**OBJECTIVE**

**As a data analyst for a bank, analyze the loan portfolio performance and provide insights on:**

* **Loan Portfolio Health**
* **Application Trends**
* **Loan Purpose Distribution**
* **Risk Metrics**
* **Portfolio Growth**

**DOMAIN KNOWLEDGE**

**How Banks Operate in Lending**

1. **Primary Function: Financial Intermediation**
   * **Banks serve as intermediaries, taking money from depositors (savings accounts, fixed deposits) and lending it to borrowers (personal loans, home loans, etc.).**
   * **Banks earn money through the spread: the difference between the interest they pay depositors and the interest they charge borrowers.**

**Money Inflow (Revenue Sources):**

1. **Interest Payments from Loans:**
   * **Borrowers pay interest on the principal loan amount, which forms the primary income for banks. For example:**
     + **A loan of $10,000 at a 12% interest rate generates $1,200 annually in interest.**
2. **Loan Origination Fees:**
   * **Banks charge a processing fee when loans are approved. This fee is often a percentage of the loan amount.**
3. **Penalties on Late Payments:**
   * **Borrowers failing to pay installments on time incur late payment charges, adding to the bank's revenue.**
4. **Income from Investments:**
   * **Banks invest surplus funds in government securities, bonds, and financial instruments to generate interest income.**

**Money Outflow (Expenses):**

1. **Interest Paid to Depositors:**
   * **Banks pay interest on savings accounts, fixed deposits, and other deposit schemes. This is their primary cost.**
2. **Loan Defaults:**
   * **When borrowers fail to repay (charged-off loans), banks incur losses. These are classified as Non-Performing Assets (NPAs).**
3. **Operational Costs:**
   * **Salaries, branch maintenance, technology upgrades, etc., form part of the bank's expenses.**
4. **Cost of Borrowing:**
   * **Banks sometimes borrow money from central banks or other financial institutions to maintain liquidity.**

**How Lending Works**

1. **Loan Application:**
   * **Borrowers apply for loans, stating their purpose, income, credit score, and other details.**
2. **Credit Assessment:**
   * **Banks evaluate the creditworthiness of borrowers using their financial history, debt-to-income ratio, and credit score.**
   * **Loans are graded into categories (A, B, C) to indicate risk levels.**
3. **Loan Issuance:**
   * **Approved loans are disbursed to borrowers. Interest payments begin immediately, often in the form of EMIs (Equated Monthly Installments).**
4. **Repayment and Cash Flow:**
   * **Borrowers repay the loan through installments, which include principal repayment and interest.**
   * **A portion of the received money is used to cover bank costs, while the rest contributes to profits.**

**DATA KNOWLEDGE(Dataset)**

**id: A unique identifier for the loan or borrower.**

**address\_state: The state where the borrower resides.**

**application\_type: Indicates whether the loan application is individual or joint.**

**emp\_length: The borrower’s employment length (e.g., 1 year, 5+ years).**

**emp\_title: The borrower’s job title or occupation.**

**grade: A risk grade assigned to the loan, typically based on creditworthiness (e.g., A, B, C).**

**home\_ownership: Indicates the borrower’s housing status (e.g., Own, Rent, Mortgage).**

**issue\_date: The date the loan was issued.**

**last\_credit\_pull\_date: The most recent date the borrower’s credit profile was reviewed.**

**last\_payment\_date: The date the borrower made their most recent loan payment.**

**loan\_status: Current status of the loan (e.g., Fully Paid, Charged Off, Current).**

**next\_payment\_date: The scheduled date for the borrower's next loan payment.**

**member\_id: A unique identifier for the borrower.**

**purpose: The reason for the loan (e.g., debt consolidation, home improvement).**

**sub\_grade: A more granular classification of loan risk (e.g., A1, B2, C3).**

**term: The loan duration, typically in months (e.g., 36 months, 60 months).**

**verification\_status: Indicates whether the borrower’s income and identity have been verified.**

**annual\_income: The borrower’s reported annual income.**

**dti: Debt-to-Income ratio, measuring the borrower’s monthly debt obligations as a percentage of income.**

**installment: The fixed monthly payment the borrower needs to make.**

**int\_rate: The interest rate on the loan.**

**loan\_amount: The total amount borrowed.**

**total\_acc: The total number of credit accounts the borrower has.**

**total\_payment: The total amount paid by the borrower, including principal and interest.**