FedEx DCA Decision Engine - Overview

WHAT IS THIS SYSTEM?

A DCA (Debt Collection Agent) Management Platform - helps FedEx manage their outstanding invoices and recovery operations. It tracks overdue cases, predicts recovery chances, suggests optimal actions, monitors DCA performance, and ensures compliance.

MAIN PROBLEMS IT SOLVES

- Manual tracking via Excel -> Real-time dashboard with all cases - No recovery predictions -> AI predicts recovery probability - Random DCA assignment -> Smart assignment based on case complexity - Missed SLA deadlines -> Automatic alerts when breaching - No performance tracking -> Individual DCA efficiency scores - No audit trail -> Complete activity log for compliance - Unclear case priorities -> Risk-based prioritization system

SYSTEM ARCHITECTURE

Frontend: Streamlit (Dashboard, Pages, Role-based Access) ML Engine: Python (models/scoring.py) - Recovery probability, churn risk, next-best-action, DCA efficiency Data Layer: CSV (extensible to SQL) - nexus_accounts.csv, audit_log.csv

MAIN FEATURES

1) Dashboard (Real-Time Command Center) - Portfolio Value, Expected Recovery, At-Risk Portfolio, Avg. Ageing, KPI charts, intelligent case queue

2) Add New Case - Create new overdue cases, auto-scoring, audit log

3) Case Workflow - Status transitions, SLA checks, audit trail

4) DCA Performance - Per-agent metrics: recovery rate, responsiveness, resolution rate

5) Analytics & Reports - Aging trends, recovery buckets, risk distribution, exportable reports

6) Predictive Analytics - Recovery Probability (0-100%) based on ageing, disputes, business type, DCA activity, SLA - Churn Risk (0-100%) predicting default likelihood - Optimal Follow-up Timing recommendations - DCA Efficiency score (composite metric)

7) Live Updates - Real-time activity feed filtered by time, DCA, action type

8) Audit Trail - Full event log with timestamp, user, case, details for compliance

ML DETAILS (SUMMARY)

Recovery Probability factors: - Ageing (exponential decay), Business segment multiplier, Dispute impact, DCA responsiveness, Payment history, SLA penalty, Invoice normalization

Churn Risk factors: - Ageing thresholds, Open/Pending disputes, DCA inactivity, business size, SLA breaches

Optimal Follow-up Timing: - High prob -> 3 days; Medium -> 5-7 days; Low -> 14-30 days; Adjusted for aging and inactivity

DCA Efficiency: - Composite of avg recovery prob, responsiveness, resolution rate -> score 0-100

USAGE & BUSINESS IMPACT

- Data-driven prioritization of cases - Improved recovery rates and reduced manual effort - Faster identification of cases needing legal/escalation action - Auditable trail for compliance and disputes - Performance-based DCA coaching and incentives

ROLE-BASED ACCESS

FedEx Admin: Full access DCA Agent: Assigned cases + updates Compliance Officer: Read-only analytics & audit

GETTING STARTED (RUN)

1. Ensure Python packages are installed (streamlit, pandas, plotly, python-docx, reportlab) 2. Run the app: streamlit run app.py 3. Use sidebar role selector to view as different roles

CONTACT

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