BANK LOAN REPORT DASHBOARD

1. Introduction:

This project focuses on analyzing loan application data from a bank to understand customer behavior, loan performance, and financial risks.
The goal is to build an interactive dashboard using Power BI to help the bank's team make decisions faster and smarter by tracking key metrics like loan status, interest rates, income, and more.

2. Problem Statement:

Banks collect a lot of loan data, but it's hard to understand that data without visuals. Traditional methods are slow and make it difficult to make quick decisions. This project aims to create a user-friendly dashboard that shows:

- Identifying high-risk loans
- Monitoring payment status
- Understanding customer profiles
- Improving approval decisions

3. Methodology:

We used Power BI to build an interactive dashboard with filters and visuals. Key steps include:

Data Columns Used:

- loan_status
- emp_length
- grade, sub_grade
- loan_amount, annual_income, dti, int_rate, installment
- term, home_ownership, application_type
- issue_date, last_payment_date, next_payment_date

Key Performance Indicators:

- **Total Loan Applications:** Calculate the toal number of loan applications received during a specified period.To monitor the Month-To-Date(MTD),Loan Application and track change Month-Over-Month(MOM)

- **Total Funded Amount:** Understanding the total amount of funds disbursed as loans is crucial. We also want to keep an eye on the MTD Total Funded Amount and analyse the Month-over-Month (MoM) changes in this metric.
- **Total Amount Received:** Tracking the total amount received from borrowers is essential for assessing the bank's cash flow and loan repayment. We should analyse the Month-to-Date (MTD) Total Amount Received and observe the Month-over-Month (MoM) changes.
- **Average Interest Rate:** Calculating the average interest rate across all loans, MTD, and monitoring the Month-over-Month (MoM) variations in interest rates will provide insights into our lending portfolio's overall cost.
- **Average Debt-to-Income Ratio (DTI):** Evaluating the average DTI for our borrowers helps us gauge their financial health. We need to compute the average DTI for all loans, MTD, and track Month-over-Month (MoM) fluctuations.

Charts:

- **Monthly Trends by Issue Date (Line Chart):** To identify seasonality and long-term trends in lending activities
- **Regional Analysis by State (Filled Map):** To identify regions with significant lending activity and assess regional disparities
- **Loan Term Analysis (Donut Chart):** To allow the client to understand the distribution of loans across various term lengths.
- **Employee Length Analysis (Bar Chart):** How lending metrics are distributed among borrowers with different employment lengths, helping us assess the impact of employment history on loan applications.
- **Loan Purpose Breakdown (Bar Chart): W**ill provide a visual breakdown of loan metrics based on the stated purposes of loans, aiding in the understanding of the primary reasons borrowers seek financing.
- **Home Ownership Analysis (Tree Map):** For a hierarchical view of how home ownership impacts loan applications and disbursements.

4. Expected Outcomes:

- Quick overview of loan performance
- Find which customer types are more risky
- Help bank in better decision-making
- Reduce loan defaults by identifying patterns early

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- Easy tracking of pending and upcoming payments

5. Technologies and Tools Used :

- Power BI: Used for creating interactive dashboards with advanced features like Navigation Pane and Drill-through Charts.
- Python**:** Utilized for data preprocessing and feature transformation using libraries like Pandas.
  MS Excel**:** For data preparation and initial dataset organization.
- Power Query: Applied for data cleaning, filtering**,** and transformation before visualization.

6. Data Sources :

The dataset is from a financial loan record containing:

- Loan application details
- Income, employment, and payment history
  (File name: financial_loan.csv)

7. Risks and Challenges:

Some challenges include:

- Cleaning missing values and formatting dates
- Understanding columns like dti and int_rate
- Creating dynamic visuals with filters
- Making the dashboard easy for non-technical users

8. Conclusion:

The Bank Loan Dashboard gives clear and smart insights into customer loans.
It helps the bank reduce risk, make better decisions, and understand customer profiles better.
This is a useful tool for loan officers, risk managers, and analysts.

9. References :

- Kaggle DataSets

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- Youtube
- ChatGpt