

INNOVATION BRIEF – Customer Experience Dashboard (Option 4)

1. Problem Context

NexGen Logistics receives a large volume of customer feedback related to delays, damaged deliveries, incorrect shipments, and service issues. However, insights were siloed and manual analysis made it difficult to identify at-risk customers, predict dissatisfaction, or take proactive action. The requirement was to build an AI-powered Customer Experience Dashboard that could convert raw feedback into actionable intelligence.

2. Solution Overview

The Customer Experience Dashboard is a full-stack analytics solution combining rule-based NLP, machine learning, and hybrid risk scoring. It processes customer feedback, identifies sentiment trends, highlights major issue categories, and computes a hybrid risk score for every customer. The tool supports CSV uploads, making it a general-purpose system for any dataset.

3. Key Components

- Data Pipeline – Automated preprocessing, missing value handling, date parsing, and text normalization.
- Sentiment Analysis – Dual-engine sentiment: VADER (rule-based) + ML Model (TF-IDF + Logistic Regression).
- Hybrid Risk Model – Weighted scoring using rating, sentiment, issue severity, and recommendation likelihood.
- Visual Analytics – Trend charts, issue breakdowns, sentiment distribution, and KPI snapshots.
- ML Evaluation – Real model accuracy, classification report, and predictive scoring.
- Interactivity – Upload custom CSVs and generate insights instantly.

4. Innovation Highlights

- Hybrid Risk Scoring combines business rules + ML signals for higher accuracy.
- ML model learns domain-specific tone beyond VADER's dictionary limitations.
- Identifies contradictory cases (e.g., good comment + low rating).
- Scalable architecture with modular code design.
- Works on any logistics/customer feedback dataset.

5. Impact & Business Value

- Detect churn-risk customers before they escalate issues.

- Improve customer retention by prioritizing high-risk segments.
- Identify operational failures (delay clusters, packing issues, wrong item trends).
- Data-driven interventions: refunds, callbacks, training, SLA improvement.
- Reduces human dependency in feedback analysis.

6. Future Enhancements

- BERT-based sentiment
- Automated intervention engine
- SLA breach prediction
- Deployment to cloud (Streamlit Cloud / AWS)

Conclusion

The dashboard transforms unstructured feedback into measurable intelligence. With hybrid risk scoring and ML-powered sentiment, NexGen gains a proactive tool for elevating customer satisfaction and optimizing operations.