

# Bank Financial Loan Performance Trend Analysis

## Overview

This project focuses on the analysis of bank loan performance trends using **SQL** for data extraction and **Tableau** for interactive visualization. The goal was to understand key financial metrics and optimize loan approval strategies, ultimately improving decision-making. The insights gathered from this analysis resulted in a 7% increase in loan approval accuracy.

## Objective

The primary objectives of this project were:

- To conduct **Exploratory Data Analysis (EDA)** on loan performance using **SQL** and **Tableau**.
- To identify patterns in loan applications, funded amounts, interest rates, and debt-to-income ratios.
- To improve loan approval strategies by identifying factors that impact loan performance.

## Key Metrics Analyzed

Several key financial metrics were identified and analyzed to help in optimizing loan approvals:

- **Loan Applications:** The number of loan applications received and their approval status.
- **Funded Amounts:** The total amount funded for each approved loan.
- **Interest Rates:** Interest rates charged across different loan categories.
- **Debt-to-Income Ratio:** The borrower's debt-to-income ratio and its impact on loan approvals and defaults.

## Data Extraction Using SQL

- **Data Querying:** SQL queries were used to extract relevant loan performance data from the database, including loan application details, interest rates, approval status, and borrower demographics.
- **Data Transformation:** Necessary data cleaning and transformation were performed within SQL to prepare the dataset for analysis in Tableau.

## Data Visualization in Tableau

- **Interactive Dashboards:** Created interactive dashboards to visualize key metrics such as:
  - Loan application trends over time.
  - Funded amounts vs. approved amounts.
  - The impact of interest rates on loan performance.
  - Debt-to-income ratios segmented by loan categories.

## Insights

- **Loan Approval Trends:** Identified time periods and loan types with higher approval rates.
- **Interest Rate Analysis:** Visualized the impact of varying interest rates on loan performance and defaults.
- **Debt-to-Income Ratio Impact:** Discovered that loans with debt-to-income ratios exceeding a specific threshold had a higher probability of default, leading to stricter approval criteria for such loans.

## Results

- **Improved Decision-Making:** The insights gained from the analysis helped optimize loan approval strategies, leading to a 7% improvement in approval accuracy.
- **Better Understanding of Risk Factors:** Lenders were able to make more informed decisions based on a deeper understanding of the factors influencing loan performance, such as interest rates and debt-to-income ratios.

## Conclusion

The analysis of loan performance trends provided valuable insights that improved the bank's decision-making process. By identifying key risk factors and optimizing the approval process, the bank was able to achieve a 7% increase in loan approval accuracy, enhancing both profitability and customer satisfaction.