

BANK LOAN REPORT – QUERY & ANALYSIS DOCUMENT

Role Demonstrated: Data Analyst | SQL | Business Intelligence | Financial Analytics

A. Project Summary & Key Insights

Objective:

Designed a comprehensive **Bank Loan Analytics Dashboard** to monitor loan performance, funding, repayment, and risk metrics across multiple dimensions (time, geography, loan type, borrower profile).

Impact Delivered:

- Enabled **month-over-month monitoring** of loan issuance, disbursement, and repayments.
 - Identified **high-performing (good) and high-risk (bad) loans** to support strategic decisions.
 - Applied **advanced SQL techniques** including CTEs, subqueries, window functions, and CTAS for insightful data analysis.
 - Delivered actionable insights to support financial planning, risk assessment, and regulatory reporting.
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1. Key Performance Indicators (KPIs)

i) Loan Applications

- Total Applications: `SELECT COUNT (id) AS TOTAL_LOAN_APPLICATIONS`
- Month-over-Month Comparison:
 - Previous MTD (Aug): `COUNT (id)`
 - Current MTD (Sep): `COUNT (id)`

ii) Fund Amount

- Total Funded: `SUM(loan_amount)`
- MTD Funded Amount: `SUM(loan_amount) WHERE MONTH(issue_date)=CurrentMonth`
- MoM Comparison: Enabled **fund allocation trends analysis**.

iii) Amount Received

- Total Recovered: $\text{SUM}(\text{total_payment})$
- MTD Recovery: $\text{SUM}(\text{total_payment}) \text{ WHERE } \text{MONTH}(\text{issue_date})=\text{CurrentMonth}$

iv) Interest Rate Analysis

- Average Rate: $\text{AVG}(\text{int_rate}) \rightarrow \text{Rounded for reporting}$
- MTD & Previous MTD Comparison for trend detection

v) Debt-to-Income Ratio (DTI)

- Overall & MTD Average DTI for assessing borrower risk
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2. Good Loan Metrics

- **Good Loan %** = Loans fully paid or current $\rightarrow \sim\text{XX}\%$
 - Funded Amount & Amount Received from good loans tracked separately for **revenue quality insights**.
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3. Bad Loan Metrics (Risk Assessment)

- **Bad Loan %** = Loans charged-off $\rightarrow \sim\text{XX}\%$
 - Funded Amount & Recovery from bad loans highlighted to **prioritize risk mitigation**.
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4. Loan Status Overview

- Aggregated by loan_status: Total funded, total recovered, avg interest, avg DTI
 - MTD status tracking enabled **trend analysis for risk & revenue monitoring**.
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B. Analytical Dashboards & Multi-dimensional Insights

1. Time-based Analysis (Month)

- Tracked **monthly loan trends**, funding, and repayments \rightarrow helps identify seasonality.

2. State-wise Analysis

- Loan issuance, amount funded, and recovery analyzed by state \rightarrow **geographic performance insights**.

3. Loan Term Analysis

- Insights by term (short-term, long-term loans) \rightarrow informs lending strategy.

4. Employee Length & Borrower Profile

- Segmented loans by employee tenure → identifies **low-risk vs high-risk borrower profiles**.

5. Loan Purpose & Home Ownership Analysis

- Purpose & home ownership metrics → supports **targeted marketing & portfolio planning**.

Filters Applied:

- Ability to filter by **Grade, Loan Status, Purpose, etc.** to derive **granular insights**.
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C. Advanced SQL Techniques Demonstrated

1. CTEs (Common Table Expressions)

- Average income by home ownership
- Top 3 loans per grade
- Loan status distribution

2. Subqueries & Conditional Analytics

- Borrowers earning above average
- States exceeding average loan issuance

3. Window Functions

- Ranking borrowers by loan amount
- Previous/next loan comparisons (LAG & LEAD)
- Cumulative loan disbursement analysis

4. Aggregates & Grouping

- Avg interest & loan amount by grade
- Top 5 purposes for highest loan issuance
- High-income states analysis

5. CTAS (Create Table AS Select)

- Created tables for **charged-off loans** and **top 10 borrowers** for downstream analytics
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D. Professional Takeaways & Outcome

- Built a **robust, scalable SQL-based analytical framework** for bank loan reporting.
- Translated raw transactional data into **business-ready KPIs and actionable insights**.

- Delivered **visualizations-ready datasets** for dashboards (Power BI/Tableau).
- Highlighted **risk and revenue opportunities**, aiding informed decision-making.

Core Skills Demonstrated:

SQL (Advanced), Data Analysis, KPI Reporting, Financial Risk Assessment, Dashboard Preparation, Data-driven Decision Making