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Problem statement:

Our client is a local Portugese banking institution. We want to analyze the direct marketing campaign of the bank in order to predict the likelihood of a customer getting subscribed to a term deposit. Our analysis will also help the bank understand how effective the marketing campaigns are and how it can be improved. It will help generate additional revenue through term deposits, return on marketing campaigns while also increasing the bank's customer base.

Stakeholders:

The stakeholders include CEO, VP Marketing, VP Sales, Digital Marketing Manager, Marketing Manager, Financial Advisor, call center manager, customer sales analyst, business analysts, regional marketing manager, salesperson, sales manager, customer business manager and shareholders.

Project Scope**:**

Who: Our client is a local Portugese banking institution and the dataset is about its banking customers.

What: The bank is spending a considerable amount, time and resources on marketing campaigns to identify and win customers to sign up for term deposits.

When: Response of term deposit subscription when marketing campaign is run.

Where: Banking customers are located in a geographical location.

Why: To analyze how effective our marketing campaigns have been and what new strategies can be implemented to get more term deposits subscriptions. To generate additional revenue through term deposits, higher return on marketing campaigns, increase bank's customer base and forecast the number of financial advisors required to meet a required target.

Data set:

The data source originated from the marketing department of a Portuguese banking institution. The data set can classified into 5 different categorized categories and has 20 features. Detailed dataset is shown in Appendix.

- Bank client data
- Related with the last contact of the current campaign
- Other attributes
- Social and economic context attributes
- Output variable (desired target)

Bank Marketing source data is available a Bank Marketing Data Set

Data - science approach

The data will be partitioned into a training set (70%) and test set (30%). We will be cleaning our data against null, missing or NA values.

We will be analyzing our dataset with the following predictive algorithms

- Machine Learning- Logistic Regression, SVC, Decision Tree and Random Forest

Appendix:

Data set:

1 - age (numeric)

2 - job : type of job

3 - marital : marital status

4 - education

5 - default: has credit in default? (categorical: 'no','yes','unknown')

6 - housing: has a housing loan? (categorical: 'no','yes','unknown')

7 - loan: has personal loan? (categorical: 'no','yes','unknown')

related with the last contact of the current campaign:

8 - contact: contact communication type (categorical: 'cellular','telephone')

9 - month: last contact month of year (categorical: 'jan', 'feb', 'mar', ..., 'nov', 'dec')

10 - day_of_week: last contact day of the week (categorical: 'mon','tue','wed','thu','fri')

11 - duration: last contact duration, in seconds (numeric).

12 - campaign: number of contacts performed during this campaign and for this client

13 - pdays: no of days that passed by after the client was last contacted

14 - previous: number of contacts performed before this campaign and for this client (numeric)

15 - poutcome: outcome of the previous marketing campaign

16 - emp.var.rate: employment variation rate - quarterly indicator (numeric)

17 - cons.price.idx: consumer price index - monthly indicator (numeric)

18 - cons.conf.idx: consumer confidence index - monthly indicator (numeric)

19 - euribor3m: euribor 3 month rate - daily indicator (numeric)

20 - nr.employed: number of employees - quarterly indicator (numeric)

Output variable (desired target):

21 - y - has the client subscribed to a term deposit? (binary: 'yes','no')