

# SBI Loan Portfolio Power BI Dashboard Project

## Client Requirement & Dashboard Task Document

Prepared for: Data Analyst – Performance Showcase Project

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### 1. CLIENT OBJECTIVE

The purpose of this Power BI project is to design a comprehensive, insight-driven dashboard for the State Bank of India (SBI) Head Office. The dashboard will present an integrated view of loan portfolio performance, customer demographics and credit risk, branch efficiency, and data quality metrics. The goal is to help management identify risky patterns, monitor operational efficiency, and make data-driven decisions to improve loan management and reduce defaults.

### 2. DASHBOARD PAGES & TASK CATEGORIES

#### A. Loan Portfolio Overview

**Objective:** Analyze overall loan performance and portfolio health.

**Tasks:**

- KPI Cards – Total Loans, Approved %, Pending %, Rejected %, Avg Loan Amount, Total Disbursed (■)
- Loan Disbursement Trend over time (Monthly & Quarterly)
- Loan Type Distribution (Donut / Stacked Bar)
- Top 10 Branches by Disbursement (Bar Chart with conditional formatting)
- Interest Rate Range vs Loan Count (Histogram)
- Loan Tenure Distribution (Pie / Donut)
- State-wise Loan Distribution (Map Visual)

**DAX Measures:**

```
Total Approved Loans
Approval % = DIVIDE([Total Approved], [Total Loans])
Avg Interest Rate = AVERAGE(Loan[Interest_Rate])
```

**Slicers:**

State, Loan Type, Year, Branch

#### B. Customer Insights Dashboard

**Objective:** Understand customer segments, income patterns, and default behaviour.

**Tasks:**

- KPI Cards – Total Customers, Avg Age, Gender Ratio, Default %, Avg Credit Score
- Annual Income vs Loan Amount Correlation (Scatter Plot with regression line)

- Default % by Age Group (<25, 25–35, 36–45, 46–60, >60)
- Employment Type Split (Pie / Stacked Bar)
- Credit Score Banding & Distribution (Histogram)

### DAX Measures:

```
Default % = DIVIDE([Total Defaults], [Total Loans])
Avg Credit Score = AVERAGE([Credit_Score])
```

### Drillthrough:

Customer Detail page showing full profile, loan history, and risk flags.

## C. Branch Performance Dashboard

**Objective:** Compare branch-level performance and identify efficiency gaps.

### Tasks:

- KPI Cards – Loans per Branch, Total EMI Amount, Branch Default %, Avg Disbursement Time
- Loan Amount vs Default % (Bubble / Scatter chart)
- Top 5 / Bottom 5 Branches table with conditional formatting

### DAX Measures:

```
Branch Default Rate =
CALCULATE(
    DIVIDE([Defaults], [Total Loans]),
    FILTER(ALL(Branch), Branch[Name]=SELECTEDVALUE(Branch[Name]))
)

Loan Growth YoY = DIVIDE([ThisYearLoans]-[LastYearLoans], [LastYearLoans])
```

### Drillthrough:

Branch Detail page with staff counts, average loan size, and month-wise trend.

## D. Loan Performance & Risk Dashboard

**Objective:** Measure repayment performance, defaults, and risk indicators.

### Tasks:

- KPI Cards – Total Defaulted Loans, Repaid %, Avg EMI, Avg Tenure
- Monthly Default Trend (Line Chart with 12-month rolling average)
- Credit Score vs EMI Amount (Scatter with quadrant analysis)
- Approval Status Distribution (Donut / Bar Chart)

### DAX Measures:

```
Repaid % = 1 - [Default %]
Avg EMI = AVERAGE([EMI_Amount])
```

### Tooltip Page:

Display on-hover risk factors such as income bracket, credit score, and employment type.

## E. Data Quality & Operational Metrics

**Objective:** Track data reliability and operational data health for the Excel source.

### Tasks:

- Missing Value Count per column (Table with % missing)
- Duplicate Record Count (Card + sample records table)
- Case Issue % by column (Bar Chart showing UPPER/lower/mixed)
- Data Type Error % (KPI Card)
- Invalid / Incorrect Data Flag matrix (Conditional formatting on errors)

### DAX Logic Example:

```
DataIssueFlag =  
IF(  
    ISBLANK([Customer_Name]) || [Age] <= 0 || [Interest_Rate] <= 0,  
    "Error",  
    "OK"  
)
```

## 3. DATA CLEANING & MODELING TASKS

### Data Cleaning (Power Query Steps):

- Remove duplicate rows (~100)
- Handle missing values using mean/mode imputation
- Standardize case (Proper for names, UPPER for States)
- Correct spelling anomalies (e.g., Marid → Married)
- Convert textual numbers (e.g., 5 lakh → 500000)
- Normalize Interest\_Rate: remove % and convert numeric
- Fix invalid dates or replace with null
- Replace unrealistic values (Age < 18 or > 100)
- Create final cleaned table 'Loans\_Cleaned'

### Data Modeling (Power BI):

- Create Date table (Year, Quarter, Month, Week, IsWorkingDay)
- Use star schema: Loans\_Cleaned as fact, dimensions: Customer, Branch, LoanType, Date
- Define relationships (Loan → Branch, Customer, Date)
- Mark Date Table and configure data categories (State as Geography)
- Create Measures table for DAX formulas
- Build Year → Quarter → Month hierarchy for time navigation

## 4. ADVANCED POWER BI CONCEPTS & IMPLEMENTATION NOTES

- Dynamic Titles using DAX: 'Loan Performance for ' & COALESCE(SELECTEDVALUE(State[State\_Name]), 'All States')
- Tooltip Pages for Customer/Branch details

- Bookmarks & Buttons for preset dashboard views
- Conditional Formatting via DAX (Credit Score < 600 → Red)
- Smart Narrative Visual for auto-generated insights
- Row-Level Security (RLS) for branch-level access

## 5. DELIVERABLES & EXPECTED OUTCOME

### Deliverables:

- Power BI (.pbix) file with all dashboards and DAX measures
- Cleaned Excel file (Loans\_Cleaned.xlsx)
- Project document (this PDF) summarizing key logic
- User guide (1–2 pages) explaining slicers, bookmarks, and drillthrough

### Expected Outcome:

- Professional interactive Power BI report for HR/client review
- Demonstration of strong data cleaning and modeling skills
- Advanced DAX and visualization storytelling
- Operational insight on data quality and loan performance

## 6. QUICK REFERENCE — IMPORTANT DAX & Power Query Snippets

```
Approval % =
DIVIDE(
    CALCULATE(COUNTROWS(Loans_Cleaned), Loans_Cleaned[Approval_Status] = "Approved"),
    COUNTROWS(Loans_Cleaned)
)

Default Rate =
DIVIDE(
    CALCULATE(COUNTROWS(Loans_Cleaned), Loans_Cleaned[Default_Flag] = "Yes"),
    COUNTROWS(Loans_Cleaned)
)

Remove commas:
= Table.TransformColumns(Source, {{ "Loan_Amount", each Text.Replace(_, ",", ""), type text}})

Convert "5 lakh":
= Table.ReplaceValue("#PreviousStep", "5 lakh", "500000", Replacer.ReplaceText, {"Annual_Income"})
```

## 7. NOTES FOR HR/REVIEWERS

This project demonstrates the end-to-end process of building a production-ready Power BI solution: from raw Excel data cleaning, through robust data modelling and DAX-driven measures, to polished interactive dashboards that deliver actionable business insights for SBI's loan portfolio.

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**Project file:** SBI\_Loan\_Project\_PowerBI\_Dashboard\_Requirements.pdf