

DATA ANALYST PORTFOLIO PROJECT

BANK LOAN ANALYSIS

PART 1

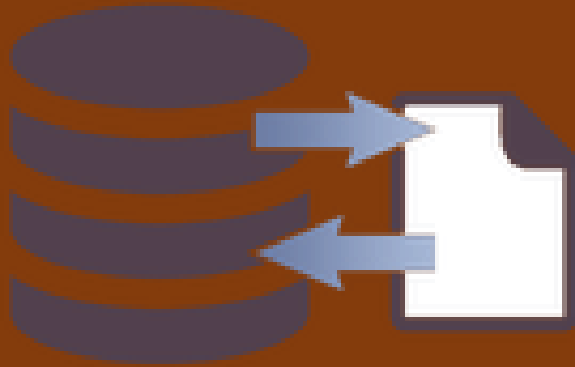
MS SQL SERVER






MS SQL SERVER

IMPORT DATA



 **Introduction**

[Introduction](#)
[Specify Input File](#)
[Preview Data](#)
[Modify Columns](#)
[Summary](#)
[Results](#)




[Help](#)

Import Flat File

This wizard will help you import the contents of a file into a new table in your database.

To import data, you must:

- Specify the input file containing the data.
- Preview the automatically generated table schema and optionally modify columns.



✓

To begin importing your data, click Next.

☐ Do not show this page again.



MS SQL SERVER

CREATING DB



Introduction

[Introduction](#)
[Specify Input File](#)
[Preview Data](#)
[Modify Columns](#)
[Summary](#)
[Results](#)

[Help](#)

Import Flat File

This wizard will help you import the contents of a file into a new table in your database.

To import data, you must:

- Specify the input file containing the data.
- Preview the automatically generated table schema and optionally modify columns.

To begin importing your data, click Next.

☐ Do not show this page again.



MS SQL SERVER

WRITING QUERIES

```
SELECT
    loan_status,
    COUNT(id) AS LoanCount,
    SUM(total_payment) AS Total_Amount_Received,
    SUM(loan_amount) AS Total_Funded_Amount,
    AVG(int_rate * 100) AS Interest_Rate,
    AVG(dti * 100) AS DTI
FROM
    bank_loan_data
GROUP BY
    loan_status
```

149 %

Results Messages

	loan_status	LoanCount	Total_Amount_Received	Total_Funded_Amount	Interest_Rate	DTI
1	Fully Paid	32145	411586256	351358350	11.6410707918092	13.1673507557434
2	Charged Off	5333	37284763	65532225	13.8785749318289	14.0047328005517
3	Current	1098	24199914	18866500	15.0993260800947	14.7243442736843

SQL



FIRING SQL QUERIES TO SOLVE THE BUSINESS PROBLEMS

COMPARING RESULTS WITH POWER BI, TABLEAU and EXCEL

```
SELECT
    loan_status,
    COUNT(id) AS LoanCount,
    SUM(total_payment) AS Total_Amount_Received,
    SUM(loan_amount) AS Total_Funded_Amount,
    AVG(int_rate * 100) AS Interest_Rate,
    AVG(dti * 100) AS DTI
FROM
    bank_loan_data
GROUP BY
    loan_status
```

149 %

Results Messages

	loan_status	LoanCount	Total_Amount_Received	Total_Funded_Amount	Interest_Rate	DTI
1	Fully Paid	32145	411586256	351358350	11.6410707918092	13.1673507557434
2	Charged Off	5333	37284763	65532225	13.8785749318289	14.0047328005517
3	Current	1098	24199914	18866500	15.0993260800947	14.7243442736843

You can use the data in any DB to fire queries. Queries used will remain same

DATA ANALYST PORTFOLIO PROJECT

BANK LOAN ANALYSIS

PART 2

POWER BI





POWER BI

CONNECTING TO MS SQL SERVER



Microsoft®
SQL Server®





BANK LOAN REPORT | SUMMARY



Menu

Summary

Overview

Details

Purpose

All

Grade

All

State

All

Total Loan Applications

38.6K

MTD

4.3K

MoM

6.9%

Total Funded Amount

\$435.8M

MTD

\$54.0M

MoM

13.0%

Total Amount Received

\$473.1M

MTD

\$58.1M

MoM

15.8%

Avg Interest Rate

12.05%

MTD

12.4%

MoM

3.5%

Avg DTI

13.33%

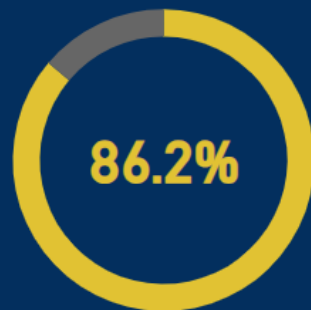
MTD

13.7%

MoM

2.7%

GOOD LOAN ISSUED



Good Loan Applications

33.2K

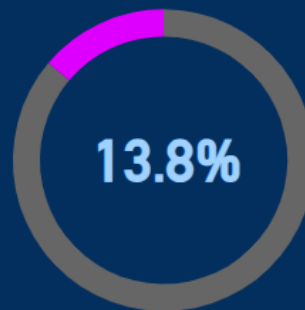
Good Loan Funded Amount

\$370.2M

Good Loan Total Received

\$435.8M

BAD LOAN ISSUED



Bad Loan Applications

5.3K

Bad Loan Funded Amount

\$65.5M

Bad Loan Total Received

\$37.3M

LOAN STATUS

Loan Status	Total Loan Applications	Total Funded Amount	Total Amount Received	MTD Funded Amount	MTD Amount Received	Avg Interest Rate	Avg DTI
Fully Paid	32145.0	\$35,13,58,350.0	\$41,15,86,256.0	\$4,13,02,025	\$4,78,15,851	11.64%	13.17%
Current	1098.0	\$1,88,66,500.0	\$2,41,99,914.0	\$39,46,625	\$49,34,318	15.10%	14.72%
Charged Off	5333.0	\$6,55,32,225.0	\$3,72,84,763.0	\$87,32,775	\$53,24,211	13.88%	14.00%
Grand Total	38576.0	\$43,57,57,075.0	\$47,30,70,933.0	\$5,39,81,425	\$5,80,74,380	12.05%	13.33%



BANK LOAN REPORT | OVERVIEW



Menu

Summary

Overview

Details

Select Measure

Total Loan Applications

Good v Bad Loan

All

Grade

All

State

All

Total Loan Applications

38.6K

MTD

4.3K

MoM

6.9%

Total Funded Amount

\$435.8M

MTD

\$54.0M

MoM

13.0%

Total Amount Received

\$473.1M

MTD

\$58.1M

MoM

15.8%

Avg Interest Rate

12.05%

MTD

12.4%

MoM

3.5%

Avg DTI

13.33%

MTD

13.7%

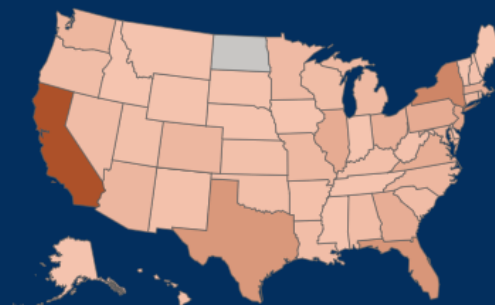
MoM

2.7%

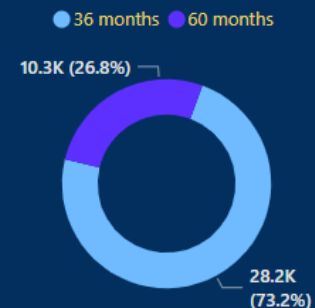
Total Loan Applications by Month



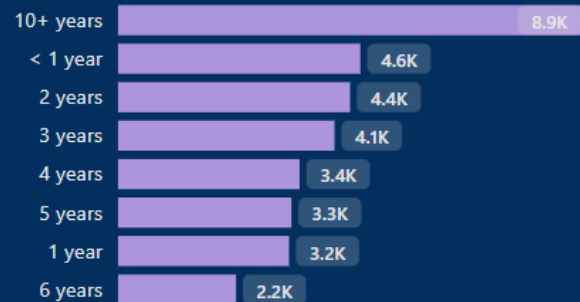
Total Loan Applications by State



Total Loan Applications by Term



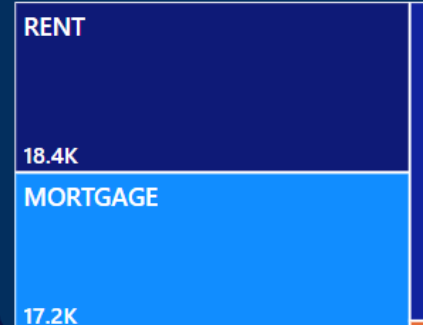
Total Loan Applications by Employee Length



Total Loan Applications by Purpose



Total Loan Applications by home_ownership





BANK LOAN REPORT | DETAILS



Menu

Summary

Overview

Details

Good v Bad Loan

All

Grade

All

State

All

Total Loan Applications

38.6K

MTD

4.3K

MoM

6.9%

Total Funded Amount

\$435.8M

MTD

\$54.0M

MoM

13.0%

Total Amount Received

\$473.1M

MTD

\$58.1M

MoM

15.8%

Avg Interest Rate

12.05%

MTD

12.4%

MoM

3.5%

Avg DTI

13.33%

MTD

13.7%

MoM

2.7%

id	purpose	home_ownership	grade	sub_grade	issue_date	Funded Amount	Int Rate	Sum of installment	Amount Collection
54734	Debt consolidation	RENT	B	B4	09 August 2021	\$25,000.0	11.89%	\$829.1	\$29,330.0
55742	credit card	RENT	B	B5	08 May 2021	\$7,000.0	10.71%	\$228.2	\$8,216.0
57245	Debt consolidation	OWN	C	C2	10 March 2021	\$1,200.0	13.11%	\$40.5	\$1,458.0
57416	Debt consolidation	RENT	C	C3	09 November 2021	\$10,800.0	13.57%	\$366.9	\$13,208.0
58915	Debt consolidation	RENT	B	B3	08 April 2021	\$7,500.0	10.08%	\$162.3	\$5,844.0
59006	credit card	MORTGAGE	C	C5	09 September 2021	\$3,000.0	14.26%	\$102.9	\$3,705.0
61390	credit card	MORTGAGE	A	A5	10 February 2021	\$4,000.0	7.88%	\$125.1	\$4,452.0
61419	Debt consolidation	RENT	D	D2	10 February 2021	\$5,600.0	14.96%	\$194.0	\$6,475.0
62102	Debt consolidation	RENT	B	B1	10 April 2021	\$3,200.0	9.88%	\$103.1	\$3,414.0
65426	car	MORTGAGE	B	B1	09 August 2021	\$4,000.0	11.14%	\$131.2	\$2,755.0
65640	home improvement	MORTGAGE	C	C2	08 May 2021	\$5,000.0	11.34%	\$87.2	\$3,154.0
66431	Debt consolidation	RENT	B	B5	09 February 2021	\$2,525.0	12.21%	\$84.1	\$3,028.0
66749	Debt consolidation	MORTGAGE	C	C4	08 December 2021	\$10,625.0	13.47%	\$360.4	\$12,975.0
66943	Debt consolidation	RENT	B	B4	10 August 2021	\$2,800.0	11.49%	\$61.6	\$3,144.0
66964	Debt consolidation	MORTGAGE	D	D3	08 June 2021	\$7,500.0	13.24%	\$253.6	\$9,129.0
67503	Debt consolidation	MORTGAGE	A	A4	09 October 2021	\$10,000.0	8.59%	\$316.1	\$11,280.0
68163	small business	MORTGAGE	A	A3	10 February 2021	\$3,000.0	7.14%	\$92.8	\$3,342.0
68381	Debt consolidation	RENT	A	A5	08 March 2021	\$6,625.0	8.63%	\$209.5	\$7,542.0

PROBLEM STATEMENT

DASHBOARD 1: SUMMARY

Key Performance Indicators (KPIs) Requirements:

- 1. Total Loan Applications:** We need to calculate the total number of loan applications received during a specified period. Additionally, it is essential to monitor the Month-to-Date (MTD) Loan Applications and track changes Month-over-Month (MoM).
- 2. Total Funded Amount:** Understanding the total amount of funds disbursed as loans is crucial. We also want to keep an eye on the MTD Total Funded Amount and analyse the Month-over-Month (MoM) changes in this metric.
- 3. Total Amount Received:** Tracking the total amount received from borrowers is essential for assessing the bank's cash flow and loan repayment. We should analyse the Month-to-Date (MTD) Total Amount Received and observe the Month-over-Month (MoM) changes.
- 4. Average Interest Rate:** Calculating the average interest rate across all loans, MTD, and monitoring the Month-over-Month (MoM) variations in interest rates will provide insights into our lending portfolio's overall cost.
- 5. Average Debt-to-Income Ratio (DTI):** Evaluating the average DTI for our borrowers helps us gauge their financial health. We need to compute the average DTI for all loans, MTD, and track Month-over-Month (MoM) fluctuations.

PROBLEM STATEMENT

DASHBOARD 1: SUMMARY

Good Loan v Bad Loan KPI's

Good Loan:

- 1. Good Loan Application Percentage
- 2. Good Loan Applications
- 3. Good Loan Funded Amount
- 4. Good Loan Total Received Amount

Bad Loan

- 1. Bad Loan Application Percentage
- 2. Bad Loan Applications
- 3. Bad Loan Funded Amount
- 4. Bad Loan Total Received Amount

Loan Status Grid View

In order to gain a comprehensive overview of our lending operations and monitor the performance of loans, we aim to create a grid view report categorized by 'Loan Status.' By providing insights into metrics such as 'Total Loan Applications,' 'Total Funded Amount,' 'Total Amount Received,' 'Month-to-Date (MTD) Funded Amount,' 'MTD Amount Received,' 'Average Interest Rate,' and 'Average Debt-to-Income Ratio (DTI),' this grid view will empower us to make data-driven decisions and assess the health of our loan portfolio.

PROBLEM STATEMENT

DASHBOARD 2: OVERVIEW

CHARTS

1. **Monthly Trends by Issue Date (Line Chart):** To identify seasonality and long-term trends in lending activities
2. **Regional Analysis by State (Filled Map):** To identify regions with significant lending activity and assess regional disparities
3. **Loan Term Analysis (Donut Chart):** To allow the client to understand the distribution of loans across various term lengths.
4. **Employee Length Analysis (Bar Chart):** How lending metrics are distributed among borrowers with different employment lengths, helping us assess the impact of employment history on loan applications.
5. **Loan Purpose Breakdown (Bar Chart):** Will provide a visual breakdown of loan metrics based on the stated purposes of loans, aiding in the understanding of the primary reasons borrowers seek financing.
6. **Home Ownership Analysis (Tree Map):** For a hierarchical view of how home ownership impacts loan applications and disbursements.

Metrics to be shown: 'Total Loan Applications,' 'Total Funded Amount,' and 'Total Amount Received'

PROBLEM STATEMENT

DASHBOARD 3: DETAILS

GRID

Need for a comprehensive 'Details Dashboard' that provides a consolidated view of all the essential information within our loan data. This Details Dashboard aims to offer a holistic snapshot of key loan-related metrics and data points, enabling users to access critical information efficiently.

Objective:

The primary objective of the Details Dashboard is to provide a comprehensive and user-friendly interface for accessing vital loan data. It will serve as a one-stop solution for users seeking detailed insights into our loan portfolio, borrower profiles, and loan performance.

FUNCTIONALITIES YOU WILL LEARN

SQL – MS SQL SERVER

- ✓ Creating Database
- ✓ Creating Table
- ✓ Select
- ✓ Datename
- ✓ Datepart
- ✓ Cast
- ✓ Decimal
- ✓ Month
- ✓ Hour
- ✓ Quarter
- ✓ Day
- ✓ Group by
- ✓ Order by
- ✓ Decimal
- ✓ Limit
- ✓ Count
- ✓ Distinct
- ✓ CTE
- ✓ Partition

POWER BI

- ✓ Connecting to SQL Server
- ✓ Data Cleaning
- ✓ Data Modelling
- ✓ Data Processing
- ✓ Power Query
- ✓ Date Tables
- ✓ Time Intelligence Func
- ✓ DAX
- ✓ Date Function
- ✓ Text Function
- ✓ Filter Function
- ✓ Calculate
- ✓ SUM/ SUMX
- ✓ Creating KPI's
- ✓ New Card Visual
- ✓ Creating Charts
- ✓ Formatting visuals
- ✓ Creating Functions
- ✓ Navigations

SOFTWARE USED

MS OFFICE/ EXCEL: VERSION 2021

MS SQL SERVER: 19.0

SQL SERVER MANAGEMENT STUDIO – 19.0.20209.0

POWER BI: JUNE 2023 Version



FOLLOW FOR MORE ANALYTICS RESOURCES



LinkedIn: <https://www.linkedin.com/in/rohit-lakha/>



GitHub: <https://github.com/Rohitlakha>

Keep learning n keep growing 