

## **Project Report: Analysis of Credit Card Customer Attrition and Retention Strategies**

### **Introduction**

**Overview:** This project aims to analyze the factors contributing to credit card customer attrition and develop predictive models to identify customers at risk of churning. Additionally, effective marketing strategies will be proposed to improve customer retention.

**Dataset:** The data used for this analysis was downloaded from the Kaggle website, which provides information about credit card customers, including demographics, card usage patterns, and attrition status.

### **Exploratory Data Analysis**

**Data Cleaning:** Duplicate rows and null values were checked and addressed, ensuring a clean dataset for analysis.

**Dataset Structure:** The structure of the dataset was examined to understand the available variables and their types.

**Descriptive Statistics:** Basic statistical measures were calculated to gain insights into the distribution and summary of the data.

**Visualizations:** Various visualizations, such as histograms, bar charts, and pie charts, were created using Power BI to explore the relationships and patterns within the data.

### **Data Preprocessing**

**Target Variable Conversion:** The target variable representing customer attrition was converted into binary format (0s and 1s) to facilitate prediction modelling.

### **Feature Selection**

**Factor Analysis of Mixed Data (FAMD):** FAMD technique was employed to identify relevant variables that have a significant impact on customer attrition. This step helps in reducing dimensionality and selecting the most influential features.

## Predictive Modelling

**Neural Network Development:** A neural network model was chosen to predict customer churn based on the selected features. However, due to the imbalanced nature of the dataset with only 16% attrited customers, the neural network might not have achieved satisfactory results.

## Retention Strategies

**Customer Segmentation:** Based on the analysis, customers can be segmented into different groups with similar characteristics and preferences. This segmentation can help tailor marketing strategies and retention efforts.

**Incentives and Rewards:** Implementing loyalty programs, personalized offers, and rewards can incentivize customers to continue using their credit cards.

**Family-centric Benefits:** Introduce family-oriented benefits, such as discounts on family outings, cashback on groceries or childcare expenses, or insurance coverage for dependents, to cater to their family needs and provide additional value.

**Transaction-based Rewards:** Implement a tiered rewards system that offers bonus points, cashback, or exclusive benefits for reaching certain transaction thresholds, incentivizing customers to increase their card usage.

**Anniversary Offers:** Recognize and celebrate their loyalty by providing exclusive anniversary offers, such as increased rewards, discounted annual fees, or bonus points, as a token of appreciation for their continued relationship.

**Upgrade Opportunities:** Offer opportunities for credit limit increases, access to premium card features, or enhanced benefits for customers who have been with the bank for an extended period, demonstrating recognition of their long-term commitment.

## Conclusion

**Summary:** Despite challenges with the imbalanced dataset, the analysis provided insights into factors related to credit card customer attrition. However, further research and experimentation with different modelling techniques are recommended to improve prediction accuracy.

**Recommendations:** Implementing the proposed retention strategies, such as customer segmentation, incentives, enhanced customer service, targeted communication, and feedback mechanisms, can contribute to minimizing customer attrition and increasing customer loyalty.

## Limitations

**Imbalanced Dataset:** The dataset's imbalance with a low percentage of attrited customers can impact the accuracy of the predictive model. Additional techniques, such as oversampling or under-sampling, could be explored to address this issue.

**External Factors:** The dataset may not capture external factors, such as economic conditions or competitor actions, which could influence customer attrition. Incorporating such variables could enhance the predictive power of the model.

## Future Work

**More Advanced Modelling Techniques:** Explore alternative modelling techniques, such as ensemble models (e.g., random forests, gradient boosting), to achieve better performance in predicting customer churn.

**Real-Time Monitoring:** Implement a system to monitor customer behaviour and trigger proactive retention actions based on predefined thresholds or patterns indicating potential attrition.