# **BANK LOAN – FULL REPORT**

## Key Performances 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 Loan Applications and track changes Month-over-Month

1. 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 analyze the Month-over-Month changes in this metric.

1. Total Amount Received:

Tracking the total amount received from borrowers is essential for accessing the bank’s cash flow and loan repayment. We should analyze the Month-to-Date Total Amount Received and observe the Month-over-Month changes.

1. Average Interest Rate:

Calculating the average interest rate across all loans, MTD, and monitoring the Month-over-Month variances in interest rates will provide insights into our lending portfolio’s overall cost.

1. 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 fluctuations.

## Functionalities Will Be Using

### SQL – MS SQL Server

1. Creating database
2. Creating table
3. Select
4. Datename
5. Datepart
6. Cast
7. Decimal
8. Month
9. Hour
10. Quarter
11. Day
12. Group By
13. Order By
14. Decimal
15. Limit
16. Count
17. Distinct
18. CTE
19. Partition

### POWER BI

1. Connecting to SQL Server
2. Data Cleaning
3. Data Modelling
4. Data Processing
5. Power Query
6. Date Tables
7. Time Intelligence Func
8. DAX
9. Date Function
10. Text Function
11. Filter Function
12. Calculate
13. SUM/SUMX
14. Creating KPI’s
15. New Card Visual
16. Creating charts
17. Formatting visuals
18. Creating Functions
19. Navigations

## Domain Knowledge

Bank loans are a crucial financial tool that enables individuals and businesses to achieve their goals and manage financial needs. However, it's essential for borrowers to understand the terms, costs, and responsibilities associated with loans to make informed financial decisions.

Banks collect loan data through various channels and processes, including:

Loan Applications**:**

When individuals or businesses apply for loans, they submit detailed applications that include personal and financial information. This data is collected electronically or in paper form.

Credit Reports**:**

Banks often access credit reports from credit bureaus when assessing a borrower's creditworthiness. These reports contain information about a person's credit history, existing loans, and payment behaviour.

Internal Records**:**

Banks maintain internal records of loan transactions, including disbursements, repayments, and loan status changes. These records are generated and stored in the bank's database.

Online Portals**:**

Many banks offer online platforms where borrowers can apply for loans, make payments, and access account information. Data from these portals is collected and stored for analysis.

Third-party Data Sources:

Some banks may use external data sources, such as income verification services, to gather additional information about borrowers.

### **Process of Granting a Loan**

#### Loan Application:

The process begins when a customer submits a loan application to a bank or lending institution. This application can be submitted in person, online, or through other channels.

#### Application Review:

The lending institution reviews the loan application and collects necessary documentation, such as income statements, credit reports, and identification documents.

#### Identity Verification:

One of the initial checks is to verify the applicant's identity. This helps ensure that the applicant is who they claim to be and prevents identity theft.

#### Credit Check:

A crucial step is to perform a credit check on the applicant. This involves accessing their credit report from credit bureaus. Lenders evaluate the applicant's credit history, credit score, and any past delinquencies or defaults.

Income Verification**:**

Lenders assess the applicant's ability to repay the loan by verifying their income. This may involve reviewing pay stubs, tax returns, or other income documentation.

Debt-to-Income Ratio (DTI) Check**:**

Lenders calculate the applicant's DTI, which is the ratio of their monthly debt payments to their monthly income. A lower DTI indicates better repayment capacity.

#### Employment Verification:

Lenders may contact the applicant's employer to verify their employment status and length of employment. Stable employment history is often seen as a positive factor.

#### Collateral Assessment (if applicable):

If the loan is secured by collateral, such as a home or a car, the lender evaluates the value and condition of the collateral.

#### Risk Assessment:

Lenders assess the overall risk associated with the loan. This includes considering the applicant's credit risk, income stability, and the purpose of the loan.

#### Loan Approval or Denial:

Based on the information gathered and the risk assessment, the lender makes a decision to approve or deny the loan application. If approved, the lender determines the loan amount, interest rate, and terms.

#### Loan Agreement:

If the loan is approved, the lender provides the applicant with a loan agreement that outlines the terms and conditions, including the interest rate, repayment schedule, and any fees.

#### Disbursement of Funds:

Once the loan agreement is signed by both parties, the lender disburses the funds to the borrower. The borrower can use the funds for the specified purpose.

#### Repayment:

The borrower is responsible for making regular loan payments as specified in the loan agreement. This includes repaying the principal amount along with interest.

#### Ongoing Monitoring:

Lenders continue to monitor the loan throughout its term, including tracking payments, assessing the borrower's financial health, and managing any delinquencies or defaults.

### Reasons for Analysing Bank Loan Data:

Banks analyse loan data for several critical reasons:

Risk Assessment**:**

One of the primary purposes of analysing loan data is to assess the risk associated with lending to a particular individual or business. Banks use data to evaluate the creditworthiness of borrowers, predict default probabilities, and determine interest rates and lending terms.

Decision-making:

Loan data analysis supports the decision-making process when evaluating loan applications. Banks use data-driven models and algorithms to make informed lending decisions, such as approving or denying loan requests.

Portfolio Management**:**

Banks manage portfolios of loans, including mortgages, personal loans, and business loans. Data analysis helps banks monitor the health of these portfolios, identify underperforming loans, and optimize loan terms and pricing.

Fraud Detection:

Banks use data analysis to detect fraudulent loan applications and activities. Unusual patterns, inconsistencies, or discrepancies in loan data can trigger fraud alerts.

Regulatory Compliance:

Banks are subject to regulatory requirements that mandate the collection and reporting of loan data. Compliance with regulations such as the Home Mortgage Disclosure Act (HMDA) and the Know Your Customer (KYC) regulations requires data analysis and reporting.

Customer Insights:

Analysing loan data provides insights into customer behaviour, preferences, and needs. Banks can use these insights to tailor loan products and marketing strategies to specific customer segments.

Profitability Analysis:

Banks assess the profitability of their loan portfolios by analysing data related to interest income, loan origination costs, default rates, and collection efforts.

Market Research:

Data analysis helps banks understand market trends, competitive landscape, and customer demand. This information guides product development and market expansion strategies.

Credit Risk Management:

Banks continuously monitor and manage credit risk associated with their loans. Data analysis helps in setting risk management strategies, provisioning for potential losses, and stress testing loan portfolios.

Customer Retention:

Banks use data analysis to identify opportunities for retaining existing customers, such as offering loan refinancing options or additional financial products.

## Bank Loan Report Query Document

### KPI’s

#### Total Loan Application

SELECT COUNT(id) AS MTD\_Total\_Loan\_Applications

FROM bank\_loan\_data



#### Mont-to-Date Loan Application

SELECT COUNT(id) AS MTD\_Total\_Loan\_Applications

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12 AND YEAR(issue\_date) = 2021



#### PMonth-to-Date Loan Application

SELECT COUNT(id) AS MTD\_Total\_Loan\_Applications

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11 AND YEAR(issue\_date) = 2021



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#### Total Funded Amount

SELECT SUM(loan\_amount) AS Total\_Funded\_Amount

FROM bank\_loan\_data



#### MTD Total Funded Amount

SELECT SUM(loan\_amount) AS MTD\_Total\_Funded\_Amount

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12 AND YEAR(issue\_date) = 2021



#### PMTD Total Funded Amount

SELECT SUM(loan\_amount) AS MTD\_Total\_Funded\_Amount

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11 AND YEAR(issue\_date) = 2021



#### Total Amount Received

SELECT SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data



#### MTD Total Amount Received

SELECT SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12 AND YEAR(issue\_date) = 2021



#### PMTD Total Amount Received

SELECT SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11 AND YEAR(issue\_date) = 2021



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#### Average Interest Rate (%)

SELECT ROUND(AVG(int\_rate) \* 100,2) AS Avg\_Int\_Rate

FROM bank\_loan\_data



#### MTD Average Interest (%)

SELECT ROUND(AVG(int\_rate) \* 100,2) AS Avg\_Int\_Rate

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12



#### PMTD Average Interest

SELECT ROUND(AVG(int\_rate) \* 100,2) AS Avg\_Int\_Rate

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11



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#### Average Debt-to-Income Ratio (%)

SELECT AVG(dti) \* 100 AS Avg\_DTI

FROM bank\_loan\_data



#### MTD Average Debt-to-Income Ratio (%)

SELECT AVG(dti) \* 100 AS Avg\_DTI

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12



#### PMTD Average Debt\_to\_Income Ratio(%)

SELECT AVG(dti) \* 100 AS Avg\_DTI

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11



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### GOOD LOAN ISSUED

#### Good Loan Percentage (%)

\*note: considering ‘Fully Paid’ and ‘Current’ loan status as included in as a good loan

-- to check the unique values inside the loan\_status column

SELECT DISTINCT(loan\_status)

FROM bank\_loan\_data

-- find the good loan considering the status assigned

SELECT CAST(ROUND((COUNT(CASE WHEN loan\_status = 'Fully\_Paid' OR loan\_status = 'Current' THEN id END) \* 100.0) /COUNT(id),2) AS DECIMAL(10,2)) AS Good\_Loan\_Percentage

FROM bank\_loan\_data



#### Good Loan Applications

SELECT COUNT(id) AS Good\_Loan\_Application

FROM bank\_loan\_data

WHERE loan\_status = 'Fully\_Paid' OR loan\_status = 'Current'



#### Good Loan Funded Amount

SELECT SUM(loan\_amount) AS Good\_Loan\_Funded\_Amount

FROM bank\_loan\_data

WHERE loan\_status = 'Fully Paid' OR loan\_status = 'Current'



#### Good Loan Amount Received

SELECT SUM(total\_payment) AS Good\_Loan\_Amount\_Received

FROM bank\_loan\_data

WHERE loan\_status = 'Fully Paid' OR loan\_status = 'Current'



### BAD LOAN ISSUED

#### Bad Loan Percentage (%)

-- checking unqiue values in loan\_status column

SELECT DISTINCT(loan\_status) AS type\_of\_status

FROM bank\_loan\_data

SELECT

CAST(ROUND((COUNT(CASE WHEN loan\_status = 'Charged Off' THEN id END) \* 100.0) /

COUNT(id), 2) AS DECIMAL (10,2)) AS Bad\_Loan\_Percentage

FROM bank\_loan\_data



#### Bad Loan Application

SELECT COUNT(loan\_status) AS Bad\_Loan\_Application

FROM bank\_loan\_data

WHERE loan\_status = 'Charged Off'



#### Bad Loan Funded Amount

SELECT SUM(loan\_amount) AS Bad\_Loan\_Funded\_Amount

FROM bank\_loan\_data

WHERE loan\_status = 'Charged Off'



#### Bad Loan Amount Received

SELECT SUM(total\_payment) AS Bad\_Loan\_Amount\_Received

FROM bank\_loan\_data

WHERE loan\_status = 'Charged Off'



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### LOAN STATUS

SELECT

loan\_status,

COUNT(id) AS Loan\_Count,

SUM(total\_payment) AS Total\_Payment\_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

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SELECT

loan\_status,

SUM(total\_payment) AS MTD\_Total\_Amount\_Received,

SUM(loan\_amount) AS MTD\_Total\_Funded\_Amount

FROM bank\_loan\_data

GROUP BY loan\_status

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### BANK LOAN REPORT | OVERVIEW

### MONTH

SELECT

MONTH(issue\_date) AS Month\_Number,

DATENAME(MONTH, issue\_date) AS Month\_Name,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY MONTH(issue\_date), DATENAME(MONTH, issue\_date)

ORDER BY MONTH(issue\_date)

A screenshot of a table

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### STATE

SELECT

address\_state AS State,

COUNT(id) AS Total\_Loan\_Applications,

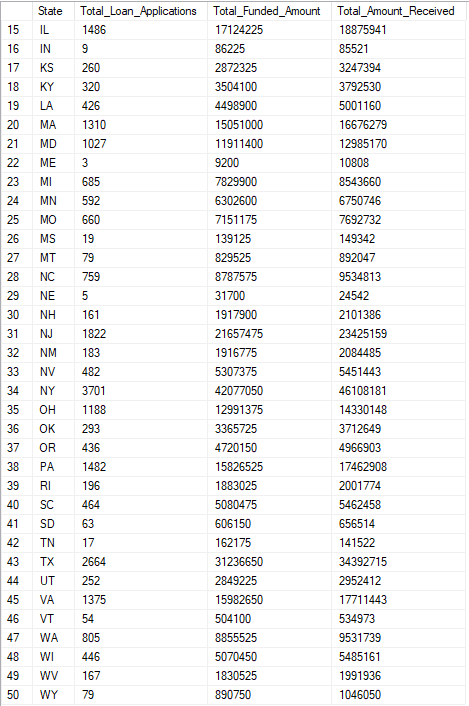
SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY address\_state

ORDER BY address\_state



### TERM

SELECT

term AS Term,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY term

ORDER BY term

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### EMPLOYEE LENGTH

SELECT

emp\_length AS Employee\_Length,

COUNT(id) AS Total\_Loan\_Applications,

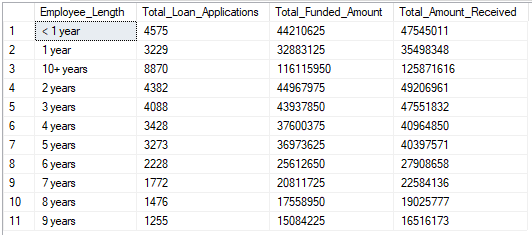
SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY emp\_length

ORDER BY emp\_length



### PURPOSE

SELECT

purpose AS PURPOSE,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY purpose

ORDER BY purpose

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### HOME OWNERSHIP

SELECT

home\_ownership AS Home\_Ownership,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY home\_ownership

ORDER BY home\_ownership

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