

Research on classification techniques and their application to bank customer classification by Dr. Nong Thi Hoa - Dr. Nguyen Van Tao

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Abstract: This study investigates classification techniques and their application to customer segmentation within the banking sector. As financial institutions increasingly rely on data-driven strategies, accurately categorizing customers based on behavioral and transactional data is critical for targeted marketing, risk assessment, and service personalization. The research systematically evaluates several supervised learning algorithms, including Decision Trees, Support Vector Machines, and ensemble methods such as Random Forest and Gradient Boosting. A comprehensive experimental framework is developed using a real-world dataset from a Vietnamese commercial bank, encompassing demographic profiles, transaction history, and account activity. Model performance is assessed through metrics such as accuracy, precision, recall, and F1-score, with particular attention to handling class imbalance and feature selection. The findings demonstrate that ensemble methods, particularly Random Forest, achieve superior predictive performance and robustness compared to traditional classifiers. Furthermore, the study proposes a practical classification model tailored to banking customer profiles, offering actionable insights for improving customer relationship management and operational efficiency. This research contributes to the growing field of financial data analytics by providing a validated methodology for effective customer segmentation.

Keywords: customer segmentation, customer classification, banking, machine learning techniques