

PROJECT 2 — CUSTOMER TRANSACTION & FRAUD ANALYSIS REPORT

1. EXECUTIVE SUMMARY

This report presents a complete analysis of customer transactional behavior and fraud patterns using Python-based Exploratory Data Analysis (EDA) and an interactive Power BI dashboard. The dataset includes transaction amounts, transaction types, customer IDs, and fraud indicators. The objective of the project was to analyze customer financial activity, detect fraud signals, and identify transactional trends across accounts.

The dashboard analysis reveals a total transactional volume of ₹97.01M, across five major transaction types. Fraud prevalence is extremely low (Average isFraud = 0.01), indicating that fraud events occur rarely but must still be monitored closely. Cash-out and transfer transactions show the highest fraud association.

2. OBJECTIVE

- Analyze customer transaction data to understand total volume and patterns.
- Identify fraud behavior and transaction types with high fraud risk.
- Study customer account activity and high-value transaction behavior.
- Summarize KPIs using a Power BI dashboard.
- Provide insights and recommendations to improve fraud monitoring.

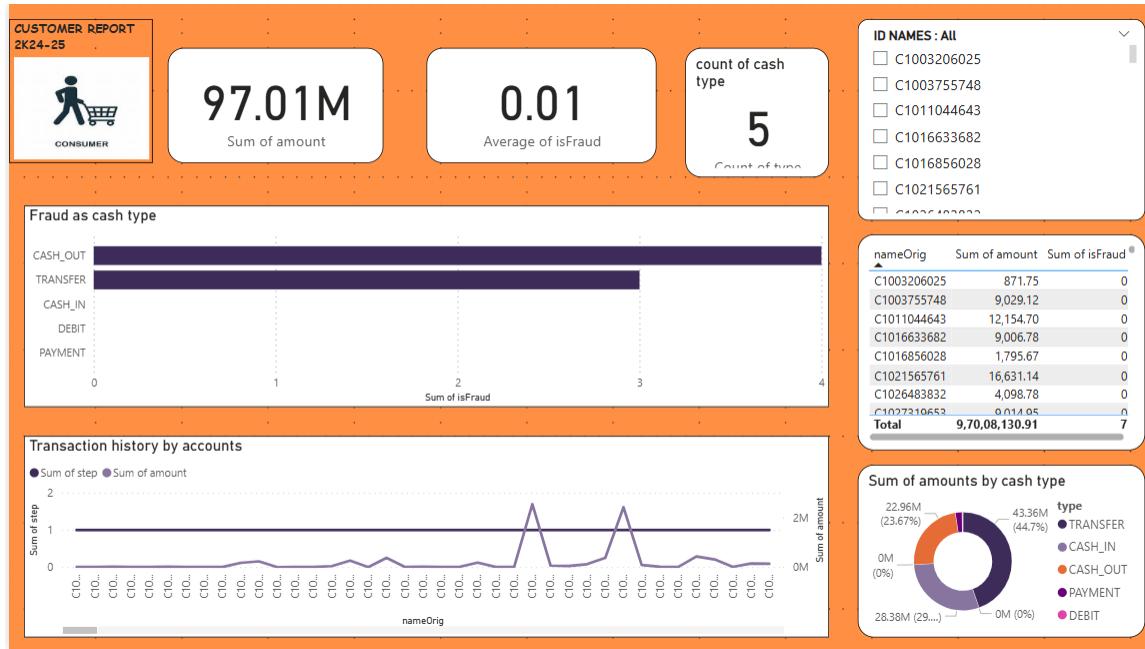
3. KEY PERFORMANCE INDICATORS (KPIs)

- Total Transaction Amount: ₹97.01M
- Average Fraud Rate: 0.01
- Transaction Types: 5
- Fraud-Prone Types: CASH_OUT, TRANSFER

4. EDA SUMMARY

- Dataset cleaned and missing values removed.
- Fraud variable highly imbalanced.
- Transaction amount distribution right-skewed.
- High-value recurring accounts identified.
- Transaction type strongly related to fraud patterns.

5. DASHBOARD INSIGHTS



- Fraud highest in CASH_OUT and TRANSFER.
- Line chart shows spikes in transaction history for some accounts.
- Donut chart shows TRANSFER and CASH_OUT form majority of money flow.
- High-value account IDs identified.
- Average fraud level extremely low.

6. INSIGHTS & FINDINGS

- Fraud is concentrated in fund-transfer operations.
- A few accounts contribute most of the total transaction volume.
- Majority of transactions are transfers and cash withdrawals.
- Fraud ratio extremely low but still significant operational risk.

7. RECOMMENDATIONS

- Strengthen monitoring for cash-out and transfer operations.
- Implement customer risk scoring.
- Apply ML-based fraud classification models.
- Educate customers about safe digital payments.
- Build real-time fraud alert dashboards.

8. CONCLUSION

The project successfully integrates EDA and dashboard analytics to understand customer transaction patterns and fraud risks. Findings show that fraud is concentrated around money-out operations. Future work should include machine learning and real-time detection solutions.