



BANK ANALYTICS PROJECT

Presented By Group 3

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Introduction

The banking dataset used in this project represents key operational aspects of a financial institution, including **customer information, loan details, branch data, product types, and repayment records.**

This dataset provides a structured view of how banking services are delivered to customers and how financial performance can be measured at different levels such as client, branch, and product.

The purpose of analyzing this banking dataset is to gain insights into **loan disbursement patterns, repayment behavior, and overall banking performance.**

By examining relationships between clients, loans, branches, and products, the dataset enables a detailed understanding of how different banking units contribute to business outcomes.

The key objectives of this project include:

- To gain a comprehensive understanding of bank transaction patterns across time and branches.
- To measure the bank's financial performance using well-defined KPIs.
- To identify transaction irregularities and potential risk indicators.
- To evaluate customer engagement through transaction frequency analysis.
- To enable branch-level performance comparison for operational insights.
- To present insights through clear, interactive dashboards that assist management in decision-making.



Why was this project selected?

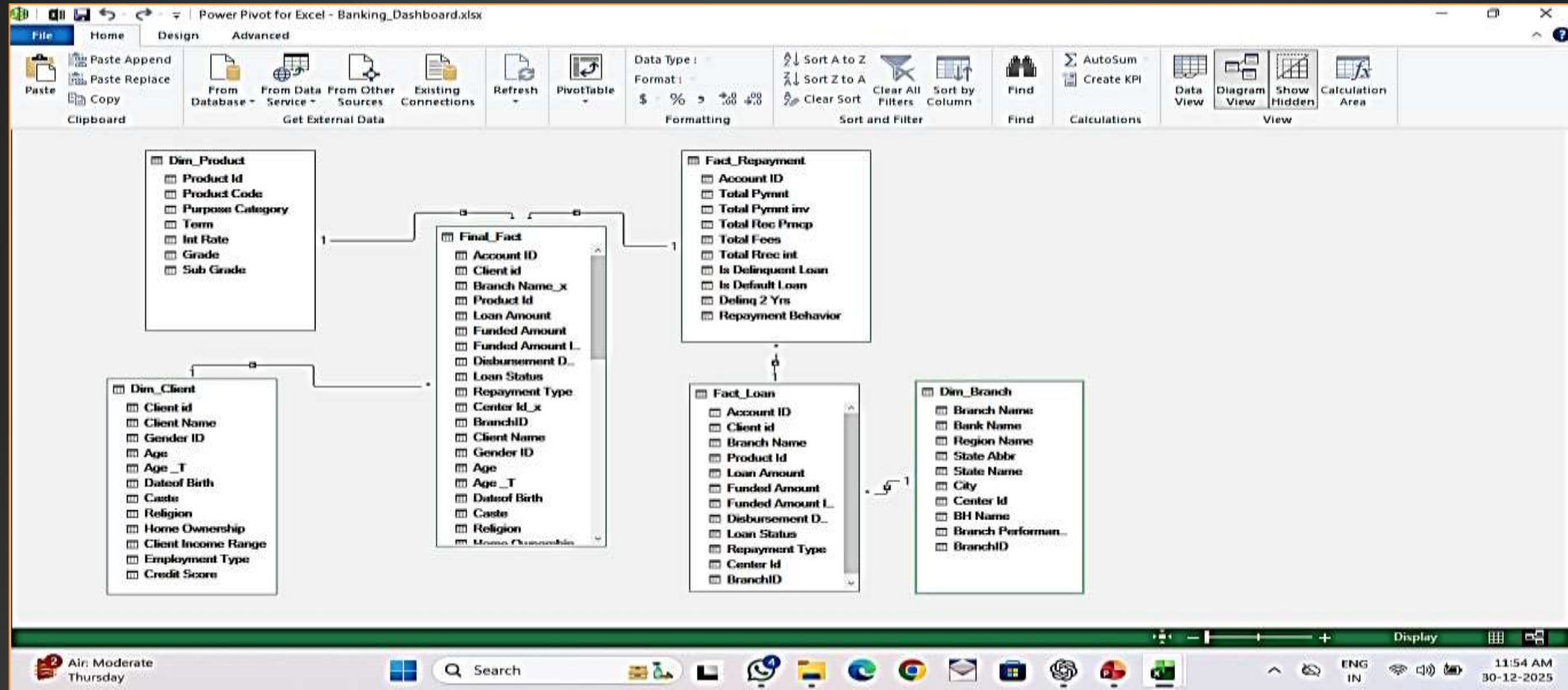
The banking and financial services industry plays a crucial role in the economy and generates large volumes of structured data related to customers, loans, branches, and financial transactions.

Analyzing this data effectively is essential for improving operational efficiency, managing credit risk, and supporting strategic decision-making. This motivated us to select a **Banking Data Analytics project** as it represents a real-world, data-intensive business scenario.

Overall, this project was selected because it provides a **practical, business-oriented learning experience** that closely reflects real banking analytics use cases and prepares us for real-world data analyst roles.

This project was selected to gain practical exposure to **loan performance analysis, repayment behavior, and risk identification**, which are key challenges faced by banks. The dataset provides a comprehensive view of banking operations, making it ideal for understanding how different factors such as branch, product, and customer behavior influence overall performance.

Data Modelling Framework



KPI'S

The KPIs are designed to help management monitor operational health and make data-driven decisions.

Customer-Related KPIs

- **Total Clients: 1000**
Represents the total number of customers currently associated with the bank. This indicates the overall customer base size.
- **Active Clients: 402**
Shows customers who are actively transacting or holding active loans. This reflects customer engagement levels.
- **New Clients: 242**
Indicates customers newly acquired during the selected period, highlighting the bank's growth and acquisition performance.
- **Client Retention Rate: 67%**
Measures the percentage of customers who continue their relationship with the bank. A 67% retention rate suggests a moderately strong customer loyalty level.

Loan & Funding KPIs

- **Total Loan Amount Disbursed: 52M**
Represents the total value of loans issued by the bank, reflecting lending activity and business expansion.
- **Total Funded Amount: 52.36M**
Indicates the actual amount funded to customers. The close alignment with the disbursed amount suggests efficient fund allocation.
- **Average Loan Size: 26.18K**
Shows the average loan amount per customer, providing insight into the bank's lending strategy and customer credit exposure.
- **Loan Growth %: 16.18%**
Reflects the growth in loan disbursement compared to the previous period, indicating positive business momentum.

Repayment & Income KPIs

- **Total Repayment Collected: 53.86M**
Shows the total amount repaid by customers, indicating strong repayment performance.
- **Principal Recovery Rate: 99.05%**
Measures the percentage of principal amount successfully recovered. A very high value indicates excellent loan recovery efficiency.
- **Interest Income: 5.06M**
Represents revenue earned from interest on loans, highlighting the bank's profitability from lending operations.
- **On-Time Repayment %: 71.05%**
Indicates the proportion of repayments made on or before the due date, reflecting good repayment discipline among customers.

Risk & Credit Quality KPIs

- **Default Rate: 5%**
Shows the percentage of loans that have defaulted. A relatively low value suggests effective credit risk management.
- **Delinquency Rate: 10.35%**
Measures the proportion of loans with delayed payments. This helps identify potential future default risks.

Performance & Growth Indicators

- **Performance Category Split**
 - **Low Risk: 43%**
 - **Medium Risk: 35%**
 - **High Risk: 22%**
This distribution highlights that most loans fall under low to medium risk, indicating a balanced and controlled loan portfolio.
- **Year-Over-Year Growth %**
 - Shows fluctuations in growth across years
 - Strong positive growth in recent years (up to **16.18%**) indicates recovery and expansion after a decline period

Excel Dashboard



Banking Dashboard

Presented By: Group 3

Total Clients

1000

Active Clients

402

New Client

870

Interest Income

5.06 M

Total Funded Amount

52.36 M

Total loan Amount Disbursed

52.36 M

Total Repayment Collected

53.86 M

Is Default Loan

No

Yes

Repayment Behavior

Late

On-Time

Very Late

Branch Performance Category

High

Low

Medium

Disbursement Date

All Periods

YEARS

2015

2016

2017

2018

Loan Growth %

9.93%

Client Retention Rate

67%

Principal Recovery Rate

99%

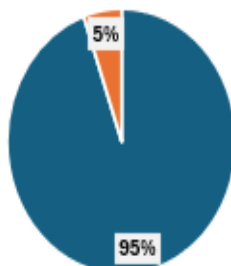
Default Rate %

5.40%

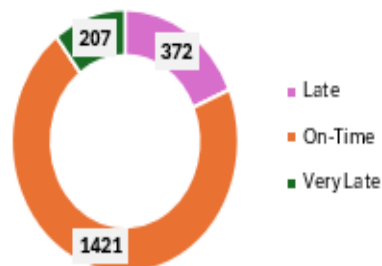
Delinquency Rate

10.35%

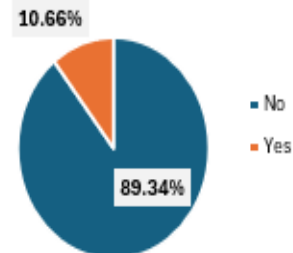
Is Loan Default



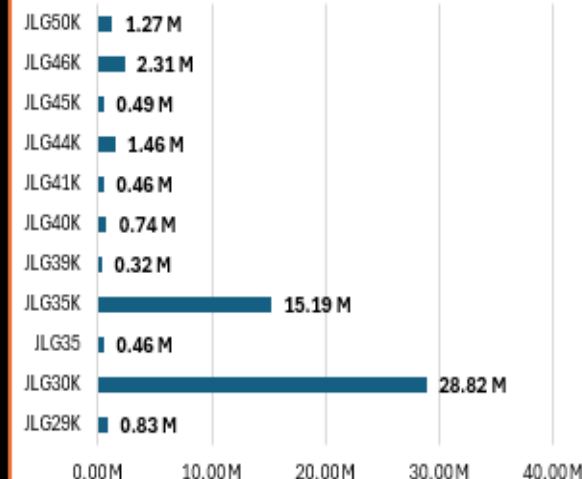
Repayment Behaviour



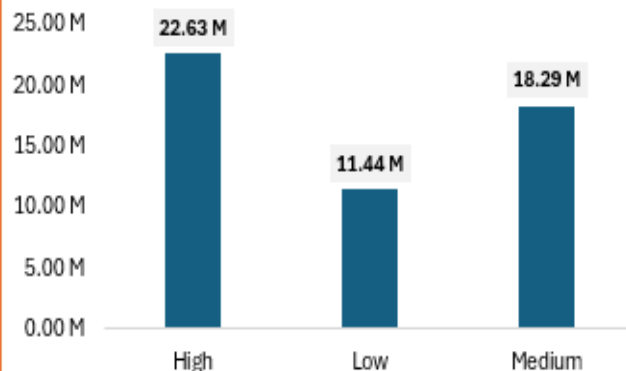
Is Delinquent Loan



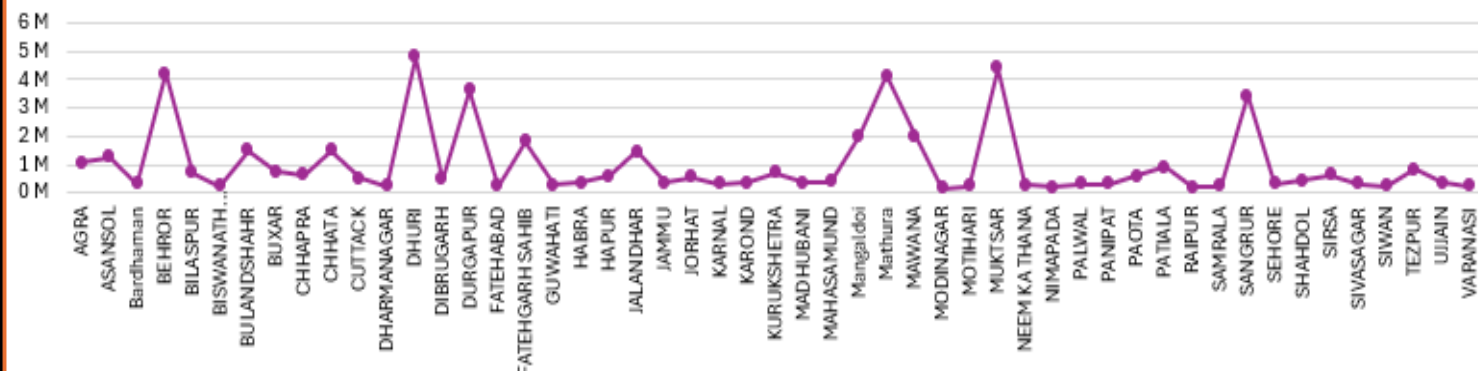
Product Wise Loan Volume



Branch Performance Category Split



Loan Distribution by Branch





Banking KPI

1K

Total Clients

402

Active Clients

34

New Clients

67.24

Client Retention Rate

52M

Total Loan Amount Disbursed

52M

Total Funded Amount

26.18K

Average Loan Size

54M

Total Repayments Collected

99.05%

Principal Recovery Rate

5.00%

Default rate

10.35%

Delinquency Rate

71.05%

On-Time Repayment Behaviour%

5.06M

Interest Income



Power Bi Dashboard - 2



Banking Dashboard

State

All

Date

All

Branch

All

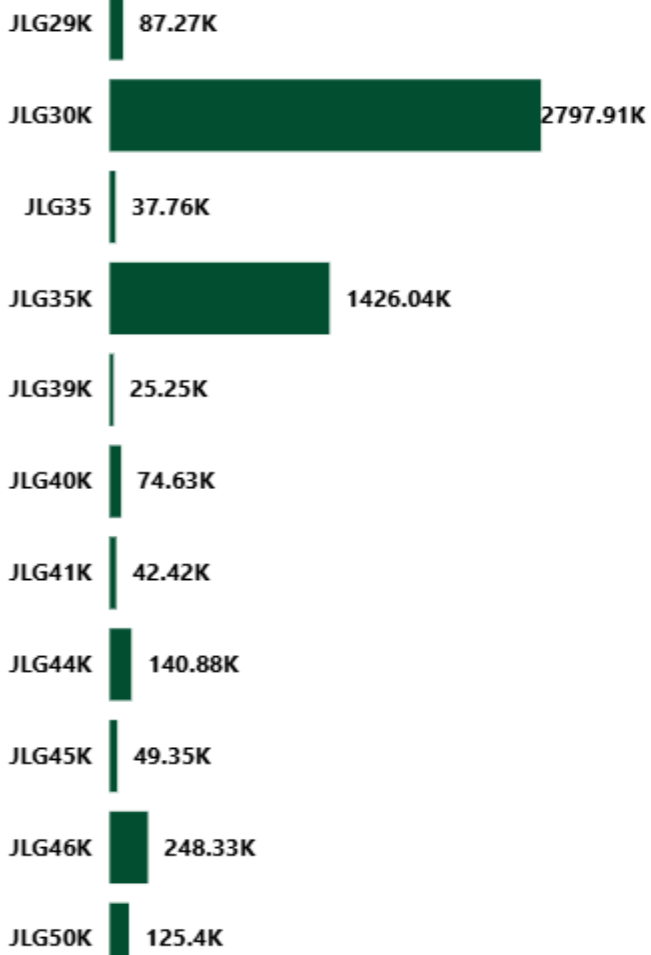
Agriculture

Home Loan

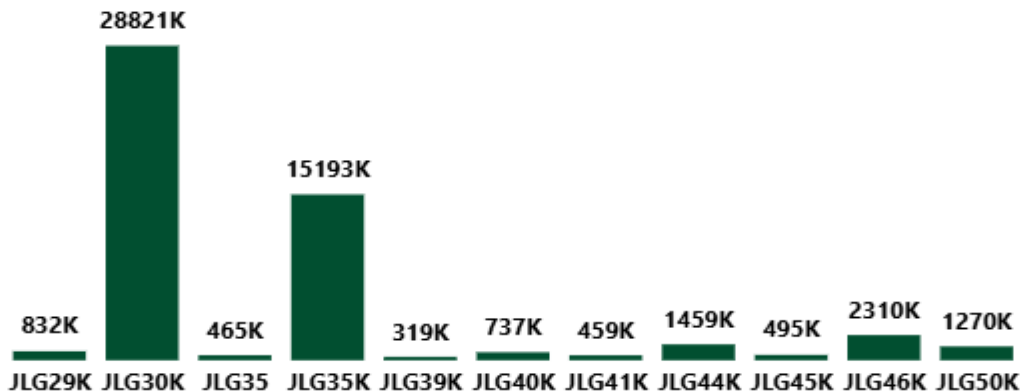
Services

Trade

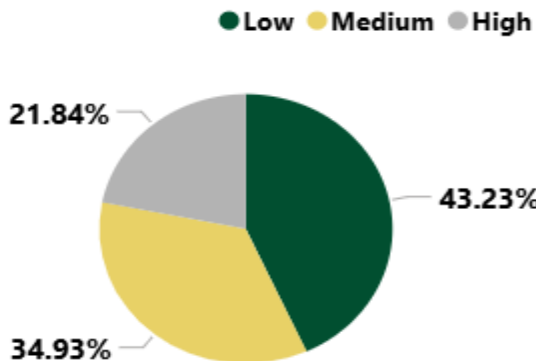
Interest Income Per Product



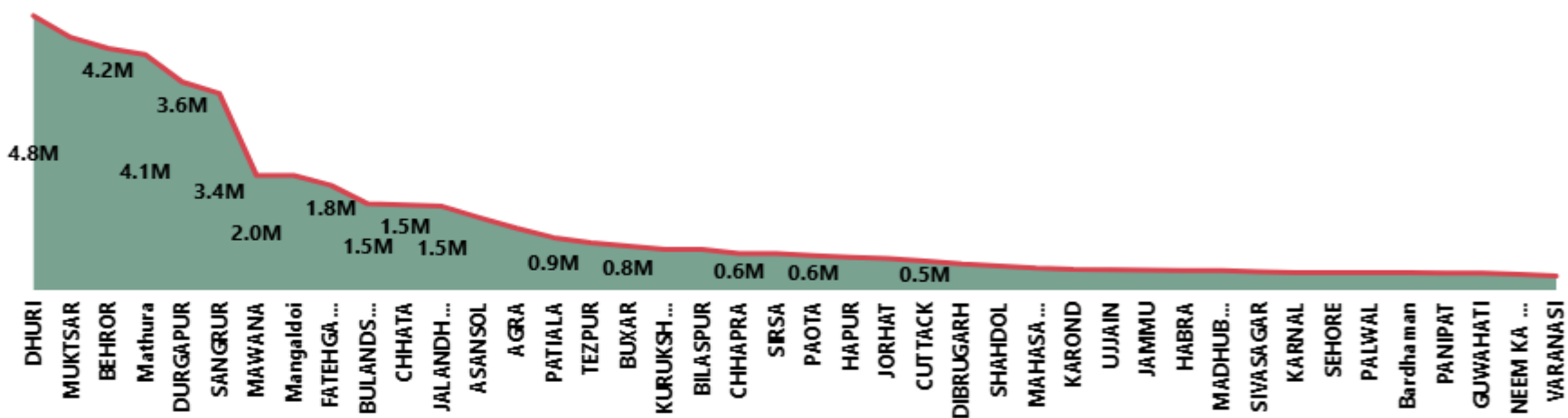
Product Wise Loan Volume



Branch Performance Category Split



Loan Distribution By Branch





Power Bi Dashboard - 3

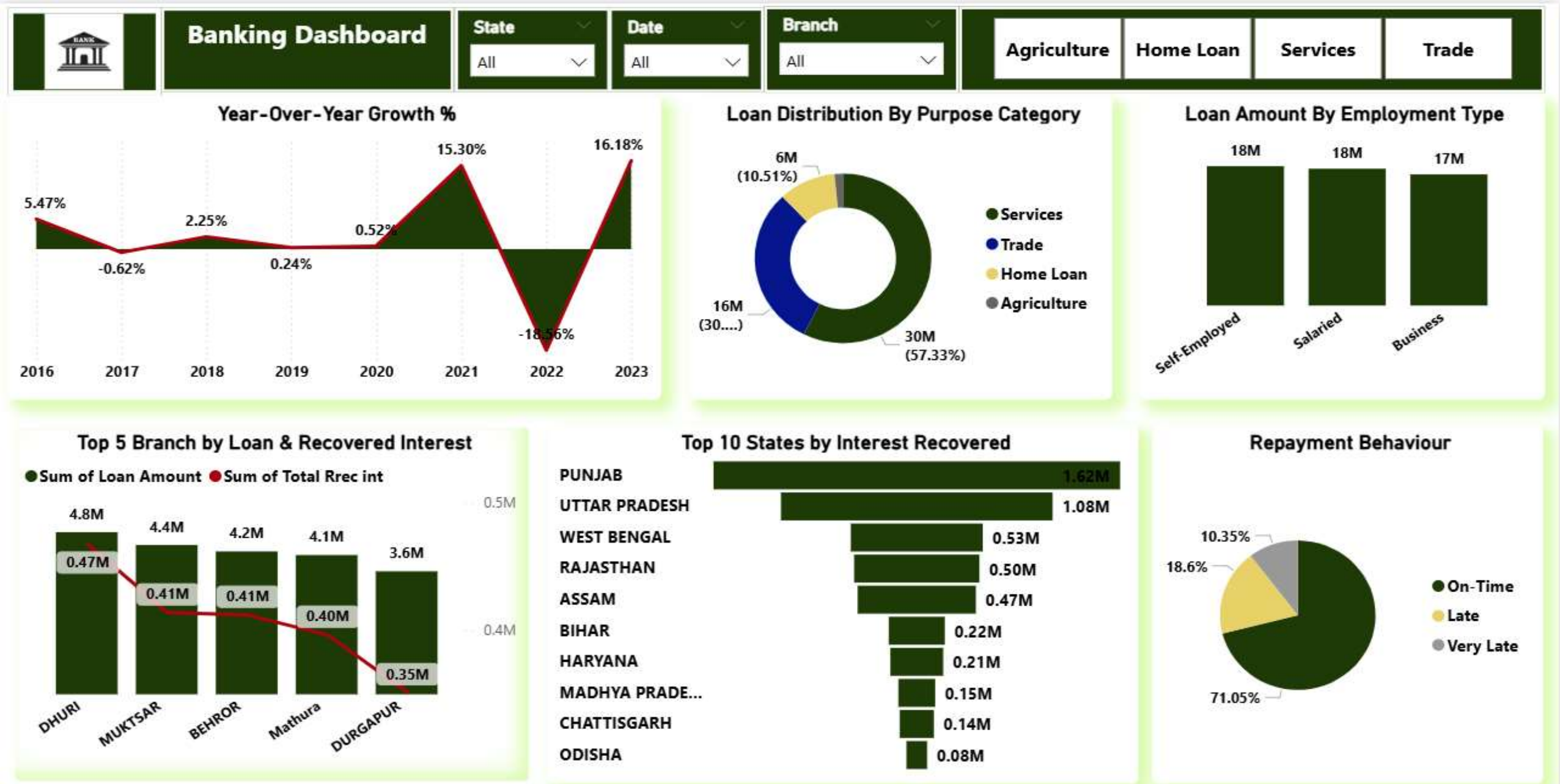




Tableau Dashboard



Banking Dashboard

Total Clients
1,000

Active Clients
402

New Clients
870

Client Retention Rate
585

Total Funded Amount
52.36M

Average Loan Size
26.18K

Default Rate
5.40%

Total Loan Amount Disbursed
52.36M

Total Repayments Collected
53.86M

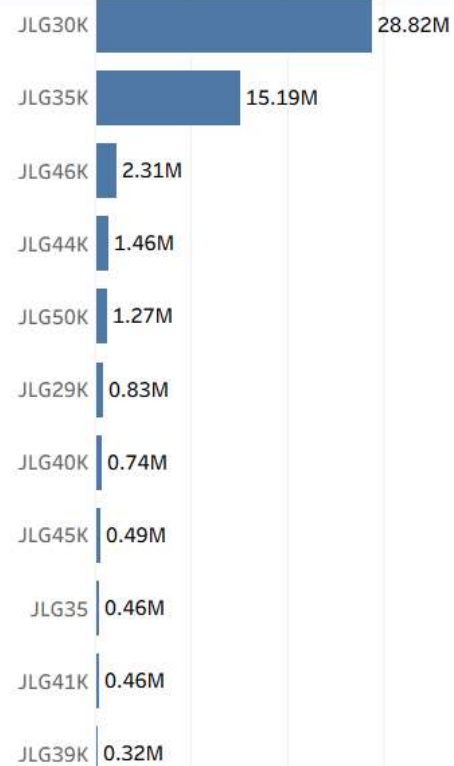
Principal Recovery Rate
99.05%

On-Time Repayment %
71.05%

Delinquency Rate
10.35%

Interest Income
5.06M

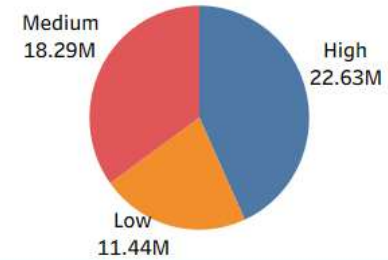
Product-wise Loan Volume



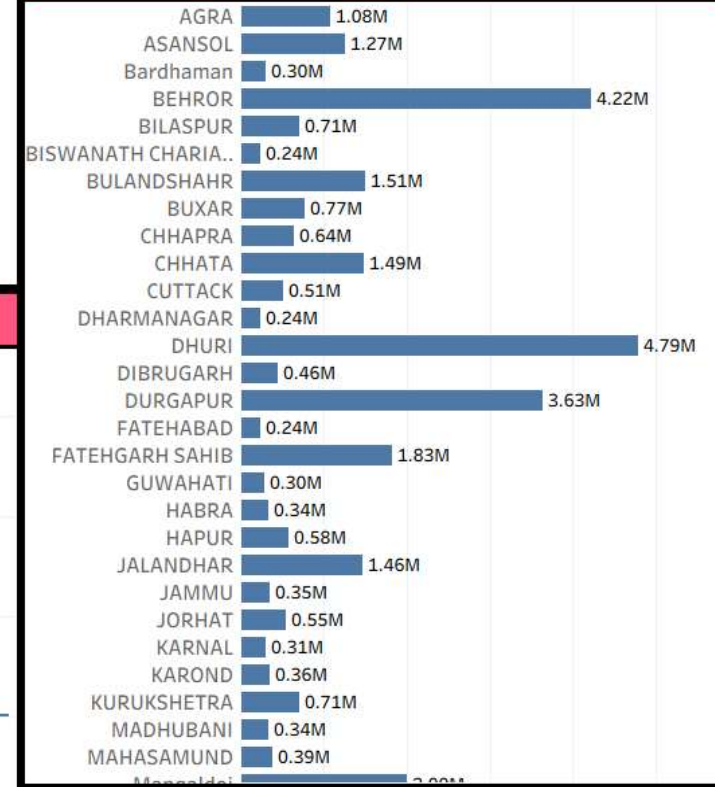
Repayment Behaviour



Branch Performance Category Split



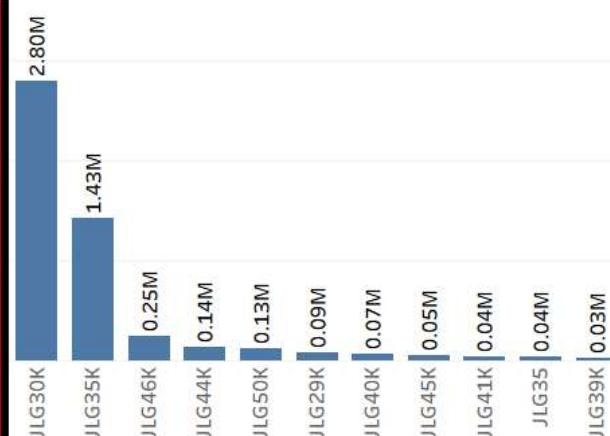
Loan Distribution by Branch



Loan Growth %



Product Profitability



SQL QUERIES

```
1 • Create Database Bank_Analytics;
2 • Use Bank_Analytics;
3 • Alter table final_fact
4   Modify column `Disbursement Date` date;
5 • Show tables;
6   -- 1. TOTAL CLIENTS
7 • select count(`client id`) from dim_client as Total_Clients;
8
9   -- 1. ACTIVE CLIENTS
10 • select count(`Loan Status`) from final_fact where `Loan Status` = "Active";
11
12   -- 2. NEW CLIENTS
13 • select count(`Client Id`) from final_fact
14   where Year(`Disbursement Date`) not in ("2015","2016","2017","2018","2019","2020","2021","2022");
15
```


-- 3. Client Retention Rate

```
select ROUND(  
    100 * SUM(transaction_count > 1) / COUNT(*),  
    2  
    ) AS Client_Retention_Rate  
FROM (  
    SELECT  
        `Client id`,  
        COUNT(*) AS transaction_count  
    FROM final_fact  
    GROUP BY `Client id`  
) t;
```

-- 4. Total Loan Amount Disbursed

```
select sum(`Loan Amount`) from fact_loan;
```

-- 5. Total Funded Amount

```
select sum(`funded amount`) from fact_loan;
```


-- 6. Average Loan Size

- `select avg(`Loan Amount`) from fact_loan;`

-- 7. Loan Growth %

- `With Yearly_Sales as(
 select Year(`Disbursement Date`) as Year, sum(`Loan Amount`) as Amount from final_fact
 group by Year(`Disbursement Date`))
 select Year, Amount, Lag(Amount) over (order by year) as Previous_Year,
 ((Amount - Lag(Amount) over (order by year))/Lag(Amount) over (order by year))*100 as Growth_Percentage
 from Yearly_Sales order by Year desc ;`

-- 8. Total Repayments Collected

- `Select sum(`total pymnt`) from final_fact;`

-- 9. Principal Recovery Rate

- `select (sum(`Total Rec Prncp`)/sum(`Loan Amount`)* 100.00)from final_fact;`

-- 10. Interest Income

- `select sum(`Total Rrec int`) from fact_repayment;`

-- 11. Default Rate

- `Select (sum(Case When `Is Default Loan` ="Y" Then 1 Else 0 END) *100.00 / count(*)) as default_range_Percentage
from final_fact;`

-- 12. Delinquency Rate

- `Select(sum(Case When `Is Delinquent Loan`="Y" Then 1 Else 0 END)*100.00/count(*))
as DelinquencyRate from final_fact;`

-- 13. On time Repayment %

- `Select (sum(Case When `Repayment Behavior`="On-Time" then 1 Else 0 End) /count(*))*100.00
as On_Time_Repayment from final_fact;`

-- 14. Loan Distribution By Branch

- `select `Branch Name_x`,sum(`Loan Amount`) from final_fact group by `Branch Name_x` order by sum(`Loan Amount`) desc;`

-- 16. Product wise Loan Volume

- `SELECT `Product Id`, sum(`Loan Amount`) as Amount from final_fact group by `Product Id`;`

-- 17. Interest Income Per Product

- `Select `Product Id`, sum(`Total Rrec int`) as Interest_Recovered
from final_fact group by `Product Id`
Order by sum(`Total Rrec int`) desc;`

Performance Analysis

The banking performance analysis evaluates customer behavior, loan portfolio strength, repayment efficiency, and risk indicators using dashboard-based insights.

The bank serves **1,000 clients**, but only **402 are active**, indicating low customer engagement. With **242 new clients** and a ****67%** retention rate reminding that most business comes from existing customers rather than new active participation.

The **total loan amount disbursed is ₹52.36M** with an **average loan size of ₹26.18K**, showing a focus on small-ticket lending. Loan growth stands at **16.18%**, but year-over-year trends reveal volatility, including a sharp decline in 2022, highlighting sensitivity to market conditions.

Repayment performance is strong, with **₹53.86M collected** and a **99% principal recovery rate**. **71.05% of repayments are on time**, ensuring healthy cash flow. However, the **10.35% delinquency rate** signals early repayment stress, even though the **default rate remains low at around 5%**.

Branch and product analysis shows uneven performance, with a few branches and products (JLG30K and JLG35K) contributing the majority of loan volume and interest income. This creates concentration risk and highlights the need for diversification.

Trend & Time Based Analysis

The trend and time-based analysis highlights how the bank's performance changes across years, months, and repayment cycles.

The **Year-Over-Year (YoY) growth trend** shows moderate growth in most years, with steady increases up to 2021. However, there is a **sharp decline in 2022**, indicating the impact of external or operational challenges, followed by a **strong recovery in 2023 (16.18%)**, reflecting improved lending activity and business stabilization.

Monthly transaction trends indicate relatively **consistent transaction volumes** throughout the year, suggesting stable customer activity. Any minor fluctuations point toward seasonal effects rather than structural issues.

From a repayment perspective, **on-time repayment (71.05%)** remains stable over time, supporting healthy cash flows. However, the presence of a **10.35% delinquency rate** suggests that repayment behavior requires continuous monitoring, especially during economic stress periods.

Key Insights

Customer Activity Gap: Out of 1,000 total clients, only 402 are active. Nearly 60% inactivity highlights weak customer engagement. This presents a strong opportunity for reactivation-driven growth.

Credit Risk & Delinquency Signal: The default rate is low at 5.4%, indicating strong credit quality. However, delinquency stands higher at 10.35%. This signals early repayment stress that needs proactive control.

Healthy Repayment & Recovery: On-time repayments dominate compared to late payments. The principal recovery rate is an excellent 99%. This reflects strong collection efficiency and cash flow stability.

Strong Financial Performance: Total loan disbursement is ₹52.36M with collections of ₹53.86M. Interest income generated is ₹5.06M. Collections exceeding disbursements indicate robust recovery strength.

Concentration & Branch Performance Risk: Over 80% of loans come from two products (JLG30K & JLG35K). High-performing branches contribute significantly more revenue. This highlights product concentration and uneven branch efficiency.

Strategic Recommendations

Reactivate Inactive Customers : Nearly 60% of customers are inactive and underutilized. Targeted re-engagement campaigns can unlock low-cost growth. This improves portfolio size without increasing acquisition costs.

Strengthen Early Delinquency Control : Delinquency rate (10.35%) is significantly higher than defaults. Implement early-warning alerts for missed or delayed EMIs. This prevents delinquency from escalating into loan defaults.

Diversify Loan Product Portfolio : Loan volume is highly concentrated in two products. Introduce mid-range and diversified loan offerings. This reduces dependency risk and improves portfolio stability.

Standardize High-Performing Branch Practices : High-performing branches generate double the revenue of low ones. Replicate their operational and recovery best practices. This ensures balanced performance across all branches.

Adopt Risk-Adjusted Growth Strategy : Loan growth shows year-wise volatility despite strong recovery. Align growth targets with delinquency and risk thresholds. This ensures sustainable and controlled business expansion.

Conclusion

The analysis shows that the bank has **strong financial stability**, supported by high repayment discipline, a **99% recovery rate**, and controlled default levels. However, a large inactive customer base, higher delinquency compared to defaults, and concentration in a few products and branches highlight key areas for improvement. Focusing on **customer activation, early risk monitoring, and diversification** will help the bank achieve more consistent and sustainable growth.



THANK YOU