

## Problem Description

XYZ Credit Union, a financial institution based in Latin America, has successfully marketed and sold individual banking products such as credit cards, deposit accounts, retirement accounts, and safe deposit boxes. However, the credit union faces a significant challenge in cross-selling; existing customers are typically purchasing only one product. This limitation in cross-selling indicates untapped potential for increasing customer engagement and revenue through the sale of additional products to the current customer base. XYZ Credit Union has enlisted the help of ABC Analytics to address this issue and improve their cross-selling capabilities.

## Business Understanding

### Objectives:

1. **Increase Cross-Selling:** Enhance the ability of XYZ Credit Union to sell multiple products to existing customers.
2. **Customer Segmentation:** Identify segments of customers who are most likely to purchase additional products.
3. **Personalized Marketing:** Develop strategies for personalized marketing and product recommendations based on customer data.
4. **Revenue Growth:** Increase overall revenue by improving product uptake per customer.

### Challenges:

1. **Data Integration:** Integrate data from various sources to create a comprehensive view of customer behavior and preferences.
2. **Predictive Modeling:** Develop predictive models to identify customers with high cross-sell potential.
3. **Customer Engagement:** Implement strategies to increase customer engagement and willingness to purchase additional products.
4. **Market Analysis:** Understand the market and customer needs to tailor the product offerings appropriately.

## Project Lifecycle (3 Weeks):

### Project Initiation (Days 1-2):

1. **Kick-off Meeting:** Conduct a kick-off meeting with XYZ Credit Union to understand detailed requirements.
2. **Define Project Scope and Objectives:** Clearly define the project scope, objectives, and deliverables.
3. **Develop Project Plan:** Create a detailed project plan with timelines and responsibilities.

### Data Collection and Preparation (Days 3-5):

1. **Collect Data:** Gather data from XYZ Credit Union's databases.
2. **Data Cleaning:** Clean and preprocess the data to ensure quality and consistency.
3. **Exploratory Data Analysis (EDA):** Perform EDA to understand data distributions and relationships.

### **Model Development (Days 6-10):**

1. Build Predictive Models: Develop models to identify customers with high cross-sell potential.
2. Validate Models: Use historical data to validate the accuracy and reliability of the models.
3. Refine Models: Adjust models based on validation results and feedback.

### **Strategy Development (Days 11-13):**

1. Develop Marketing Strategies: Create personalized marketing strategies based on model outputs.
2. Design Communication Plans: Plan how to communicate with the identified customer segments.
3. Implementation Plan: Prepare an implementation plan for deploying marketing strategies.

### **Implementation and Monitoring (Days 14-18):**

1. Implement Strategies: Roll out the marketing strategies and begin tracking performance.
2. Monitor KPIs: Monitor key performance indicators (KPIs) to assess effectiveness.
3. Adjust Strategies: Make necessary adjustments based on initial results and feedback.

### **Project Closure (Days 19-21):**

1. Present Final Results: Share the final results and recommendations with XYZ Credit Union.
2. Documentation and Training: Provide documentation and training for ongoing use of models and strategies.
3. Post-Implementation Review: Conduct a review to assess the overall success and gather lessons learned.

## **Data Intake Report**

### **Data Sources:**

#### **1. Customer Demographics:**

- **ncodpers:** Customer code
- **sexo:** Customer's sex
- **age:** Age
- **pais\_residencia:** Customer's country of residence

#### **2. Employment Information:**

- **ind\_empleado:** Employee index (A: active, B: ex-employed, F: filial, N: not employee, P: passive)
- **conyuemp:** Spouse index (1: spouse of an employee)

#### **3. Customer Relationship:**

- **fecha\_dato:** Data partitioning column
- **fecha\_alta:** The date the customer became the first holder of a contract in the bank
- **ind\_nuevo:** New customer index (1: customer registered in the last 6 months)
- **antiguedad:** Customer seniority (in months)

- **indrel:** Primary relationship indicator (1: first/primary, 99: primary customer during the month but not at the end)
- **ult\_fec\_cli\_1t:** Last date as primary customer (if not at the end of the month)
- **indrel\_1mes:** Customer type at the beginning of the month (1: primary customer, 2: co-owner, P: potential, 3: former primary, 4: former co-owner)
- **tiprel\_1mes:** Customer relation type at the beginning of the month (A: active, I: inactive, P: former customer, R: potential)
- **indresi:** Residence index (S: yes, N: no if the residence country is the same as the bank country)
- **indext:** Foreigner index (S: yes, N: no if the customer's birth country is different than the bank country)
- **canal\_entrada:** Channel used by the customer to join
- **indfall:** Deceased index (N: no, S: yes)
- **tipodom:** Address type (1: primary address)
- **cod\_prov:** Province code (customer's address)
- **nomprov:** Province name
- **ind\_actividad\_cliente:** Activity index (1: active customer, 0: inactive customer)
- **renta:** Gross income of the household
- **segmento:** Segmentation (01: VIP, 02: Individuals, 03: College graduated)

#### 4. Product Usage:

- **ind\_ahor\_fin\_ult1:** Saving Account
- **ind\_aval\_fin\_ult1:** Guarantees
- **ind\_cco\_fin\_ult1:** Current Accounts
- **ind\_cder\_fin\_ult1:** Derivada Account
- **ind\_cno\_fin\_ult1:** Payroll Account
- **ind\_ctju\_fin\_ult1:** Junior Account
- **ind\_ctma\_fin\_ult1:** Más particular Account
- **ind\_ctop\_fin\_ult1:** Particular Account
- **ind\_ctpp\_fin\_ult1:** Particular Plus Account
- **ind\_deco\_fin\_ult1:** Short-term deposits
- **ind\_deme\_fin\_ult1:** Medium-term deposits
- **ind\_dela\_fin\_ult1:** Long-term deposits
- **ind\_ecue\_fin\_ult1:** E-account

- **ind\_fond\_fin\_ult1:** Funds
- **ind\_hip\_fin\_ult1:** Mortgage
- **ind\_plan\_fin\_ult1:** Pensions
- **ind\_pres\_fin\_ult1:** Loans
- **ind\_reca\_fin\_ult1:** Taxes
- **ind\_tjcr\_fin\_ult1:** Credit Card
- **ind\_valo\_fin\_ult1:** Securities
- **ind\_viv\_fin\_ult1:** Home Account
- **ind\_nomina\_ult1:** Payroll
- **ind\_nom\_pens\_ult1:** Pensions
- **ind\_recibo\_ult1:** Direct Debit

#### **Data Quality:**

- **Completeness:** Ensure all necessary fields are populated.
- **Accuracy:** Verify that the data accurately represents the customers and their activities.
- **Consistency:** Check for consistency in data formats and values across different sources.
- **Timeliness:** Ensure that the data is up-to-date and relevant for analysis.

#### **Data Analysis:**

- **Descriptive Statistics:** Summarize the main features of the dataset.
- **Correlation Analysis:** Identify relationships between different variables.
- **Segmentation Analysis:** Segment customers based on demographics, product usage, and other relevant factors.

#### **Initial Findings:**

- A significant portion of the customer base holds only one product.
- There is a correlation between certain demographic factors (e.g., income level) and the likelihood of holding multiple products.
- Transaction frequency and account balance may be indicators of cross-sell potential.

**Name of person doing the project: Anu Joseph (individual project)**