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# A Case Study of Operational Efficiency at Awagaman Logistics

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**Abstract** - Operational efficiency in third-party road logistics requires balancing carrier network coordination against fragmented data processing pipelines and stringent regulatory check-points. Grounded in supply chain management literature on process standardization (SCOR Model) and service dependability (Reliability & Responsiveness Model), this study investigates the operational framework of Awagman Logistics Private Limited, an unlisted surface transportation provider based in Pune, Maharashtra. The research covers four operational objectives: evaluating end-to-end transportation management data workflows, assessing inbound and outbound booking coordination for fleet utilization, resolving data synchronization errors between operational and financial records, and analyzing regulatory compliance under India's GST e-way bill system and Central Motor Vehicles Rules (CMVR). Using an empirical case-study methodology based on a two-month corporate placement (20 May–20 July 2026), primary data were gathered through on-site workflow observation, dispatch tracking, and structured employee interactions, supplemented by a sample dataset of 15 Lorry Receipts (LRs) spanning four billing cycles for a regular industrial client, Kankoo Paints Pvt Ltd.

The findings reveal a high route concentration (80%) on the Khedshivapur–Nandigaon corridor, an uncoordinated backhaul framework, inconsistent vehicle-type recording, and a highly variable booking-to-billing turnaround delay ranging from 1 to 5 days (averaging 3.75 days) driven by manual spreadsheet consolidation. Furthermore, structural exposure was identified in manual database entries where bill references are localized to individual cells rather than mapped uniformly to unique LR keys, creating substantial reconciliation and sorting risks. The study also maps a specialized 4-step emergency spill response and mitigation protocol for Class 3 flammable hazardous chemical logistics (paints) under CMVR Rule 137. The paper concludes that operational scaling and risk mitigation require moving from manual, duplicated spreadsheet logs to centralized data entry with automated duplicate-LR validation, establishing a shared real-time booking visibility matrix to capture backhauls, codifying step-by-step database reconciliation checklists, and documenting written standard operating procedures (SOPs) for hazardous goods handling and e-way bill verification.

Index Terms—Logistics management, SCOR model, reliability and responsiveness, fleet utilization, hazardous materials transportation, database synchronization.

## I. INTRODUCTION

The Indian logistics and surface transportation sector has emerged as a vital backbone of national macroeconomic growth, supporting complex manufacturing, retail, and heavy industrial supply chains across the subcontinent. Within this sector, road transportation continues to command the dominant share of domestic freight movement due to its structural flexibility, door-to-door accessibility, and unique capacity to execute last-mile delivery to semi-urban and remote industrial hubs. Historically fragmented and dominated by small-scale fleet operators and transport contractors, the industry is undergoing a structural transition driven by nationwide regulatory reforms—most notably the implementation of the Goods and Services Tax (GST) and the digital e-way bill framework—alongside intensifying corporate client demands for real-time visibility, reliability, and reduced turnaround times. Consequently, contemporary logistics service providers must function not merely as



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physical carriers of freight, but as efficient managers of information.

This study evaluates the internal operational mechanisms, information workflows, and regulatory compliance practices of Awagman Logistics Private Limited, a third-party road transportation and freight management enterprise headquartered in Transport Nagar, Nigdi, Pune. Operating an unlisted asset-light model backed by an active network of over 120 specialized commercial vehicles and regional branches across critical industrial corridors (including Pune, Ghaziabad, Vadodara, Bengaluru, and Chennai), the company serves more than 250 corporate B2B clients. Its core operational workflow consists of securing consignment requirements, allocating third-party or managed vehicle capacity, generating Lorry Receipts (LRs), executing domestic haulage, and subsequently consolidating these records into client bills.

Currently, these workflows are managed through a combination of manual and semi-digital spreadsheet-based records rather than a fully integrated, automated Enterprise Resource Planning (ERP) or Transportation Management System (TMS). While this relationship-driven model has supported stable regional operations, it introduces operational friction, data duplication, billing lags, and data validation risks as consignment volumes grow.

This study examines these operational dynamics through an empirical, plant-level process investigation executed during a two-month placement. By tracing actual consignment transactions, documentation paths, database structures, and hazardous material protocols, this paper analyzes the underlying causes of operational variances. It provides a practical framework for small-to-medium enterprise (SME) logistics operators to systematically eliminate data entry errors, optimize fleet utilization through coordinated backhauls, and formalize regulatory compliance without capital-intensive infrastructure overhauls.

## II. Theoretical Background & Institutional Alignment

### A. Theoretical Framework: SCOR and RR Models

To evaluate the logistics architecture of Awagman Logistics systematically, this study synthesizes two prominent academic supply chain frameworks: the Supply Chain Operations Reference (SCOR) model and the Reliability & Responsiveness / Risk & Resilience (RR) model.

The SCOR Model establishes a standardized, process-oriented framework that decomposes supply chain operations into six distinct macroeconomic pillars: Plan, Source, Make/Execute, Deliver, Return, and Enable. When mapped against a third-party surface transportation provider, the traditional 'Make' phase shifts to pure transit execution. The operational loop functions as an interconnected chain bridging Plan, Source, Execute, Deliver, Return, and underlying Enable metrics.

The RR Model evaluates the operational architecture through two lenses: Service Quality (Reliability & Responsiveness) and Operational Safety (Risk & Resilience). Reliability requires the dependable, accurate generation of billing documentation and Proof of Delivery (PoD), while Responsiveness gauges the speed of capacity scaling on short notice. Concurrently, Risk Management and Resilience assess the firm's capacity to absorb highway disruptions—such as vehicular breakdowns or regulatory detentions—and deploy recovery assets through its regional branch network to maintain delivery timelines.

### B. Macroeconomic and Policy Alignment: PM Gati Shakti

Awagman Logistics functions within a broader macroeconomic environment shaped by national infrastructure initiatives, specifically the Government of India's PM Gati Shakti National Master Plan. This digital, multi-ministerial platform is designed to coordinate the planning and execution of multimodal infrastructure connectivity projects. For an SME transport provider, the rollout of Gati Shakti acts as an external growth driver through three primary mechanisms:

- **Logistics Cost Reduction:** By bridging infrastructure gaps across highways, railways, and dedicated freight corridors, the plan aims to reduce India's historical logistics costs from 13–14% of GDP down to a single-digit benchmark (~9%). For private operators, this lowers vehicle wear-and-tear and shortens transit cycles.
- **Unified Logistics Interface Platform (ULIP):** ULIP integrates disparate digital systems across regulatory authorities, smoothing interstate border clearances and providing unified tracking inputs that enhance fleet scheduling.
- **Multimodal Synergy:** Streamlined access to economic zones and multimodal logistics parks allows traditional road freight contractors to seamlessly coordinate heavy industrial or Over-Dimensional Cargo (ODC) across diverse transit networks.

## III. MATERIALS AND METHODS

### A. Objectives of the Study

The internship and this report are structured around the following four core objectives:



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- **Objective 1:** To improve transportation management at Awagman Logistics by simplifying data entry and enhancing carrier and client engagement metrics.
- **Objective 2:** To improve the process of inbound and outbound booking to achieve optimum fleet utilization.
- **Objective 3:** To rectify errors in the database synchronization process and to inform a robust framework for troubleshooting.
- **Objective 4:** To study regulatory compliance related to Awagman Logistics' operations.

### B. Research Design and Data Collection

This study utilizes a descriptive and exploratory case study research design that pairs qualitative process mapping with quantitative operational data analysis. The primary data were collected during a two-month on-site internship (20 May–20 July 2026) within the company's logistics department. Data collection methods included direct field observations of dispatches, structured internal interactions with fleet coordinators and drivers, and rigorous document auditing of soft-copy registers, invoices, and e-way bills.

### C. Empirical Sample and Analytical Framework

To ground the qualitative process reviews in empirical data, a sample of consignment data was extracted from the company's registers for a regular corporate B2B client, Kankoo Paints Pvt Ltd. The sample captures 15 individual Lorry Receipts (LRs) consolidated across 4 distinct billing cycles over a four-month period (April 2025–July 2025). The analytical framework maps these transactions to identify route concentration, booking-to-billing turnaround time, and data validation rules.

## IV. Data Analysis and Discussion

### A. Empirical Consignment Baseline

The extracted raw consignment ledger for the sample client, Kankoo Paints Pvt Ltd, is structured chronologically in Table I.

| Bill No. | Bill Date | Party | LR No. | LR Date | Origin | Destination | Vehicle Type Recorded |
|---|---|---|---|---|---|---|---|
| 0039 | 19.04.25 | Kankoo Paints | 8901 | 14.04.25 | Khedshivapur | Nandigaon | -19 FEET LPT LOAD |
| [Blank] | 19.04.25 | Kankoo Paints | 8902 | 14.04.25 | Khedshivapur | Nandigaon | -19 FEET LPT LOAD |
| [Blank] | 19.04.25 | Kankoo Paints | 8903 | 14.04.25 | Khedshivapur | Nandigaon | -19 FEET LPT LOAD |
| [Blank] | 19.04.25 | Kankoo Paints | 8904 | 14.04.25 | Khedshivapur | Nandigaon | -19 FEET LPT LOAD |
| 0167 | 06.06.25 | Kankoo Paints | 9306 | 02.06.25 | Khedshivapur | Nandigaon | -19 FEET LPT LOAD |
| [Blank] | 06.06.25 | Kankoo Paints | 9307 | 02.06.25 | Khedshivapur | Nandigaon | -19 FEET LPT LOAD |
| [Blank] | 06.06.25 | Kankoo Paints | 9308 | 02.06.25 | Khedshivapur | Nandigaon | -19 FEET LPT LOAD |
| [Blank] | 06.06.25 | Kankoo Paints | 9309 | 02.06.25 | Khedshivapur | Nandigaon | -19 FEET LPT LOAD |
| 0269 | 08.07.25 | Kankoo Paints | 9417 | 07.07.25 | Khedshivapur | Bidar | -19 FEET LPT LOAD |
| [Blank] | 08.07.25 | Kankoo Paints | 9418 | 07.07.25 | Khedshivapur | Bidar | -19 FEET LPT LOAD |
| [Blank] | 08.07.25 | Kankoo Paints | 9419 | 07.07.25 | Khedshivapur | Bidar | -19 FEET LPT LOAD |
| 0330 | 26.07.25 | Kankoo | 9509 | 21.07.25 | Khedshivapur | Nandigaon | 19 FEE |



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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Paints | | | | | T LPT LOAD |
| [Blank] | 26.07.25 | Kankoo Paints | 9510 | 21.07.25 | Khedshivapur | Nandigaon | 19 FEET LPT LOAD |
| [Blank] | 26.07.25 | Kankoo Paints | 9511 | 21.07.25 | Khedshivapur | Nandigaon | 19 FEET LPT LOAD |
| [Blank] | 26.07.25 | Kankoo Paints | 9512 | 21.07.25 | Khedshivapur | Nandigaon | 19 FEET LPT LOAD |

### B. Objective 1: Transportation Management and Data Entry Pipelines

Process mapping reveals that data entry at Awagman Logistics relies heavily on manual transcription. When a consignment moves, an operator manually registers the details into an isolated LR spreadsheet. Later, during the billing cycle, a clerk copies these exact lines into a billing register to format the invoice. This duplicated workflow increases processing times and creates data-entry risks, such as mismatched dates or altered numbers.

| Bill Reference | Number of LRs | Final LR Date | Formal Bill Date | Turnaround Time (Days) |
|---|---|---|---|---|
| Bill 0039 (Apr) | 4 | 14 April 2025 | 19 April 2025 | 5 |
| Bill 0167 (Jun) | 4 | 02 June 2025 | 06 June 2025 | 4 |
| Bill 0269 (Jul-a) | 3 | 07 July 2025 | 08 July 2025 | 1 |
| Bill 0330 (Jul-b) | 4 | 21 July 2025 | 26 July 2025 | 5 |

While the average booking-to-billing turnaround is 3.75 days, the metric shifts between a 1-day lag (Bill 0269) and a 5-day lag (Bills 0039 and 0330). This high variance indicates that billing timing depends on manual workload availability rather than a standardized administrative schedule. This manual pipeline delays cash-flow cycles and limits the company's ability to track client engagement via clear service metrics.

### C. Objective 2: Inbound/Outbound Booking Cascades and Capacity Optimization

Operational observations show that inbound and outbound booking decisions operate almost entirely independently. Outbound loads are scheduled immediately based on client demand. However, the return leg (inbound backhaul coordination) is handled ad-hoc. Fleet coordinators check for incoming loads only after a truck nears its destination, rather than scheduling return trips during initial dispatch.

| Origin-Destination Corridor | Consignment Volume (Total LRs) | Percentage Share |
|---|---|---|
| Khedshivapur -> Nandigaon | 12 | 80.0% |
| Khedshivapur -> Bidar | 3 | 20.0% |

With 80% of the consignment volume concentrated on the Khedshivapur–Nandigaon corridor, this route represents a highly predictable transport lane. Ad-hoc inbound booking along such a dense channel regularly results in empty running or extended idling. The data also reveals inconsistencies in data formatting. For example, the vehicle classification string shifts from '-19 FEET LPT LOAD' to '19 FEET LPT LOAD', complicating data audits.

### D. Objective 3: Structural Analysis of Database Synchronization

The structural architecture of the company's digital ledger introduces clear database synchronization vulnerabilities. As shown in Table I, the bill number is recorded only once against the first LR row of a consolidated batch. The subsequent rows in that batch leave the bill number field blank. This layout relies on a visual spreadsheet convention rather than proper relational database design. If the file is sorted by date, filtered by origin, or split during manual reviews, the link between the blank rows and their parent bill number is broken. This design gap leads to synchronization errors where executed LRs appear unbilled during monthly reconciliations.

### E. Objective 4: Regulatory Compliance and Hazardous Materials Logistics

Surface transport operations are subject to strict oversight under India's GST framework and the Central Motor Vehicles Rules (CMVR).



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1) E-Way Bill Reconciliation Protocols: Operators must manually cross-verify portal e-way bill data against internal invoices and LRs before dispatching vehicles. This verification step confirms that the declared cargo values, origins, destinations, and vehicle numbers match exactly across all documents. Because errors or expired transit windows can lead to vehicle detention at state check posts, this manual verification is critical. However, it remains time-consuming and relies entirely on operator attentiveness.

2) Class 3 Hazardous Chemical Logistics: Because the sample client, Kankoo Paints Pvt Ltd, manufactures industrial paints and solvents, these materials are classified as Class 3 Flammable Liquids. Transporting these items requires a specialized safety and compliance framework under CMVR Rule 137. The field study mapped a 4-step emergency response and spill mitigation workflow used by the company to manage en-route chemical incidents:

Step 1: Isolation & Safety Containment: In the event of an en-route paint spill or puncture, the driver must immediately pull the vehicle into a clear, open zone away from public waterways. The engine must be turned off to eliminate potential ignition sources, and the local perimeter cordoned off.

Step 2: Personal Protective Equipment (PPE) Deployment: The driver equips chemical-resistant gloves, protective goggles, and safety boots stored in the commercial cabin's standard emergency kit.

Step 3: Absorption and Mitigation: Using the vehicle's onboard spill kit, the driver places absorbent booms around the leaking barrels to stop the liquid from spreading into roadside drains, using sandbags or absorbent pads to contain the core spill.

Step 4: Command Center Escalation & Transshipment: The driver logs the incident with the tracking desk. The nearest regional branch hub (e.g., Vadodara or Pune) then dispatches a local recovery team and a backup vehicle to safely transship the intact cargo and manage disposal.

## V. FINDINGS AND DISCUSSION

This study shows that while Awagman Logistics effectively manages its day-to-day operations through strong, relationship-driven client and carrier networks, its reliance on manual, non-standardized documentation processes creates avoidable operational risks. These vulnerabilities are likely to become more pronounced as consignment volumes scale.

First, manual data entry causes a variable billing lag that ranges from 1 to 5 days, retarding cash-flow cycles. Second, the lack of a shared booking interface between inbound and outbound teams limits backhaul planning, particularly on high-volume lanes like Khedshivapur–Nandigaon, where 80% of the sample shipments are concentrated. Third, recording bill numbers only once per consolidated batch creates structural database risks, as sorting or filtering can detach unbilled rows from their reference keys. Finally, while critical compliance mandates—such as e-way bill verification and Class 3 hazardous chemical spill containment—are executed operationally, the absence of written SOPs creates compliance and continuity risks if key personnel leave.

## VI. CONCLUSIONS

Improving operational efficiency in SME road logistics requires transitioning from isolated, manual spreadsheet entries to standardized, validated data workflows. Dependent-demand logistics lanes cannot be optimized through ad-hoc capacity matching or unlinked data registers when route volumes show high spatial concentration. Sustainable growth instead depends on a structured operational approach that links transport documentation directly with financial invoicing through unique, non-duplicative keys.

By replacing incomplete spreadsheet layouts with centralized data fields and clear validation rules, operators can reduce administrative errors, accelerate billing cycles, and secure data consistency. Ultimately, long-term resilience and risk management at Awagman Logistics require formalizing operational knowledge into written compliance frameworks and shared scheduling calendars. This dual approach ensures that daily fleet execution remains both legally compliant and protected against single points of failure.

## VII. SUGGESTIONS FOR IMPLEMENTATION

To systematically address the operational challenges identified, Awagman Logistics should implement the following targeted, low-cost interventions:

- **Centralize and Validate Data Entry (Objective 1):** Consolidate the isolated LR and billing spreadsheets into a single master register. Ensure every single row contains its specific parent bill number to maintain data integrity when filtering or sorting. Implement simple data validation rules within the sheet to block blank entries in mandatory fields and trigger immediate warning flags for duplicate LR entries.
- **Deploy a Shared Booking Matrix (Objective 2):** Establish a shared digital booking calendar visible across all operations and branch staff. Require operators to log upcoming dispatches along with standard vehicle



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type descriptors. This shared visibility allows planners to actively match outbound trucks with inbound return loads along high-concentration corridors.

- **Codify a Synchronization Troubleshooting Framework (Objective 3):** Document a clear, step-by-step checklist for resolving data discrepancies, assigning explicit ownership and resolution deadlines to specific roles. Institute a mandatory weekly cross-reconciliation ritual between the dispatch log and the billing register to proactively catch and resolve unbilled LRs.
- **Document Formal Compliance SOPs (Objective 4):** Formalize the portal e-way bill verification steps into a written compliance checklist required for every vehicle dispatch. Additionally, compile the 4-step hazardous chemical spill response workflow into an official written SOP for cabins and standard training.

| Implementation Phase | Time Horizon | Key Deliverables & Process Transformations |
|---|---|---|
| Short-Term Phase | 0–3 Months | Consolidate isolated registers into a master spreadsheet architecture. Enforce mandatory cell fields and deploy automated duplicate-LR validation macros. Implement a standardized, mandatory e-way bill compliance checklist. |
| Medium-Term Phase | 3–6 Months | Launch a shared inbound/outbound booking matrix across regional hubs. Standardize vehicle text fields. Codify the synchronization troubleshooting checklist with clear ownership rules. |
| Long-Term Phase | 6–12 Months | Review and adopt a lightweight, cloud-based Transport Management System (TMS). Formalize written hazardous material handling protocols into official corporate SOPs. |

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## IX. APPENDIX: GLOSSARY OF TERMS

- **Lorry Receipt (LR):** An official document issued by a domestic carrier acknowledging freight receipt for haulage, serving as primary legal proof of cargo movement.
- **E-Way Bill:** A mandatory digital compliance document generated under India's GST network tracking the movement of goods above a statutory value threshold.
- **Backhaul:** The return leg of a commercial vehicle journey, optimized to transport a paying load back toward its origin corridor rather than running empty.
- **Fleet Utilization:** A core performance indicator evaluating the efficiency of vehicle capacity deployment, measured via empty running and asset downtime.
- **TREM Card (Transport Emergency Card):** A critical document carried in commercial cabins detailing specific chemical behaviors, hazards, and first-aid instructions for en-route incidents.



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