Banking Transaction Data Analysis Using Power BI

Project Overview

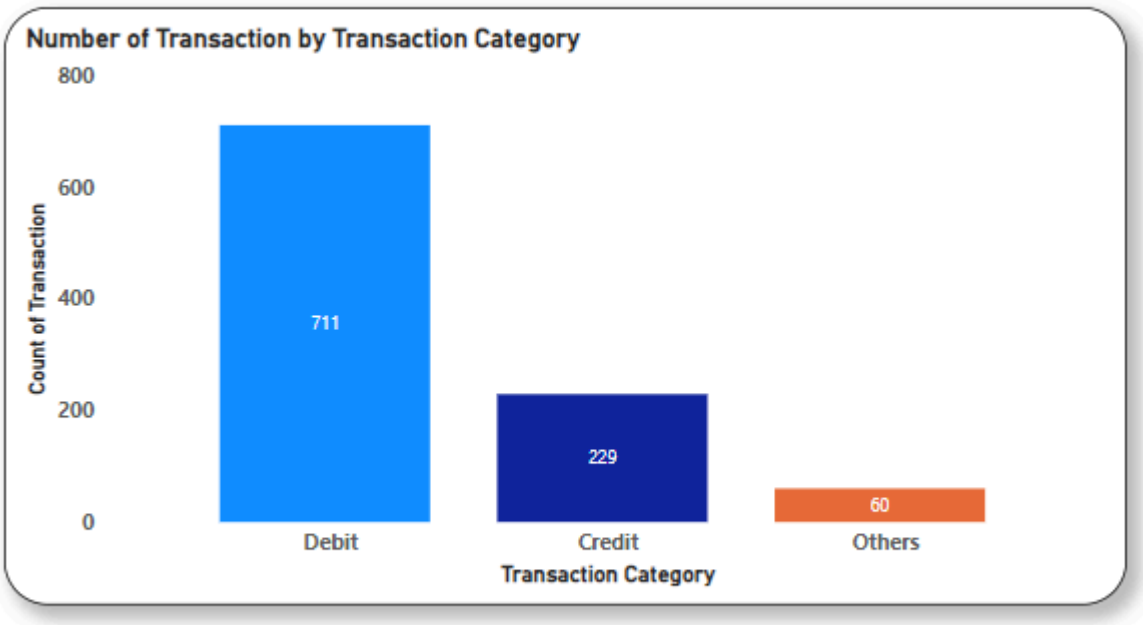
This document presents the analysis of banking transaction data conducted using Power BI. The project aims to provide insights into customer behavior, transaction patterns, and overall banking performance to help the bank improve customer service, detect fraudulent activities, and optimize operations.

Key Objectives

1. **Understand Customer Behavior:**
    - Analyze customer transaction patterns to identify spending habits and preferences.
    - Segment customers based on transaction frequency and volume.
2. **Transaction Analysis:**
    - Track and visualize the volume and value of transactions over time.
    - Identify peak transaction periods and trends across different branches.
3. **Fraud Detection:**
    - Detect unusual transaction patterns that may indicate fraudulent activities.
    - Monitor high-value transactions and flag anomalies for further investigation.
4. **Performance Metrics:**
    - Evaluate the performance of different branches and ATMs.
    - Assess the effectiveness of various banking products and services.

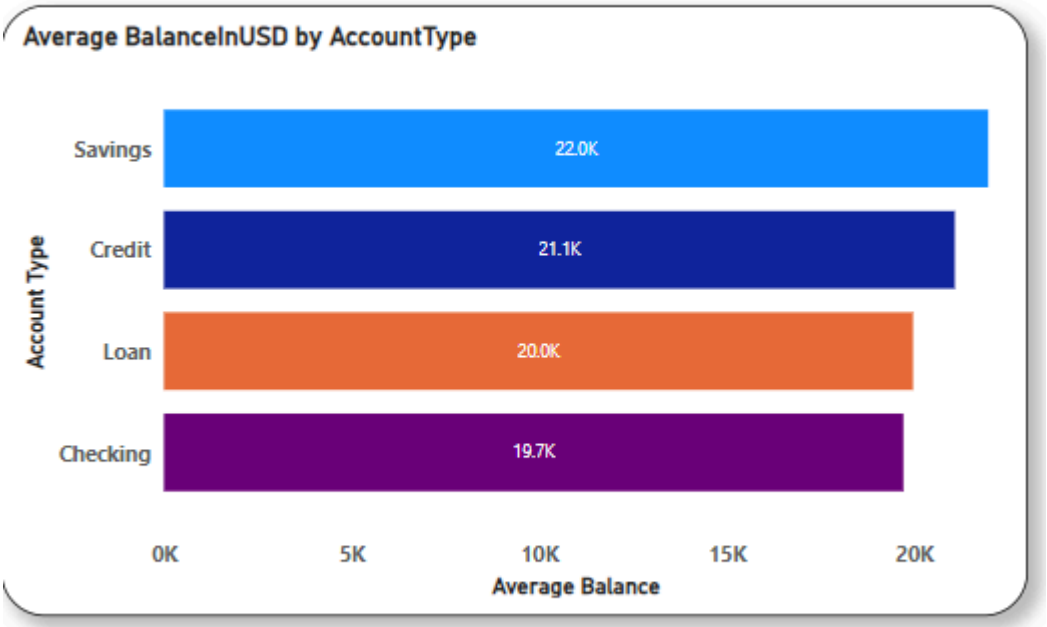
Dashboards and Insights

Q5.Categorizing Transaction Types.



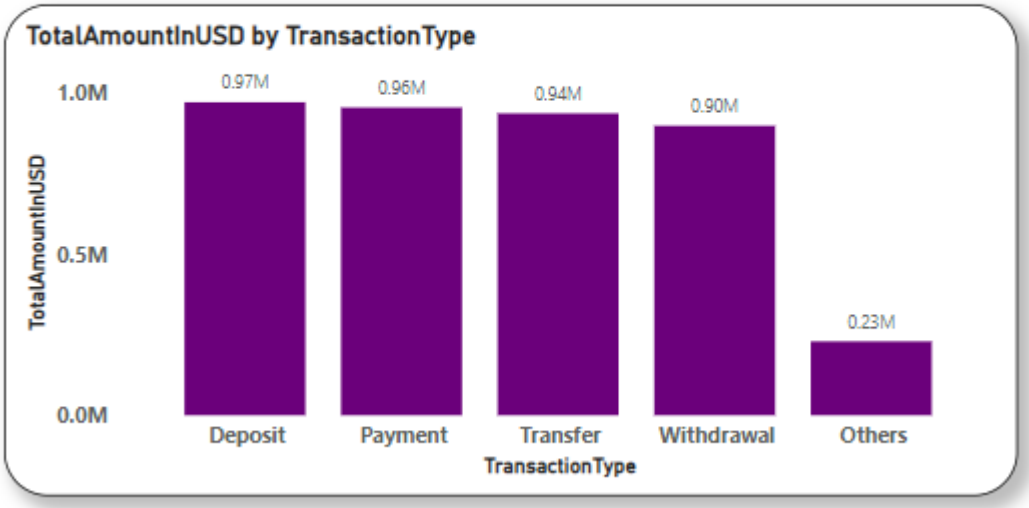
I created a new column called new transaction category.There are 711 debit transaction and 229 credit transaction and 60 others type of transaction.

Q6.Analysis of Account Balances



We can see here saving account has the highest average balance.

Q7.Currency Exchange Rate Impact

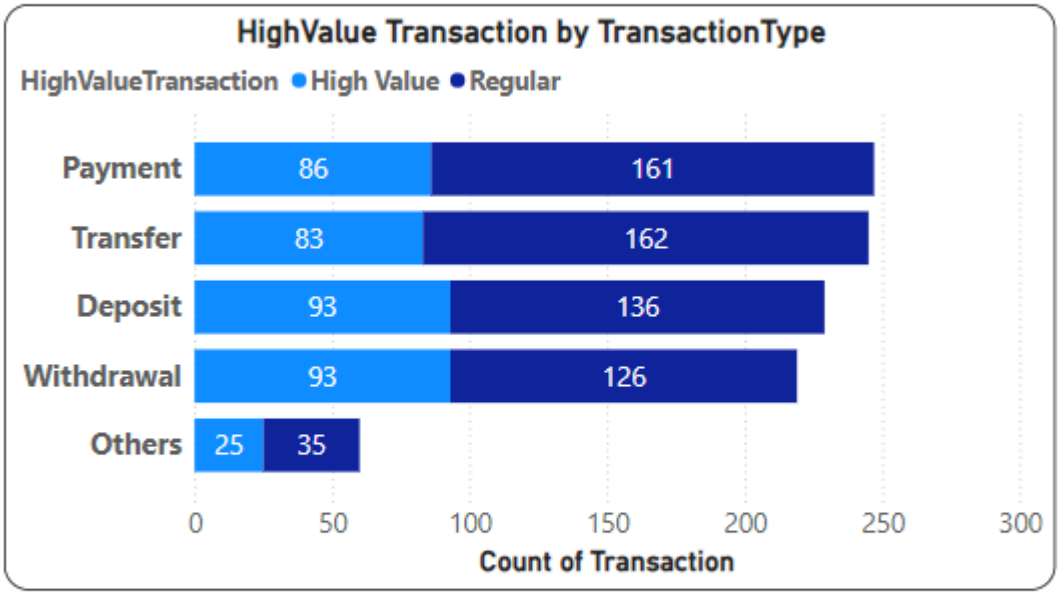


Q12.Customer Loyalty Analysis

AccountNumber	OpeningDate	Recent_Transaction	Active_Days_Count
100268	4/4/2020	10/9/2024	1649
100876	8/8/2020	2/12/2025	1649
102194	4/14/2020	10/19/2024	1649
104716	12/12/2020	6/18/2025	1649
104796	11/28/2020	6/4/2025	1649
105468	5/24/2020	11/28/2024	1649
107588	2/25/2020	8/31/2024	1649
107687	10/7/2020	4/13/2025	1649
109038	1/5/2021	7/12/2025	1649

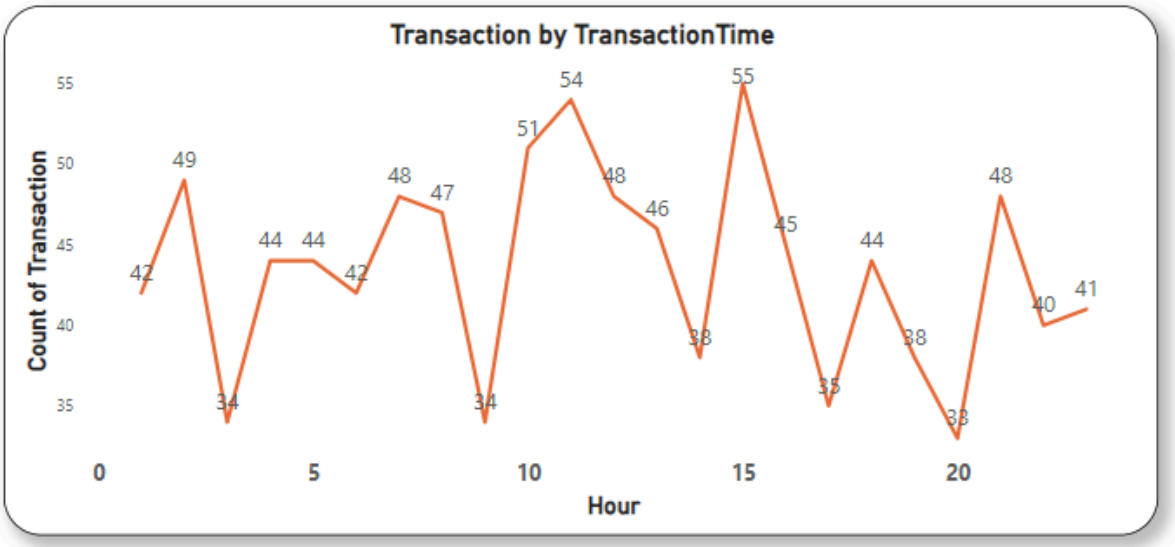
I calculate the duration of each account's relationship with the bank (from 'OpeningDate' to the most recent transaction date). In the table we can see all longest-standing customers.

Q13.High-Value Transaction Analysis



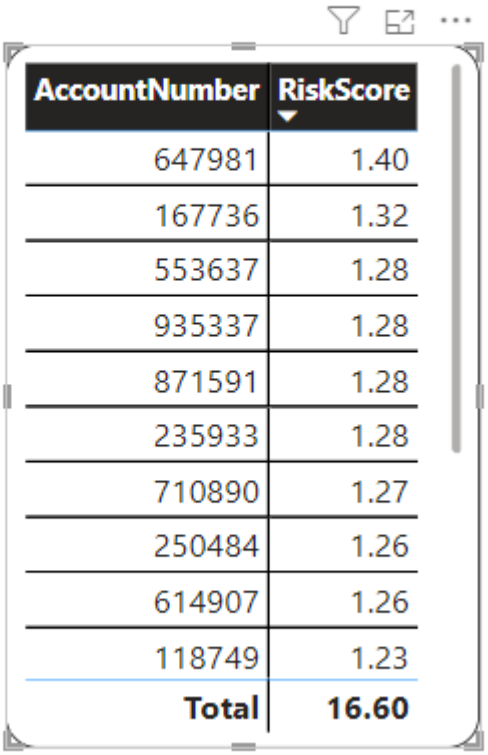
For this i have created a new column called HighValueTransaction(amount>5000 is high and others are regular Transactions).We can see the number of high value transaction and regular transaction for each transaction type.

Q14.Analysis of Transaction Time Patterns



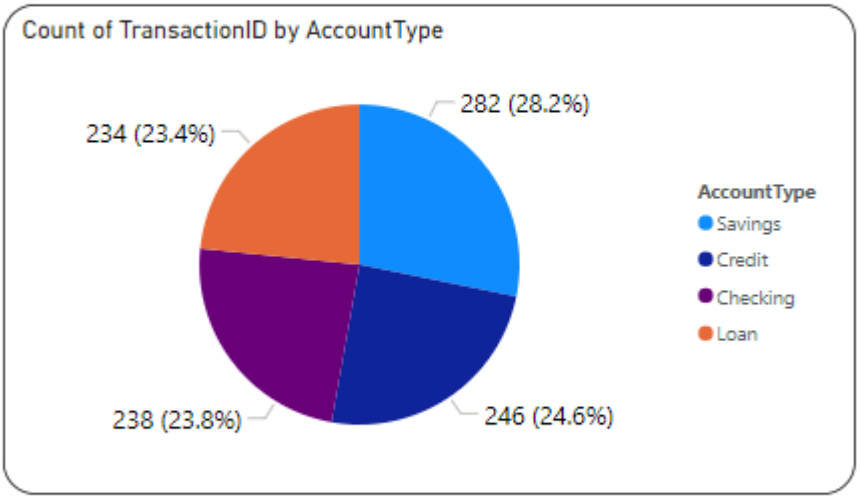
We can see here from 10 A.M to 3 P.M most of the transactions are made.

Q19.Risk Analysis



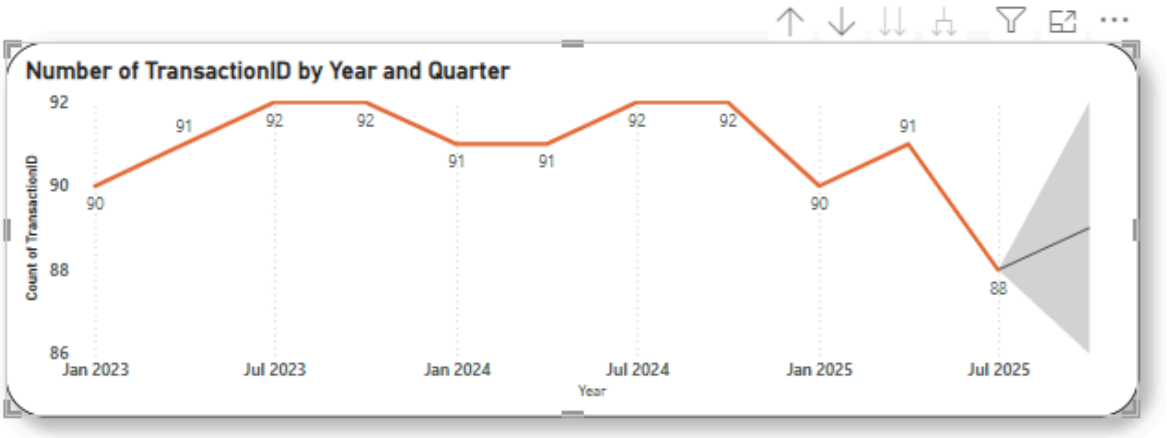
AccountNumber	RiskScore
647981	1.40
167736	1.32
553637	1.28
935337	1.28
871591	1.28
235933	1.28
710890	1.27
250484	1.26
614907	1.26
118749	1.23
Total	**16.60**

Q21. Branch and Account Type Influence on Transactions



In the pie chart we can see saving accounts has more influence in transactions campare to others.

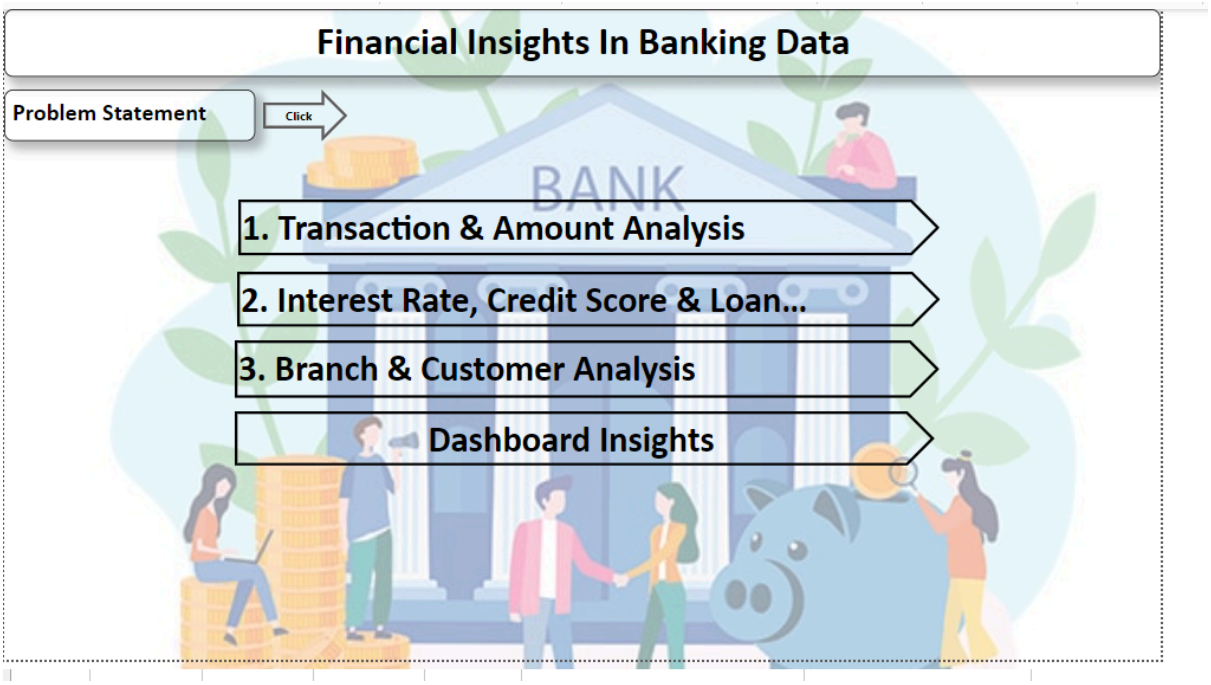
Q23. Data Modeling: Time Series Forecasting of Transactions



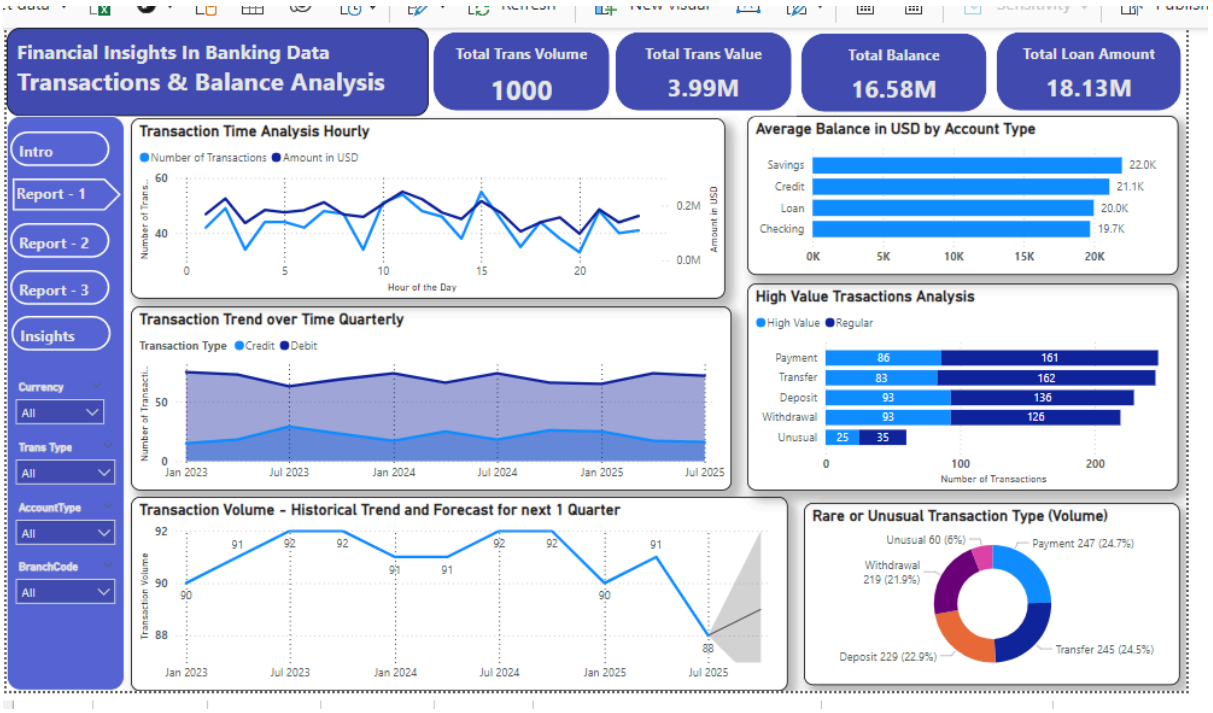
In the line chart we can visualize transaction forecasting for the next quarter.

1. **Transaction and Balance Analysis:** Displays transaction volume and value trends over time.
2. **Credit score,Interest rate and and Loan Analysis:** Displays credit score and Loan analysis.
3. **Branch and customer Analysis:** Evaluates branch and ATM efficiency and performance.

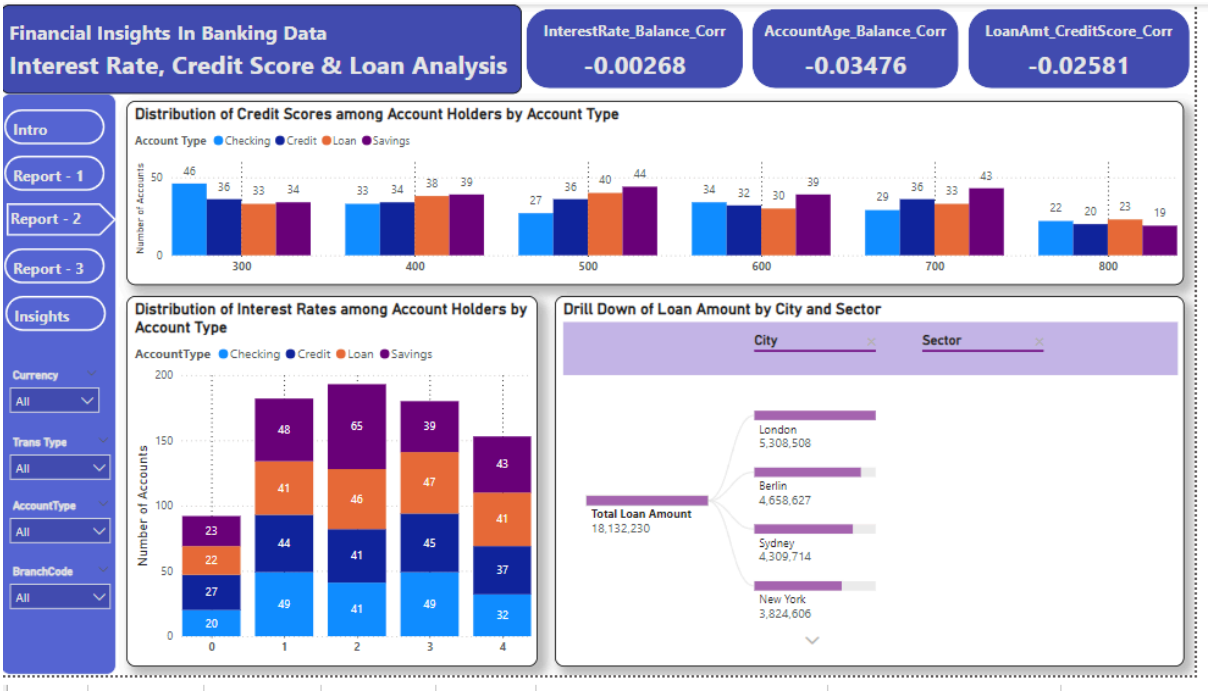
These insights help the bank improve customer service, detect fraud, and optimize operations.



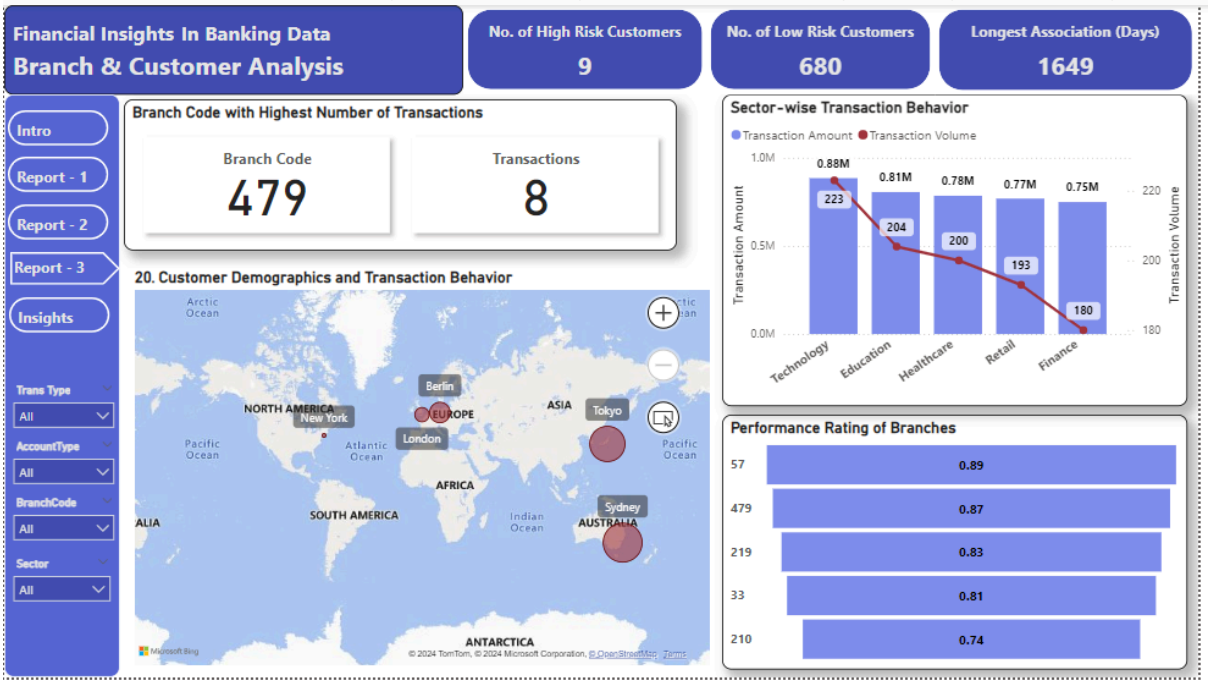
Home page



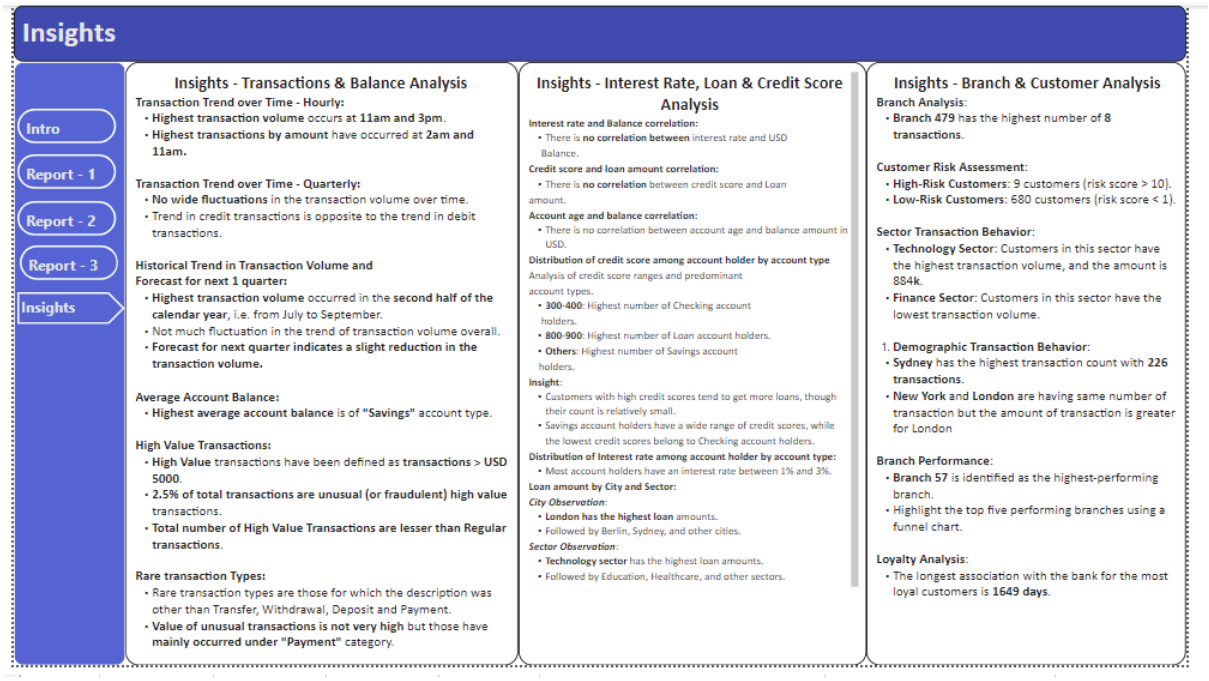
Dashboard 1



Dashboard 2



Dashboard 3



Insights

This project analyzes banking transaction data using Power BI to gain insights into customer behavior, transaction patterns, and bank performance. The key objectives include understanding customer spending habits, segmenting customers based on transaction frequency, and tracking transaction volume and value over time. The analysis aims to detect fraudulent activities by identifying unusual transaction patterns and monitoring high-value transactions. Data sources include customer demographics, transaction details, account information, and branch locations. Key Power BI dashboards provide visualizations of customer overviews, transaction trends, and performance metrics. The project helps the bank improve customer service, detect fraud, and optimize operations.