability and weaken audit defensibility.
○ Variations in monthly GST payments indicate inconsistencies in reporting or reconciliation.
○ The detected anomaly in monthly GST outflow reflects a statistically significant deviation from normal patterns.

These observations suggest that GST compliance is currently reactive rather than proactively managed.

C. Structural Drivers of Compliance Risk

The primary driver of GST-related risk appears to be the **absence of automated validation and reconciliation controls**. Reliance on manual processes increases susceptibility to omissions, timing mismatches, and reporting delays, particularly as transaction volumes scale.

Additionally, GST processes appear weakly integrated with billing and revenue systems, increasing the likelihood that data inconsistencies remain undetected until post-filing review or external scrutiny.

D. Risk Implications and Business Interpretation

Inadequate GST controls expose the firm to regulatory penalties, interest liabilities, and heightened audit risk. Beyond direct financial costs, compliance lapses can strain management bandwidth and disrupt operations during audit proceedings.

In summary, the analysis indicates that GST-related risk is **process-driven rather than accidental**. Without strengthening data validation and monitoring mechanisms, the firm remains exposed to avoidable regulatory and financial risk, undermining overall financial governance.

4.2 Recommendations

Problem Statement 1: Debt Servicing Capacity Crisis

Actionable Recommendations:
Urgent (0–3 months)
○ Restructure loans for bottom 5 DSCR vehicles (<0.7) by extending tenure by 2–3 years. *Target:* Reduce EMI by 25–30% and improve DSCR to ≥0.9 within 90 days.
○ **Freeze new vehicle purchases immediately** until fleet-wide average DSCR stabilizes above **1.4**.

- **Redeploy underperforming vehicles** to higher-utilization routes or better-paying clients within **30 days**.
- Long-term (3–12 months)
- **Cap EMI-to-revenue ratio at 20%** for all future acquisitions through stricter loan-to-value norms.
- **Exit persistently loss-making vehicles** (DSCR <1.0 for 6 months) via sale or lease termination to reduce cash burn.

Implementation Impact
- **Monthly EMI reduction:** Loan restructuring of 5 critical vehicles reduces EMI by ₹**1.3–1.6 lakhs per month**.
- **DSCR improvement:** Fleet average DSCR improves from **1.27 → ~1.40**, moving the company out of high-default risk.
- **Cash burn elimination:** Eliminates ₹**3–4.5 lakhs monthly deficit** from ultra-low DSCR vehicles within **3 months**.
- **Default risk reduction:** High-risk vehicle count expected to fall from **34 → ~22–25 vehicles** within **9–12 months**.

Net impact: Immediate liquidity stabilization and prevention of loan defaults worth ₹**9+ crores of outstanding debt**.

Problem Statement 2: Revenue Concentration Risk

Actionable Recommendations
Urgent (0–3 months)
- **Conduct retention reviews with top 5 clients** and lock in renewals or service extensions for at least **12 months**.
  Target: Secure ≥ **90% revenue continuity** from top clients within **60 days**.
- **Upsell additional routes or vehicles** to existing mid-sized clients to reduce marginal dependence on top 1 client.
Long-term (3–12 months)
- **Acquire 6–8 mid-tier clients** (₹30–50 lakhs annual billing each).
  Target: Reduce top-5 revenue share from **78.6% to ≤ 65%** within **12 months**.
- **Set exposure limits**: no single client to exceed **20% of total revenue** going forward.

Implementation Impact
- **Revenue diversification:** Addition of 6–8 mid-tier clients adds ₹**2.1–3.9 crores annual revenue**.
- **Concentration reduction:** Top-5 client dependence declines from **78.6% → ≤ 65%** within **12 months**.
- **Risk exposure:** Potential revenue loss from a single client drop reduces from ₹**21.8 million/year → < ₹12 million/year**.
- **HHI score improvement:** HHI reduces from **1785 → ~1400**, shifting to low–moderate concentration risk zone.

Net impact: Business survival no longer hinges on one or two clients, restoring pricing power and financial resilience.

Problem Statement 3: GST Compliance Deterioration

Actionable Recommendations
Urgent (0–2 months)
○ **Resolve all missing GSTIN records (43 invoices)** through client verification and reclassification.
 Target: Achieve **100% GSTIN completeness** within **45 days**.
○ Forensically reconcile November GST anomaly and file amendments if required within 60 days.
Long-term (3–6 months)
○ **Implement mandatory GSTIN validation** in billing system (invoice cannot be generated without GSTIN).
○ **Monthly GST reconciliation checklist** (Sales vs GSTR-1 vs GSTR-3B) to be completed before every filing.
 Target: Reduce GST documentation errors to **< 2%** within **6 months**.

Implementation Impact
○ **Penalty avoidance:** Prevents ₹**5–6 lakhs** in GST penalties and interest through timely correction.
○ **Working capital recovery:** Unlocks ₹**1.5–2.0 lakhs** in unclaimed input tax credits.
○ **Audit risk reduction:** Cuts GST audit probability from ~**65% to < 20%** by eliminating red flags.
○ **Process efficiency:** Reduces GST documentation error rate from **8.35% → < 2%** within **6 months**.
Net impact: Improves cash flow, ensures regulatory compliance, and protects management bandwidth from audit disruptions.

This comprehensive financial analysis of Shree Swami Samarth Travels has identified critical vulnerabilities across debt servicing capacity, revenue concentration, and regulatory compliance that collectively threaten business sustainability. The integrated recommendation framework provides a structured pathway from immediate crisis stabilization through medium-term operational improvements to long-term strategic transformation. Implementation of these evidence-based interventions will transform the organization from a crisis-vulnerable commodity provider into a financially resilient, strategically differentiated mobility solutions partner capable of sustainable growth. The success of this transformation depends on disciplined execution, systematic monitoring, and unwavering management commitment to the data-driven decision-making capabilities this analytical framework now provides.

Links:

Working dataset 1 Link(Raw) : Link

Working dataset 2 Link(Raw): Link

Cleaned Dataset 1 : Link

Cleaned Dataset 2 : Link

Colab Link 1 : Link

Colab Link 2 : Link

Colab Link 3 : Link

Proof or originality : Link

WebApp Link: https://financial-stress-simulator.vercel.app/

Github Link : https://github.com/yashbadhe/Financial-stress-simulator