

LENDING CASE STUDY

Introduction

The case study's objective is to demonstrate the practical application of Exploratory Data Analysis (EDA) in a real business context. Alongside implementing learned EDA techniques, participants will gain insight into risk analytics within the banking and financial services sector. The study emphasizes understanding how data is leveraged to mitigate the risk of financial loss when lending to customers. Overall, it aims to provide hands-on experience in using EDA for effective risk management in a business setting.

Business Understanding

In a consumer finance company specializing in lending to urban customers, the decision-making process for loan approval involves managing two types of risks:

Risk of Lost Business:

If the applicant is likely to repay the loan, rejecting the application results in a missed business opportunity for the company. This risk involves potential loss of revenue and customer engagement.

Risk of Default:

On the other hand, if the applicant is not likely to repay the loan and is prone to default, approving the loan poses a financial risk for the company. This risk involves potential losses due to non-repayment by the borrower.

Balancing these two risks is crucial for the company to make sound lending decisions, ensuring both business growth and financial stability. Effective risk assessment and analysis of applicant profiles are essential components of this decision-making process.

Scenarios

When a person applies for a loan, the company can make two types of decisions:

Loan Accepted:

- Fully Paid: The applicant has successfully repaid both the principal and interest on the loan.
- Current: The applicant is currently in the process of repaying the loan, and the tenure is not yet completed. These candidates are not considered as 'defaulted.'
- Charged-off: The applicant has failed to pay the instalments for an extended period, resulting in a default on the loan.

Loan Rejected:

The company rejects the loan application due to various reasons, such as not meeting their requirements. As a result, there is no transactional history available for these rejected applicants in the company's dataset. The company evaluates loan applications based on these outcomes, managing the different scenarios for accepted loans and acknowledging the absence of transactional history for rejected applicants in the dataset.

Objective

The company, identified as the largest online loan marketplace, offers personal loans, business loans, and medical procedure financing through a user-friendly online platform with lower interest rates. However, like other lending companies, dealing with loans to "risky" applicants poses a significant financial risk, termed as credit loss. Credit loss refers to the money lost when borrowers default on their payments. In this context, customers labeled as 'charged-off' are considered defaulters.

The case study's primary objective is to employ Exploratory Data Analysis (EDA) to identify risky loan applicants. By understanding the driving factors or variables strongly indicative of loan default, the company aims to reduce credit loss. This knowledge can be utilized for portfolio management and risk assessment, enabling more informed decision-making in the lending process.

Conclusion

The above analysis with respect to the charged off loans.

Loan Term Impact: Loans with shorter terms have a lower likelihood of being charged off.

Renters' Advantage: Notably, individuals with a home ownership status of 'RENT' show a decreased likelihood of repaying the loan.

High-Risk Loan Purposes: Loans designated for small business and renewable energy purposes pose a significantly high risk.

Surprise Verification Status: It is surprising that individuals without a verification status demonstrate a higher probability of repaying the loan.

Risk by Loan Grades: Loans classified under grades D, E, F, and G are identified as particularly risky.

Seasonal Impact: Loans issued in the latter part of the year (from July to December) exhibit a higher likelihood of being charged off.

Instalment Influence: As the installment amount of the loan increases, there is a greater likelihood of default.

High Loan Amount Risk: Loans exceeding \$15,000 are more likely to be charged off.

Interest Rate Impact: Charged off loans tend to have higher interest rates compared to fully paid loans.

dti Ratio Influence: Individuals with a lower debt-to-income (dti) ratio have a higher likelihood of successfully repaying the loan.

