Domain Context – Banking Loan Portfolio & Credit Risk

Bank loans are income-generating assets for financial institutions but simultaneously represent credit risk exposure.

Every lending decision directly impacts:

- Default probability
- Portfolio health
- Regulatory compliance
- Profitability margins

Understanding the loan lifecycle and risk parameters is essential to design meaningful KPIs and actionable analytics.

Loan Lifecycle & Data Generation

Each stage of the loan process generates structured financial data:

• Application data (income, employment, loan purpose)
• Credit bureau metrics (credit score, delinquencies, repayment behaviour)
• Underwriting decision variables (DTI ratio, risk grade)
• Disbursement records
• Ongoing repayment & status tracking

This structured data enables risk segmentation and performance monitoring.

Core Risk Evaluation Parameters

From a lending perspective, critical indicators include:

• Credit Score – borrower reliability
• Debt-to-Income (DTI) Ratio – repayment capacity
• Employment Stability – income consistency
• Loan Amount vs Income ratio
• Loan Status (Fully Paid / Charged Off / Current)
• Interest Rate risk pricing

These factors influence approval decisions, pricing strategy, and expected loss exposure.

Business Objectives of Loan Data Analysis

Loan portfolio analysis supports:

1 Risk Identification

Detect high-risk borrower segments and default-prone categories.

2 **Portfolio Monitoring**

Track performing vs non-performing loans across regions and segments.

3 **Profitability Optimization**

Evaluate interest income against default and charge-off rates.

4 **Strategic Lending Decisions**

Refine underwriting rules based on historical repayment behaviour.

5 **Exposure Control**

Identify concentration risk by state, purpose, or income group.

Analytical Relevance to This Project

This project applies domain understanding to:

• Segment loans into good vs bad categories
• Analyze state-wise and purpose-wise risk concentration
• Evaluate DTI and credit score impact on loan outcomes
• Identify patterns in charged-off loans
• Support data-driven credit decision-making

The objective is not only to visualize loan data but to extract insights that could influence underwriting policies and reduce portfolio risk.