Bank Loan Data Analysis and Visualization

Overview: This project involved analyzing and visualizing a dataset related to bank loans. The objective was to gain insights into customer demographics, loan characteristics, and loan performance. The final deliverable is a Power BI dashboard that provides a clear, interactive overview of key metrics and trends within the loan portfolio.

Key Results:

1. **Total Loan Applications and Amounts:**

   o **Total Applications:** The dataset contains **31,680 loan applications**. This figure represents the total number of loans processed by the bank.

   o **Total Loan Amount:** The cumulative loan amount is approximately **€310 million**, indicating the financial scale of the bank's lending activities.

2. **Average Interest Rate:**

   o The average interest rate across all loans is **10.46%**, which reflects the typical cost of borrowing for customers.

3. **Loan Status Overview:**

   o **Default Rate:** Approximately **20.79%** of the loans have defaulted, as indicated by the pie chart showing loan status. This suggests that around one in five loans is at risk, which is a critical insight for the bank's risk management team.

   o **No Default:** The remaining **79.21%** of loans are performing well, with no defaults reported. This indicates that the majority of the bank's loan portfolio is stable.

4. **Loan Grade Distribution:**

   o The bar chart displays the distribution of loans across different grades, with **Grade A** loans being the most common. This suggests that the bank predominantly services high-credit-quality customers. Lower grades (C, D, E) have fewer loans, indicating a more conservative lending approach for riskier borrowers.

5. **Loan Intent:**

   o The pie chart illustrates the purposes for which loans were taken. The top three intents are **Education (19.85%)**, **Debt Consolidation (17.53%)**, and **Home Improvement (16.93%)**. This shows that a significant portion of the loans are used for personal development and financial restructuring.

6. **Customer Home Ownership:**

   o The treemap reveals that most loan customers either have a **Mortgage** or **Rent** their homes, with fewer customers owning their homes outright. This insight can help tailor loan products to specific customer segments.

7. **Income by Loan Grade:**

   o The bar chart on customer income by loan grade shows that higher-grade loans (like Grade A) are associated with higher-income customers. This suggests a correlation between customer income and creditworthiness.

Conclusion: The dashboard provides a comprehensive view of the bank's loan portfolio, highlighting critical insights such as the distribution of loan grades, default rates, and the primary purposes of the loans. These insights are valuable for both risk management and strategic decision-making. The interactive elements, like slicers for filtering by loan status, grade, intent, and home ownership, allow for dynamic analysis, making the dashboard a powerful tool for stakeholders.