Business Requirement Document (BRD)

Project Title : Loan Approval Analytics Project

Prepared by : Sakshi Bagal
Date : 5/12/2025

---

1. Project Overview

This project focuses on analyzing historical loan application data to understand **loan approval patterns** and support better lending decisions. The analysis uses Exploratory Data Analysis (EDA) to generate clear, actionable insights for business stakeholders.

---

2. Business Objectives & Goals

Objectives: - Understand factors influencing loan approval and rejection - Identify high-risk and low-risk applicant profiles - Improve transparency in loan approval decisions

Goals: - Support data-driven lending policies - Reduce credit risk and defaults - Improve approval efficiency and customer targeting

---

3. Domain Knowledge (Banking & Finance)

Loan approval decisions are typically influenced by: - Applicant income and employment stability - Credit score and repayment history - Loan amount and loan purpose

Higher income and credit scores generally indicate **lower risk**, while higher loan amounts may increase **default probability**.

---

4. Data Description

The dataset contains historical loan application records with: - Numerical fields: income, credit score, loan amount - Categorical fields: loan intent, occupation status - Target variable: loan status (Approved / Rejected)

The data is structured and anonymized.

---

5. Functional Requirements

a) Data Preprocessing

- Load and inspect the loan approval dataset
- Handle missing or inconsistent values

- Convert data types where required
- Create derived fields such as Approval Status (Approved / Rejected)
- Ensure data is ready for analysis and visualization

b) Exploratory Data Analysis (EDA)

The analysis should answer the following business questions:

~Loan Characteristics

1. What is the overall loan approval vs rejection rate?
2. How does credit score influence approval decisions?

~Customer Profile Insights

3. How customers Age affects the approval decision?
4. How does occupation / employment status affect loan approval?
5. Do higher income customers get approved more?
6. Which age group applies for most loans?
7. How many customers have defaults on file = Yes?

~Loan Intent & purpose

8. What % of loans get approved for each loan intent?
9. What is average debt to income ratio for approved loans?

~Product & interest Behavior

10. Product Type Distribution by occupation status of customers
11. Which loan products have the highest interest rate?
12. overall loan approval rate by age group and occupation status.
13. What relationships exist between income, credit score, loan amount, and loan status?

---

7. Tools & Technologies Used

- Python
- Pandas, NumPy
- Matplotlib, Seaborn
- Jupyter Notebook

---

8. Deliverables

- EDA notebook
- Visual analysis charts (bar plots, box plots, pair plots)
- Summary of key findings and business insights

---

9. Expected Business Impact

- Improved loan approval accuracy
- Better risk assessment
- Data-backed decision-making for lending teams