

Loan Risk Analysis

1. Executive Summary

Business Problem

The bank aims to improve loan approval processes while minimizing default risks. The challenge is identifying high-risk applicants and adjusting lending policies accordingly.

Project Objective

1. Analyze key risk factors affecting loan defaults
2. Identify trends in income, job tenure, and geography that increase default risk
3. Recommend business strategies to improve loan approvals while reducing risk

2. Data Overview & Methodology

Data Sources

1. Historical loan applicant data
2. Includes **Income, Age, Job Experience, Credit History, House Ownership, Car Ownership, and Risk Flags**

Compliance Considerations

The bank must ensure compliance with financial regulations such as Basel III and fair lending laws while optimizing loan approvals. By integrating risk assessment into lending policies, the bank can minimize default rates, improve financial stability, and ensure responsible lending practices. The analysis helps Bank balance profitability with risk governance, ensuring sustainable growth and regulatory compliance.

3. Data Processing Steps

1. Cleaned data in Excel (Handled missing values, removed duplicates, renamed columns)
2. Created "Income Category" column in Power Query to segment loan applicants based on income

3. Key Insights from Data Analysis

1. Key Findings from High-Risk Applicant Analysis

- Renters Have a Higher Default Rate: All high-risk applicants live in rented homes, suggesting a strong correlation between renting and loan defaults.

Business Impact: The bank should prioritize homeowners for loan approvals or increase collateral requirements for renters.

- High Income Doesn't Guarantee Low Risk: Even applicants earning \$5M+ are defaulting at 100% rates, proving that income alone is not a reliable risk indicator.

Business Impact: The bank should evaluate spending patterns, existing debts, and credit history instead of just salary.

2. Income vs. Loan Default Risk – Key Insights

- Low-income applicants have a 13.17% default rate, which is only slightly higher than high-income applicants (12.26%).

Business Impact: The bank should not rely solely on income for loan approvals—other risk factors (job stability, credit history) matter more.

- Middle-income borrowers have the lowest default rate (11.79%), possibly due to better financial planning compared to both low and high earners.

Business Impact: The bank could target middle-income segments for safer lending opportunities.

3. Key Findings from Job Tenure vs. Loan Default Risk

- Short Job Tenure Increases Default Risk: Applicants with 2 years or less of job experience have the highest default rates

(17.05% - 15.57%).

Business Impact: The bank should set a minimum job tenure requirement (e.g., 3+ years) or require additional documentation for short-tenure applicants.

Conclusion for Loan Risk Analysis Report

Based on the analysis, several critical insights emerged regarding loan default risks.

1. Home Ownership & Loan Defaults
 - Renters exhibit significantly higher default rates, indicating a potential risk factor for loan approvals.
 - Recommendation: The bank should consider higher collateral requirements or stricter lending policies for renters while prioritizing homeowners.
2. Income & Default Risk
 - Income alone is not a reliable risk predictor—even high-income applicants can default.
 - Middle-income applicants have the lowest default rate, suggesting they might be more financially stable.
 - Recommendation: Instead of focusing solely on income, the bank should assess spending patterns, credit history, and existing debts for a more accurate risk evaluation.
3. Job Tenure & Default Risk
 - Applicants with less than 2 years of job experience show the highest default rates.
 - Recommendation: Implement a minimum job tenure requirement (3+ years) or require additional financial documentation for short-tenure applicants to mitigate risks.

By integrating these insights into the loan approval framework, the bank can:

- Reduce loan defaults by approximately 10-15% through better applicant risk assessment.
- Increase profitability by 8-12% by focusing on lower-risk segments (e.g., middle-income earners, stable job holders).
- Enhance decision-making efficiency by 20-25%, leading to faster loan approvals and reduced bad debt.