

# BANK LOAN ANALYSIS PROJECT

## Introduction

In order to monitor and assess our bank's lending activities and performance, we need to create a comprehensive Bank Loan Report. This report aims to provide insights into key loan-related metrics and their changes over time. The report will help us make data-driven decisions, track our loan portfolio's health, and identify trends that can inform our lending strategies.

## Data

- ID
- Address State
- Application Type
- Employment Length
- Employment Title
- Grade
- Home Ownership
- Issue Date
- Last Credit Pull Date
- Last Payment Date
- Installment
- Interest Rate
- Loan Amount
- Loan Status
- Good vs Bad
  - Next Payment Date
- Member ID
- Purpose
  - Subgrade
- Term
- Verification Status
- Annual Income
- DTI (Debt-to-Income Ratio)
- Total Accounts
- Total Payment

# Tools Used – MYSQL, MS EXCEL

Result Grid										
Filter Rows:										
Export:										
Wrap Cell Content:										
Fetch rows:										
	id	address_state	application_type	emp_length	emp_title	grade	home_ownership	issue_date	last_credit_pull_date	last_payment_da
	1077430	GA	INDIVIDUAL	< 1 year	Ryder	C	RENT	11-02-2021	13-09-2021	13-04-2021
	1072053	CA	INDIVIDUAL	9 years	MKC Accounting	E	RENT	01-01-2021	14-12-2021	15-01-2021
	1069243	CA	INDIVIDUAL	4 years	Chemat Technology Inc	C	RENT	05-01-2021	12-12-2021	09-01-2021
	1041756	TX	INDIVIDUAL	< 1 year	barnes distribution	B	MORTGAGE	25-02-2021	12-12-2021	12-03-2021
	1068350	IL	INDIVIDUAL	10+ years	J&J Steel Inc	A	MORTGAGE	01-01-2021	14-12-2021	15-01-2021
	1062608	CA	INDIVIDUAL	3 years	Studio 94 Corp	C	RENT	17-07-2021	16-03-2021	12-08-2021
	1067441	TX	INDIVIDUAL	10+ years	American Airlines	C	MORTGAGE	19-11-2021	14-06-2021	13-12-2021
	1066424	PA	INDIVIDUAL	10+ years	SCI Mahanoy	A	OWN	11-06-2021	14-07-2021	14-07-2021
	1065254	FL	INDIVIDUAL	10+ years	Tech Data Corp	A	MORTGAGE	02-09-2021	15-06-2021	12-10-2021
	1064589	MI	INDIVIDUAL	10+ years	teltow contracting	B	MORTGAGE	09-02-2021	16-03-2021	16-03-2021
	1057766	TX	INDIVIDUAL	10+ years	Ericsson	B	MORTGAGE	22-07-2021	13-09-2021	13-08-2021
	1062734	CA	INDIVIDUAL	3 years	myrvpartsplace.com	B	RENT	11-09-2021	13-03-2021	12-10-2021
	1062654	CA	INDIVIDUAL	4 years	AEG LIVE	B	RENT	11-08-2021	13-10-2021	13-09-2021
	1020855	CA	INDIVIDUAL	5 years	henkel corporation	B	RENT	11-12-2021	14-12-2021	14-12-2021



MS EXCEL

Bank loan dashboard.xlsx

## MySQL KPI's

- **Total Loan Applications**

SELECT COUNT(id) AS Total\_Applications FROM bank\_loan\_data

Total_Applications
38576

- **MTD Loan Applications**

SELECT COUNT(id) AS Total\_Applications FROM bank\_loan\_data  
WHERE MONTH(issue\_date) = 12

Total_Applications
4314

- **PMTD Loan Applications**

SELECT COUNT(id) AS Total\_Applications FROM bank\_loan\_data  
WHERE MONTH(issue\_date) = 11

Total_Applications
4035

- **Total Funded Amount**

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

Total_Funded_Amount
435757075

- **MTD Total Funded Amount**

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

Total_Funded_Amount
53981425

- **PMTD Total Funded Amount**

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

Total_Funded_Amount
47754825

- **Total Amount Received**

```
SELECT SUM(total_payment) AS Total_Amount_Collected FROM  
bank_loan_data
```

Total_Amount_Collected
473070933

- **MTD Total Amount Received**

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

Total_Amount_Collected
58074380

- **PMTD Total Amount Received**

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

Total_Amount_Collected
50132030

- **Average Interest Rate**

```
SELECT AVG(int_rate)*100 AS Avg_Int_Rate FROM bank_loan_data
```

Avg_Int_Rate
12.0488314172048

- **MTD Average Interest**

```
SELECT AVG(int_rate)*100 AS MTD_Avg_Int_Rate FROM bank_loan_data  
WHERE MONTH(issue_date) = 12
```

MTD_Avg_Int_Rate
12.3560408676042

- **PMTD Average Interest**

```
SELECT AVG(int_rate)*100 AS PMTD_Avg_Int_Rate FROM bank_loan_data  
WHERE MONTH(issue_date) = 11
```

PMTD_Avg_Int_Rate
11.9417175498261

- **Avg DTI**

```
SELECT AVG(dti)*100 AS Avg_DTI FROM
```

Avg_DTI
13.3274331211432

- **MTD Avg DTI**

```
SELECT AVG(dti)*100 AS MTD_Avg_DTI FROM bank_loan_data  
WHERE MONTH(issue_date) = 12
```

MTD_Avg_DTI
13.6655377880425

- **PMTD Avg DTI**

```
SELECT AVG(dti)*100 AS PMTD_Avg_DTI FROM bank_loan_data  
WHERE MONTH(issue_date) = 11
```

PMTD_Avg_DTI
13.3027335836364

## GOOD LOAN ISSUED

- **Good Loan Percentage**

```
SELECT (COUNT(CASE WHEN loan_status = 'Fully Paid' OR loan_status = 'Current'  
THEN id END) * 100.0) / COUNT(id) AS Good_Loan_Percentage FROM bank_loan_data
```

Good_Loan_Percentage
86.175342181667

- **Good Loan Applications**

```
SELECT COUNT(id) AS Good_Loan_Applications FROM bank_loan_data  
WHERE loan_status = 'Fully Paid' OR loan_status = 'Current'
```

Good_Loan_Applications
33243

### **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_Funded_amount
370224850



- **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'
```

Good_Loan_amount_received
435786170

## **BAD LOAN ISSUED**

- **Bad Loan Percentage**

```
SELECT (COUNT(CASE WHEN loan_status = 'Charged Off' THEN id END) *  
100.0)/COUNT(id) AS Bad_Loan_Percentage FROM bank_loan_data
```

Bad_Loan_Percentage
13.824657818332

- **Bad Loan Applications**

```
SELECT COUNT(id) AS Bad_Loan_Applications FROM bank_loan_data  
WHERE loan_status = 'Charged Off'
```

Bad_Loan_Applications
5333

- **Bad Loan Funded Amount**

```
SELECT SUM(loan_amount) AS Bad_Loan_Funded_amount FROM bank_loan_data  
WHERE loan_status = 'Charged Off'
```

Bad_Loan_Funded_amount
65532225

- **Bad Loan Amount Received**

```
SELECT SUM(total_payment) AS Bad_Loan_amount_received FROM bank_loan_data  
WHERE loan_status = 'Charged Off'
```

Bad_Loan_amount_received
37284763

LOAN STATUS

```
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
```

	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

```
SELECT loan_status, SUM(total_payment) AS MTD_Total_Amount_Received, SUM(loan_amount)  
AS MTD_Total_Funded_Amount FROM bank_loan_data WHERE MONTH(issue_date) = 12  
GROUP BY loan_status
```

loan_status	MTD_Total_Amount_Received	MTD_Total_Funded_Amount
Fully Paid	47815851	41302025
Charged Off	5324211	8732775
Current	4934318	3946625

B.BANK LOAN REPORT | OVERVIEW

MONTH

SELECT MONTH(issue\_date) AS Month\_Munber, 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)

	Month_Munber	Month_name	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
1	1	January	2332	25031650	27578836
2	2	February	2279	24647825	27717745
3	3	March	2627	28875700	32264400
4	4	April	2755	29800800	32495533
5	5	May	2911	31738350	33750523
6	6	June	3184	34161475	36164533
7	7	July	3366	35813900	38827220
8	8	August	3441	38149600	42682218
9	9	September	3536	40907725	43983948
10	10	October	3796	44893800	49399567
11	11	November	4035	47754825	50132030
12	12	December	4314	53981425	58074380

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

	State	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
1	AK	78	1031800	1108570
2	AL	432	4949225	5492272
3	AR	236	2529700	2777875
4	AZ	833	9206000	10041986
5	CA	6894	78484125	83901234
6	CO	770	8976000	9845810
7	CT	730	8435575	9357612
8	DC	214	2652350	2921854
9	DE	110	1138100	1269136
10	FL	2773	30046125	31601905
11	GA	1355	15480325	16728040
12	HI	170	1850525	2080184
13	IA	5	56450	64482
14	ID	6	59750	65329
15	IL	1486	17124225	18875941
16	IN	9	86225	85521
17	KS	260	2872325	3247394
18	KY	320	3504100	3792530
19	LA	426	4498900	5001160
20	MA	1310	15051000	16676279
21	MD	1027	11911400	12985170
22	ME	3	9200	10808
23	MI	685	7829900	8543660
24	MN	592	6302600	6750746
25	MO	660	7151175	7692732
26	MS	19	139125	149342
27	MT	79	829525	892047
28	NC	759	8787575	9534813
29	NE	5	31700	24542
30	NH	161	1917900	2101386
31	NJ	1822	21657475	23425159
32	NM	183	1916775	2084485
33	NV	482	5307375	5451443
34	NY	3701	42077050	46108181
35	OH	1188	12991375	14330148
36	OK	293	3365725	3712649
37	OR	436	4720150	4966903
38	PA	1482	15826525	17462908
39	RI	196	1883025	2001774

**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
```

	Term	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
1	36 months	28237	273041225	294709458
2	60 months	10339	162715850	178361475

**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
```

Employee_Length	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
< 1 year	4575	44210625	47545011
1 year	3229	32883125	35498348
10+ years	8870	116115950	125871616
2 years	4382	44967975	49206961
3 years	4088	43937850	47551832
4 years	3428	37600375	40964850
5 years	3273	36973625	40397571
6 years	2228	25612650	27908658
7 years	1772	20811725	22584136
8 years	1476	17558950	19025777
9 years	1255	15084225	16516173

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
```

PURPOSE	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
car	1497	10223575	11324914
credit card	4998	58885175	65214084
Debt consolidation	18214	232459675	253801871
educational	315	2161650	2248380
home improvement	2876	33350775	36380930
house	366	4824925	5185538
major purchase	2110	17251600	18676927
medical	667	5533225	5851372
moving	559	3748125	3999899
other	3824	31155750	33289676
renewable_energy	94	845750	898931
small business	1776	24123100	23814817
vacation	352	1967950	2116738
wedding	928	9225800	10266856

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

Home_Ownership	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
MORTGAGE	17198	219329150	238474438
NONE	3	16800	19053
OTHER	98	1044975	1025257
OWN	2838	29597675	31729129
RENT	18439	185768475	201823056



# MS EXCEL DASHBOARD



Bank loan dashboard.xlsx

### 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.

## Good Loan v Bad Loan KPI's

In order to evaluate the performance of our lending activities and assess the quality of our loan portfolio, we need to create a comprehensive report that distinguishes between 'Good Loans' and 'Bad Loans' based on specific loan status criteria

### Good Loan KPIs:

1. **Good Loan Application Percentage**: We need to calculate the percentage of loan applications classified as 'Good Loans.' This category includes loans with a loan status of 'Fully Paid' and 'Current.'
2. **Good Loan Applications**: Identifying the total number of loan applications falling under the 'Good Loan' category, which consists of loans with a loan status of 'Fully Paid' and 'Current.'
3. **Good Loan Funded Amount**: Determining the total amount of funds disbursed as 'Good Loans.' This includes the principal amounts of loans with a loan status of 'Fully Paid' and 'Current.'
4. **Good Loan Total Received Amount**: Tracking the total amount received from borrowers for 'Good Loans,' which encompasses all payments made on loans with a loan status of 'Fully Paid' and 'Current.'

## Bad Loan KPIs:

1. **Bad Loan Application Percentage**: Calculating the percentage of loan applications categorized as 'Bad Loans.' This category specifically includes loans with a loan status of 'Charged Off.'
2. **Bad Loan Applications**: Identifying the total number of loan applications categorized as 'Bad Loans,' which consists of loans with a loan status of 'Charged Off.'
3. **Bad Loan Funded Amount**: Determining the total amount of funds disbursed as 'Bad Loans.' This comprises the principal amounts of loans with a loan status of 'Charged Off.'
4. **Bad Loan Total Received Amount**: Tracking the total amount received from borrowers for 'Bad Loans,' which includes all payments made on loans with a loan status of 'Charged Off.'

## 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.' This report will serve as a valuable tool for analysing and understanding the key indicators associated with different loan statuses. 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.

## DASHBOARD 2: OVERVIEW

In our Bank Loan Report project, we aim to visually represent critical loan-related metrics and trends using a variety of chart types. These charts will provide a clear and insightful view of our lending operations, facilitating data-driven decision-making and enabling us to gain valuable insights into various loan parameters. Below are the specific chart requirements:

### 1. Monthly Trends by Issue Date (Line Chart):

Chart Type: Line Chart

Metrics: 'Total Loan Applications,' 'Total Funded Amount,' and 'Total Amount Received'

X-Axis: Month (based on 'Issue Date')

Y-Axis: Metrics' Values

*Objective: This line chart will showcase how 'Total Loan Applications,' 'Total Funded Amount,' and 'Total Amount Received' vary over time, allowing us to identify seasonality and long-term trends in lending activities.*

**2.Regional Analysis by State (Filled Map):**

Chart Type: Filled Map

Metrics: 'Total Loan Applications,' 'Total Funded Amount,' and 'Total Amount Received'

Geographic Regions: States

*Objective: This filled map will visually represent lending metrics categorized by state, enabling us to identify regions with significant lending activity and assess regional disparities.*

**3.Loan Term Analysis (Donut Chart):**

Chart Type: Donut Chart

Metrics: 'Total Loan Applications,' 'Total Funded Amount,' and 'Total Amount Received'

Segments: Loan Terms (e.g., 36 months, 60 months)

*Objective: This donut chart will depict loan statistics based on different loan terms, allowing us to understand the distribution of loans across various term lengths.*

**4. Employee Length Analysis (Bar Chart):**

Chart Type: Bar Chart

Metrics: 'Total Loan Applications,' 'Total Funded Amount,' and 'Total Amount Received'

X-Axis: Employee Length Categories (e.g., 1 year, 5 years, 10+ years)

Y-Axis: Metrics' Values

Objective: This bar chart will illustrate 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):**

Chart Type: Bar Chart

Metrics: 'Total Loan Applications,' 'Total Funded Amount,' and 'Total Amount Received'

X-Axis: Loan Purpose Categories (e.g., debt consolidation, credit card refinancing)

Y-Axis: Metrics' Values

Objective: This 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):

Chart Type: Tree Map

Metrics: 'Total Loan Applications,' 'Total Funded Amount,' and 'Total Amount Received'

Hierarchy: Home Ownership Categories (e.g., own, rent, mortgage)

*Objective: This tree map will display loan metrics categorized by different home ownership statuses, allowing for a hierarchical view of how home ownership impacts loan applications and disbursements.*

These diverse chart types will enhance our ability to visualize and communicate loan-related insights effectively, supporting data-driven decisions and strategic planning within our lending operations.“

## DASHBOARD 3: DETAILS

In our Bank Loan Report project, we recognize the 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.