Customer Analytics for a Bank

Power BI Project

Project Overview

Problem Statement: The bank wants to understand its customers better in order to make informed business decisions.

Despite having a large pool of customer data, the bank is unable to effectively analyse this data and extract meaningful insights.

Project Goal: Create a dashboard in Power BI that allows the bank to track and analyze customer information such as age, income, credit score, loan taken, and card ownership.

This dashboard will provide the bank with a comprehensive understanding of its customer base, enabling it to identify areas for improvement and capitalize on customer trends.

Tools : Excel, Python, SQL and Power BI

About Dataset

This dataset contains 100K+ records of bank customers, specifically related to their financial behaviour and creditworthiness. The data is organized by month, with each row representing a customer's information for a particular month.

The dataset contains a variety of columns, including the customer's ID, their age, social security number (SSN), occupation, annual income, monthly in-hand salary, number of bank accounts, number of credit cards, interest rate, number and type of loans, delay from due date, number of delayed payments, changed credit limit, number of credit inquiries, credit mix, outstanding debt, credit utilization ratio, credit history age, payment of minimum amount, total EMI per month, amount invested monthly, payment behaviour, monthly balance, and credit score.

Please note that link to dataset will be shared separately.

Raw Data Files

Bank Customer Dataset.csv (100k+ entries) - Main CSV file with below 28 columns:

- ID
- Customer_ID
- Month
- Name
- Age
- SSN
- Occupation
- Annual_Income
- Monthly_Inhand_Salary
- Num_Bank_Accounts
- Num_Credit_Card
- Interest_Rate
- Num_of_Loan
- Type_of_Loan
- Delay_from_due_date

- Num_of_Delayed_Payment
- Changed_Credit_Limit
- Num_Credit_Inquiries
- Credit_Mix
- Outstanding_Debt
- Credit_Utilization_Ratio
- Credit_History_Age
- Payment_of_Min_Amount
- Total_EMI_per_month
- Amount_invested_monthly
- Payment_Behaviour
- Monthly_Balance
- Credit_Score

Prerequisite Tools
(with installation guide)

Python (Free) - Usage of anaconda package is recommended, it will install Python 3 with Jupyter notebook. Below is the link for tutorial to download and install Anaconda package for Python:

https://www.datacamp.com/tutorial/installing-anaconda-windows

Power BI Desktop (Free)- Use Microsoft Store to download Power BI desktop.

MySQL (Optional)

https://www.dataquest.io/blog/install-mysql-windows/

MS Excel

Project Outline (Part 1)

- **Analyse and Cleanse Data**:
    - Familiarize with data and recommend necessary cleaning activities
    - You can use MS Excel/Python or SQL for this stage.

- **KPIs and Calculations**:
    - Discuss expected KPIs and calculations
    - Transform the data for easier consumption in Power BI
    - Create Measures/Calculated columns for KPIs

- **Initial Dashboard Design**:
    - Draft initial design and receive feedback
    - Incorporate feedback and finalize the BI Dashboard
- **Data Visualization**:
    - Choose the most effective visualizations to represent the data
    - Create interactive charts and graphs to make data more understandable

Project Outline (Part 2)

- **Incremental Data Refresh Process**:
  - Design a process to streamline incremental data refreshes

- **Data Security and Access**:
  - Ensure that the data is secure and access is controlled based on user roles and permissions

- **Documentation**:
  - Document the Power BI dashboard, KPIs, and refresh process
- **Document the project on GitHub**
- **User Training**:
  - Provide training to end-users on how to effectively use the BI dashboard
- **Final Feedback**:
  - Get final feedback on the overall project.
- **Candidate Feedback:**
  - Share your overall experience

Proposed Metrics and KPIs (Part 1)

- **Avg. No. of Credit Inquiries**: The number of times a customer has made credit inquiries, which affects their credit score.

- **Credit Utilization Ratio:** The percentage of a customer's available credit that they have utilized.

- **Payment Delinquency Rate:** The percentage of payments that are made after the due date during a given time period.

- **Debt-to-Income Ratio:** The ratio of the customer's total monthly debt payments to their gross monthly income.

- **Load Type Metrices:** The type of loans the customer has taken.

- **Monthly In-hand Salary:** This is a key indicator of a customer's ability to repay loans and credit card balances.

- **Payment behaviour:** This metric can be used to track a customer's payment behaviour over time, including any missed or delayed payments. It can provide insights into their creditworthiness and financial stability.

- **Number of delayed payments:** This metric represents the number of payments a customer has delayed beyond the due date. It can be used to identify potential financial risk and inform decisions around lending or credit limits.

Proposed Metrics and KPIs (Part 2)

- **Payment Behaviour:** A customer's behavior regarding making payments on time.

- **Credit Score:** A customer's credit score, indicating their creditworthiness.

- **Credit History Age:** The age of a customer's credit history.

- **Avg. Investment amount:** The amount of money a customer invests in various financial instruments.

- **Average Monthly Balance:** The average amount of money that the customer maintains in their account(s) each month.

- **Avg. no. of Bank Accounts held by customer:** The number of bank accounts a customer has is important for determining their financial stability.

- **Avg. No. of Credit Card held:** The number of credit cards a customer holds, indicating their creditworthiness.

- **Avg. No. of days delays in payment:** The number of days a customer's payment is delayed beyond the due date.

- **No. of Loan:** The number of loans a customer has outstanding, which is a good indicator of their financial health.

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