Banking Data Analytics Project

EDA using Python | MySQL | Power BI Dashboard

Project Objective

The objective of this project is to analyze banking customer data to understand loan performance, deposit behavior, and customer segmentation, and to present meaningful insights using Python EDA and Power BI dashboards.

Dataset Overview

- Total Records: **3000 customers**

- Total Columns: **25**
- Data Source: CSV file
- Each row represents **one bank customer**

Key Columns:

- Customer details: Age, Gender, Nationality, Occupation
- Banking metrics: Loan, Deposit, Savings, Checking Accounts
- Customer value: Income Band, Fee Structure, Loyalty Classification

Tools & Technologies

- Python – Data Cleaning & EDA
- Pandas & NumPy – Data manipulation
- Matplotlib & Seaborn – Data visualization
- MySQL – Database storage
- Power BI – Interactive dashboards

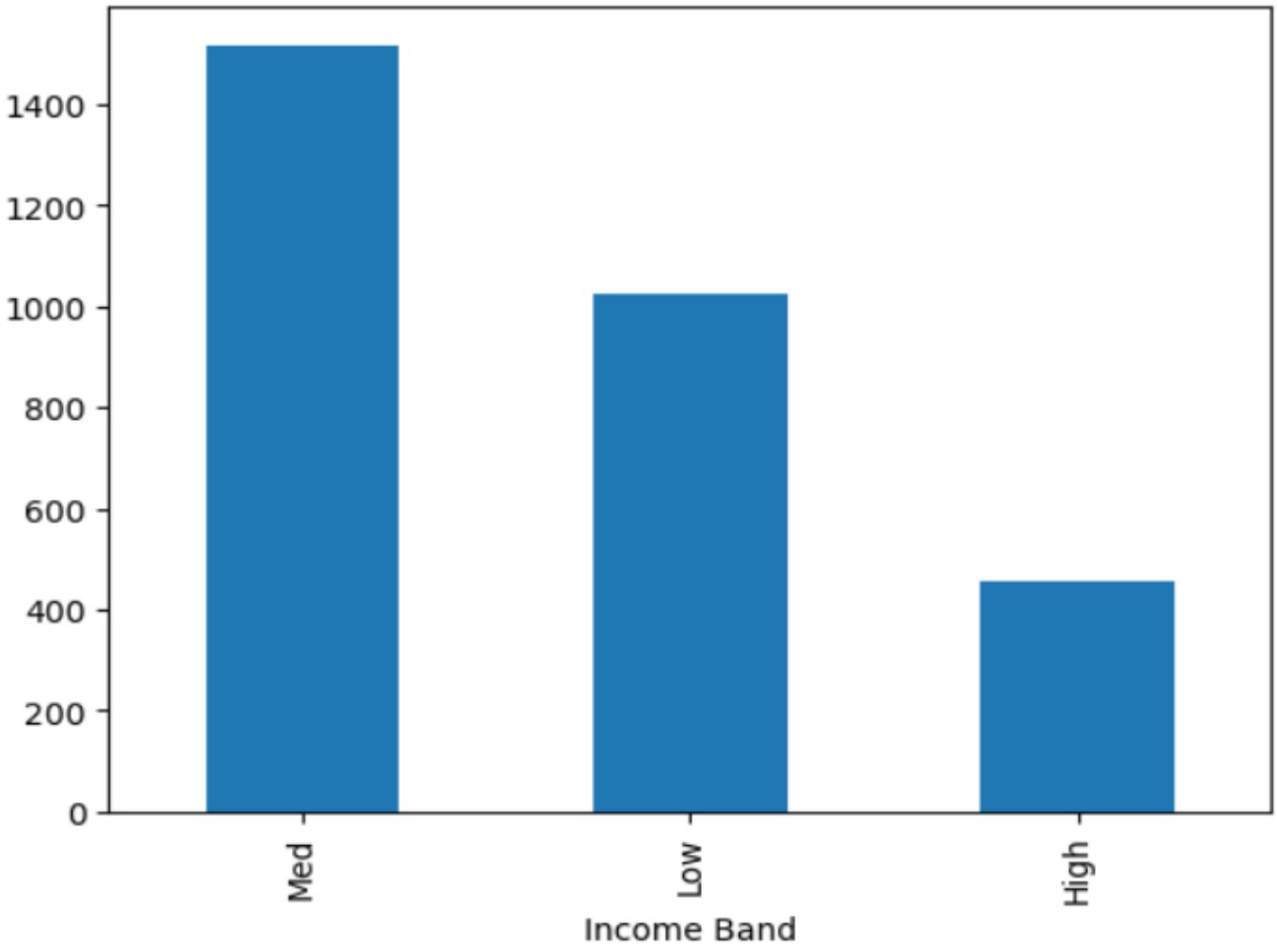
EDA Analysis Performed

- Income band distribution
- Gender-wise customer distribution
- Credit card usage pattern
- Nationality-wise customer analysis
- Fee structure and loyalty classification
- Correlation analysis of financial variables

Key Insights from EDA

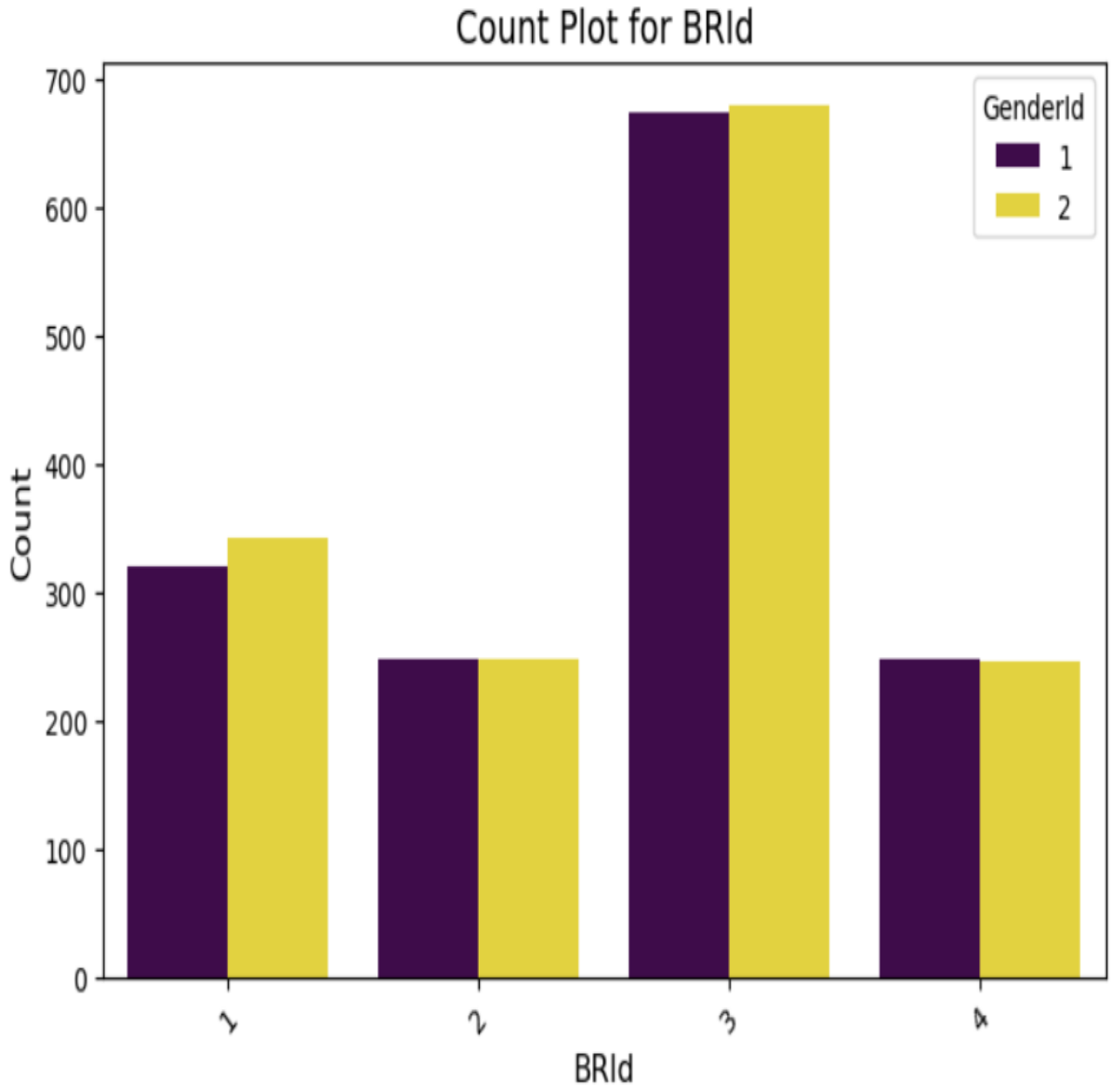
📌 Income Band Distribution – Insight

Most customers belong to the Low- and Medium-income groups, while High income customers are fewer.
This shows the bank mainly serves retail and middle-income customers, with scope to grow premium services.



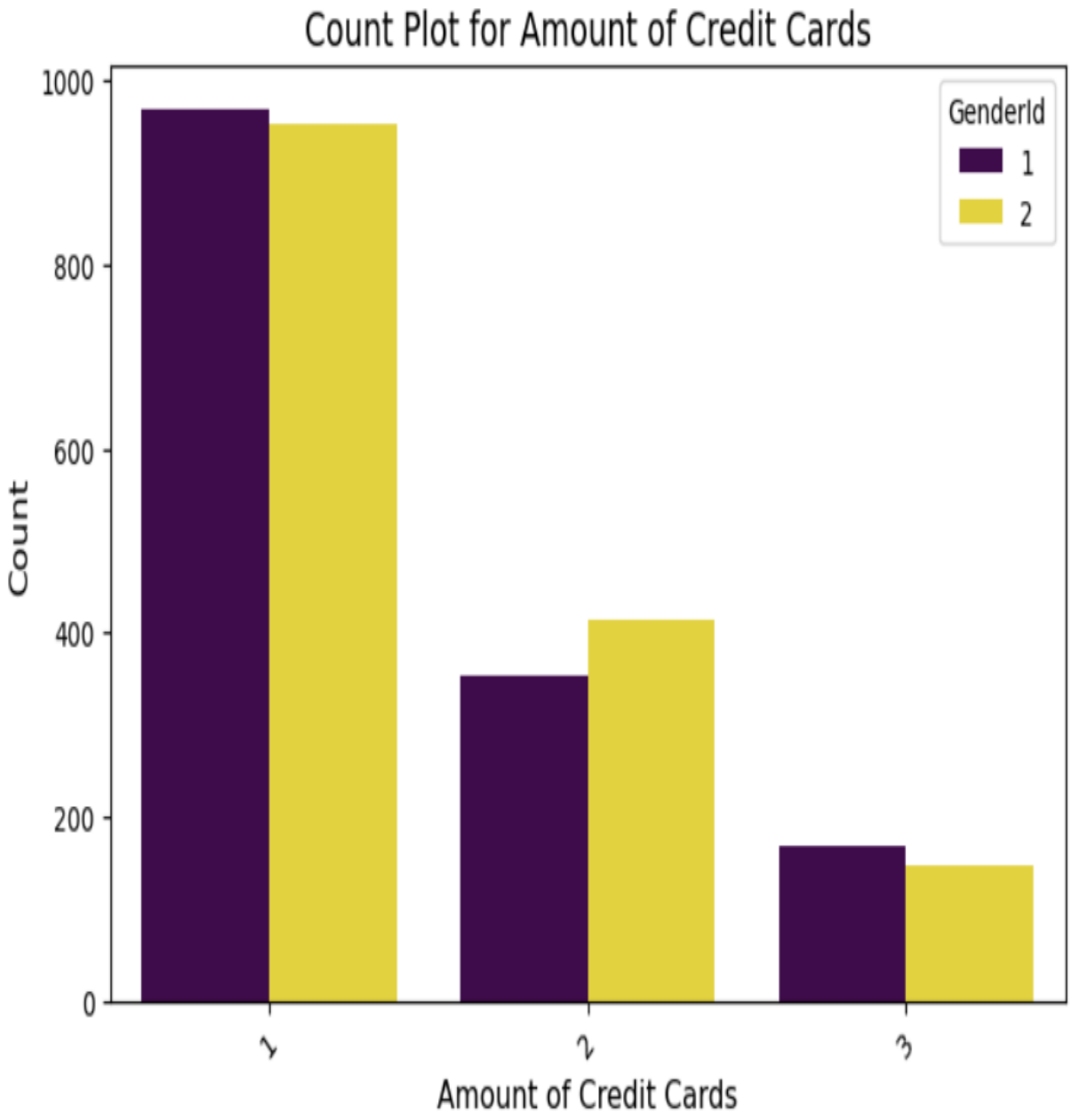
📌 Gender-wise Customer Distribution – Insight

Male and female customers are almost equally distributed across the dataset.
This indicates no gender bias and balanced customer participation in banking services.



📌 Credit Card Usage Pattern – Insight

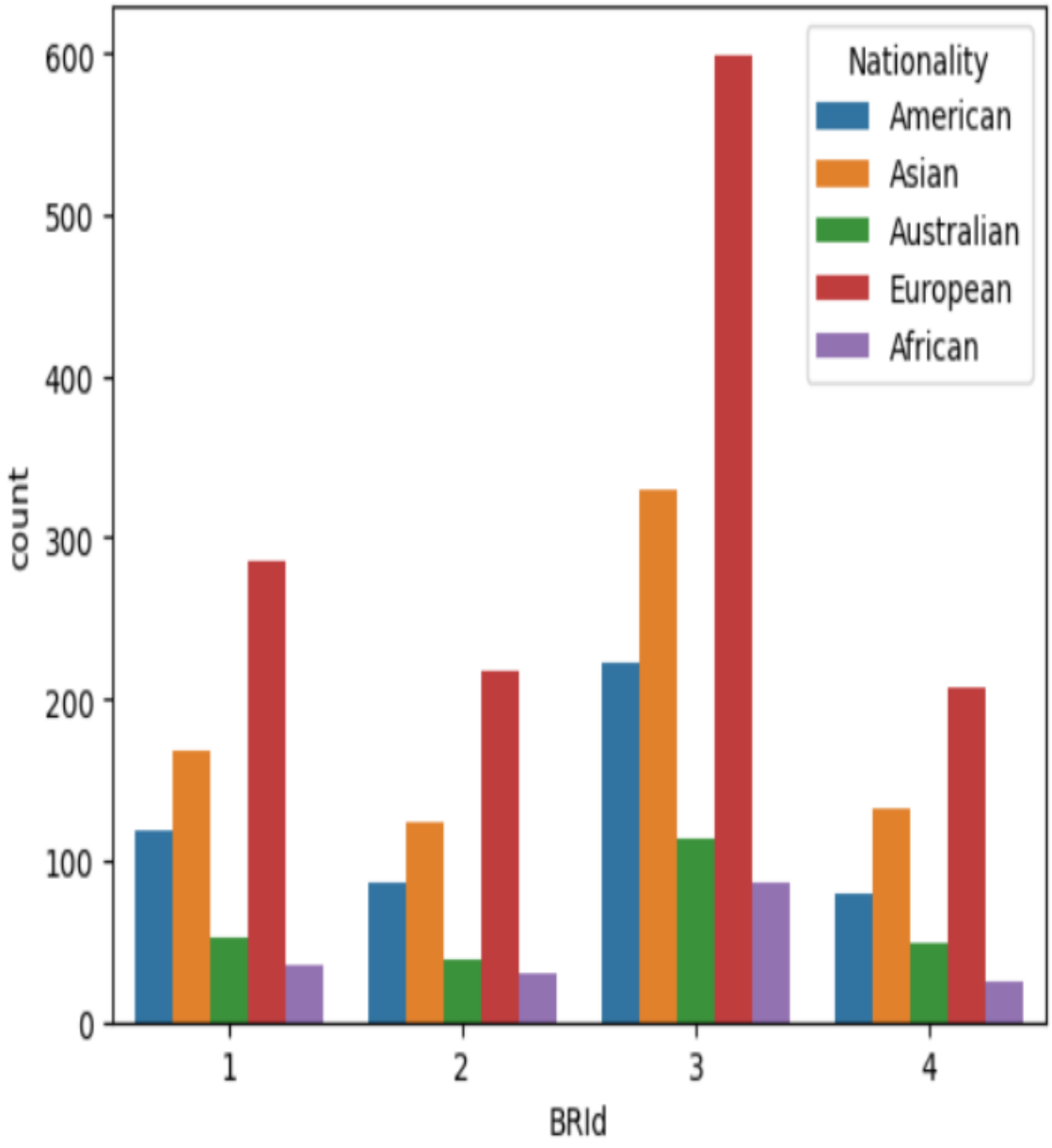
The majority of customers hold only one credit card, and very few hold multiple cards.
This highlights a strong opportunity for cross-selling additional credit cards.



📌 Nationality-wise Customer Analysis – Insight

European customers contribute the highest share of loans and deposits, followed by Asian and American customers.

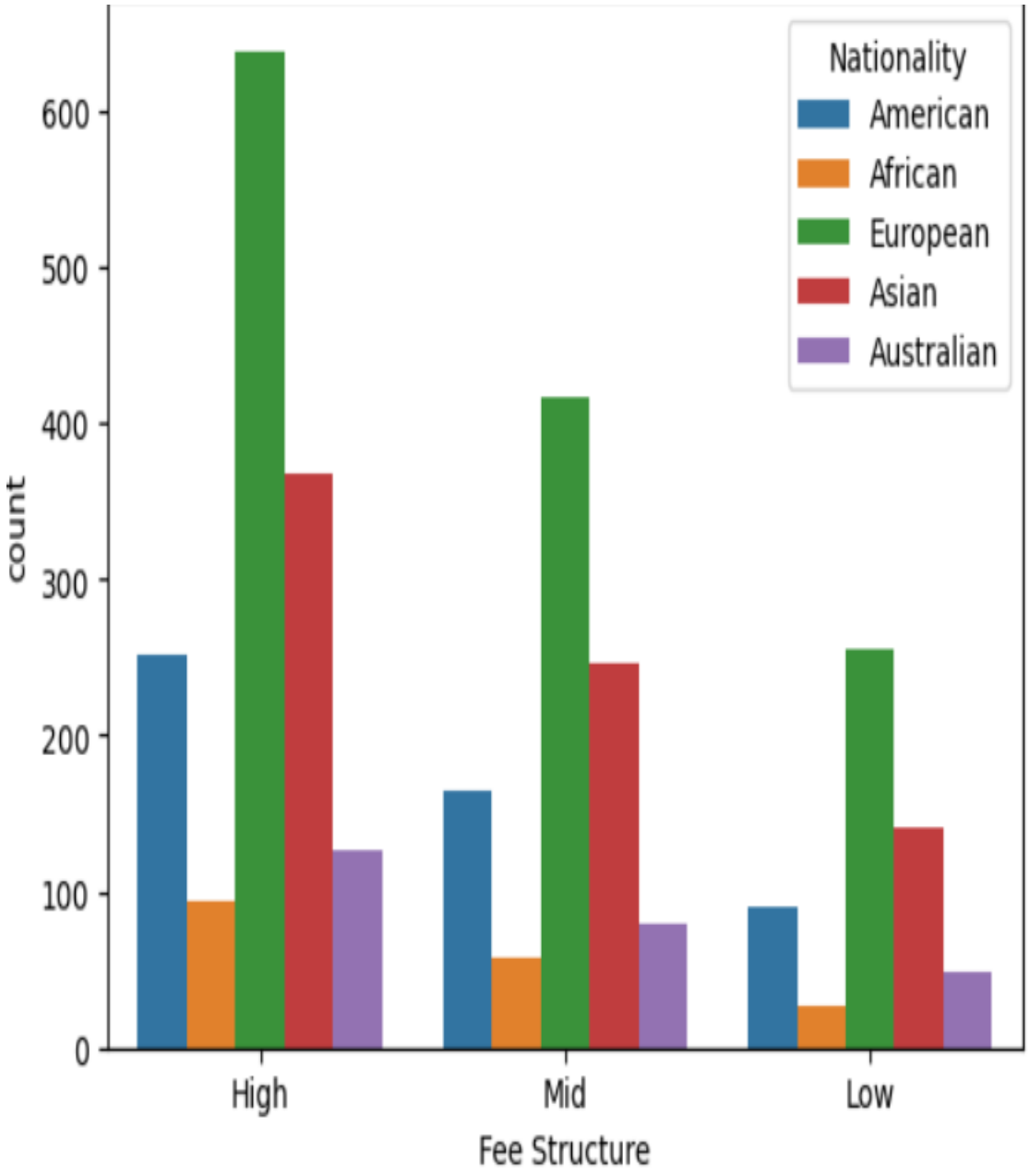
This shows strong penetration in the European segment.



📌 Fee Structure Analysis – Insight

Most customers fall under High and Mid fee structures, while Low fee customers are fewer.

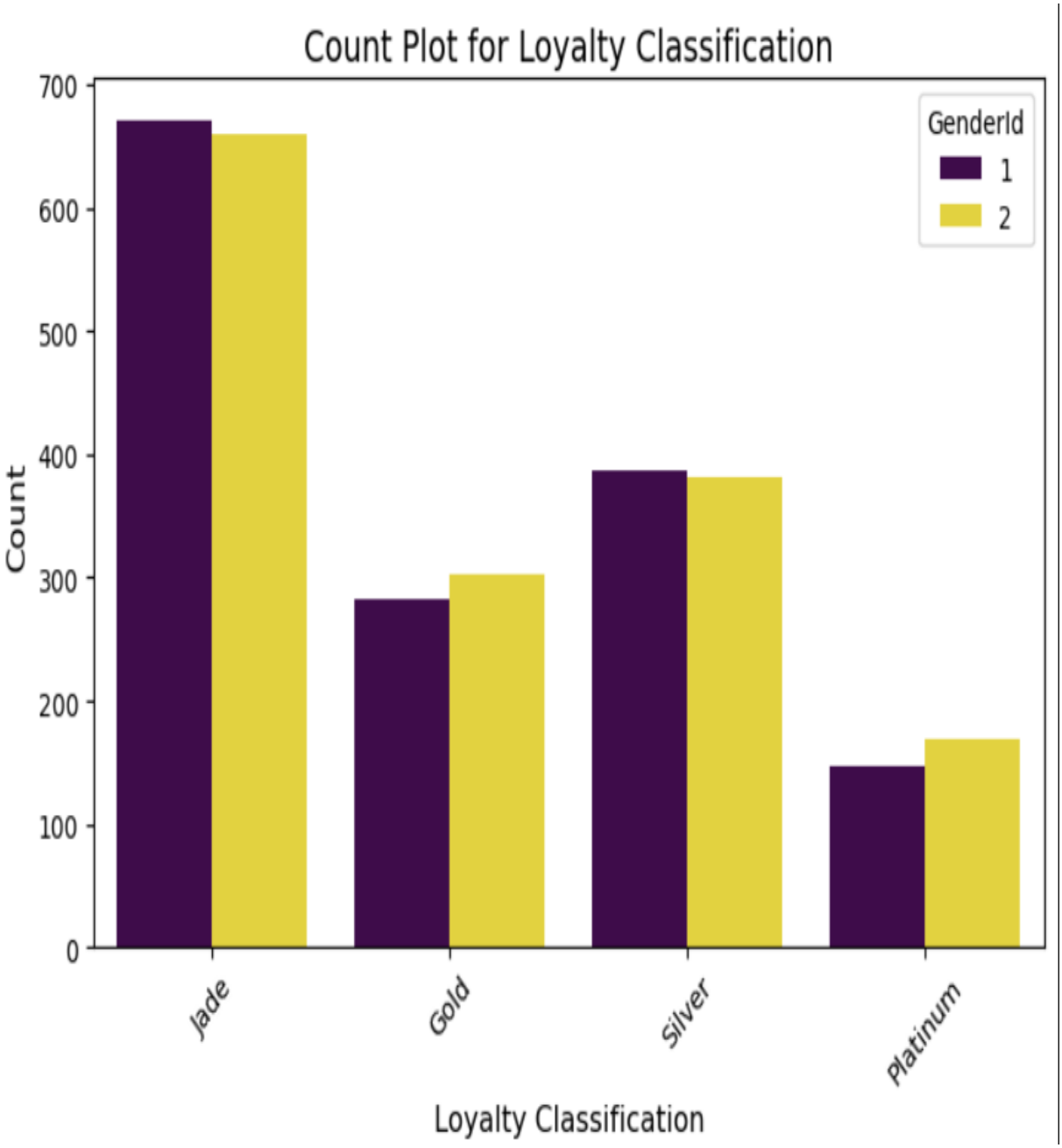
This indicates strong fee-based income generation for the bank.



📌 Loyalty Classification – Insight

Jade customers form the largest loyalty segment, followed by Silver and Gold.

Platinum customers are limited, showing potential for upgrading high-value customers.

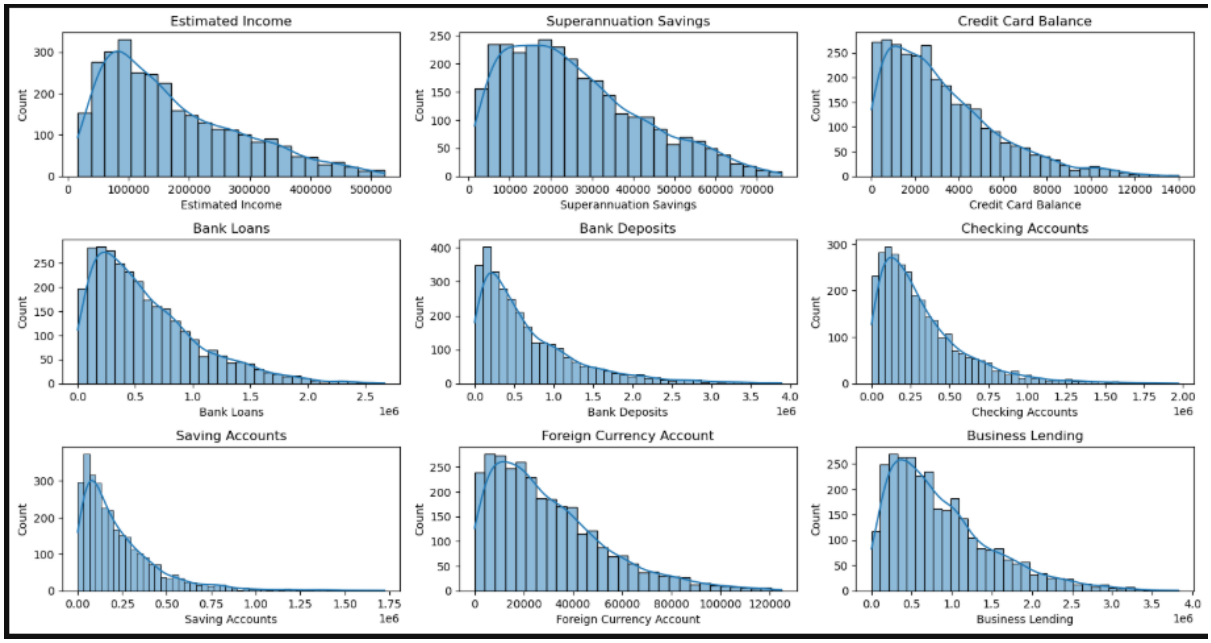


📌 Correlation Analysis – Insight

A positive relationship exists between **loans, deposits, and business lending**.
Customers with higher financial activity tend to use **multiple banking products**.

OVERALL INSIGHT

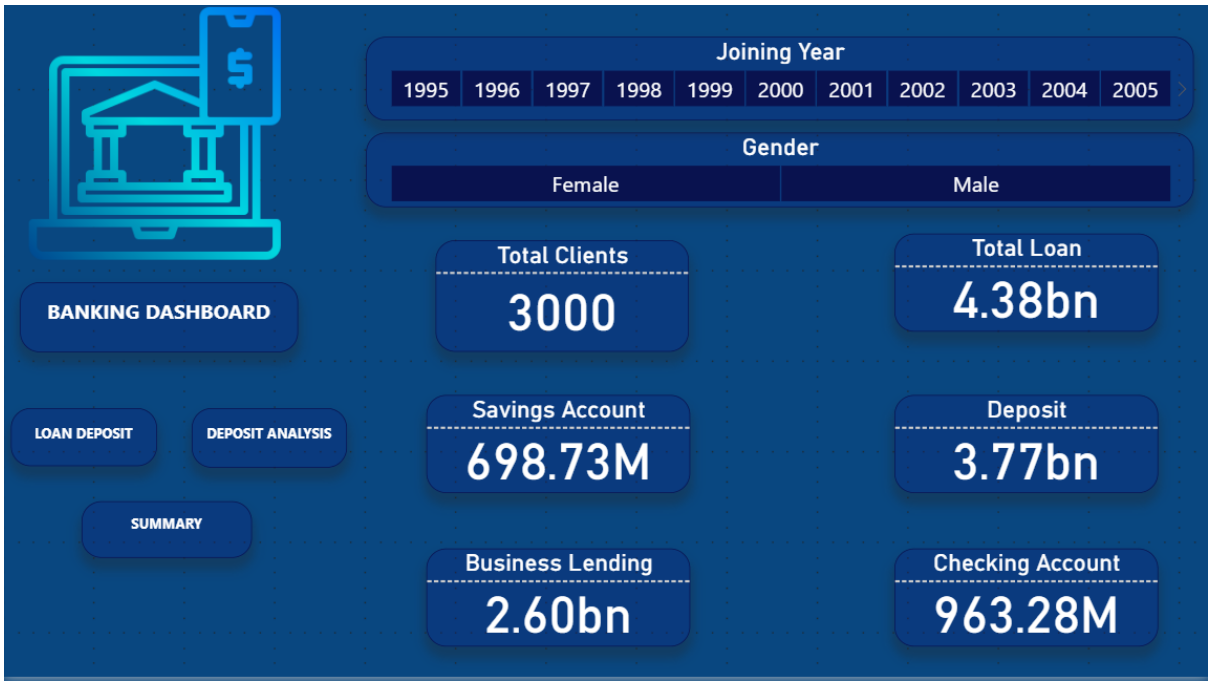
The analysis shows that the bank has a **diversified and stable customer base** with balanced gender distribution and strong loyalty. Business lending and deposits are the **major contributors to revenue**, while most customers belong to low and mid income groups. The data highlights clear opportunities for **cross-selling products, upgrading loyalty tiers, and expanding premium banking services using data-driven decisions**.



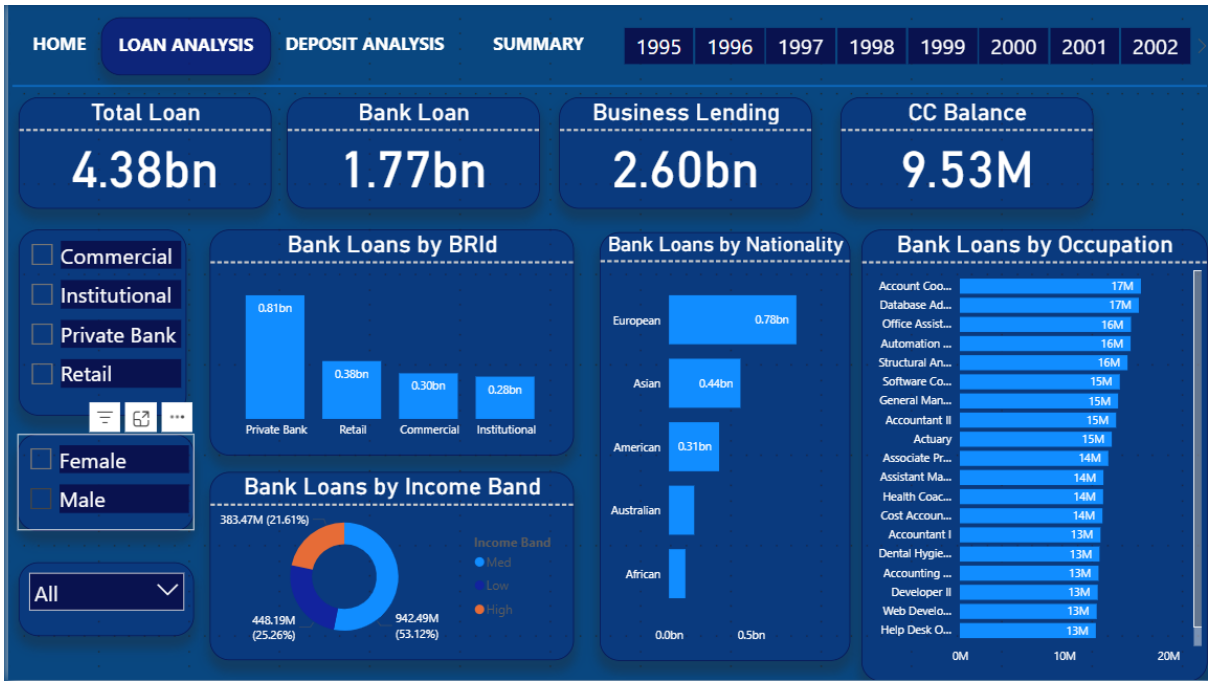
Power BI Dashboard Overview

Pages Created:

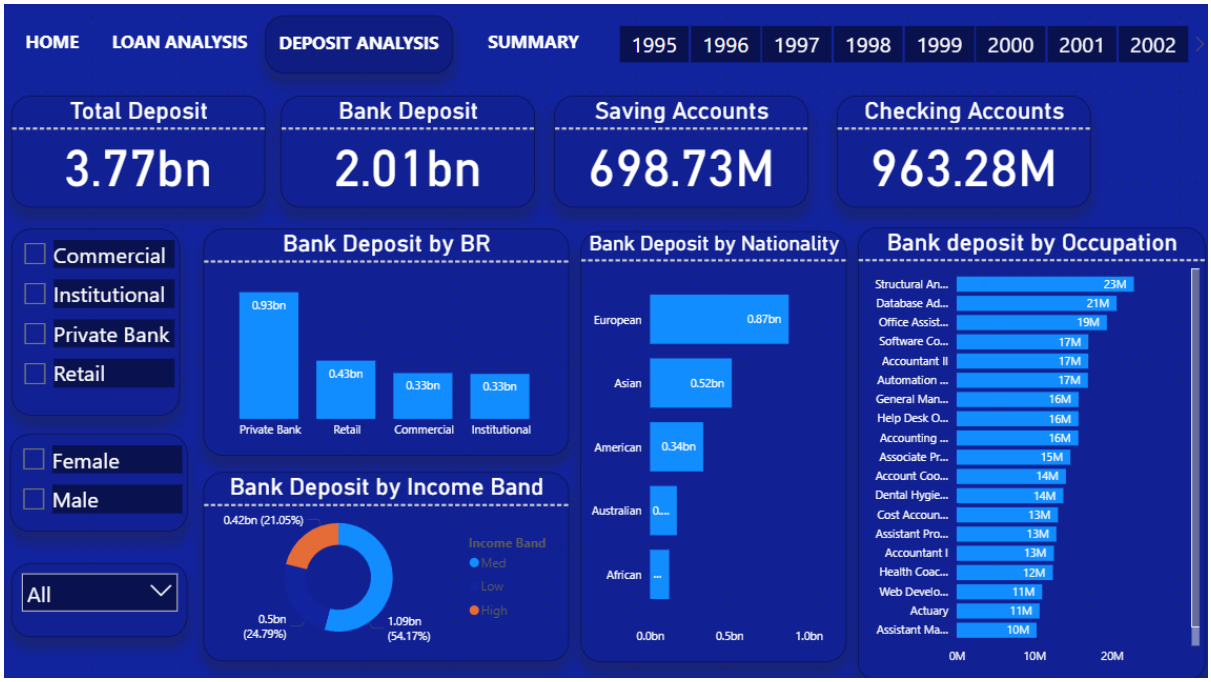
- **Home**



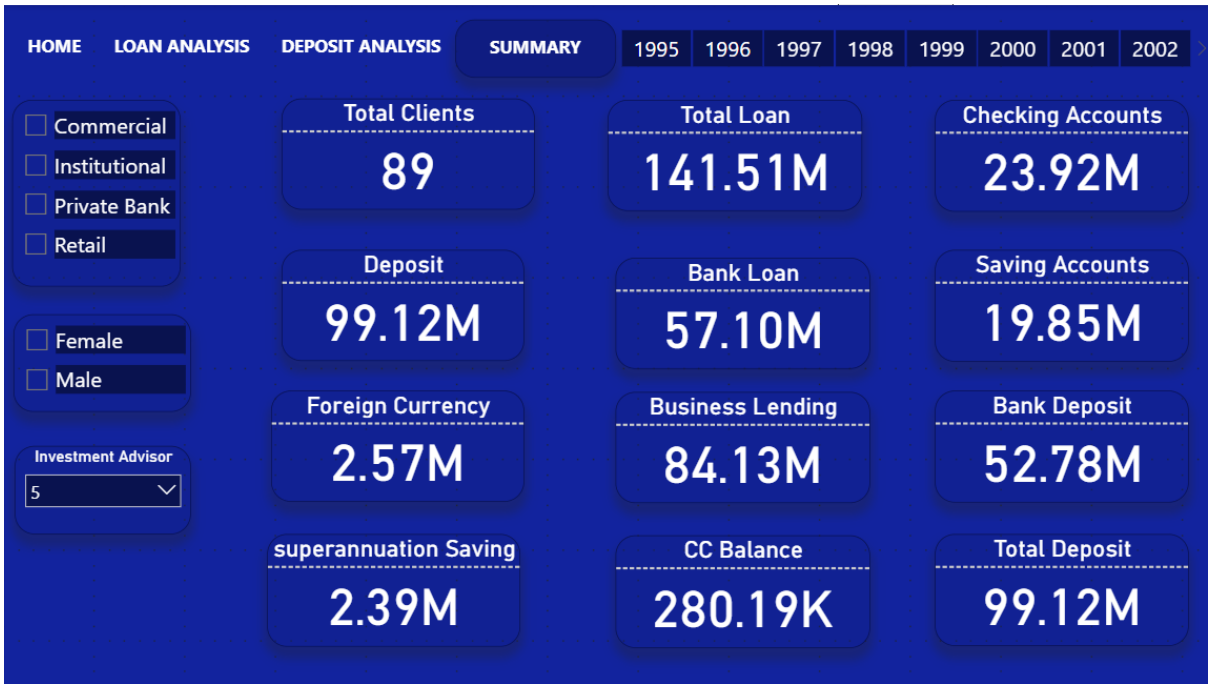
- **Loan Analysis**



- **Deposit Analysis**



- **Summary**



Business-Level Insights

- Total Loan: **4.38 Billion**
- Total Deposit: **3.77 Billion**
- Business Lending contributes **2.60 Billion**

- Bank has strong scope for **cross-selling premium products**
- Data-driven insights help in **better banking decisions**

Conclusion

This project demonstrates an end-to-end banking analytics workflow, starting from raw CSV data to actionable insights using Python, SQL, and Power BI.