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Campus

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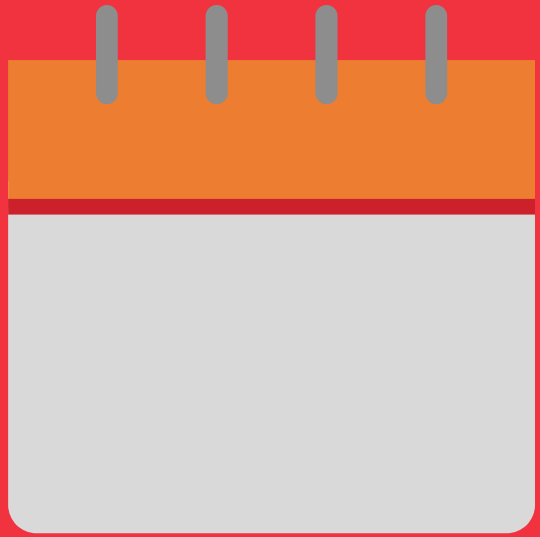
Course : Business Problem Solving, Insights and Storytelling

Lecture On : Bank Marketing Assignment

Instructor :

Session Agenda

In this session, we will discuss and comprehend the problem statement, as well as go through the constraints and instructions in order to arrive at a solution.



Problem Statement

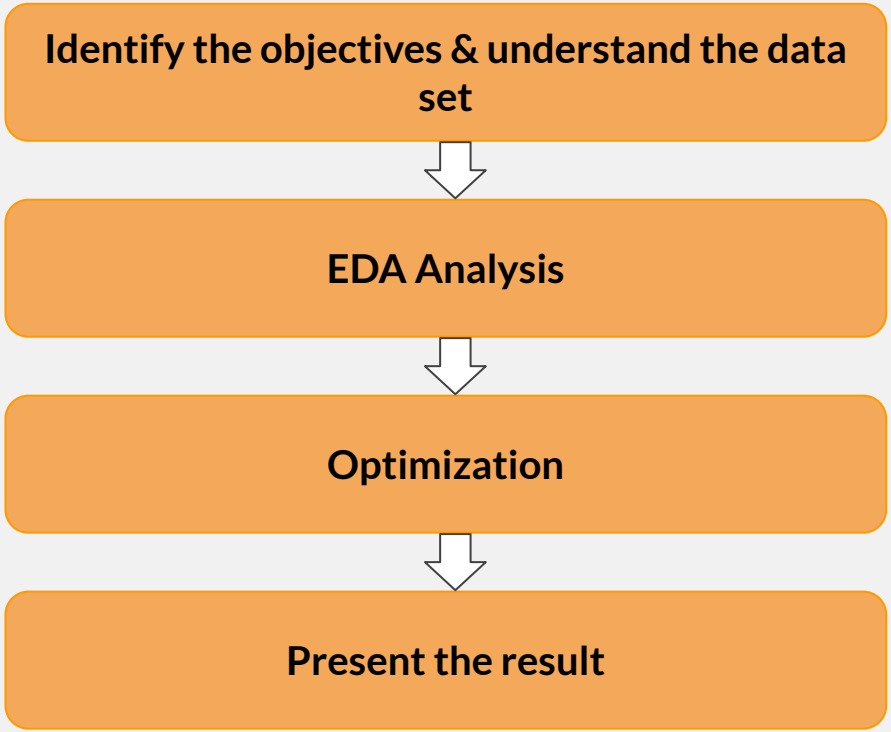
Banks offer a wide range of financial services to their customers. They also conduct marketing campaigns aimed at their existing customers in order to increase revenue. These marketing campaigns should be cost-efficient as to increase the profit. One such marketing campaign is planned by Bank of Corporate for the financial service 'Term deposits.'

The problem statement is that you, as a Business Analytics Consultant at the Bank of Corporate, are responsible for selecting target customers for ‘Term deposits’ from the bank's existing customer base (data), applying your knowledge of EDA and optimisation the data, and providing the best-optimized solution for the future marketing campaign.

Problem Statement

Term deposits, also known as fixed deposits, are cash investments made for a set period of time ranging from one month to five years at predetermined fixed interest rates. Term deposit fixed interest rates are higher than savings account regular interest rates. At the end of the maturity period, the customers receive the total amount (investment plus interest). Furthermore, the funds can be withdrawn only at the end of the maturity period. Withdrawing funds before that time will result in a penalty, and the customer will not receive any interest returns. This type of investment deposit provides the bank with the funds it needs to lend money to corporations or individuals at a higher interest rate than what is paid to the customer.

Let's break it down



Objective

- The objective is to select target customers for term deposits from the bank's existing customer base.
- You should also record the key driving factors that led to a successful conversion (opening of a term deposit account) of a customer
- The bank would use this information to optimise its investment in its future marketing campaign.

Part 1: Understand the data set

In this case study, you will be given a dataset from a marketing campaign run by 'Bank of Corporate' in 2017.

The two data sets given are:

- Data set Stub file.xlsx - It contains detailed information on all customer calls made as part of the term deposit marketing campaign in 2017.
- Data Dictionary.xlsx - It contains the definitions of variables of the data set.

Part 2: EDA Analysis

You have to use EDA analysis to determine how customer and campaign characteristics (mentioned in Data dictionary) influence the successful conversion of customer.

Customer attributes	This include all **customer information**, such as bank account number, age, job, marital status, education, Account balance, availment of any loan, loan default) and so on.
Campaign attributes (All information related to the bank's calls/reach-outs to customers during the marketing campaign)	• When the customer was **last contacted** by the bank about any of the **products/services** such as credit cards, loans, and so on. • The **total number of times** the customer has been **contacted** by the bank for any of the **products/services** up to this point. • The **outcome** of the most recent contact with the customer regarding any of the **products/services** • The **time spent on the phone** with a specific customer and **result** of the call regarding opening a term deposit account.

Part 3: Optimization

The bank has budgeted ₹1,50,000 for this marketing campaign and has decided to segment customers based on **marital status** and **educational background**. Notably, the bank incurs a cost of **₹10** for a 1-minute call to any customer.

The problem statement is that you, as a Consultant, must provide the bank with an analysis of the number of calls to be made to each customer segment (taking account of factors above) in order to maximise the total number of customers opening the term deposit account.

Customer segment

Marital status	Educational background
Single	Bachelors
Married	Masters
Divorced	Doctorate

A customer segment is defined as all combination of marital status and educational background.

Conditions for Optimization

The Bank wishes to ensure that it reaches all customer segments. (Customer diversification)
So the following information must be included in your analysis:

- A minimum of 50 customers must be contacted from each customer segment.
- The total number of calls made to each customer category must equal the minimum number of calls specified in the table 1
- The total number of conversions from the following customer categories must meet a minimum number as specified in the table 2

Bachelors	400
Masters	500
Doctorate	600
Married	600
Single	300
Divorced	350

Table 1

Bachelors	120
Masters	120
Doctorate	120
Married	150
Single	150
Divorced	100

Table 2

Instructions for Optimization

With the constraints outlined, estimate the number of calls required for each customer segment so that the total estimated number of converted calls for the future marketing campaign is maximised.

Following are the information you should obtain from EDA analysis to to calculate the estimated cost of the future marketing campaign for each customer segment:

1. Calculate the average call duration for both converted & unconverted calls for each customer segment based on 2017 data.
2. Calculate the conversion rate for each customer segment based on 2017 data (conversion rate = number of converted calls / total number of calls made).
3. Based on the estimated no. of calls for each customer segment and the conversion rate calculated in the preceding step, you can estimate the 'number of converted calls' and 'number of non-converted calls' for the upcoming marketing campaign.

   Finally, Estimate the cost for each customer segment using the total average call duration for both converted & unconverted customer calls and also estimate 'no. of converted calls' and 'no. of non converted calls' for the marketing campaign.

Part 4: Present your Results

Finally, you need to submit four workbooks and a presentation for summary that convey specifics of the approach & key findings of analysis as well.

Cleaned dataset	This workbook should consist of the dataset after you have made all the required modifications to it and it is ready for analysis.
Univariate analysis	This workbook should include the results of univariate and segmented univariate analysis of the dataset.
Bivariate analysis	This workbook should consist of the results of the bivariate analysis of the dataset.
Optimization	This workbook should include the results of the optimized solution.
Bank marketing presentation	This is a PDF (converted from the edited template PPT) where you will provide the details of the approach and major insights of the analysis.

Here are the some of the criteria you need to keep in mind

- Make sure that data quality concerns (missing data, duplicate data, outliers, spelling inconsistencies) are addressed appropriately and that data is converted to the appropriate format using the right methods.
- Identify the possible derived columns and, if necessary, convert any specific column to a required format for ease of analysis.
- Explain the findings of all analyses in business terms. Identify the insights that will help explain how a specific variable plays a critical role in a successful conversion.
- Ensure that the optimization analysis only uses values derived from the EDA of the dataset; it includes all required constraints, and that the results meet the given objective.
- Make sure the problem-solving recommendations are realistic, actionable, and consistent with the analysis.
- Provide a step-by-step approach and state the assumptions (if, any) & details of the analysis performed to derive the insights in the form of a PPT.
- The presentation should have succinct insights, visualisations and a well-defined structure. (Feel free to use graphs wherever appropriate for explanation)

Evaluation Breakdown

Data Cleaning and Manipulation	20%
Data analysis	30%
Optimisation Analysis	30%
Presentation and Recommendations	20%

Any Queries?

Thank You!