# CSE 338L - Applied Data science Lab

Maximizing Customer Retention in Consumer Credit Card Portfolios through Predictive Analysis

## Problem Statement:

The business manager of a consumer credit card portfolio is confronted with the critical challenge of customer attrition, commonly known as churn. Customer attrition not only results in loss of revenue but also impacts the overall health and growth potential of the portfolio. Understanding the underlying reasons for customer churn is imperative for devising effective retention strategies.

## Real-world Problem:

Customer attrition in the consumer credit card industry poses significant challenges to business managers. It represents a loss of potential revenue and market share, as well as the erosion of customer loyalty. Understanding the factors driving customer churn is essential for proactive intervention and retention efforts.

Several real-world factors contribute to customer attrition in the credit card industry:

Changing Customer Needs: Shifts in consumer preferences, financial circumstances, or lifestyle changes can lead to a decreased need for specific credit card services.

Competitive Offerings: Introduction of more attractive offerings or rewards programs by competitors may entice customers to switch their credit card provider.

Poor Customer Experience: Issues such as long wait times for customer service, difficulty in resolving disputes, or unsatisfactory user experiences with online platforms can drive customers away.

Financial Hardship: Economic downturns or personal financial difficulties may prompt customers to reassess their credit card usage and opt for alternatives or no credit at all.

Ineffective Communication: Lack of personalized communication or targeted marketing efforts may result in customers feeling undervalued or neglected, leading to attrition.

Proposed Solution:

The proposed solution involves leveraging data analytics and predictive modeling techniques to identify patterns and predictors of customer churn within the credit card portfolio. By analyzing historical data on customer behavior, demographics, transactional patterns, and interactions with the credit card company, predictive models can be developed to forecast which customers are most likely to churn in the future.

## Key Objectives:

Data Collection and Preprocessing: Gather comprehensive data on customer demographics, transaction history, credit card usage patterns, and customer interactions.

Exploratory Data Analysis (EDA): Explore the dataset to identify correlations, trends, and anomalies related to customer churn.

Feature Engineering: Derive meaningful features from the raw data to enhance the predictive power of the model.

Model Development: Build predictive models, such as logistic regression, decision trees, random forests, or neural networks, to forecast customer churn.

Model Evaluation: Assess the performance of the predictive models using appropriate metrics like accuracy, precision, recall, and F1-score.