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Customer Churn Analysis

This repository contains the documentations and the codes on the customer churn analysis project that was done on SyriaTel company. The aim of the project. The project is aimed at detecting the customer patterns and come up with measures to mitigate the customer churn through drawing of insights and making recommendations to the stakeholders.

Project overview

SyriaTel prides itself in provision of a wide range of services, including mobile, landline, and internet connectivity, to its customers. However, the company faces the menace of customer churn which is a problem that is witnessed across several other telecommunication companies.

Customer churn is where the customers stop or discontinue using the services of the company. We tried to detect whether there is a noticeable pattern for this, study the customer behavior and key factors that influences churn. Customer churn not only impacts the revenue and the market share of the company but also it tests the customer loyalty to the service or the product that a company offers them. We utilized data and machine learning algorithms to detect and prevent churn. The project involved the following steps:

1. Business and data understanding. The stakeholder audience for this project includes marketing managers, customer retention teams, and business executives. The dataset used for analysis is sourced from the kaggle and contains information on various customer attributes, such as demographic data, service usage, and customer interactions. The dataset comprises X records and Y variables
2. Data preprocessing and exploration - here we perform preparation of the data and cleaned it then went ahead to do an exploratory data analysis. We then identified patterns and trends from our analysis

3. Modeling - we built predictive models using algorithms such as logistic regression, decision trees and random forest. We started with a baseline logistic regression model, which is a widely-used algorithm for binary classification tasks. We further explored more advanced algorithms such as decision tree classifiers and random forests. Each model was trained on a subset of the dataset and evaluated using appropriate evaluation metrics.
4. Evaluation - we evaluated the models using metrics such as accuracy, precision etc. We used the performance of each model to determine the best model that we used as our final model. In our project we used Logistic regression classifier.
5. Hyperparameter tuning. We tuned the best performing model's hyperparameters to increase its accuracy and also generalizability.
6. Insights and recommendations - here we drew insights from the exploratory data analysis and provided data-driven recommendations to the stakeholders to help mitigate the challenge of churning.
7. conclusion - In conclusion, the analysis of the customer churn in SyriaTel has provided clear knowledge on the factors that leads to churning of the customers as well as valuable insights into the customer behaviors. The models have provided a clear predictive power on customers churn as well as identifying important features that greatly influence customer retention. We found that customer service calls, total evening and day charges, international plan subscription and also voice mail plan are key factors influencing customer churn.

Repository structure

1. README.md. Provides an overview of the project
2. Data - contains the dataset used in this project
3. github.pdf - a pdf of the github repository
4. index.ipynb/ notebook - contains the full project codes
5. notebook.pdf - a pdf copy of the notebook
6. Presentation pdf. This contains the non technical presentation of the project. It contains visualizations from the notebook codes

Project dependencies

This project is implemented in python under the following dependencies;

1. Scikit-learn
2. pandas
3. Matplotlib
4. Numpy
5. Seaborn Install or import them before running the code to avoid errors

Conclusion and next steps

In conclusion, the analysis of the customer churn in SyriaTel has provided clear knowledge on the factors that leads to churning of the customers as well as valuable insights into the customer behaviors. The models have provided a clear predictive power on customers churn as well as identifying important features that greatly influence customer retention. Going forward the following steps can be taken;

1. The company can go ahead and develop specific retention strategies such as ensuring certain areas that had high churn rate are given quality network coverage and offers like increased bundles at a cheaper rate
2. Monitor and evaluate the ever changing customers behavior in order to stay up to date with the customer churn mitigation strategies Stay up to day date the market trends which are bound to change every other single day.
3. Focus on the customer satisfaction. This will ensure that the customers who have not churned are always enjoying the services of the company and that at no point will they discontinue with the usage of the company's services and products.

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