A REPORT ON THE DEVELOPING A CLASSIFIER THAT PREDICTS WHICH CUSTOMERS ARE LIKELY TO CHURN SO THAT SYRIATEL CAN TAKE APPROPRIATE ACTIONS AND REDUCE CUSTOMER ATTRITION.

1. BUSINESS UNDERSTANDING

1.1 **BUSINESS OVERVIEW**

SyriaTel is a telecommunication company based in Syria. The services of the company include voice and data services. Recently, the company has been concerned about the increased rate of customer churn that is resulting to high loss of revenue.Customer churn is when a customer discontinues their relationship with a company, which can result in lost revenue and reduced profits.

The company is looking to outsource a data scientist to help identify the contributing factors that are leading to customer's opting out on the services.

A data scientist who will leverage cutting-edge technology to develop a binary classifier that accurately predicts whether a customer is likely to churn or not. By analyzing a wide range of customer data including demographics, usage patterns, and service interactions, we will identify patterns associated with churn and develop strategies to mitigate these issues.

The success of the project will be determined by the accuracy of the classifier and the effectiveness of the strategies employed. Ultimately, efforts will translate into outcomes for SyriaTel and its customers.

1.2 **BUSINESS OBJECTIVE**

- **Main Objective**

The primary goal of this project is to identify the factors that contribute to curstomer churn and Develop a classifier that predicts which customers are likely to churn so that SyriaTel can take appropriate actions and reduce customer attrition.

- **specific objectives**

1. Conducting a comprehensive analysis of SyriaTel's customer data to identify patterns and trends that contribute to customer churn.
2. Determining which variables have the highest impact on customer churn in SyriaTel's customer base.
3. Building and testing a predictive model to accurately forecast the likelihood of customer churn.
4. Evaluating the performance of the predictive model and comparing it with other alternative models.
5. Identifying preventive measures that SyriaTel can take to reduce customer churn and retain more customers.
6. Developing a plan to implement the preventive measures based on the insights gained from the predictive model.
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1.3 **BUSINESS CRITERIA**

Being able to develop a binary classifier that accurately predicts whether a customer is likely to churn or not and By analyzing a wide range of customer data including demographics, usage patterns, and service interactions, we will identify patterns associated with churn and develop strategies to mitigate these issues.

1.4 **ASSESSING THE SITUATION**

1.1.4 RESOURCE INVENTORY

1.4.1.1. DATASETS

SyriaTel Customer ChurnLinks ,find the data in kaggle as Churn in Telecom's dataset.

1.4.1.2 SOFTWARE USED

- Jupyter Notebook
- Git
- Github
- Numpy
- Pandas
- scikit learn

1.4.2 ASSUMPTIONS

- data provided is correct and upto date

1.4.3 CONSTRAINTS

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2. DATA UNDERSTANDING

2.1 **DATA UNDERSTANDING OVERVIEW**

For this project, we are using the available dataset in Kaggle. The dataset is the SyriaTel Customer Churn link: https://www.kaggle.com/datasets/becksddf/churn-in-telecoms-dataset (https://www.kaggle.com/datasets/becksddf/churn-in-telecoms-dataset)

2.2 **DATA DESCRIPTION**

We have one dataset available for this project.

We have no missing values

Data has both continuous and categorical features comprising of the following data types; objects, integers, float and booleans we have a total of 3333 entries and 21 columns

3. DATA PREPARATION

This are the steps in preparing data

3.1 **LOADING DATA**

- load data from the excel sheets downloaded from kaggle as a csv file

3.2 **CLEANING DATA**

- Convert categorical data to
- remove irrelevat columns

3.3 **ANALYSIS**

We performed various analyses in our dataset such as Exploratory Data Analysis(Univariate Analysis, Bivariate Analysis) and also carried out data visualization

4. MODELING

4.1 **PREPROCESS DATA**

- Split and train data into(X_train, X_test, y_train,
- y_test) label encode categorical data normalize the
- numeric data

4.2 **BUILDING AND EVALUATING MODELS**

We decided to work with the following binary classifiers:

- KNN(K-Nearest Neighbours)
- Logistic Regression
- Decision Trees
- Random Forest

5. CONCLUSION

- Importance of Recall: In the context of predicting customer churn, the focus was placed on optimizing for Recall. By prioritizing Recall, the goal was to minimize the number of customers who are incorrectly classified as non-churners.
- Best Model: Among the models explored, the decision tree Classifier performed the best since was able to correctly identify 78% of the customers who were likely to churn.the model had an accuracy score of 92.8%
- The factors that mostly influence churn of customer include total day charge, customr service calls and number oof voice mail messages.
- Predicting customer churn is an ongoing process, and it is important to continuously refine and improve the model. Regularly monitoring the model's performance, collecting new data, and incorporating feedback from business stakeholders can lead to better predictions and more accurate identification of customers who are at risk of churning.

6. RECOMMENDATIONS

- The company should ensure continoous prediction of the factors influencing churn by contionously collecting new data and improving the model as prediction is an ongoing process.
- to reduce customer churn, the company should review the charge rate for the day calls as total day charge is the most influencial predictor for churn in this model.
- SyriaTel should improve the customer service calls through attentive listening to customers issues, feedbackd and complains and also through offering timely solutions for the same.
- SyriaTel company should reach out to the customers with high numbers of voicemail messages to determine the cause for the voicemail messages surge and know how to adress the same.
- SyriaTel should come up with a tailormade data and voice plan products for the international customers based on their unique needs.

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