

# ASSIGNMENT GUIDELINES

- Make the changes in the PPT as you solve the parts
- This file contains the template for the **EDA part** of the project.
- Check the instructions added in the note section of every slide for clarity.
- Don't move around any image or text box
- If you require more/lesser elements, be careful when you copy/delete the existing ones.

# ASSIGNMENT

Name: ...Adarsh Kumar.....

## Problem Statement

**Bank of Corporate** conducted a telemarketing campaign for one of its financial products 'Term deposits' to build a long-term relationship with the existing customers. These campaigns need to be cost efficient such that the bank not only increases their overall revenues but also the total profit.

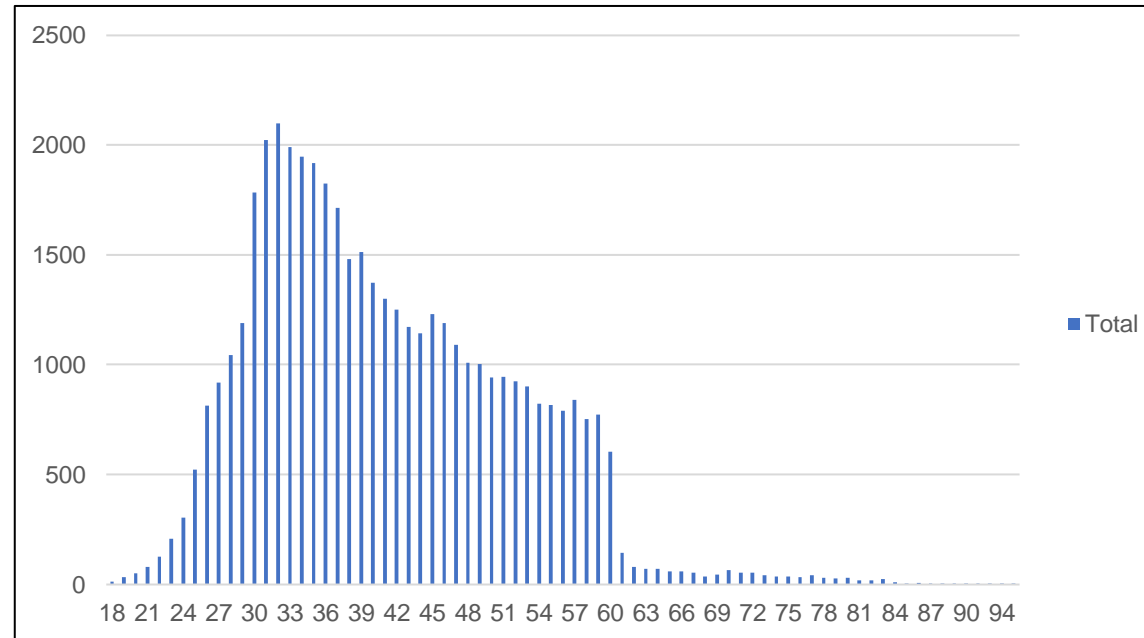
## Assignment Objective

To identify the target customers and the driving factors behind the successful conversion of a customer and optimize future marketing campaigns.

# PART I : Univariate Analysis

## Marketing Campaign Optimization

Variable under consideration: AGE

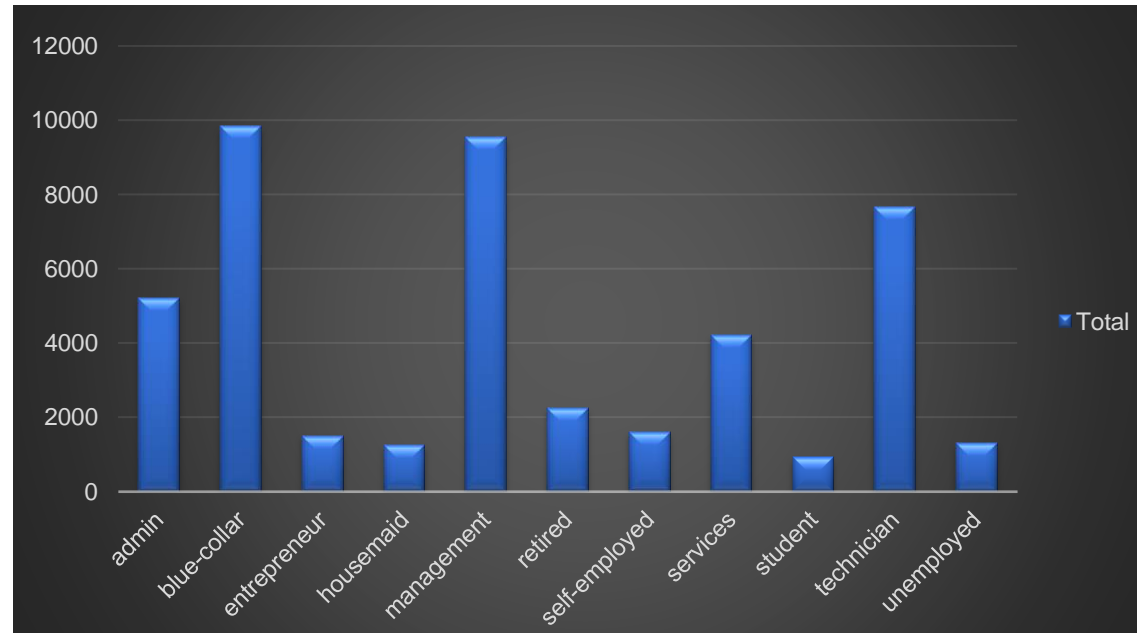


- Majority of the bank customers lie between the range of 23-60 years which can be considered as a working age group.
- Also, there is a steep decline in the number of customers after 60 years.

# PART I : Univariate Analysis

## Marketing Campaign Optimisation

Variable under consideration: JOBS



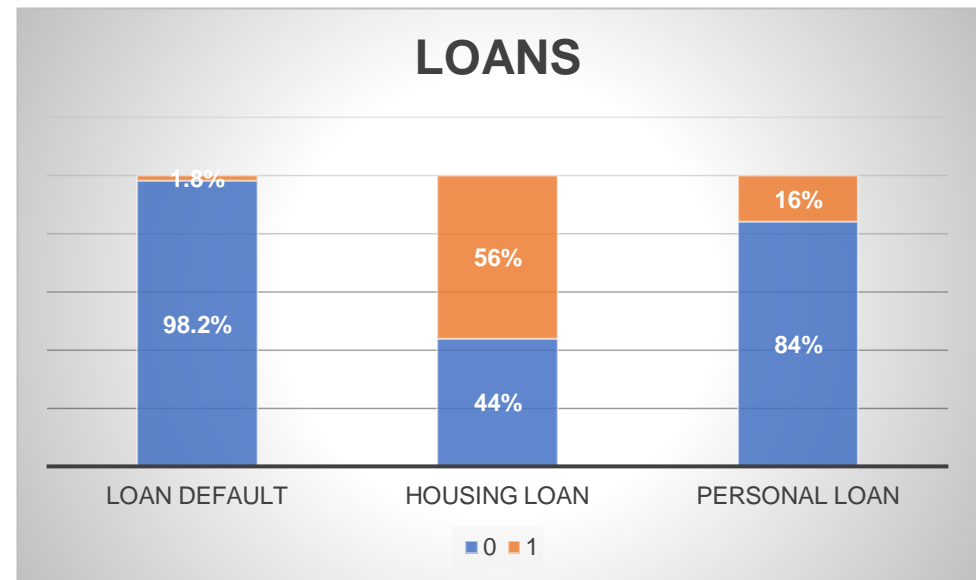
- The majority share of the working professionals are from the blue collar and management customer segment.

# PART I : Univariate Analysis

## Marketing Campaign Optimisation

Variable under consideration: LOANS

	Loan Default	Housing Loan	Personal Loan
0	98.2%	44%	84%
1	1.8%	56%	16%

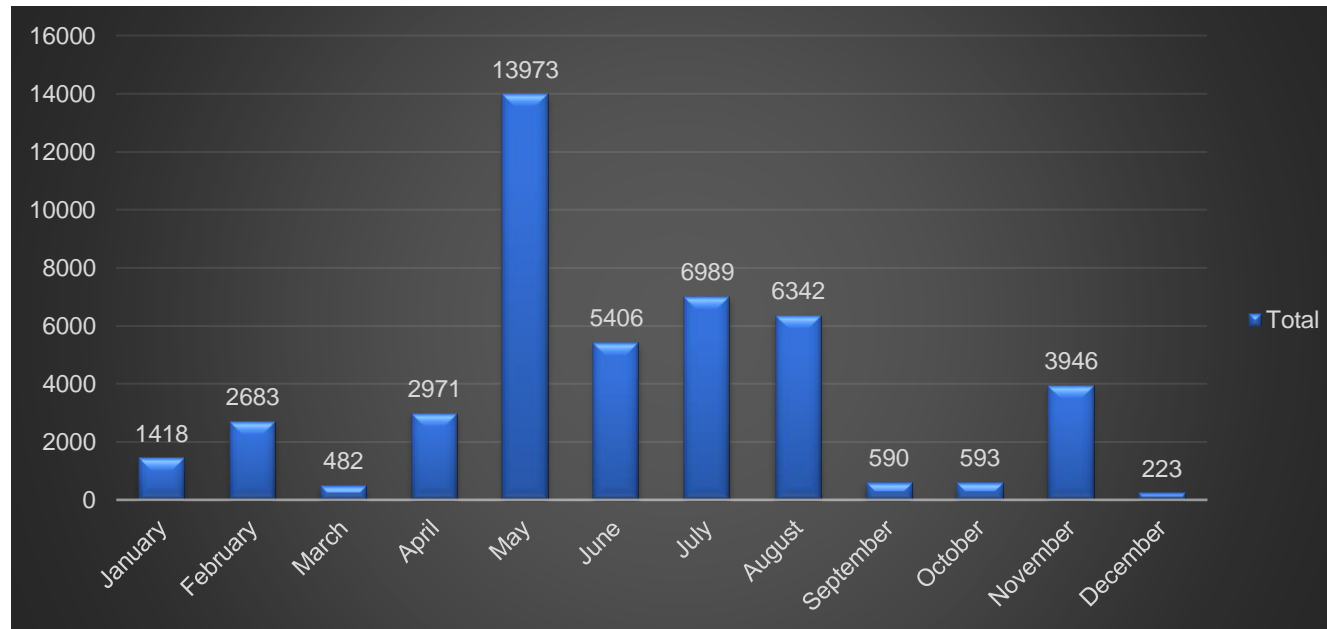


- The customers who defaulted the loan are very less which is **1.80%** of the total customers.
- Majority of the customers have taken the housing loan when compared to the personal loan, maybe due to the tax evasions and also for investment purposes.

# PART I : Univariate Analysis

## Marketing Campaign Optimisation

Variable under consideration: MONTH

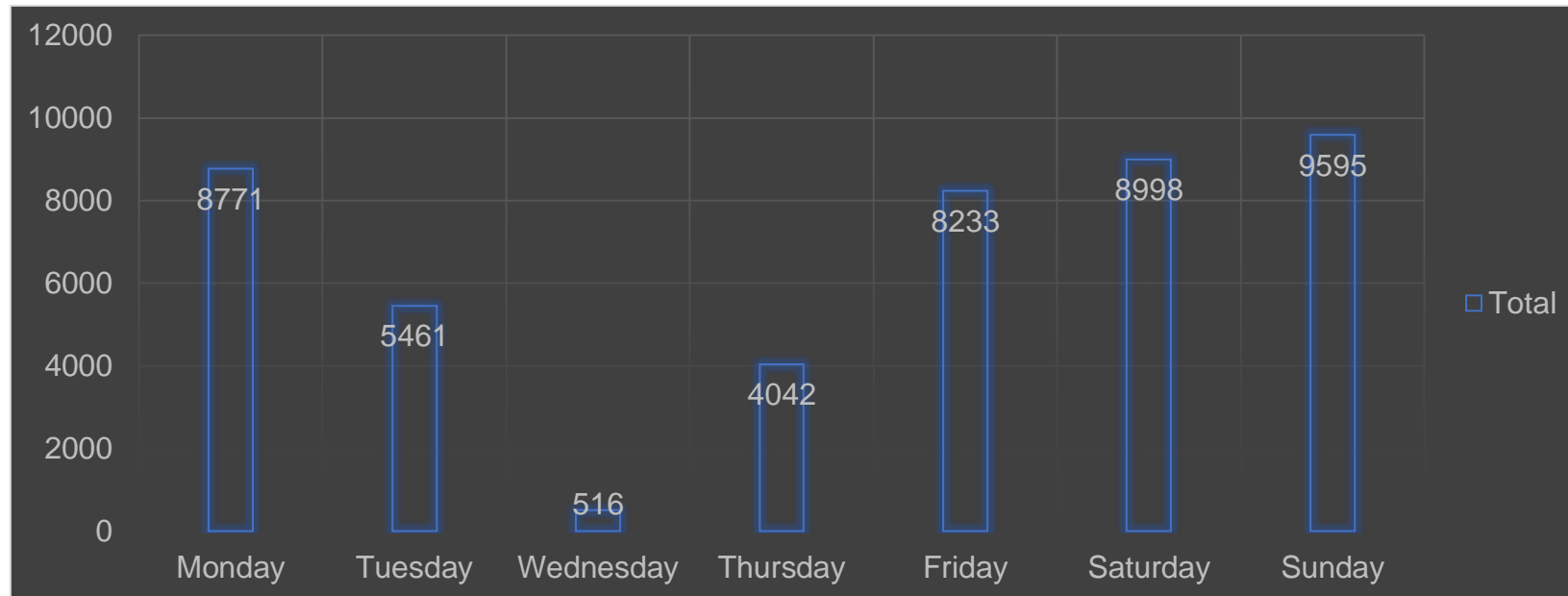


- The maximum calls are made to the customers in the month of **May**, i.e. (30.51%).
- The minimum calls are made in the month of **December**, i.e. (0.48%).

# PART I : Univariate Analysis

## Marketing Campaign Optimisation

Variable under consideration: DAY

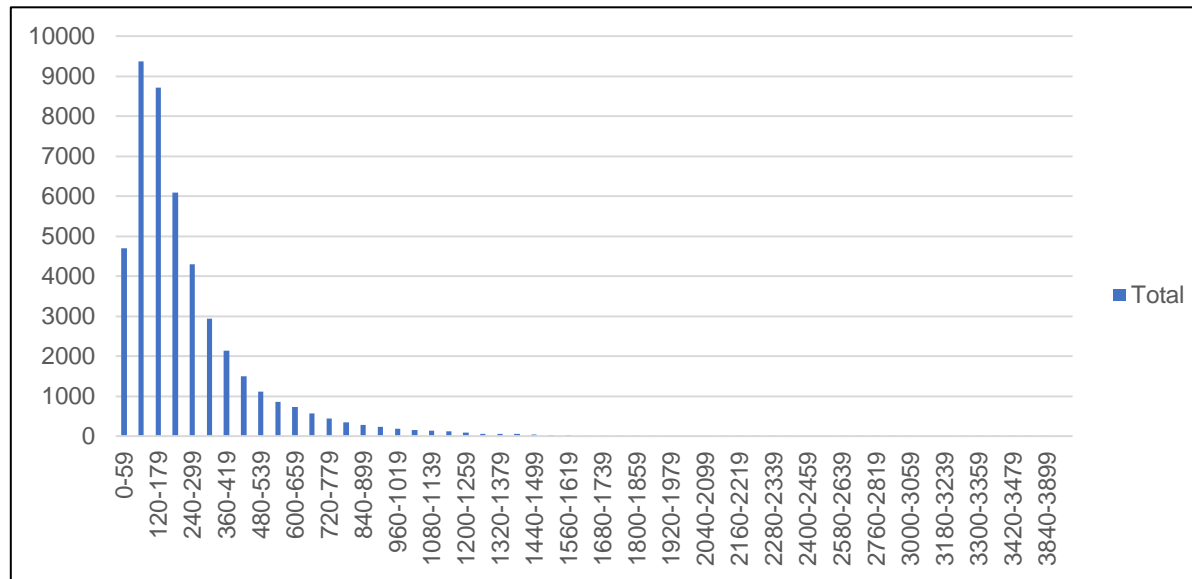


- The graph depicts that the bank reaches out to its customers only on **Weekends over Weekdays**.
- The reason for this action could be that majority of the customers are **working population**.

# PART I : Univariate Analysis

## Marketing Campaign Optimisation

Variable under consideration: CALL DURATION



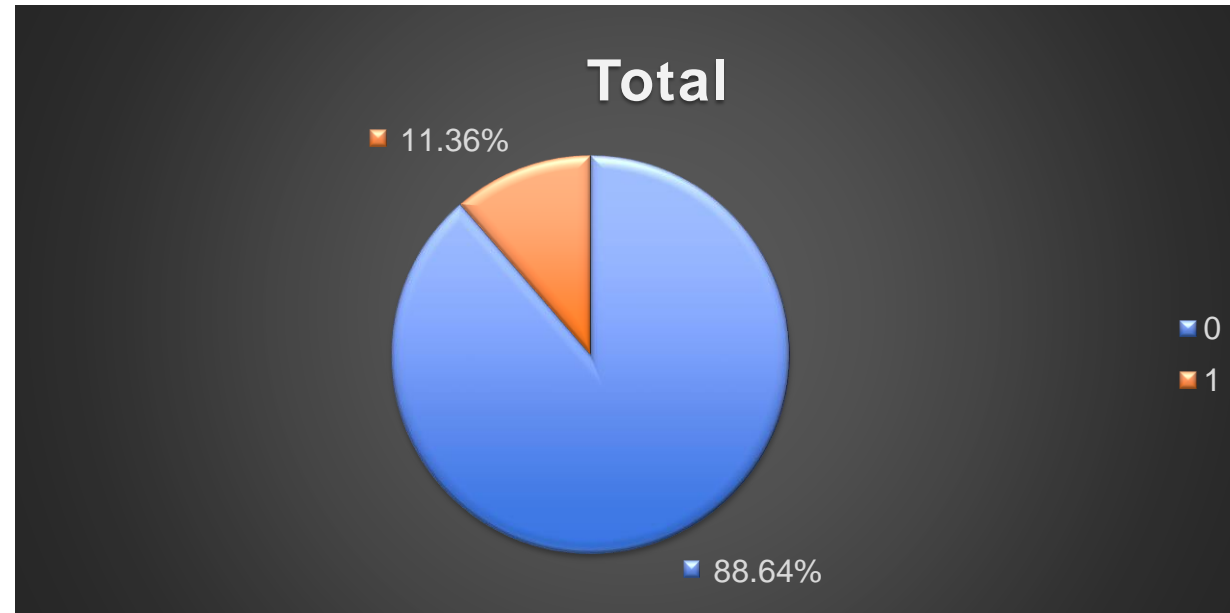
- From this graph, you can observe that the call duration with most of the customers lies **between 1-3 minutes**.
- The median of call duration is approx. **180 seconds**.



# PART I : Univariate Analysis

## Marketing Campaign Optimisation

Variable under consideration: SUBSCRIPTION

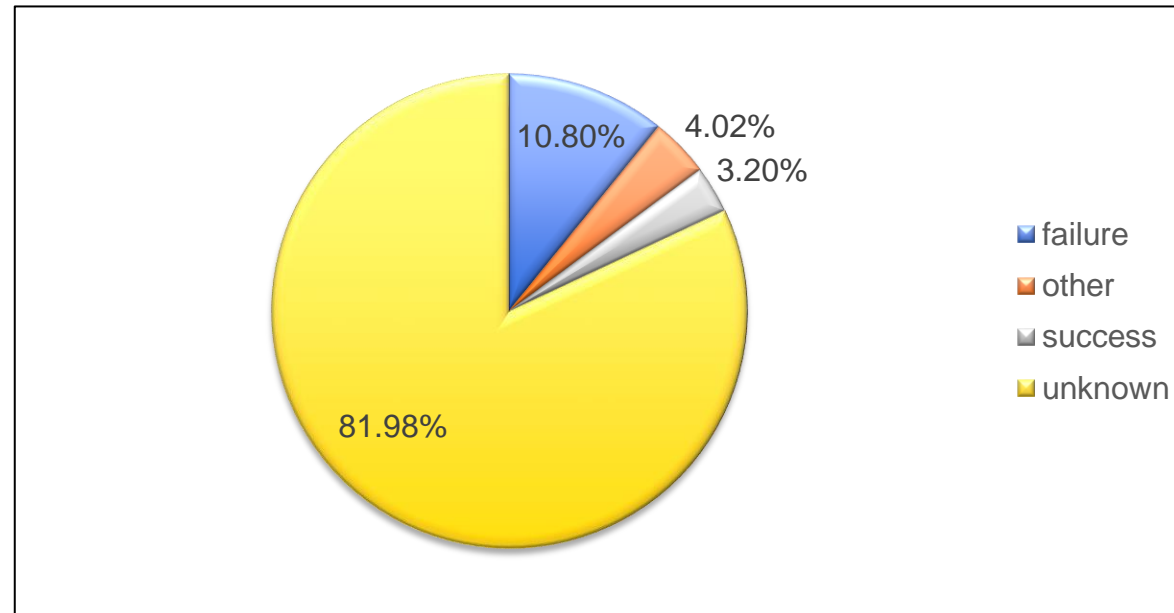


- Around **88.64%** of the customers have only subscribed to the product, and **11.36%** of them have not subscribed.

# PART I : Univariate Analysis

## Marketing Campaign Optimisation

Variable under consideration: SEGMENTED UNIVARIATE (P outcome)



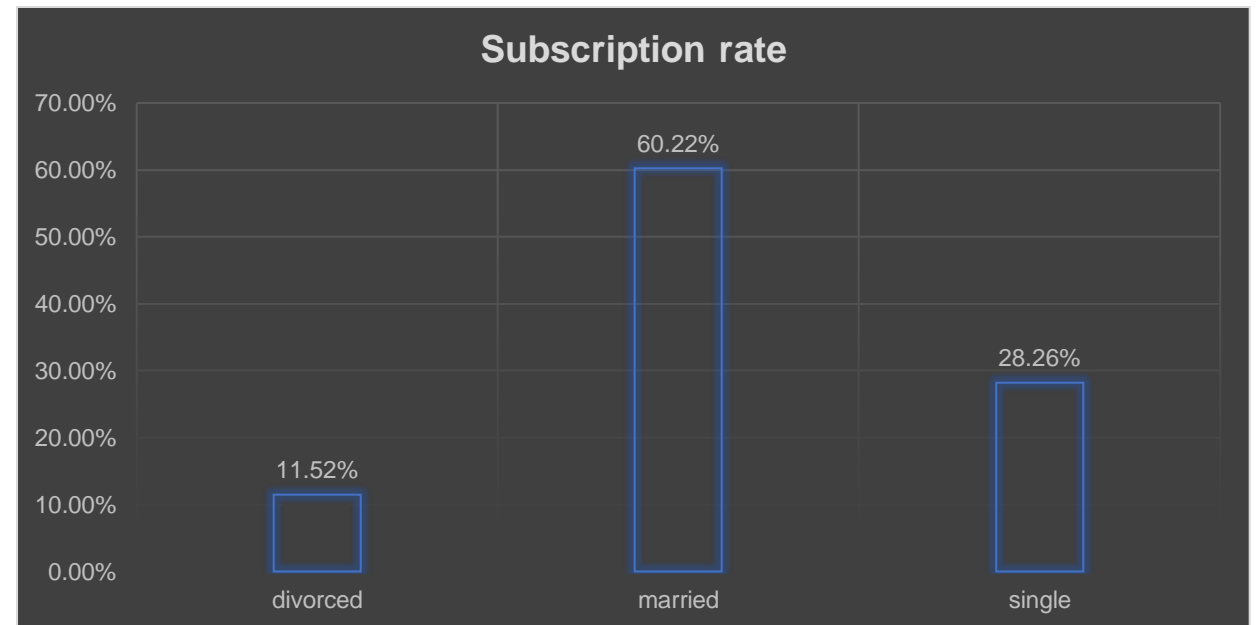
- Around **81%** of the customers are not reached earlier and reached out for the first time regarding some product by the bank.

# PART II : Bivariate Analysis

## Marketing Campaign Optimisation

Variables under consideration: SUBSCRIPTION, MARITAL STATUS, CALL DURATION

Marital Status	Subscription rate
divorced	11.52%
married	60.22%
single	28.26%



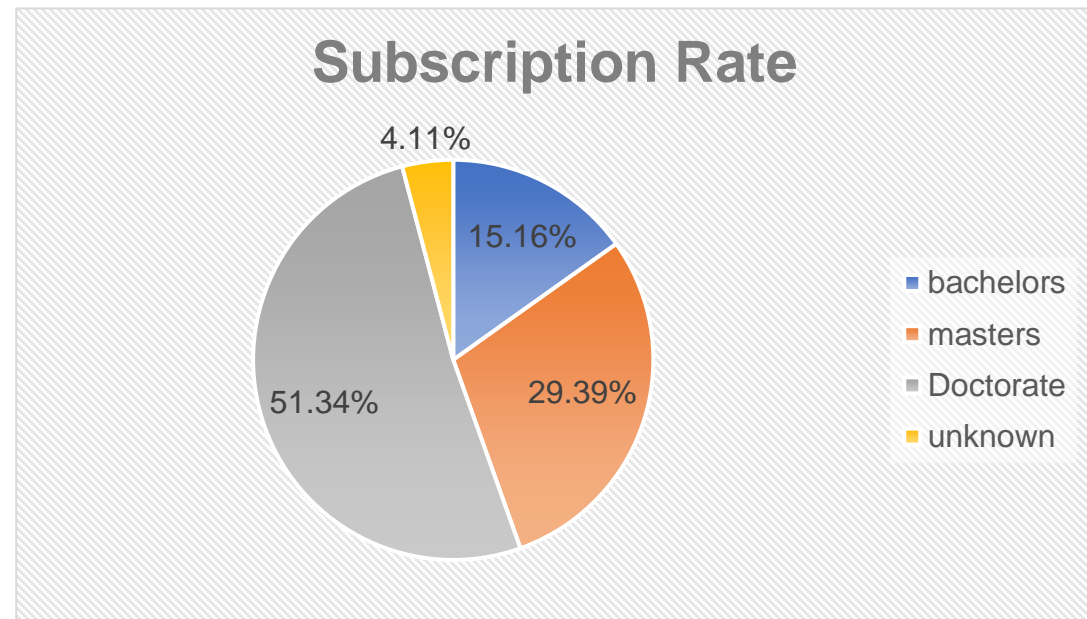
- Customers who are married have the highest subscription rate and divorced customers have the lowest subscription rate.

# PART II : Bivariate Analysis

## Marketing Campaign Optimisation

Variables under consideration: EDUCATION, SUBSCRIPTION RATE, CALL DURATION

Education	Subscription Rate
bachelors	15.16%
masters	29.39%
Doctorate	51.34%
unknown	4.11%

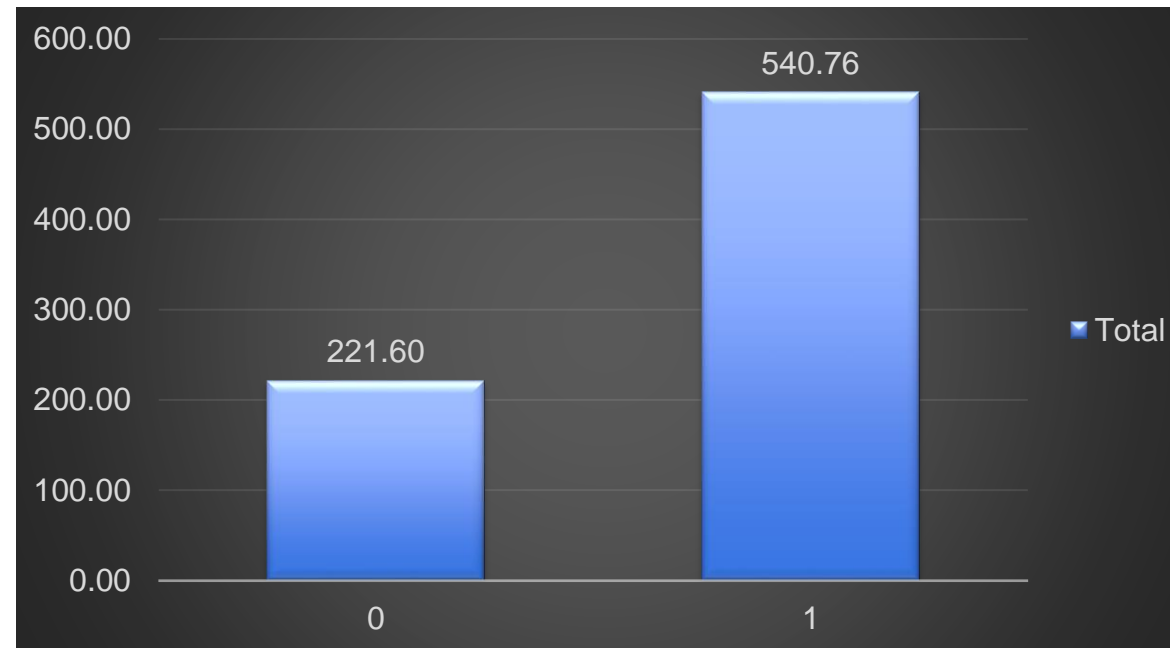


- Customers with **Doctorate & Masters** level of education **have higher subscription rate** and Customers with **bachelors** level of education and unknown have **low subscription rate**.

# PART II : Bivariate Analysis

## Marketing Campaign Optimisation

Variables under consideration: SUBSCRIPTION, AVG. CALL DURATION



- Average call duration is **high for the subscribed customers** and Average call duration is **low for unsubscribed customers**.

# PART III: Optimisation Results

## Marketing Campaign Optimisation

Marital Status	Education	Average Call Duration (non-converted)	Average Call Duration (converted)	Conversion Rate	No. of Calls	Est. No. of Converted Calls	Est. no. of Non-Converted Calls	Estimated Cost
divorced		218.03	589.53	0.12	0	0	0	0
	bachelors	222.38	592.25	0.17	0	0	0	0
	Doctorate	215.68	562.08	0.34	0	0	0	0
	masters	218.09	608.07	0.48	0	0	0	0
married		221.55	546.04	0.52	0	0	0	0
	bachelors	220.74	626.95	0.15	0	0	0	0
	Doctorate	218.41	484.91	0.35	0	0	0	0
	masters	223.41	564.1	0.5	0	0	0	0
single		222.47	527.95	0.36	0	0	0	0
	bachelors	218.49	708.03	0.05	0	0	0	0
	Doctorate	217.03	493.03	0.48	0	0	0	0
	masters	226.67	544.96	0.17	0	0	0	0

- **Conversion Rate** = No. of Calls Converted / Total number of calls (No. of converted calls + No. of non-converted calls)
- **Converted Calls** = (No. of calls) \* (Conversion Rate)
- **Cost / minute** = 10
- **Total Converted calls** = 0
- **Estimated cost** = [Cost/min. \* (Est. no. of converted calls \* Avg. call duration (converted)) + (Est. no. of non-converted calls \* Avg. call duration (non-converted))] / 60

# PART III: Optimisation Results

## Marketing Campaign Optimisation

Constraints :-

Constraints	LHS	Sign	RHS
Married	0	>=	600
Single	0	>=	300
Divorced	0	>=	350
Bachelors	0	>=	400
Doctorate	0	>=	500
Masters	0	>=	600
Budget	0	<=	150000
Conversion of Bachelors	0	>=	120
Conversion of Doctorate	0	>=	120
Conversion of Masters	0	>=	120
Conversion of Married	0	>=	150
Conversion of Single	0	>=	150
Conversion of Divorced	0	>=	100
NN1	0	>=	50
NN2	0	>=	50
NN3	0	>=	50
NN4	0	>=	50
NN5	0	>=	50
NN6	0	>=	50
NN7	0	>=	50
NN8	0	>=	50
NN9	0	>=	50

# PART IV: Major insights

## Marketing Campaign Optimisation

- Majority of the bank customers lie **between the range of 23-60 years** which can be considered as a working age group.
- The majority share of the working professionals are from the **blue collar and management** customer segment.
- Majority of the customers have **taken the housing loan** when compared to the personal loan, maybe due to the tax evasions and also for investment purposes.
- The maximum calls are made to the customers in the month of **May**, i.e. **(30.51%)**.
- The minimum calls are made in the month of **December**, i.e. **(0.48%)**.
- Around **88.64%** of the customers have only subscribed to the product, and **11.36%** of them have not subscribed.
- Around **81%** of the customers are not reached earlier and reached out for the first time regarding some product by the bank.
- Customers who are **married have the highest subscription rate** and **divorced customers have the lowest subscription rate**.
- Customers with **Doctorate & Masters** level of education **have higher subscription rate** and Customers with **bachelors** level of education and unknown have **low subscription rate**.
- Average call duration is **high for the subscribed customers** and Average call duration is **low for unsubscribed customers**.