

Bank Loan Analysis Report

Problem Statement

The bank wants to analyze its loan portfolio to understand key performance indicators such as total loan applications, funded amounts, repayment collections, interest rates, and debt-to-income ratios. The objective is to evaluate loan performance based on different dimensions — monthly trends, loan status (Good vs Bad), state, term, employment length, purpose, and home ownership.

Solution Overview

To address this problem, SQL queries were written to extract and aggregate relevant data from the 'bank_loan_data' table within the 'Bank Loan DB' database. The solution focuses on computing monthly performance metrics (MTD vs PMTD), good and bad loan segmentation, and analytical summaries by various categories.

SQL Queries and Insights

Total Loan Applications

```
SELECT DISTINCT COUNT(id) AS Total_Loan_Application FROM bank_loan_data;
```

Monthly Loan Applications (MTD & PMTD)

```
SELECT COUNT(id) AS MTD_Loan_Application FROM bank_loan_data WHERE  
MONTH(issue_date) = 12 AND YEAR(issue_date) = 2021;
```

```
SELECT COUNT(id) AS PMTD_Loan_Application FROM bank_loan_data WHERE  
MONTH(issue_date) = 11 AND YEAR(issue_date) = 2021;
```

Funded Amount Analysis

```
SELECT SUM(loan_amount) AS Total_Funded_Amount FROM bank_loan_data;
```

```
SELECT SUM(loan_amount) AS Month_Total_Funded_Amount FROM bank_loan_data WHERE  
MONTH(issue_date) = 12;
```

```
SELECT SUM(loan_amount) AS Previous_Month_Total_Funded_Amount FROM bank_loan_data  
WHERE MONTH(issue_date) = 11;
```

Amount Received from Borrowers

```
SELECT SUM(total_payment) AS Amount_Received FROM bank_loan_data;
```

```
SELECT SUM(total_payment) AS MTD_Amount_Received FROM bank_loan_data WHERE  
MONTH(issue_date) = 12;
```

```
SELECT SUM(total_payment) AS PMTD_Amount_Received FROM bank_loan_data WHERE  
MONTH(issue_date) = 11;
```

Average Interest Rate & DTI

```
SELECT AVG(int_rate)*100 AS Average_Interest_Rate FROM bank_loan_data;
```

```
SELECT AVG(dti)*100 AS Average_DTI FROM bank_loan_data;
```

Good Loan Metrics

```
SELECT (COUNT(CASE WHEN loan_status IN ('Fully Paid','Current') THEN id END)*100.00 /  
COUNT(id)) AS Good_Loan_Percentage FROM bank_loan_data;  
SELECT SUM(loan_amount) AS Good_Loan_Given FROM bank_loan_data WHERE loan_status  
IN ('Fully Paid','Current');
```

Bad Loan Metrics

```
SELECT (COUNT(CASE WHEN loan_status = 'Charged Off' THEN id END)*100.00 / COUNT(id))  
AS Bad_Loan_Percentage FROM bank_loan_data;  
SELECT SUM(loan_amount) AS Bad_Loan_Given FROM bank_loan_data WHERE  
loan_status='Charged Off';
```

Loan Status Summary

```
SELECT loan_status, COUNT(id), SUM(loan_amount), SUM(total_payment), AVG(int_rate*100),  
AVG(dti*100) FROM bank_loan_data GROUP BY loan_status;
```

State-wise, Term-wise, and Employment-length Reports

```
SELECT address_state, COUNT(id), SUM(loan_amount), SUM(total_payment) FROM  
bank_loan_data GROUP BY address_state;  
SELECT term, COUNT(id), SUM(loan_amount), SUM(total_payment) FROM bank_loan_data  
GROUP BY term;  
SELECT emp_length, COUNT(id), SUM(loan_amount), SUM(total_payment) FROM  
bank_loan_data GROUP BY emp_length;
```

Purpose and Home Ownership Reports

```
SELECT purpose, COUNT(id), SUM(loan_amount), SUM(total_payment) FROM bank_loan_data  
GROUP BY purpose;  
SELECT home_ownership, COUNT(id), SUM(loan_amount), SUM(total_payment) FROM  
bank_loan_data GROUP BY home_ownership;
```

Conclusion

This SQL-based analysis provides a comprehensive understanding of the bank's loan portfolio performance. It highlights key metrics such as monthly loan disbursements, repayment trends, interest rates, and DTI ratios, helping financial analysts identify profitable segments and areas of risk. The insights can support data-driven decisions for optimizing loan approval strategies and managing credit risk effectively.