



BANK CUSTOMER CHURN

EMPOWERING YOUR FINANCIAL FUTURE

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WHY?

- Overview

- Customer churn leads to revenue loss, higher costs, and weaker loyalty
- Banks often react too late – usually after customers have already left.
- Predicting churn allows timely and targeted retention efforts

Mission

1. Identify key drivers of customer churn.
2. Build a machine learning model to predict high-risk customers.
3. Generate actionable insights for early intervention strategies

DATASET Offered



- Dataset of 10,000 bank customers.
- Target variable: Exited (churned or not)
- Key features: Age, Balance, Credit Score, Tenure, Geography, Gender, etc.
- Balanced representation across France, Spain, and Germany.

EXPLORATORY DATA ANALYSIS (EDA)

- Churn rate is approximately 20%.
- Churn is significantly higher among customers aged 45+
- Inactive members are over 3 times more likely to churn
- German customers showed highest churn rates (~25%)

MODEL DEVELOPMENT

- DATA PREPROCESSING: LABEL ENCODING, FEATURE SCALING.
- TRAIN-TEST SPLIT: 80/20 RATIO
- MODELS TESTED: LOGISTIC REGRESSION, RANDOM FOREST
- RANDOM FOREST ACHIEVED BEST PERFORMANCE (HIGHEST ACCURACY AND AUC).

MODEL PERFORMANCE

- EVALUATION METRICS: ACCURACY, PRECISION, RECALL, F1 SCORE, AUC.",
- RANDOM FOREST RESULTS:
- ACCURACY: 0.857889
- AUC: 0.846874
- PRECISION & RECALL BALANCED, SUITABLE FOR IMBALANCED DATA.

FEATURE IMPORTANCE

Top predictors identified by Random Forest:

- Age
- IsActiveMember
- Balance
- Geography (Germany highly correlated with churn)

Streamlit Dashboard

 Streamlit App:
streamlit.app/ChurnPredictor

Recommendations

- Implement targeted retention for customers aged 45+
- Encourage engagement — reward active members.
- Offer personalized outreach to German customers.
- Monitor balance thresholds for potential churn indicators.

Final Thoughts

- Churn prediction models offer powerful customer insights.
- Actionable recommendations can improve retention and profitability.
- Future work: incorporate transactional history, deploy model into CRM system.
- Thank you! Questions welcome