

Use Case - Detecting Fuel Pilferage Using Advanced Data Analytics & ML Models

Background -

Fuel contributes (logistic cost) significant expenses as part of operational activities specially when fleet of vehicle is large including owned and third party vehicles. Advanced analytical method could help in identifying discrepancies and outliers in business transactions

Data Points

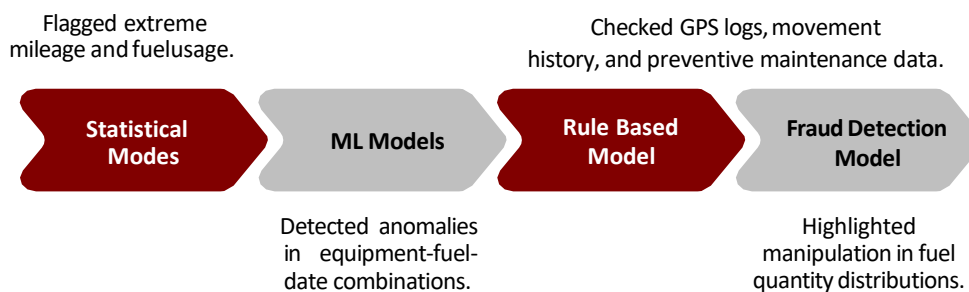
- Fuel Receipt Analysis
- Fuel Issuance Monitoring
- Mileage & Efficiency Review
- Vendor Data Validation
- GPS& Route-Based Validation

Analytical Framework:

Exploratory Data Analysis (EDA):

Identified trends, outliers, and irregular usage patterns.

Machine Learning & Statistical Models Applied:



Observation Category	Nature of Outliers Identified
Non-registered or deleted vehicles	Fuel entries despite removal or no registration trace
Fuel during non-operational status	Dispensed to inactive fleet assets
Fuel entries during maintenance	Irregular issuance during repair periods
Mileage inconsistency	Abnormal deviation from expected consumption patterns
Supplier-Operations mismatch	Fuel billed without operational or SAP record support