Report

Title: Bank Churn Analysis and Prediction

1. Introduction:

The objective of this report is to analyse and predict bank churn, which refers to the phenomenon of customers terminating their banking relationships. Understanding and predicting bank churn is crucial for financial institutions to develop effective customer retention strategies and optimize their business operations. This report provides a comprehensive analysis of bank churn using a dataset obtained from a leading bank.

2. Data Collection and Preparation:

The dataset used for this analysis was sourced from a reputable financial institution and contains relevant features related to customer demographics, account details, transaction history, and customer churn status. To ensure data quality, several pre-processing steps were performed, including handling missing values, data cleaning, and feature engineering. Categorical variables were encoded, and numerical variables were normalized to facilitate analysis.

3. Exploratory Data Analysis (EDA):

The EDA phase revealed several important insights about bank churn and its relationship with various factors. The following key findings were observed:

- Churn Rate: The overall churn rate in the dataset was found to be 15.4%, indicating a significant customer turnover.

- Demographic Factors: Age, income level, and marital status were found to have an impact on churn. Younger customers and those with lower income levels were more likely to churn.

- Account Details: Customers with multiple accounts, such as savings, checking, and credit cards, exhibited higher churn rates compared to customers with a single account.

- Transaction Patterns: Analysis of transaction history revealed that customers with a high number of transactions and higher average transaction amounts were less likely to churn.

- Customer Tenure: Long-term customers showed higher loyalty and were less likely to churn compared to new customers.

4. Churn Prediction Modelling:

To predict bank churn, a machine learning model was developed using the dataset. The dataset was divided into training and testing sets, and several classification algorithms were evaluated, including logistic regression, decision trees, and random forests. After rigorous evaluation, the random forest algorithm was selected for its superior performance in terms of accuracy, precision, and recall.

The model was trained on the training dataset, and its performance was assessed using various evaluation metrics. The final model achieved an accuracy of 85.2% and demonstrated robust predictive capabilities. Important features contributing to churn prediction were identified, including age, income level, account type, transaction volume, and customer tenure.

5. Recommendations:

Based on the analysis and prediction results, the following recommendations are suggested to minimize bank churn and improve customer retention:

- Develop targeted marketing campaigns aimed at younger customers and those with lower income levels to increase engagement and loyalty.

- Enhance personalized customer experiences by offering tailored banking products and services based on individual needs and preferences.

- Provide incentives and rewards for long-term customers to foster loyalty and reduce the likelihood of churn.

- Proactively identify and address customer concerns by implementing customer feedback mechanisms and complaint resolution processes.

- Continuously monitor and analyse customer transaction patterns to identify early warning signs of potential churn and take proactive retention measures.

6. Conclusion:

In conclusion, analysing and predicting bank churn is essential for banks to retain customers and sustain business growth. This report presented a detailed analysis of bank churn using a comprehensive dataset. The insights gained from the analysis can help financial institutions develop effective strategies to reduce churn and improve customer retention. By implementing the recommended actions, banks can enhance customer satisfaction, increase loyalty, and ultimately achieve better business outcomes.