Probability of Default

A Mock Project demonstrating model development and insights

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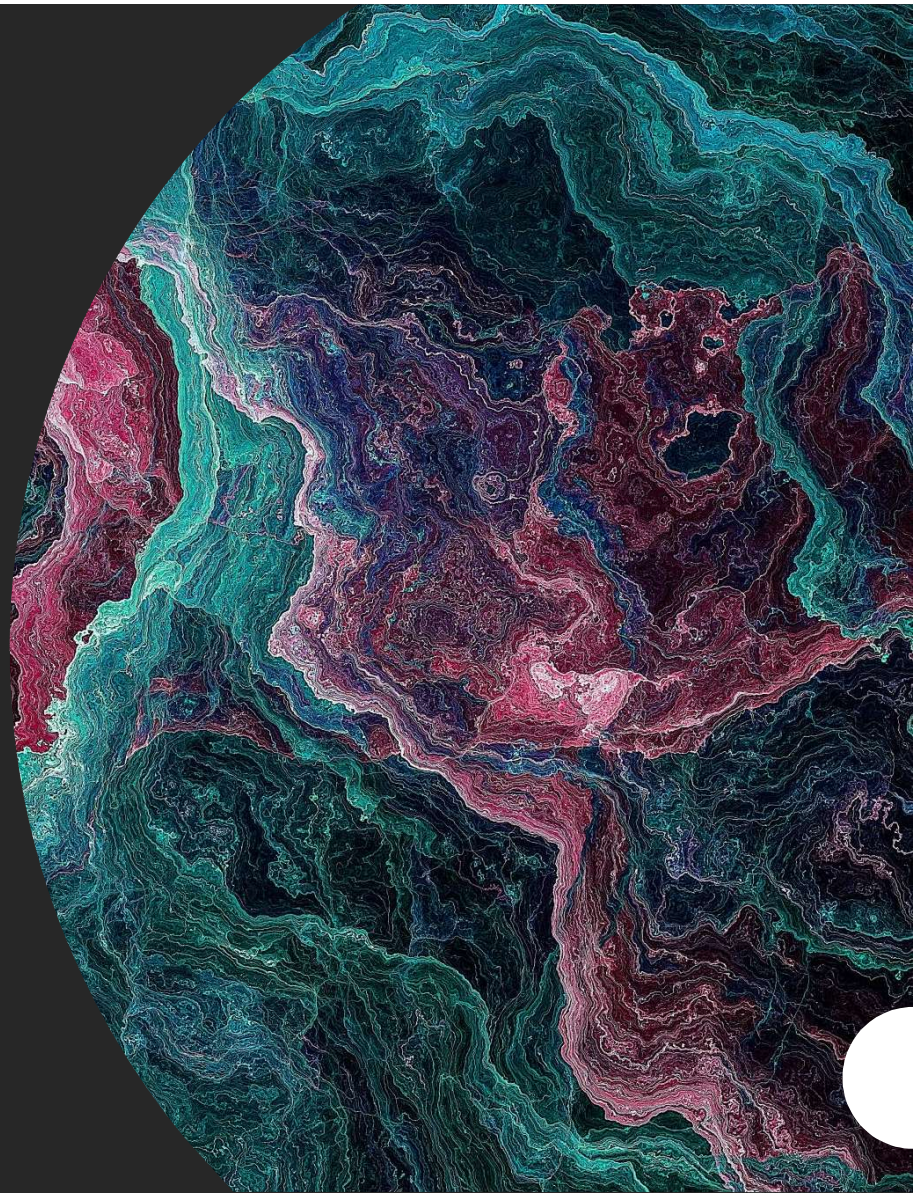


Objective: The primary purpose of the Probability of Default model is to quantitatively assess the likelihood that a borrower will default on a loan within a specified time frame.

Risk Assessment: to differentiate between high-risk and low-risk customers, helping to reduce potential losses

Credit Policy Development: assist in setting appropriate interest rates based on borrower's predicted default risk

Impact on Lending Decisions: by focusing resources on higher-potential borrowers while minimizing exposure to those deemed risky

Regulatory Compliance: ensure compliance with regulatory standards by providing quantifiable metrics that regulators can review

Features used in Model

Income – indicates financial stability, higher income reduces default risk

Credit Score – reflects past credit behaviour; essential for predicting repayment likelihood

Loan Amount – needs to align with borrower capacity; larger loans may increase borrower risk

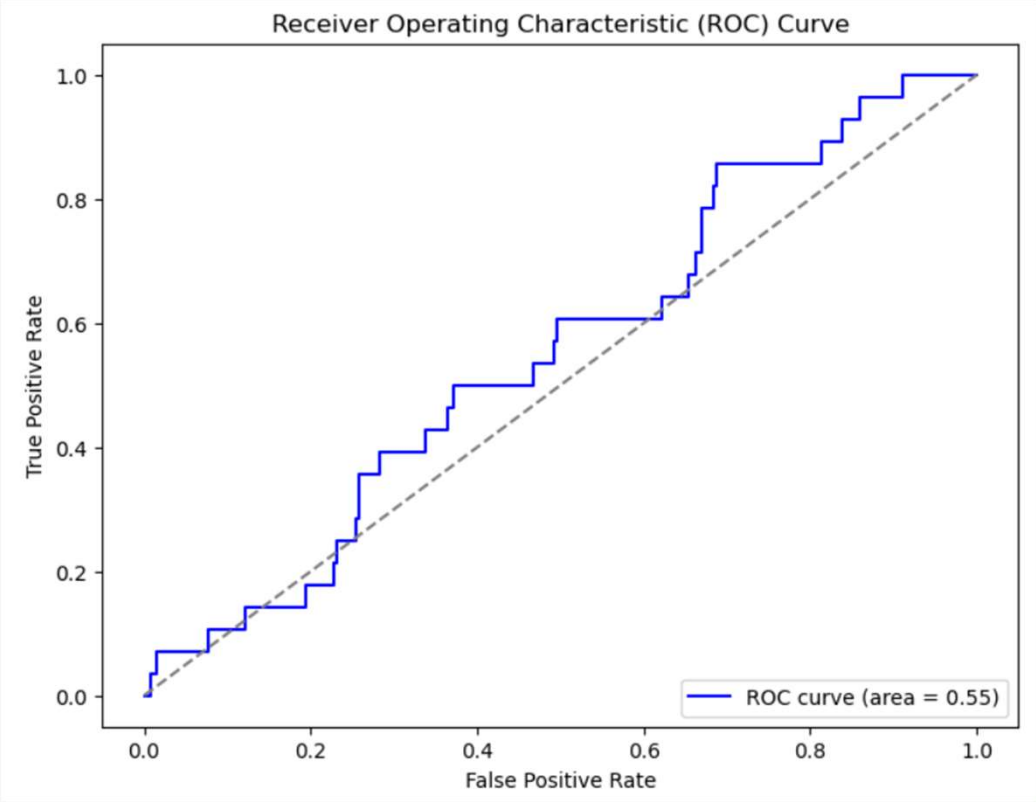
Employment Years – longer employment suggests stability; linked to better repayment performance

Payment History – Strong predictor of future behaviour; past on-time payments correlate with lower default risk

Credit Utilization – higher utilization indicates potential distress; lower rates improve repayment likelihood

Account Age – older accounts demonstrate credit management experience; associated with reduced risk

Model Performance



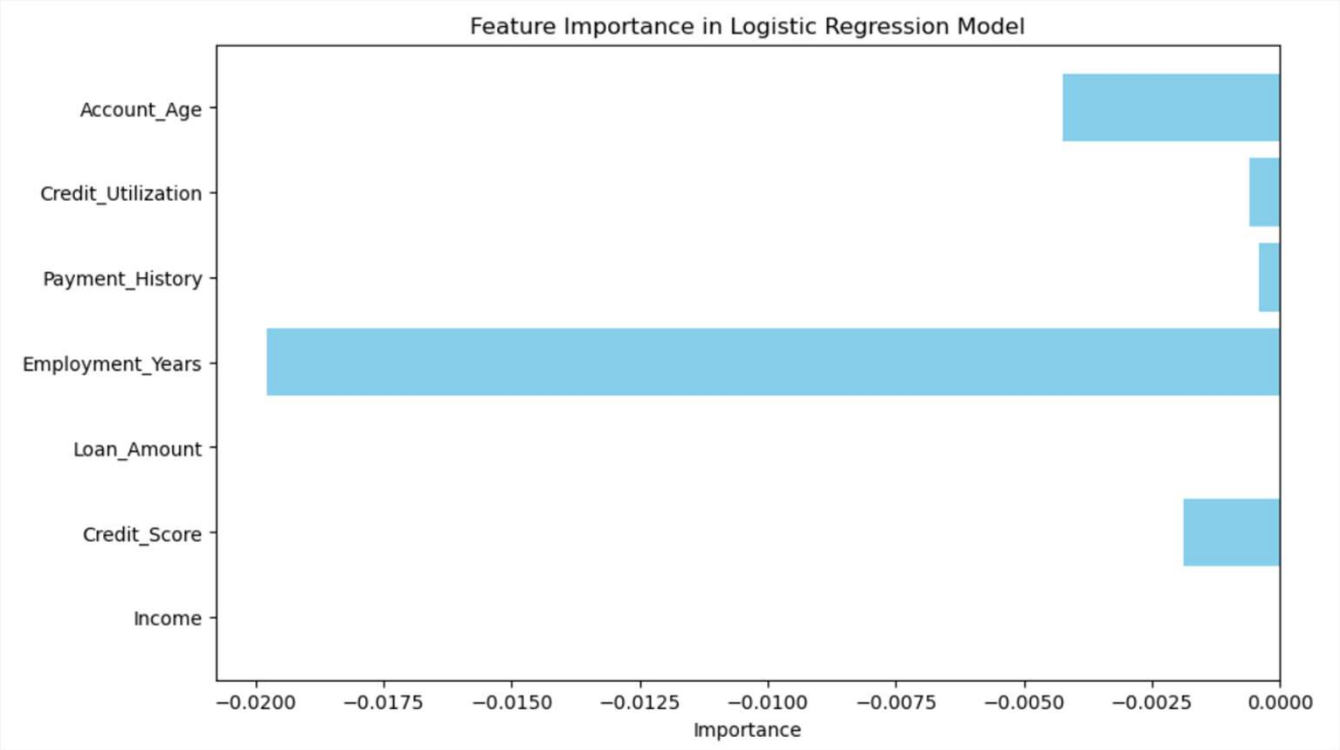
AUC Score: 0.567 (Scaled)

Measures model's ability to identify borrowers that default

Higher values (closer to 1) indicate better performance

ROC Curve: demonstrates the trade-off between catching defaults (sensitivity) and avoiding false alarms (specificity), helping assess model performance

Key Features and Business Implications



Feature Importance:

Employment Years and Account Age have the highest influence on default predictions.

Business Implications:

- Focus on customers with fewer employment years to mitigate default risk
- Tailor lending strategies for customers with longer account histories

Summary of Findings:

The model effectively identifies key factors influencing default risk, with Employment Years and Account Age emerging as top predictors. Model performance, while promising, highlights areas for improvement.

Recommendations:

- Refine the model by enhancing feature engineering and testing more advanced algorithms
- Conduct further analysis on underperforming features to improve predictive accuracy