

Week 10 Data Glacier

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Problem Description:

ABC bank wants to sell its term deposit product to customers and before launching the product they want to develop a model which help them in understanding whether a particular customer will buy their product or not (based on customer's past interaction with bank or other Financial Institution).

The Bank wants to use ML model to shortlist customer whose chances of buying the product is more so that their marketing channel (tele marketing, SMS/email marketing etc.) can focus only to those customers whose chances of buying the product is more. This will save resource and time (which is directly involved in the cost (resource billing)).

GitHub Link:

https://github.com/HamzaAlHajjChehade/Bank_Marketing_Campaign

EDA Performed on Data:

- y - Out of the total calls that are made, 11.3 % of them are successful and result into client opening a term deposit.
- age - Majority of the clients fall in age range of 25 - 60 years old.
- job - Majority of the clients are employed in admin, blue-collar, technician and services job types.
- education - Majority of clients have completed university degrees followed by clients that completed high school. While 1730 clients have unknown education level.
- marital - 60.5% of the clients are married.
- poutcome - Previous marketing campaign outcome is known for 13.6% of customers, 3.3% of previous campaign outcomes were successful.
- duration - duration was heavily concentrated until 400s. The majority of calls duration lies in the range between 50 and 800 secs.
- pdays - The Majority of clients are not previously contacted
- We can see there is a high employee variation rate which signifies that they have made the campaign when there were high shifts in job due to conditions of economy.
- The Consumer price index is also good which shows the leads were having good price to pay for goods and services may be that could be the reason to stimulate these leads into making a deposit and plant the idea of savings.

- Consumer confidence index is pretty low as they don't have much confidence on the fluctuating economy.
- The 3-month Euribor interest rate is the interest rate at which a selection of European banks lends one another funds denominated in euros whereby the loans have a maturity of 3 months. In our case the interest rates are high for lending their loans.
- The number of employees were also at peak which can increase their income index. That could be the reason the campaign targeted the leads who were employed to make a deposit.
- Customers who are married open more a deposit account compared to other marital status.
- Customers with university degree education level deposit more accounts compared to other levels.
- Customers who have no credits in default open more deposit account compared to other categories.
- Customers who have house loan open more deposit account compared to others categories.
- Customers who have no personal loan open more deposit account compared to others categories.
- The majority of contacts is of cellular type. And the clients that open a deposit account are all contacted by cellular.
- We can notice that the majority of calls were in the month of May. Moreover, the majority of clients that open a deposit account were contacted in the month of May.
- clients that open an account deposit, the majority of them were in Thursday.
- Majority of clients open deposit accounts in campaign of nonprecious campaign outcome.
- The indicators have correlation among themselves.
- Number of employees rate is highly correlated with employee variation rate.
- Consumer price index is highly correlated with bank interest rate (higher the price index, higher the interest rate).
- Employee variation rate also correlates with the bank interest rates.

Final Recommendation:

From the EDA, we can clearly identify duration playing an important attribute in defining the outcome of our dataset. It is absolute that the more the leads are interested in starting a deposit will have higher number of calls and the call duration will be higher than the average. We have also figured out that job, education, and marital status also acts as a crucial deciding factor and influences the outcome a lot.

Here are the few recommendations for the bank than can help improve the deposit rate:

- Classify job roles based on corporate tiers and approach all tier 1 employees within few days after the campaign commences.
- Listen to the leads and extract more information to deliver the best deposit plan, which can increase the duration of calls and that can lead to a deposit.
- Approaching the leads during the start of new bank period (May-July) will be a good choice as many have shown positive results from data history.
- Tune the campaign according to the national econometrics, don't channelize the expenses on campaign when the national economy is performing poor.