# Review of: "Bank Customer Churn Prediction Using SMOTE: A Comparative Analysis"

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Potential competing interests: No potential competing interests to declare.

This work discusses the use of the Synthetic Minority Over Sampling Technique (SMOTE) and Genetic Algorithm (GA) in predicting bank customer churn. SMOTE helps address data imbalance by oversampling the minority class, improving model performance. GA is employed to select informative features from the dataset, enhancing the accuracy of churn prediction models. Various classification algorithms such as Random Forest, KNN, AdaBoost, and Artificial Neural Networks (ANN) are evaluated, with ANN showing consistent performance on both training and testing datasets. Results indicate that combining Random Forest with oversampling yields superior outcomes, emphasizing the importance of addressing data imbalance for accurate churn prediction. The following recommendations could be made to further enhance this article, leading to more accurate and actionable insights for businesses in customer retention strategies.

- Conducting a detailed analysis of feature importance could provide valuable insights into the factors influencing customer churn.
- The study focuses on model performance metrics like accuracy and precision but lacks discussion on the interpretability of the models.
- The document highlights the accuracy of the models on the testing dataset but does not address the long-term performance or stability of the models over time.
- While the study compares different classification algorithms, it could benefit from comparing the proposed SMOTE-GA approach with more advanced techniques in handling imbalanced data, such as ensemble methods or deep learning models (GBM, RNN, CNN, etc.). This comparison can highlight the strengths and limitations of different approaches and guide researchers in selecting the most effective method for churn prediction.