LOAN ANALYSIS

OBJECTIVES

- To analyze loan application data.
- Understand the impact of demographic and financial factors on loan approval.
- Identify risk patterns and profiles of applicants.

Project Methodology

To begin, Python was used for cleaning and exploring the raw loan dataset—this involved identifying missing values, engineering new features like the debt-to-income ratio, and visualizing patterns across income, credit score, and approval status. This step ensured the data was accurate, complete, and analytically useful.

Once prepared, the cleaned data was imported into MySQL, where key business metrics were modeled using SQL views. These views, such as approval rates, average income levels, and risk classifications, allowed us to centralize and standardize the logic needed for analysis.

Finally, Power BI was used to design an interactive dashboard connected directly to the SQL views. This enabled dynamic filtering, KPI tracking, and visual storytelling—making the insights easily accessible to decision-makers.

Key KPIs via SQL Views

Metric / KPI	Purpose	SQL View & Query
Total Applications	Count of all loan applications received.	CREATE VIEW view_total_applications AS SELECT COUNT(*) AS total_applications FROM clean;
Loan Status Summary	Total approved and rejected applications grouped by status.	CREATE VIEW view_loan_status_summary AS SELECT Loan_Status, COUNT(*) AS total_count FROM clean GROUP BY Loan_Status;

Key KPIs via SQL Views

Metric / KPI	Purpose	SQL View & Query
Approval Rate (%)	Calculates the percentage of approved loans.	CREATE VIEW view_approval_rate AS SELECT ROUND(100 * SUM(CASE WHEN Loan_Status = 'Approved' THEN 1 ELSE 0 END) / COUNT(*), 2) AS approval_rate_percentage FROM clean;

Key KPIs via SQL Views

Metric / KPI	Purpose	SQL View & Query
Average Income & Loan	Computes average annual income and loan amount.	CREATE VIEW view_avg_income_loan AS SELECT ROUND(AVG(Annual_Income), 2) AS avg_annual_income, ROUND(AVG(Loan_Amount), 2) AS avg_loan_amount FROM clean;

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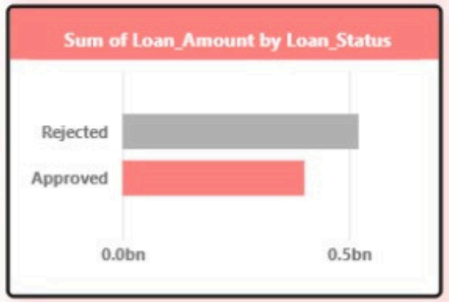
POWER BI DASHBOARDS

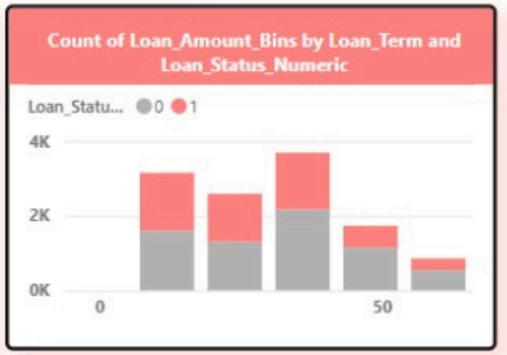
Overview

Risk Factor

Applicant Profile

Loan Details





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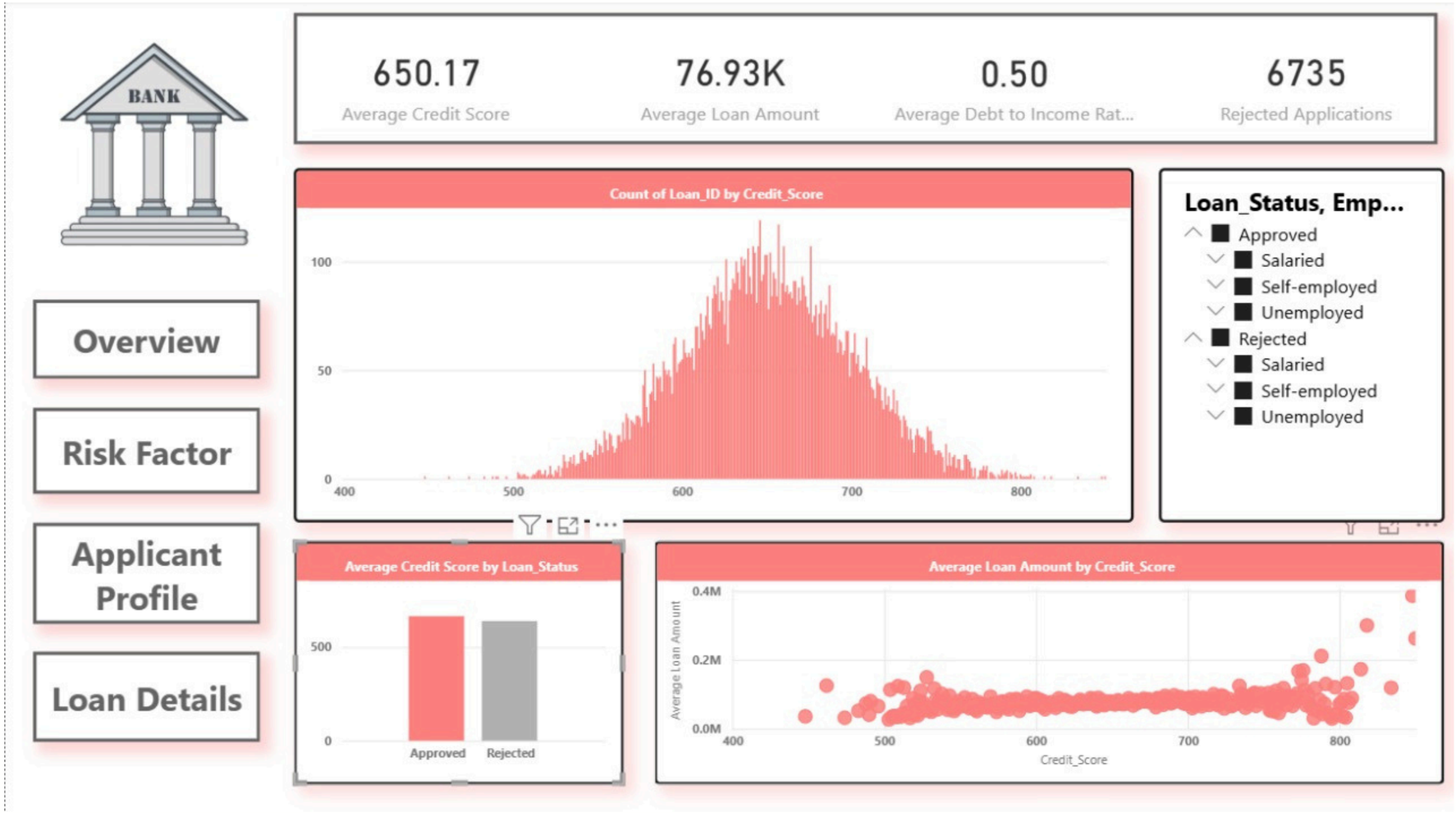

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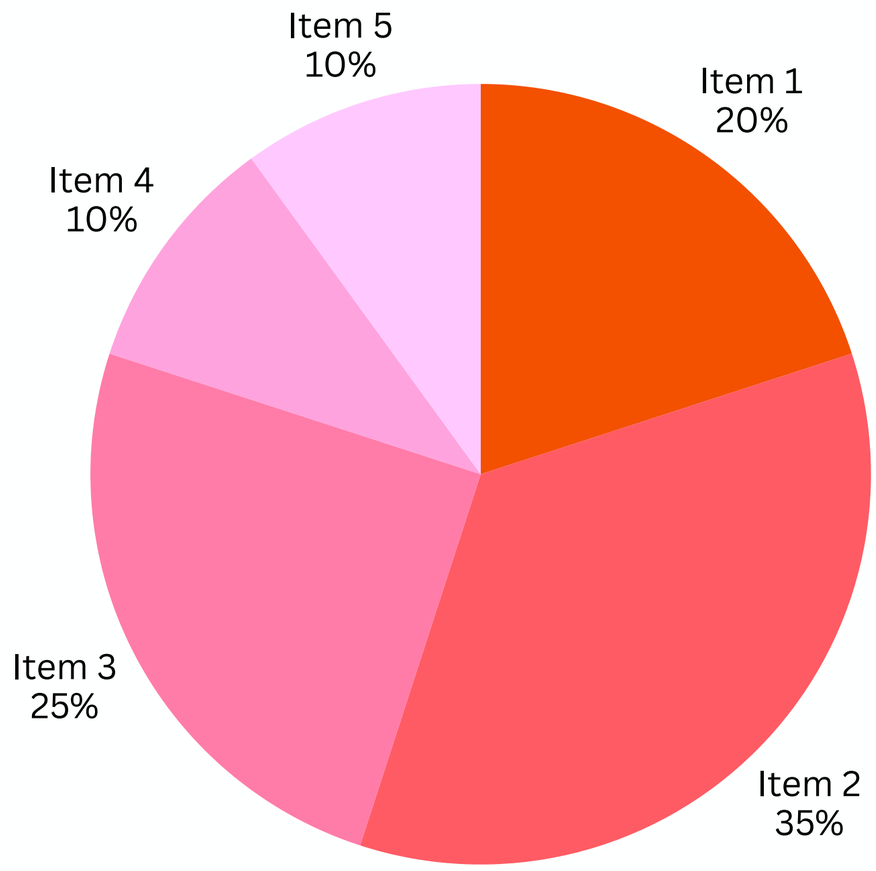
Key Business Insights

01 **Approval Rate**
The overall loan approval rate was found to be 43.88%, indicating that more than half of the applications were either rejected or flagged for risk.

02 **Average Annual Income**
Applicants had an average income of approximately $51,220, suggesting a middle-income borrower profile across the dataset.

03 **Credit Score Range**
The dataset featured a broad range of credit scores, from 400 to 850, highlighting both high-risk and highly creditworthy applicants.

04 **High-Risk Customer Profile**
Applicants with a credit score below 600 combined with a loan-to-income ratio greater than 0.5 were identified as high risk. These profiles present the greatest default potential.



GOT QUESTIONS?

Reach out.

THANK YOU