

# Case Study: Loan Performance & Lending Insights

## 1. Introduction

The financial sector is heavily reliant on data-driven decision-making to evaluate lending performance, minimize risks, and ensure sustainable growth. This case study focuses on the analysis of loan applications, funded amounts, repayments, and borrower profiles. By defining key performance indicators (KPIs) and visual analytics, the study provides insights into loan quality, repayment patterns, and borrower characteristics that influence lending outcomes.

## 2. Problem Statement

Banks and financial institutions manage large volumes of loan applications every month. However, decision-makers often face challenges such as: - Identifying patterns in loan disbursements and repayments. - Distinguishing between good loans (profitable, reliable borrowers) and bad loans (risky, default-prone borrowers). - Understanding how borrower attributes such as region, employment length, and loan purpose affect loan quality. - Tracking cash flow health through repayment monitoring. The case aims to address these issues by developing KPI-driven dashboards and analytics for effective monitoring.

## 3. Business Requirements & KPIs

### BRD 1: Summary Metrics

Key indicators identified include: 1. Total Loan Applications – Count of applications over a defined period, along with Month-to-Date (MTD) applications. 2. Total Funded Amount – The overall value of loans disbursed and MTD values. 3. Total Amount Received – The repayments collected from borrowers, including MTD values. 4. Average Interest Rate – The mean interest charged across loans, showing portfolio cost. 5. Average Debt-to-Income Ratio (DTI) – A measure of borrower financial health, averaged across all loans. Good vs Bad Loan Segmentation: Good Loans – Application %, Number of Applications, Funded Amount, Total Received. Bad Loans – Application %, Number of Applications, Funded Amount, Total Received.

### BRD 2: Visual Analytics Overview

The study proposes the following dashboards and charts: 1. Monthly Trends by Issue Date (Line/Area Chart). 2. Regional Analysis by State (Bar Chart). 3. Loan Term Analysis (Donut Chart). 4. Employment Length Analysis (Bar Chart). 5. Loan Purpose Breakdown (Bar Chart). 6. Home Ownership Analysis (Tree/Heat Map).

## 4. Analytical Approach

- Data Extraction & Cleaning: Loan application records, repayment logs, and borrower demographics are collected. - KPI Computation: Metrics such as loan application counts, funded amounts, repayments, and ratios are derived. - Segmentation: Loans are classified into Good and Bad categories based on repayment status. - Visualization & Dashboards: Charts and interactive dashboards are developed for real-time tracking and decision-making.

## **5. Expected Outcomes**

1. Improved Decision-Making: Clear visibility into loan performance trends and borrower profiles. 2. Risk Mitigation: Early identification of bad loans through data segmentation. 3. Operational Efficiency: Automated KPI tracking reduces manual effort. 4. Strategic Insights: Lending institutions gain deeper understanding of borrower behavior, allowing for tailored loan products.

## **6. Conclusion**

This case study demonstrates how data analytics in lending can transform raw loan data into actionable insights. By leveraging KPIs, good vs bad loan segmentation, and visual dashboards, financial institutions can reduce risk, enhance profitability, and optimize lending strategies.