



Case Study

**Addressing 80% of Fraudulent Transactions
in Under 2 Hours and Securing INR 14 Mn in
Daily Savings via IoT Anomaly Detection**

Client Overview

Energy and oil marketing enterprises operating vast, decentralized retail networks face immense challenges in maintaining centralized financial and operational compliance. This case study details the deployment of an Industry 4.0 IoT analytics platform for India's largest oil marketing company, covering 35,000 retail outlets. By utilizing Kafka for real-time ingestion, AWS Redshift for scalable storage, and Machine Learning models to spot anomalies, the client successfully addressed 80% of fraudulent transactions within 2 hours and realized a potential savings of INR 14 Mn in a single day.

The Challenge?



Data Processing Inefficiency

Difficulties in collecting and analyzing sensor data despite having IoT devices installed across all retail locations.



Widespread Transactional Fraud

A critical need to curtail ongoing, margin-diluting frauds committed locally at the retail outlets.



Dynamic Pricing Breaches

Inability to accurately track product sale prices to ensure compliance with a daily-updated corporate pricing chart.



Delayed Decision Making

A lack of high-speed anomaly detection mechanisms prevented leadership from taking corrective actions in a timely manner

Solution Delivered



High-Throughput Ingestion

Real-time setup using Kafka capable of collecting 35 million transactions every hour.



Advanced Intelligence Tier

Machine learning models implemented specifically to detect systemic and localized anomalies instantly.



Cloud Storage Foundation

A highly scalable storage and service layer built natively on AWS Redshift.



Comprehensive Ops Dashboard

A management interface delivering alerts across over 200 use cases, refreshed every 1 hour to provide insights at speed.



OpenAI Integration

OpenAI-powered performance optimization combined with automated frameworks to manage new RO onboarding seamlessly.



Data Gathering

Real-time ingestion mechanism setup using Kafka to collect 35 Mn transactions every hour



Intelligence

Machine Learning models implemented to detect anomaly



Storage

Highly scalable storage and service layer built on AWS Redshift



Analysis

Management and Operations dashboard and Alerts with over 200 use cases were refreshed every 1 hour to deliver information at speed

The Impact

Rapid Fraud Eradication

Addressed 80% of fraudulent transactions within 2 hours of detection.

Immediate ROI & Savings

Achieved potential direct savings of INR 14 Mn on a particular day of operations.

Maximized Revenue Compliance

Generated a ~0.5% percentage change in revenue through near real-time monitoring of local product prices.

Flawless Analytics Scale

Maintained perfect systemic stability while collecting and querying 35 million transactions per hour.

Outcome

Combating retail fraud and enforcing corporate compliance across a distributed network requires real-time data velocity and advanced machine learning infrastructure. By replacing siloed IoT systems with a unified AWS Redshift and Kafka streaming architecture, this leading oil marketing company successfully automated its Industry 4.0 strategy. This solution delivers the exact analytical speed, storage scale, and OpenAI-powered intelligence required to protect revenues, optimize operations, and cultivate a highly resilient retail energy ecosystem.



Interested in a customized solution designed to meet your unique requirements and achieve comparable results?

At Exponentia.ai, we partner with businesses to address complex data challenges and build trust in enterprise data. Our approach helps organizations streamline data management, improve visibility, and empower teams with reliable insights for better decision-making.

Engage with Us



www.exponentia.ai



engage@exponentia.ai



US



UK



UAE



IND



SGP