Loan Application Risk Assessment Report

Application ID: APP-20250315-3885

Date: October 26, 2023

Executive Summary

This report assesses the risk associated with loan application APP-20250315-3885 submitted by Scott T. Welch. The predictive model categorizes the application as **Unstable**, with a 55.61% probability. While the probability of a secure outcome (37.31%) is significant, the elevated unstable risk necessitates a thorough review of the applicant's profile and financial behavior.

Applicant Profile Summary

Feature	Value
Application Date	2025-03-15
First Name	Scott
Last Name	Welch
Contact Number	9395590599
Email Address	brittany58@example.org
Civil Status	Married
Dependents	4
Address City	Steven Ville
Address Province	Benguet
Years of Stay	30
Residence Type	Rented
Employment Type	Unemployed
Gross Monthly Income (PHP)	43,355.79
Source of Funds	Salary
Loan Purpose	Business Expansion
Loan Amount Requested (PHP)	26,803.33
Loan Tenor (Months)	6

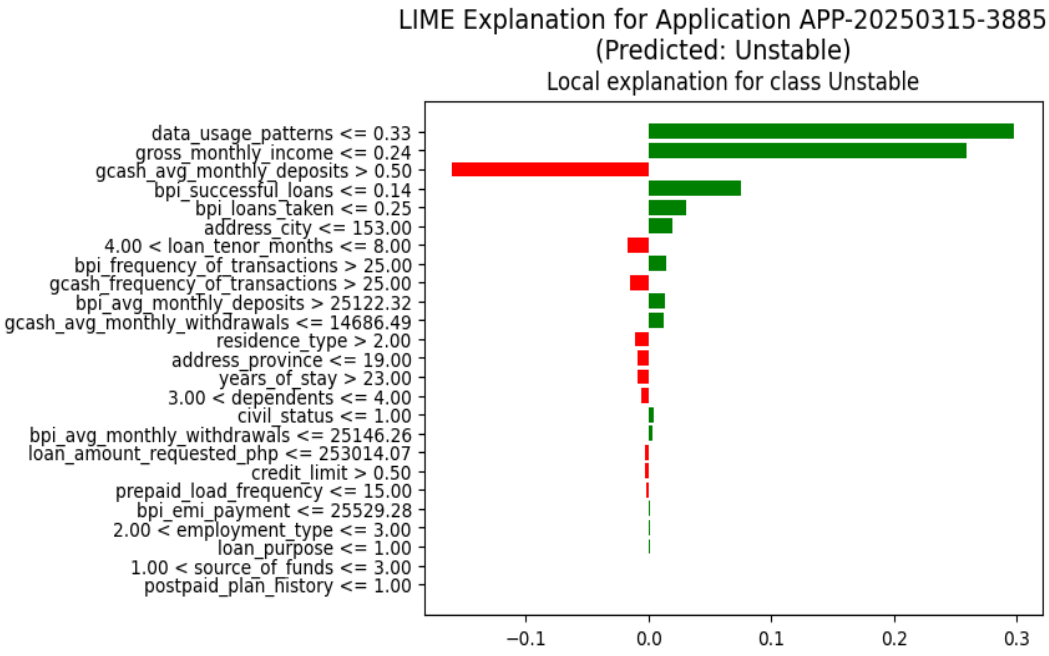
Financial Behavior Analysis

The applicant's financial behavior presents a mixed picture. While he reports a gross monthly income of PHP 43,355.79, his employment status as unemployed raises concerns about the sustainability of his income. His BPI account shows significant average monthly deposits (PHP 26,322.43) but very low withdrawals (PHP 34.17), suggesting a potentially inconsistent income stream or the use of the account primarily for receiving funds rather than regular transactions. He has one previous BPI loan with an EMI payment of PHP 10,940.45, but no successful loan history. The high frequency of prepaid load purchases (10 per month) along with a premium postpaid plan indicate potential discretionary spending. The lack of data for GCash transactions further limits our understanding of his overall financial behavior.

Key Feature Impacts & Visualizations

LIME Analysis

LIME Explanation

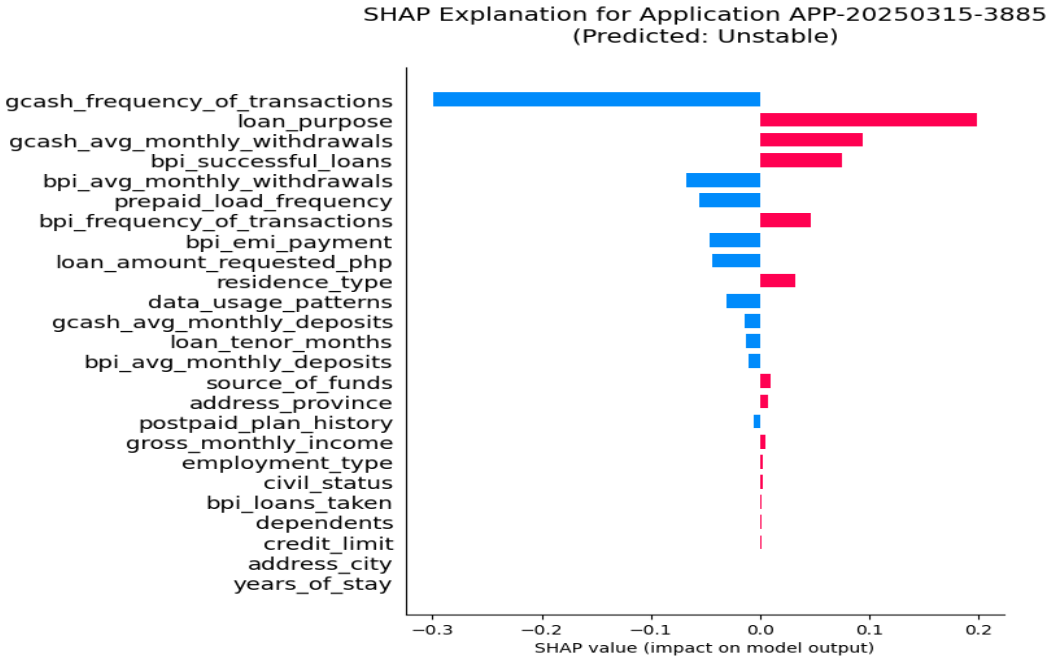


Caption: LIME explanation chart showing the relative contribution of features to the prediction of the loan application's risk category. Positive values indicate factors increasing the Unstable risk, while negative values indicate factors decreasing it.

The LIME visualization highlights several key features influencing the Unstable prediction. Data usage patterns (positive contribution) indicates the model considers low data usage to increase risk. Gross monthly income (positive contribution) surprisingly contributes positively, suggesting the model might be sensitive to discrepancies between reported income and other financial indicators. The negative contribution of gcash_avg_monthly_deposits suggests a lack of transparency on this data point increases the risk. BPI successful loans' positive impact is expected given the applicant has none. Other features show less significant influences, both positive and negative.

SHAP Analysis

SHAP Explanation

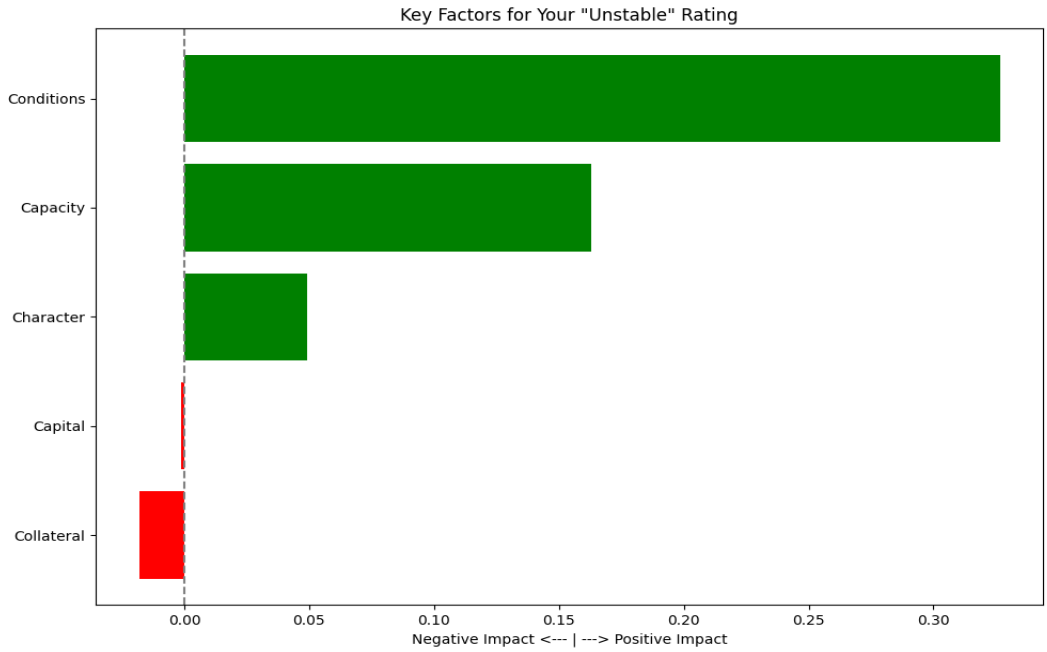


Caption: SHAP summary plot showcasing feature importance and the direction of their influence on the prediction of an unstable risk category.

The SHAP analysis provides a more comprehensive view of feature importance. It confirms the importance of data usage patterns, gcash frequency of transactions, and loan purpose in driving the unstable prediction. The negative impact of BPI average monthly withdrawals is noteworthy, suggesting the model may flag low transaction activity as risky. The positive contribution of BPI successful loans further stresses the risk from the lack of successful loans in the applicant's history. The visual representation helps to understand the magnitude and direction of influence for each feature.

Aggregated 5C Contributions

Aggregated 5C Plot



Caption: Aggregated 5C's contribution, showing the relative influence of Character, Capacity, Capital, Collateral, and Conditions on the Unstable risk prediction.

The aggregated 5C analysis indicates that Conditions (0.327) and Capacity (0.163) are the strongest positive contributors to the Unstable risk assessment. Character contributes moderately positively (0.049) while Capital and Collateral show slightly negative influences, which is unexpected given no collateral was provided.

Risk Assessment and Recommendations

Risk Factors Summary: The primary risk factors are the applicant's unemployed status despite a relatively high reported income, inconsistent financial behavior evidenced by low BPI withdrawals, the lack of GCash transaction data, and the absence of successful loan history. The model flags the low data usage patterns as contributing towards the higher instability prediction. The stated loan purpose for business expansion with limited information regarding the business plan increases the uncertainty.

Recommendations:

1. **Verify Income Source:** Conduct a thorough verification of the applicant's income source and stability. Request additional documentation supporting the claimed income of PHP 43,355.79, given the unemployment status.
2. **Analyze GCash Transactions:** Request access to the applicant's GCash transaction history to obtain a more comprehensive understanding of their financial behavior and spending patterns.
3. **Assess Business Plan:** Request a detailed business plan for the intended business expansion to evaluate its feasibility and potential for repayment.
4. **Consider Loan Amount Reduction:** Given the uncertainties, consider reducing the loan amount requested to mitigate the risk.
5. **Increase Interest Rate or Shorter Tenor:** Adjust the interest rate or shorten the loan tenor to compensate for the elevated risk profile.

Overall Assessment: This loan application presents a significant level of risk due to the conflicting information provided by the applicant and the model's prediction of an unstable risk category. Careful consideration of the recommendations above is crucial before approving the loan. Further investigation is needed to better understand

the applicant's financial situation and the viability of their business plan. Without further information, approval should be cautiously considered.