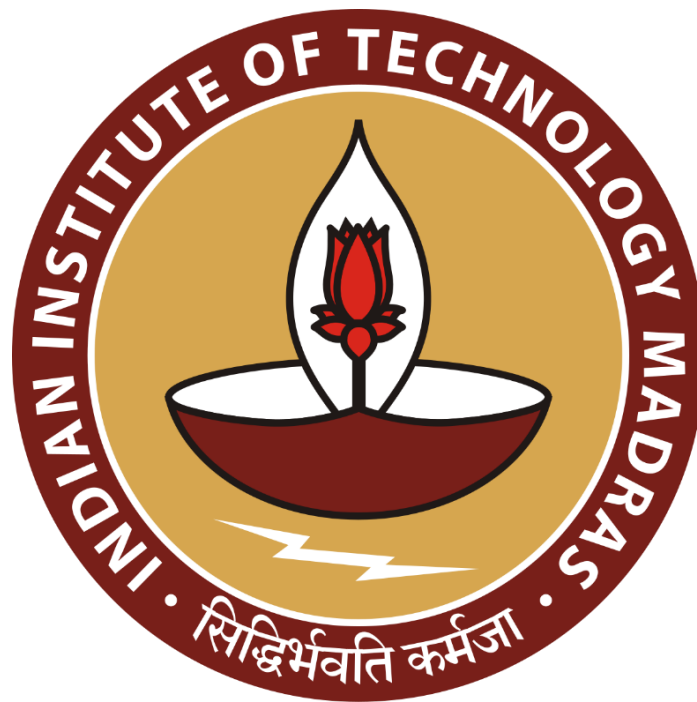# Payment Pattern Analysis and Rental Efficiency Tracking

A Midterm report for the BDM capstone Project

Submitted by

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Declaration Statement

I am working on a Project Title " **Payment Pattern Analysis and Rental Efficiency Tracking** ". I extend my appreciation to **Power Tech Project Associates**, for providing the necessary resources that enabled me to conduct my project.

I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered through primary sources and carefully analyzed to assure its reliability.

Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

I am dedicated to adhering to the information of academic honesty and integrity, and I am receptive to any additional examination or validation of the data contained in this project report.

I understand that the execution of this project is intended for individual completion and is not to be undertaken collectively. I thus affirm that I am not engaged in any form of collaboration with other individuals, and that all the work undertaken has been solely conducted by me. In the event that plagiarism is detected in the report at any stage of the project's completion, I am fully aware and prepared to accept disciplinary measures imposed by the relevant authority.

I agree that all the recommendations are business-specific and limited to this project exclusively, and cannot be utilized for any other purpose with an IIT Madras tag. I understand that IIT Madras does not endorse this.

Signature of Candidate:

Name: Udghosh Rao

Date:23/05/202

1. Executive Summary:

This mid-term report evaluates payment patterns and rental efficiency for Power Tech Project Associates, a generator sales and rental business in Neemara, Rajasthan. It analyzes 50 transactions from January to May 2025 involving 5 main customers across sales, rentals, and repairs.

The business generated a total revenue of ₹47,92,416 with a 62% payment collection rate. However, 38% of transactions remain unpaid, amounting to ₹26,35,779, posing significant cash flow challenges. The average payment delay is 5.2 days, impacting operational liquidity. Amit Kumar is identified as the highest risk customer with a 40% payment success rate and ₹7,00,821 pending. Rahul Sharma shows the most reliable payment behavior with 80% success. Sales contribute 96% of revenue but have a 60% collection rate, while repairs have an 80% collection rate despite low revenue.

The report highlights underutilization in generator rentals, especially units G004 and G005. It recommends implementing structured credit management, advance payments for large sales, customer diversification, and expanding rental operations to improve financial stability and operational efficiency. These measures aim to enhance cash flow, reduce credit risk, and optimize asset utilization for sustainable business growth

2. Proof of Originality of the Data

Business Information
- **Company:** Power Tech Project Associates
- **Owner:** Mr. Suresh (8+ years operation)
- **Location:** Neemara, Rajasthan
- **Services:** Generator Sales, Rental, and Repair
- **Fleet:** 15-20 generators (5KVA to 100KVA capacity)

Evidence Documentation Click ([Drive Link Of Proof](https://drive.google.com/drive/folders/1nZUcLgsvGrVn-8LcY3_tJZMM3ecw87fv?usp=sharing))
https://drive.google.com/drive/folders/1nZUcLgsvGrVn-8LcY3_tJZMM3ecw87fv?usp=sharing

- **Video Interview:** Mr. Suresh on business challenges, payment issues,
- **Business Photos:** images of premises, generator storage, manual records, workshop, and customer service area
- **Official Letter:** Signed authorization on company

3. Metadata

Metadata defines our dataset structure and provides context for payment pattern analysis. This information ensures data quality and establishes the foundation for reliable business insights.

Dataset Specifications
- **Format:** CSV/Excel
- **Period:** January-May 2025 (5 months)
- **Records:** 50 transactions
- **Currency:** Indian Rupees (₹)
- **Source:** Primary business data

Variable Definitions
- **Entry:** Transaction identifier (1-50)
- **Date:** Transaction date for timeline analysis
- **Customer:** Customer name for risk assessment (5 customers)
- **Service_Type:** Sales/Rental/Repair for performance comparison
- **Amount:** Transaction value (₹650 to ₹4,75,650)
- **Payment_Status:** Paid/Pending for collection tracking
- **Payment_Delay_Days:** Delay duration (0-15 days) for pattern analysis

Descriptive Statistics

Business Performance Summary

Metric	Value	Business Impact
Total Transactions	50	Consistent business volume
Total Revenue	₹47,92,416	Strong revenue generation
Average Transaction	₹95,848	High-value operations
Payment Success Rate	62%	Collection efficiency concerns
Pending Amount	₹26,35,779	Significant cash flow risk
Average Payment Delay	5.2 days	Credit management challenges

Customer Risk Assessment:

Customer	Total Amount (₹)	Success Rate	Risk Level
Rahul Sharma	5,90,210	80%	Low Risk
Vikram Patel	7,43,535	70%	Low Risk
Sunita Reddy	13,88,992	60%	Medium Risk
Anita Singh	9,03,310	50%	High Risk
Amit Kumar	11,66,369	40%	Very High Risk

4 . Analysis Process & Methods:

Methodology Selection
Excel-based descriptive analysis was selected for business compatibility and sustainability. This approach ensures Mr. Suresh can independently maintain the analysis without external dependencies or additional software costs.

Key Techniques
- **Payment Delay Analysis:** Calculate delay patterns and identify customer behavior trends
- **Customer Segmentation:** Risk classification based on payment success rates and delay patterns
- **Service Performance Comparison:** Revenue generation versus collection efficiency analysis
- **Utilization Assessment:** Generator rental frequency evaluation for optimization
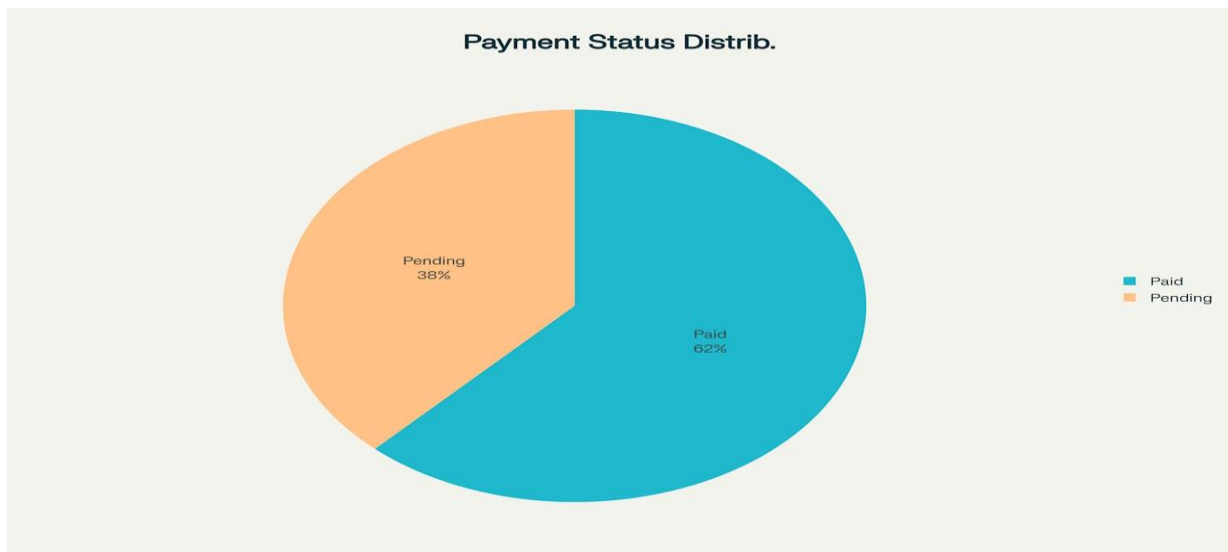
Statistical Methods
- **Descriptive Statistics:** Central tendency and variability measures for transactions and delays
- **Frequency Analysis:** Payment status and service type distributions
- **Comparative Evaluation:** Cross-category performance measurement for business insights

5 .Results and Findings:

Payment Pattern Analysis
The comprehensive analysis reveals critical payment collection challenges requiring immediate management attention. The business faces significant collection efficiency challenges with 38% of transactions remaining unpaid, representing ₹26,35,779 in outstanding revenue.

Payment Status Distribution: 62% Paid vs 38% Pending

Key Insights from Payment Status Analysis:
The payment distribution demonstrates that while 62% of transactions are successfully collected, 38% remain pending, creating substantial cash flow constraints affecting daily operations. This pattern indicates systematic issues in the payment follow-up process and suggests the need for structured credit management procedures.

Payment Delay Distribution Analysis
The analysis of payment delays reveals distinct patterns in customer payment behaviors, with the majority of payments occurring either immediately or within acceptable short-term credit periods.
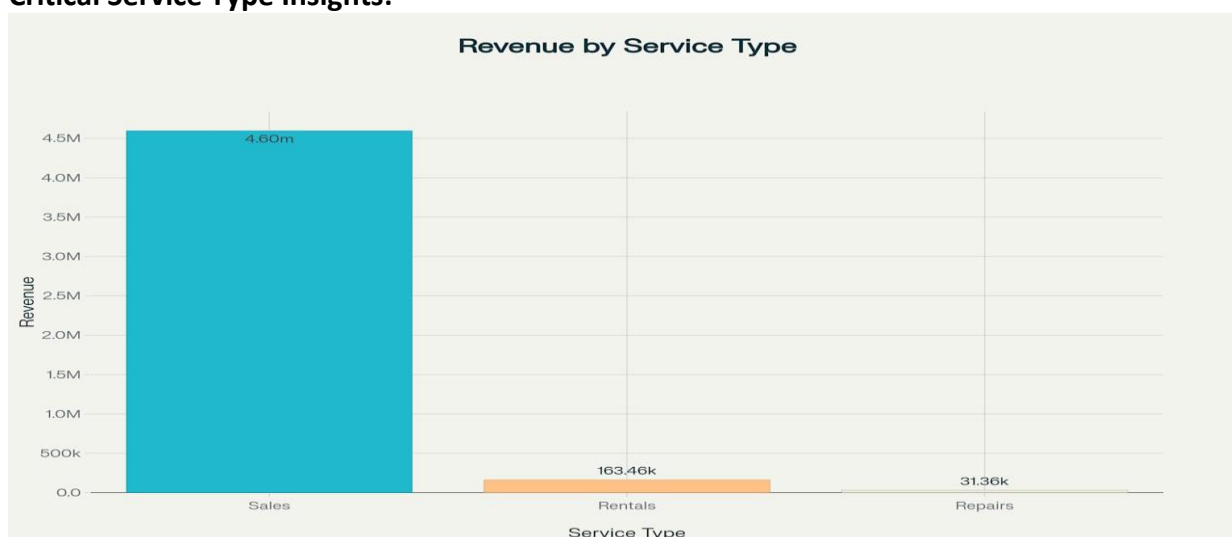

Payment Delay Distribution

Payment Delay Patterns:
- **48% immediate payments** demonstrate good cash business practices
- **36% short delays (1-5 days)** represent acceptable credit operations
- **12% medium delays (6-10 days)** require enhanced follow-up procedures
- **4% long delays (11-15 days)** represent high-risk scenarios needing immediate intervention

The payment delay distribution shows that while 48% of transactions receive immediate payment, a significant portion experiences delays that impact cash flow. The 16% of transactions with delays exceeding 6 days represent opportunities for improved collection

Service Type Performance Analysis
Critical Service Type Insights:

Revenue by Service Type

Generator Sales Performance:
- **Revenue Dominance:** 96% of total business revenue but only 60% collection rate
- **High Transaction Values:** Average ₹1,53,253 per sale creates significant exposure
- **Collection Challenges:** Large amounts correlate with longer payment delays

Equipment Rental Performance:
- **Balanced Revenue Stream:** 3.4% of revenue with 70% collection success rate
- **Better Payment Discipline:** Customers pay rentals more promptly than sales
- **Growth Opportunity:** Underutilized revenue potential with better payment patterns

Repair Services Performance:
- **Highest Collection Rate:** 80% success rate despite smallest revenue share
- **Relationship Building:** Quick payments indicate customer loyalty and urgent needs
- **Strategic Value:** Foundation for larger business opportunities

Customer Risk Assessment Results
Low-Risk Customers: Rahul Sharma (80% success) and Vikram Patel (70% success) demonstrate reliable payment patterns suitable for standard credit terms.
High-Risk Customers: Anita Singh (50% success) and Amit Kumar (40% success) need immediate risk mitigation including advance payment requirements and credit restrictions.
Generator Rental Efficiency
Rental utilization shows uneven patterns with generators G001 and G002 demonstrating higher

demand, while G005 remains significantly underutilized, indicating marketing and pricing optimization opportunities.

Critical Business Insights

Cash Flow Impact: ₹26,35,779 in pending payments represents 55% of total revenue, creating significant working capital constraints.

Customer Concentration Risk: Dependency on only 5 customers increases vulnerability to individual payment defaults.

Payment Correlation: Large transaction amounts consistently correlate with longer payment delays, suggesting need for value-based credit policies.

Strategic Recommendations

Immediate Actions:
1. Implement 15-day maximum payment terms
2. Require 50% advance for sales exceeding ₹2,00,000
3. Establish weekly follow-up procedures for pending accounts
4. Set individual credit limits based on payment history

Risk Mitigation:
1. Require security deposits from high-risk customers
2. Implement monthly account reviews
3. Develop customer diversification strategy
4. Create payment incentive programs

Business Development:
1. Expand rental marketing for underutilized generators
2. Develop maintenance contracts for existing customers
3. Create seasonal pricing strategies
4. Consider equipment financing partnerships

Key Findings Summary :

This analysis demonstrates that while Power Tech Project Associates maintains strong revenue generation, immediate improvements in payment collection efficiency are essential. The 38% pending payment rate and customer concentration risk require systematic credit management implementation and strategic business diversification to enhance long-term financial performance and operational stability.