Business Requirements Document (BRD)

Bank Loan Analysis — Business Objective

The business aims to analyze loan applications and repayment data to understand borrower behavior, measure portfolio performance, and evaluate financial risk.
This analysis supports **data-driven lending decisions**, enhances **loan recovery strategies**, and improves the bank's ability to **optimize profitability while minimizing default exposure**.

The report enables stakeholders to:

- Assess overall loan performance across customer segments and loan products.
- Identify and monitor high-risk loans and delinquent borrowers.
- Evaluate repayment trends and interest income growth.
- Compare funding disbursements and repayments across months and regions.
- Support lending decisions with evidence-based insights into borrower financial health.
- Strengthen customer profiling and risk-based pricing models.

Scope of the Report

In Scope:

- Bank loan data from the Financial_Loan dataset.
- Variables including loan amount, term, issue date, loan status, interest rate, funded amount, total amount received, annual income, DTI, and purpose.
- SQL-based exploration and transformation of raw data.
- Power BI visualization for executive reporting and monitoring.

Out of Scope:

- Predictive modeling for loan default forecasting.
- Third-party credit bureau integrations or customer-level financial scoring.
- External datasets beyond the current bank portfolio.

KPIs & Definitions

KPI	Definition	Formula	Example Use
Total Loan Applications	Total number of loan applications received.	COUNT(id)	Measure loan demand and activity volume.
Total Funded Amount	Total amount of money disbursed as loans.	SUM(loan_amount)	Evaluate total capital exposure.
Total Amount Received	Total payments collected from borrowers.	SUM(total_payment)	Assess repayment performance and liquidity.
Average Interest Rate	Average annual percentage interest on all loans.	AVG(int_rate)	Understand pricing strategy and yield.
Average DTI Ratio	Average borrower debt-to-income ratio.	AVG(dti)	Assess borrower repayment capacity.
Good Loan Percentage	Ratio of fully paid or current loans.	COUNT(Good Loans)/COUNT(All Loans) * 100	Evaluate healthy portfolio performance.
Bad Loan Percentage	Ratio of charged-off or defaulted loans.	COUNT(Bad Loans)/COUNT(All Loans) * 100	Monitor portfolio risk exposure.

Charts & Analysis Requirements

1. KPI Dashboard – Summary Cards

- **Metrics:** Total Loan Applications, Total Funded Amount, Total Amount Received, Avg Interest Rate, Avg DTI.
- **Objective:** Provide executive-level visibility into lending performance and financial health.

2. Good vs Bad Loan Analysis – Donut Chart / Card

- **Metrics:** Good Loan %, Bad Loan %, Loan Status Breakdown.
- **Objective:** Quickly identify portfolio quality and default exposure.

3. Monthly Trends – Line Chart

- **Metrics:** Total Loan Applications, Funded Amount, Amount Received (by Month).
- **Objective:** Reveal lending seasonality and repayment behavior trends.

4. Loan Purpose Breakdown – Bar Chart

- **Metrics:** Loan Purpose vs Loan Amount / Repayment Amount.
- **Objective:** Understand major lending motives and revenue-driving loan types.

5. Loan Term Distribution – Donut Chart

- **Metrics:** Loan Term (e.g., 36 months vs 60 months) vs Funded Amount.
- **Objective:** Compare short-term vs long-term loan performance.

6. Home Ownership Analysis – Tree Map

- **Metrics:** Funded Amount, Total Received by Home Ownership Type.
- **Objective:** Assess risk and funding trends based on ownership status.

7. Regional Performance – Map Visualization

- **Metrics:** Loan Applications, Funded Amount, Amount Received by State.
- **Objective:** Identify regional lending trends and areas of growth or risk.

8. Employment Length Analysis – Bar Chart

- **Metrics:** Loan Applications, Funded Amount, Amount Received by Employment Tenure.
- **Objective:** Evaluate how job stability affects loan performance.

Technical Process Summary

1. Data Extraction

- Imported raw loan data from the bank's internal database (`Financial_Loan` table).

2. Data Transformation (SQL)

- Cleaned null values and standardized data types (`loan_amount`, `int_rate`, `dti`).
- Created Month-to-Date (MTD) and Month-over-Month (MoM) metrics using SQL date functions.

- Segmented loans into **Good Loans** (Fully Paid, Current) and **Bad Loans** (Charged Off).
- Aggregated KPIs by loan status, purpose, term, and region.
- Built reusable SQL views for Power BI integration.

3. Visualization (Power BI)

- Developed interactive dashboards with **dynamic filters** for loan purpose, term, and region.
- Designed **KPI cards, line charts, treemaps, and matrix tables** to visualize portfolio trends.
- Built a **Loan Status Grid View** showing side-by-side comparisons of metrics by loan category.

Summary & Business Impact

The **Bank Loan Report** delivers actionable insights into lending operations, repayment performance, and risk exposure.
It empowers stakeholders to:

- Track financial performance and identify underperforming segments.
- Strengthen loan recovery and credit risk management strategies.
- Enhance customer targeting through loan purpose and demographic insights.
- Align lending operations with profitability and compliance objectives.
- Support executive decision-making with clear, interactive data visuals.

This analysis demonstrates how **SQL and Power BI** integration transforms raw bank loan data into **intelligent, insight-driven dashboards** that improve transparency, operational efficiency, and strategic lending outcomes.