Bank Loan Risk & Performance Analytics

Project Overview

This project focuses on analyzing a bank's loan portfolio to evaluate lending performance, risk quality, and financial trends. The objective is to build interactive dashboards that provide clear visibility into loan activity, portfolio health, and borrower behavior. The insights generated support data-driven decision-making and help improve lending strategies and risk management.

Dashboard 1: Executive Summary

Objective

The Summary Dashboard provides a high-level overview of the bank's lending performance. It tracks essential loan metrics and monitors how they change over time, enabling stakeholders to quickly assess portfolio health and operational trends.

Key Performance Indicators (KPIs)

- **Total Loan Applications**
  Measures the total number of loan applications within a selected period, including Month-to-Date (MTD) values and Month-over-Month (MoM) changes.

- **Total Funded Amount**
  Represents the total loan amount disbursed to borrowers, with MTD tracking and MoM growth or decline analysis.

- **Total Amount Received**
  Tracks repayments collected from borrowers, including MTD performance and MoM comparison to evaluate cash inflows.

- **Average Interest Rate**
  Calculates the overall average interest rate across loans, including MTD values and MoM fluctuations.

- **Average Debt-to-Income Ratio (DTI)**
  Indicates borrower financial stability by measuring average DTI across the portfolio, with MTD and MoM trend tracking.

Good Loans vs. Bad Loans Analysis

Purpose

This section categorizes loans based on performance status to evaluate portfolio quality and credit risk.

Loan Classification

- **Good Loans**: Loans with a status of *Fully Paid* or *Current*
- **Bad Loans**: Loans with a status of *Charged Off*

Good Loan Metrics

- Percentage of applications classified as good loans
- Total number of good loan applications
- Total funded amount for good loans
- Total repayment amount received from good loans

Bad Loan Metrics

- Percentage of applications classified as bad loans
- Total number of bad loan applications
- Total funded amount for bad loans
- Total repayment amount received from bad loans

Loan Status Performance Grid

This report presents loan performance metrics grouped by loan status. It enables comparison across different loan outcomes using the following measures:

- Total loan applications
- Total funded amount
- Total amount received
- Month-to-Date funded amount
- Month-to-Date amount received
- Average interest rate
- Average debt-to-income ratio (DTI)

This grid supports portfolio monitoring and risk assessment.

Dashboard 2: Portfolio Overview & Trends

Purpose

The Overview Dashboard uses multiple visualizations to highlight trends and patterns in loan activity.

Visual Analytics

1. **Monthly Lending Trends (Line Chart)**
   Shows changes in loan applications, funded amounts, and repayments over time based on loan issue date.

2. **Geographic Distribution by State (Map Visualization)**
   Displays loan activity across regions to identify areas with higher or lower lending volume.

3. **Loan Term Distribution (Donut Chart)**
   Illustrates how loans are distributed across different term lengths such as 36 and 60 months.

4. **Employment Length Analysis (Bar Chart)**
   Analyzes lending metrics based on borrower employment duration.

5. **Loan Purpose Analysis (Bar Chart)**
   Breaks down loan performance by stated loan purposes, such as debt consolidation or credit refinancing.

6. **Home Ownership Analysis (Tree Map)**
   Visualizes loan distribution based on borrower home ownership status, including own, rent, and mortgage.

Dashboard 3: Detailed Loan View

Objective

The Details Dashboard provides a consolidated and detailed view of all loan records. It enables users to explore individual loans, borrower attributes, and performance metrics in a single interface.

This dashboard supports in-depth analysis, auditing, and operational review of the loan portfolio.

Key Outcomes

- Enhanced visibility into loan portfolio performance
- Improved understanding of credit risk and repayment behavior
- Stronger support for data-driven lending and risk management decisions