Banking Transaction Analysis

Data-Driven Insights Report

Introduction

- This dashboard helps stakeholders track and analyze banking transactions based on region, transaction type(Deposit, Transfer, Withdrawal), fraud flag, and transaction status (successful or failed). It delivers data-driven insights to uncover anomalies, enhance fraud detection, optimize operations, and improve service performance. The dashboard is designed for key stakeholders:
- Business Banking Executives & Risk Managers
- Fraud detection & Compliance Teams, Operations & Support Teams
- Regional Managers & Analysts

Objective

- Monitor transaction performance by tracking key metrics, including total transactions, transaction amounts, success and failed transaction.
- Analyze and Compare Fraud Incidents across different transaction types to identify high-risk areas and strengthen fraud prevention strategies.
- Enhance Performance of Underutilized Transaction Types by pinpointing categories with low success rates or high failure rates, and implementing targeted improvements
- Identify Potential Risks and Recommend Actions to improve transaction security, operational efficiency, and customer satisfaction

Key Questions

- Which is the latency varying in all of the transactions?
- What is the ratio of successful and failed transactions?
- Which regions are performing well, and which need attention?
- Where to focus the IT, security and anti-fraud strategies based on this data?

Metric Details

Metrics	Visual Type
Total transactions	Card
Successful transactions	Card
Failed transactions	Card
Total amount	Card
Total transactions by region	Filled Map
Total transactions by time	Line Chart
Total transactions by latency group	Bar Chart
Total transactions by devices used	Bar Chart
Total transactions by fraud flag	Pie Chart
Total transactions by type of transaction	Pie Chart

BANK TRANSACTION REPORT

Home | Fraud Detection | Transaction Details

Transaction Type: All | Transaction Status: All | Device Used: All | Network Slice ID: All

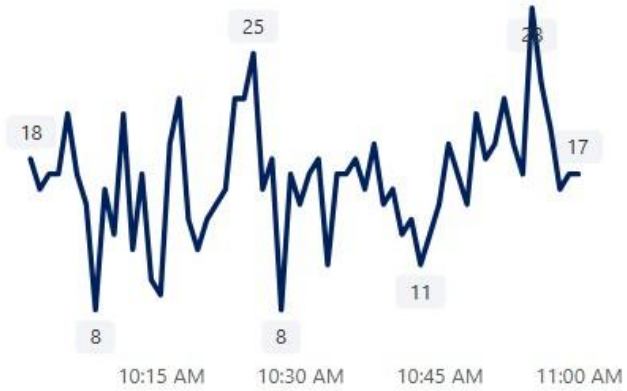
1,000 Total Transactions

771.17K Transaction Amount

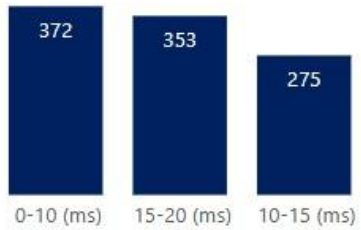
48.7% Success Transactions

51.30% Failed Transactions

Time
by Total Transactions



Latency Group
by Total Transactions



Device Used
by Total Transactions

Region
by Total Transactions

Fraud Flag
by Total Transactions

Transaction Type
by Total Transactions

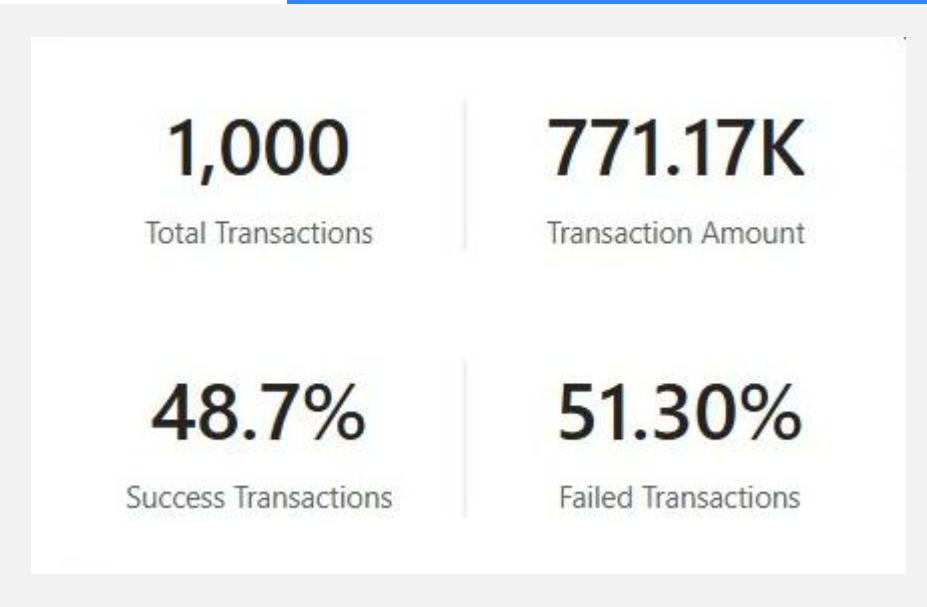
Key Metrics

Insights

- Total transactions represents the overall number of transactions recorded across all regions.
- Transaction amount shows the total amount combining all transactions
- Success transactions are the transactions which were marked successful
- Failed transactions are the transactions which were marked as failed

Measures (DAX Query)

- Total transactions = DISTINCTCOUNT('bank_transaction_data'[Transaction ID])
- Transaction amount = SUM('bank_transaction_data'[Transaction Amount])
- Success transactions = DIVIDE(CALCULATE(COUNT('bank_transaction_data'[Transaction Status]), 'bank_transaction_data'[Transaction Status] = "Success"), COUNT ('bank_transaction_data'[Transaction Status]))
- Failed transactions = DIVIDE(CALCULATE(COUNT('bank_transaction_data'[Transaction Status]), 'bank_transaction_data'[Transaction Status] = "Failed"), COUNT ('bank_transaction_data'[Transaction Status]))



Total Transactions by Region

Insights

- Colored circles indicate transactions
- Circle size indicates the number of transactions.
- Europe and America have the highest transactions compared to other regions

Challenges

Low profitability in certain states can be because of:

- Marketing & sales strategy issues for less profitable regions
- Competitors with better reach and customer retention

Recommendations

- Leverage the strengths of top performing regions in low performing ones
- Conduct competitor analysis to identify improvement areas
- Evaluate product market fit in low performing regions to pivot if needed

Total Transactions by Time

Insights

- The highest transactions happen at around 10:25 am and 11:00 am.
- The least transactions are reported before 10:15 am and just around 10:30 am.
- There is not a straightforward pattern in this case, but the fluctuation of number of transactions varies significantly during a given time range.

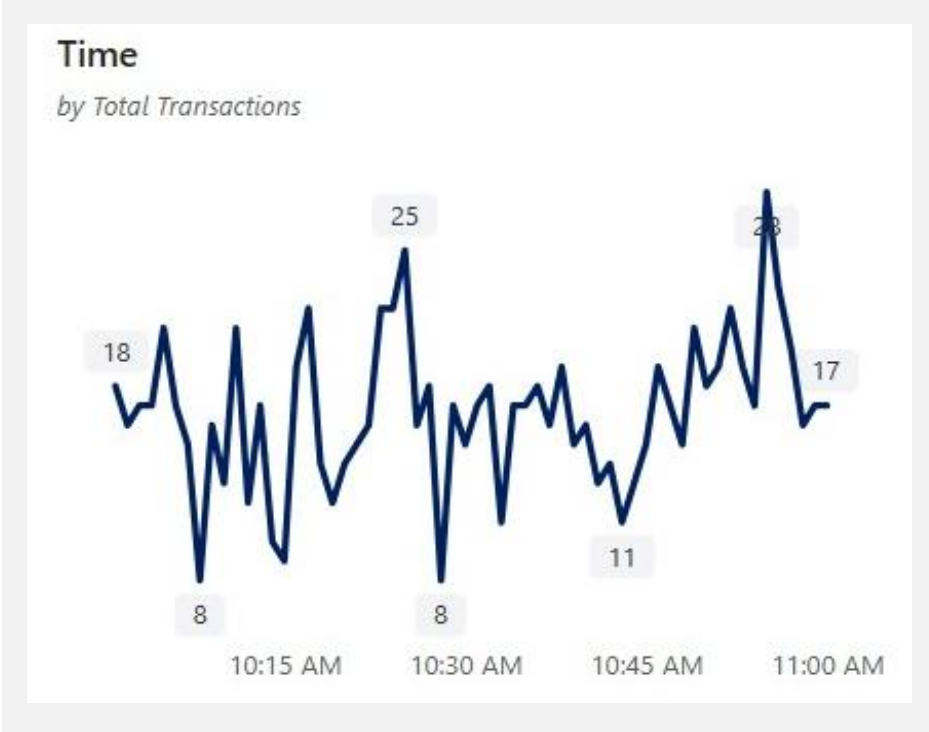
Challenges

Low performance reasons:

- Not able to determine a clear pattern based on time
- High load of transactions in a short period of time may result in unexpected downtimes.

Recommendations

- Ensure system stability during high frequency times
- Identify if the system slows down after a sudden high transactions load and if that's the reason behind the dips in the graph.



Total Profit by Latency Group & Device Used

Insights

- Majority of the transactions are having a low or near-low latencies
- The transaction processing is swift, giving the user a great experience
- Mobiles are preferred method of transacting compared to desktops

Challenges

Low profit and underperforming regions due to:

- Some transactions are still facing a higher latency than others.
- Desktops usage is lower and may decline further given technological advancements in the mobile devices

Recommendations

- Implement advanced cloud infrastructure for automated transaction processing, to reduce latency.
- Pivot towards Mobile devices in terms of new customer acquisition and future work
- Encourage users to shift towards Mobile devices as this will reduce costs towards maintaining two platforms.

Total Transactions by Fraud Flag & Transaction Type

Insights

- The actual fraud transactions are almost equal to legit transactions
- The division between the transaction types is almost similar.
- Withdrawal transactions are the highest, indicating more money is being withdrawn during current times

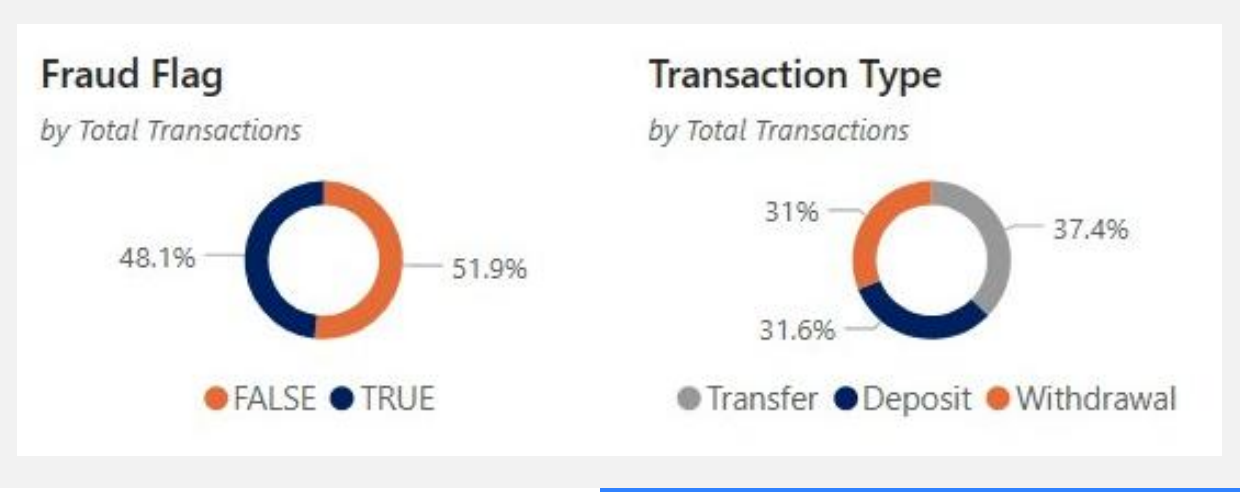
Challenges

Difficulty in reducing fraud transactions and increasing deposits may be due to:

- Weak economic conditions and potential financial impacts to customer
- Need for advanced security measures to identify and flag fraudulent transactions.

Recommendations

- Develop incentives for new and existing customers to deposit money in the bank
- Continue expanding security infrastructure for secure transaction processing



FRAUD DETECTION

Home | Fraud Detection | Transaction Details

Transaction Type: All

Transaction Status: All

Device Used: All

Network Slice ID: All

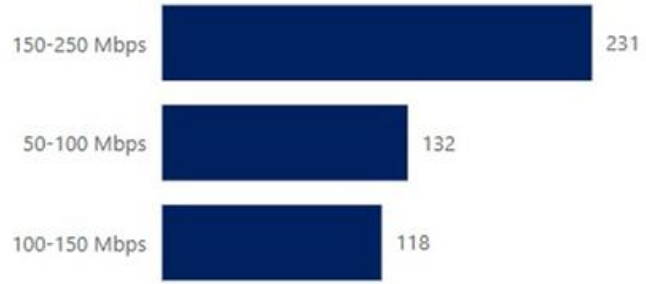
481
Fraudulent Transactions

378.86K
Transaction Amount

Transaction Status
by Fraudulent Transactions

Transaction Type
by Fraudulent Transactions

Bandwidth Group
by Fraudulent Transactions



Network Slice
by Fraudulent Transactions

Region
by Fraudulent Transactions

Fraud Transactions Overview

To identify and analyze fraudulent transactions by examining patterns across transaction types, bandwidth groups, network slices, and regions, enabling proactive fraud mitigation

Insights

- Total 481 Fraud Transactions found with around 379k amount
- Fraud percentage is similar across Transfer, deposit, withdrawal types
- High bandwidth is preferred in fraud transactions

Challenges

- Outdated security systems for fraud transaction
- Lack of modern two factor authentication in devices

Recommendations

- Monitor high-bandwidth transactions and Enforce 2FA with biometrics for high-risk transactions.
- Upgrade to AI-driven fraud detection for real-time anomaly spotting.

TRANSACTION DETAILS

Home | Fraud Detection | Transaction Details

Transaction Type: All | *Transaction Status*: All | *Device Used*: All | *Network Slice ID*: All

Transaction ID	Sender Account ID	Receiver Account ID	Transaction Type	Transaction Amount	Fraud Flag	Transaction Status	Bandwidth Group	Network Slice ID	Time
TXN1009840095	ACC54943	ACC49366	Transfer	115.33	FALSE	Success	50-100 Mbps	Slice2	10:24:00 AM
TXN1026668467	ACC36112	ACC39686	Withdrawal	1,483.40	FALSE	Failed	100-150 Mbps	Slice2	10:21:00 AM
TXN1027199935	ACC37487	ACC77079	Transfer	228.45	FALSE	Success	50-100 Mbps	Slice1	10:14:00 AM
TXN1031246972	ACC45883	ACC70147	Withdrawal	358.53	FALSE	Failed	100-150 Mbps	Slice1	10:27:00 AM
TXN1038301181	ACC85559	ACC68236	Deposit	363.94	TRUE	Failed	150-250 Mbps	Slice3	10:40:00 AM
TXN1041461220	ACC13852	ACC14965	Transfer	495.85	TRUE	Success	150-250 Mbps	Slice2	10:38:00 AM
TXN1041633816	ACC60899	ACC59622	Withdrawal	734.06	TRUE	Success	150-250 Mbps	Slice2	10:31:00 AM
TXN1042740208	ACC44135	ACC93631	Transfer	395.37	FALSE	Success	150-250 Mbps	Slice2	10:01:00 AM
TXN1050678444	ACC90361	ACC34735	Deposit	703.97	FALSE	Success	150-250 Mbps	Slice2	10:35:00 AM
TXN1051341758	ACC82436	ACC93972	Withdrawal	1,145.85	FALSE	Success	150-250 Mbps	Slice3	10:55:00 AM
TXN1056906180	ACC62489	ACC84079	Deposit	726.81	FALSE	Failed	150-250 Mbps	Slice3	10:57:00 AM
TXN1057529976	ACC64402	ACC41126	Transfer	1,133.66	FALSE	Success	150-250 Mbps	Slice2	10:40:00 AM
TXN1092084478	ACC81497	ACC20308	Deposit	1,091.12	TRUE	Success	50-100 Mbps	Slice2	10:38:00 AM
TXN1093768801	ACC80825	ACC64136	Transfer	1,319.31	TRUE	Failed	50-100 Mbps	Slice2	10:27:00 AM
TXN1094353264	ACC80118	ACC73164	Transfer	548.03	FALSE	Success	50-100 Mbps	Slice3	10:16:00 AM
TXN1116395817	ACC49997	ACC16705	Deposit	653.41	TRUE	Success	150-250 Mbps	Slice3	10:40:00 AM
TXN1135873779	ACC24360	ACC36461	Deposit	920.92	TRUE	Success	100-150 Mbps	Slice1	10:52:00 AM
TXN1136280450	ACC58515	ACC82997	Transfer	1,292.74	TRUE	Failed	150-250 Mbps	Slice2	10:41:00 AM
TXN1140740719	ACC10603	ACC45278	Deposit	1,441.89	TRUE	Failed	50-100 Mbps	Slice1	11:00:00 AM
TXN1160189664	ACC78719	ACC38259	Transfer	1,242.46	FALSE	Failed	150-250 Mbps	Slice3	10:37:00 AM

Transactions Details

Analyze granular transaction data to detect fraud patterns in real-time, focusing on sender/receiver accounts, transaction types, bandwidth usage, and network slices.

Insights

- 150–250 Mbps Bandwidth Dominates Fraud
- Network Slice "Slice 2" as Fraud Hotspot
- Sender-Receiver Account Pairs (Recurring transfers between signal potential hidden fraud)

Challenges

- Overloaded Network Slices - "Slice 2" handles both legitimate and fraudulent traffic, making isolation difficult
- More traffic before 10.15am and around 11am can lead to more fraud transaction

Recommendations

- Isolate "Slice 2" for Security Audit- Partner with cybersecurity firms to scan for vulnerabilities
- Enforce Multi-Device Authentication

Outcome

By implementing these insights and recommendations, stakeholders and bank managers can expect:

Improved profitability - Boost profits in underperforming regions (Asia, Africa etc)

Highly secure transactions - Investing in cloud security infrastructure will lead to less fraud transactions and more trust.

Competitive Advantage - Market analysis and strategic investments to lead competitors.

Consistent Growth - Sustainable YoY growth in terms of new users, new accounts and higher number of transactions.

As a result, a more profitable, well-balanced, and data-driven business with improved security and user experience, better regional performance, and stronger customer relationships.

Thank You!