BANK LOAN REPORT

PROBLEM STATEMENT

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.

Key Performance Indicators (KPIs) Requirements:

1. Total Loan Applications
2. Total Funded Amount
3. Total Amount Received
4. Average Interest Rate
5. Average Debt-to-Income Ratio (DTI)

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
2. Good Loan Applications
3. Good Loan Funded Amount
4. Good Loan Total Received Amount

Bad Loan KPIs:

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.' 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.

Report Requirements :

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
2. Regional Analysis by State
3. Loan Term Analysis
4. Employee Length Analysis
5. Loan Purpose Breakdown
6. Home Ownership Analysis

BANK LOAN REPORT QUERY DOCUMENT

KPI'S :

Total Loan Applications :

```
SELECT
   COUNT(id) AS total_loan_applications
FROM
   bank_loan_data
```

	total_loan_application
▶	38576

MTD Loan Application :

```
SELECT
   COUNT(id) AS MTD_total_loan_applications
FROM
```

```
    bank_loan_data
WHERE
    MONTH(issue_date) = 12
        AND YEAR(issue_date) = 2021
```

	MTD_total_loan_applications
▶	4314

PMTD Loan Applications :

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

	PMTD_total_loan_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 MTD_total_funded_amount
FROM
  bank_loan_data
WHERE
  MONTH(issue_date) = 12
    AND YEAR(issue_date) = 2021
```

MTD_total_funded_amount
53981425

PMTD Total Funded Amount :

```
SELECT
  SUM(loan_amount) AS PMTD_total_funded_amount
FROM
  bank_loan_data
WHERE
  MONTH(issue_date) = 11
    AND YEAR(issue_date) = 2021
```

PMTD_total_funded_amount
47754825

Total Amount Received :

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

total_amount_recived
473070933

MTD Total Amount Received :

```
SELECT
   SUM(total_payment) AS MTD_total_amount_recived
FROM
   bank_loan_data
WHERE
   MONTH(issue_date) = 12
      AND YEAR(issue_date) = 2021
```

	MTD_total_amount_recived
▶	58074380

PMTD Total Amount Received :

```
SELECT
   SUM(total_payment) AS PMTD_total_amount_recived
FROM
   bank_loan_data
WHERE
   MONTH(issue_date) = 11
      AND YEAR(issue_date) = 2021
```

	PMTD_total_amount_recived
▶	50132030

Average Interest Rate :

```
SELECT
   ROUND(AVG(int_rate) * 100, 2) AS avg_interest_rate
FROM
   bank_loan_data
```

	avg_interest_rate
▶	12.05

MTD Avg Interest Rate :

```
SELECT
   ROUND(AVG(int_rate) * 100, 2) AS MTD_avg_interest_rate
FROM
   bank_loan_data
WHERE
   MONTH(issue_date) = 12
      AND YEAR(issue_date) = 2021
```

	MTD_avg_interest_rate
▶	12.36

PMTD Avg Interest Rate :

```
SELECT
   ROUND(AVG(int_rate) * 100, 2) AS PMTD_avg_interest_rate
FROM
   bank_loan_data
WHERE
   MONTH(issue_date) = 11
      AND YEAR(issue_date) = 2021
```

	PMTD_avg_interest_rate
▶	11.94

Avg Debt To Income Ratio :

```
SELECT
   ROUND(AVG(dti) * 100, 2) AS avg_dti
FROM
   bank_loan_data
```

	avg_dti
▶	13.33

MTD Avg Debt To Income Ratio :

```
SELECT
   ROUND(AVG(dti) * 100, 2) AS MTD_avg_dti
FROM
   bank_loan_data
WHERE
   MONTH(issue_date) = 12
      AND YEAR(issue_date) = 2021
```

	MTD_avg_dti
▶	13.67

PMTD Avg Debt To Income Ratio :

```
SELECT
   ROUND(AVG(dti) * 100, 2) AS PMTD_avg_dti
FROM
   bank_loan_data
WHERE
   MONTH(issue_date) = 11
      AND YEAR(issue_date) = 2021
```

	PMTD_avg_dti
▶	13.3

GOOD LOAN ISSUED

Good Loan Percentage :

```
SELECT
```

```
    ROUND((COUNT(CASE
            WHEN
                loan_status = 'Fully Paid'
                    OR loan_status = 'Current'
            THEN
                id
        END) * 100) / COUNT(id),
        2) AS good_loan_percentage
FROM
    bank_loan_data
```

	good_loan_percentage
▶	86.18

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 Received Amount :

```
SELECT
    sum(total_payment) as good_loan_received_amount
FROM
    bank_loan_data
WHERE
    loan_status = 'Fully Paid'
        OR loan_status = 'Current'
```

	good_loan_received_amount
▶	435786170

BAD LOAN ISSUED

Bad Loan Percentage :

```
SELECT
    ROUND(COUNT(CASE
            WHEN loan_status = 'Charged off' THEN id
        END) * 100 / COUNT(id),
        2) AS bad_loan_percentage
FROM
    bank_loan_data
```

	bad_loan_percentage
▶	13.82

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 Received Amount :

```
SELECT
   sum(total_payment) AS bad_loan_received_amount
FROM
   bank_loan_data
WHERE
   loan_status = 'Charged off'
```

	bad_loan_received_amount
▶	37284763

Loan Status :

```
SELECT
   loan_status,
   COUNT(id) AS total_loan_applications,
   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	total_loan_applications	total_amount_received	toal_funded_amount	interest_rate	dti
▶	Charged Off	5333	37284763	65532225	13.878574910931917	14.004732795799695
	Fully Paid	32145	411586256	351358350	11.641070773058658	13.167350754394164
	Current	1098	24199914	18866500	15.0993260473588	14.724344262295068

MTD Total Funded And MTD Total Received Amount Loan Status :

```
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_toal_funded_amount
Fully Paid	47815851	41302025
Charged Off	5324211	8732775
Current	4934318	3946625

Report Requirements :

Monthly Trends By Issue Date :

```
SELECT
   MONTH(issue_date) AS month_number,
   DATE_FORMAT(issue_date, '%M') AS month_name,
   COUNT(id) AS total_loan_applications,
   SUM(total_payment) AS total_amount_received,
   SUM(loan_amount) AS total_funded_amount
FROM
   bank_loan_data
GROUP BY MONTH(issue_date) , DATE_FORMAT(issue_date, '%M')
ORDER BY MONTH(issue_date)
```

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

Regional Analysis By State :

```
SELECT
   address_state AS state,
```

```
    COUNT(id) AS total_loan_applications,
    SUM(total_payment) AS total_amount_received,
    SUM(loan_amount) AS total_funded_amount
FROM
    bank_loan_data
GROUP BY address_state
ORDER BY address_state
```

state	total_loan_applications	total_amount_received	total_funded_amount
AK	78	1108570	1031800
AL	432	5492272	4949225
AR	236	2777875	2529700
AZ	833	10041986	9206000
CA	6894	83901234	78484125
CO	770	9845810	8976000
CT	730	9357612	8435575
DC	214	2921854	2350
DE	110	1269136	1138100
FL	2773	31601905	30046125
GA	1355	16728040	15480325
HI	170	2080184	1850525
IA	5	64482	56450
ID	6	65329	59750
IL	1486	18875941	17124225
IN	9	85521	86225
KS	260	3247394	2872325
KY	320	3792530	3504100
LA	426	5001160	4498900
MA	1310	16676279	15051000

Loan Term Analysis :

```
SELECT
    term,
    COUNT(id) AS total_loan_applications,
    SUM(total_payment) AS total_amount_received,
    SUM(loan_amount) AS total_funded_amount
FROM
    bank_loan_data
```

GROUP BY term

ORDER BY term

	term	total_loan_applications	total_amount_received	total_funded_amount
▶	36 months	28237	294709458	273041225
	60 months	10339	178361475	162715850

Employee Length Analysis :

SELECT

emp_length as employee_length,

COUNT(id) AS total_loan_applications,

SUM(total_payment) AS total_amount_received,

SUM(loan_amount) AS total_funded_amount

FROM

bank_loan_data

GROUP BY emp_length

ORDER BY emp_length

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

Loan Purpose Breakdown :

SELECT

purpose,

COUNT(id) AS total_loan_applications,

```
    SUM(total_payment) AS total_amount_received,
    SUM(loan_amount) AS total_funded_amount
FROM
    bank_loan_data
GROUP BY purpose
ORDER BY COUNT(id) DESC
```

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

Home Ownership Analysis :

```
SELECT
    home_ownership,
    COUNT(id) AS total_loan_applications,
    SUM(total_payment) AS total_amount_received,
    SUM(loan_amount) AS total_funded_amount
FROM
    bank_loan_data
GROUP BY home_ownership
ORDER BY COUNT(id) DESC
```

	home_ownership	total_loan_applications	total_amount_received	total_funded_amount
▶	RENT	18439	201823056	185768475
	MORTGAGE	17198	238474438	219329150
	OWN	2838	31729129	29597675
	OTHER	98	1025257	1044975
	NONE	3	19053	16800

KEY FINDINGS AND INSIGHTS :

1. The data demonstrates a very healthy and consistent growth pattern for the bank throughout the observed year, with a strong finish in the last quarter (October, November, December).

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

2. The regional data highlights that the loan activity is highly concentrated in a few key states, primarily CA and FL, while many other states represent small or negligible parts of the overall portfolio. The bank's strategy appears to be heavily focused on these high-volume markets.

state	total_loan_applications	total_amount_received	total_funded_amount
AK	78	1108570	1031800
AL	432	5492272	4949225
AR	236	2777875	2529700
AZ	833	10041986	9206000
CA	6894	83901234	78484125
CO	770	9845810	8976000
CT	730	9357612	8435575
DC	214	2921854	2350
DE	110	1269136	1138100
FL	2773	31601905	30046125
GA	1355	16728040	15480325
HI	170	2080184	1850525
IA	5	64482	56450
ID	6	65329	59750
IL	1486	18875941	17124225
IN	9	85521	86225
KS	260	3247394	2872325
KY	320	3792530	3504100
LA	426	5001160	4498900
MA	1310	16676279	15051000

3. The bank's loan portfolio is heavily lean towards the **shorter, 36-month term** in application count, but the **longer, 60-month term** loans carry a significantly higher average principal balance.

term	total_loan_applications	total_amount_received	total_funded_amount
36 months	28237	294709458	273041225
60 months	10339	178361475	162715850

4. The bank's portfolio is heavily reliant on two stable but distinct segments: the **most established employees (10+ years)**, who are the bank's premium customers, and the **newest employees (< 1 to 3 years)**, who represent a high-volume, potentially younger, segment with smaller average loan needs. The bank's risk model seems comfortable lending to both type of loan needs.

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

5. Calculating the average funded amount (Total Funded Amount / Total Applications) provides insight into the typical size of loans for each purpose:

   Debt Consolidation: $232.46M / $18214 = $12763

   Small Business: $24.12M / $1776 = $13570 (Highest average size among top 3)

   Credit Card: $58.89M / $4998 = $11783

   - The **Small Business** purpose has the highest average loan size among the all categories, suggesting these borrowers require more significant capital than those consolidating debt or paying off credit cards.

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

6. Calculating the average funded amount (Total Funded Amount / Total Loan Applications) provides insight into the typical size of loans for each purpose:

   Average RENT Funded Amount : $185,768,475 / $18,439 = $10,075

   Average MORTGAGE Funded Amount: $219,329,150 / $17,198 = $12,753(Highest average size among top 3)

   Average OWN Funded Amount: $29,597,675 / $2,838 = $10,429

   - Borrowers with a **MORTGAGE** receive, on average, a loan that is over $2,600 larger than **RENT**

   and around $2250 larger than **OWN FUNDED AMOUNT.**

- The total amount received is consistently higher than the total funded amount for all categories, confirming that all segments are generating interest and positive cash flow for the bank.

home_ownership	total_loan_applications	total_amount_received	total_funded_amount
RENT	18439	201823056	185768475
MORTGAGE	17198	238474438	219329150
OWN	2838	31729129	29597675
OTHER	98	1025257	1044975
NONE	3	19053	16800

RECOMMEDATIONS :

- Reduce dependency on CA and FL by expanding marketing and credit offers in underrepresented states.
- Offer incentives (reduced rates, flexible EMI) to shift some 36-month applicants to 60-month terms.
- Increase focus on Small Business and Mortgage borrowers since they have the highest average loan sizes.
- Monitoring repayment patterns
- Refining interest rate strategies
- Expanding predictable, interest-generating loan products

FUTURE WORK :

- Create Power BI Dashboard for chart based analysis.

CONCLUSION :

The bank’s loan portfolio demonstrates healthy growth, strong interest income, and a stable customer base across various employment and loan purpose segments. However, the business is geographically concentrated, and there is room for strategic expansion. By leveraging high-value segments (Mortgage, Small Business), optimizing loan terms, and diversifying regional presence, the bank can enhance profitability, reduce risk concentration, and strengthen long-term portfolio stability.