Customer Churn

EXIT

ProjectPro

Customer Churn Analysis

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Background

Customer churn, or the percentage of customers who stop using a company's product or service within a specific time frame, poses a significant challenge for businesses.

Retaining existing customers is more cost-effective than acquiring new ones. In our analysis of a telco dataset, we identified key factors contributing to churn, such as customer service calls, total day minutes, and total day charge.

By utilizing a random forest classifier, we achieved high predictive accuracy, precision, recall, and an F1 score. These findings offer valuable insights for improving customer retention strategies and driving business growth.

Problem Statement

The loss of customers is a pressing issue for businesses, impacting their revenue and profitability. Acquiring new customers comes with high costs, making customer retention essential for sustained success. Identifying and understanding the reasons behind customer attrition is crucial for businesses to develop effective strategies and mitigate this problem.

Impact on Business:

The high rate of customer churn can lead to a decrease in revenues, subsequently affecting profits. Moreover, acquiring new customers involves substantial expenses in marketing and sales, while the departure of customers can negatively impact a company's reputation.

Need for a Solution:

To maintain competitiveness, it is crucial for companies to understand the underlying reasons behind customer attrition and take appropriate measures to mitigate it. Implementing an effective solution to address customer churn can enhance customer satisfaction, improve retention rates, and ultimately drive growth and success.

Methodology

- The analysis I have used is is a Random Forest Classifier as the final model that produced the best results.
- The project utilizes data obtained from Kaggle (available at https://www.kaggle.com/datasets/becksddf/churn-in-telecoms-dataset)

The key steps in our methodology were:

- Business Understanding
- Data Understanding
- Data Preparation
- Modeling
- Hyper-parameter tuning
- Model Evaluation
- Deployment

By following this steps, we were able to build a robust model to predict customer churn and draw meaningful insights to help the telco improve customer retention.

Key Findings

Feature Importance
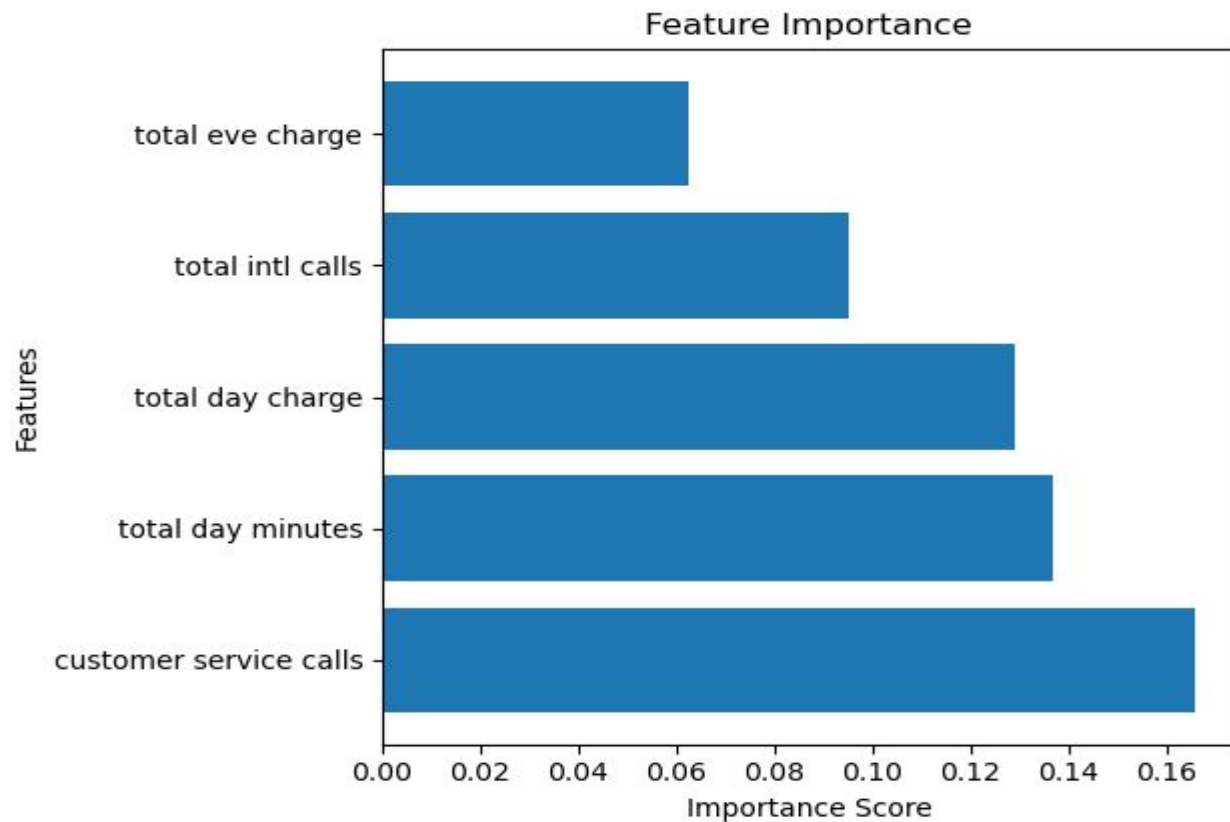
Key Findings

- Our analysis indicates that we have achieved a high level of accuracy in predicting customer churn, with an accuracy score of 0.9268.
- The precision of our model is 0.6785, indicating that among the customers predicted as churners by our model, 67.85% of them actually churned.
- The recall of our model is 0.8558, which means that out of all the customers who truly churned, our model was able to correctly identify 85.58% of them.
- The F1 score, a measure of the overall performance of our model, is 0.7569. This score represents a balanced evaluation of both precision and recall.
- According to our analysis, several key features strongly contribute to determining customer churn. Notably, customer service calls (0.165745), total day minutes (0.136781), total day charge (0.128964), total international calls (0.095320), and total evening charge (0.062339) emerged as the most important factors.

Limitations

It is important to acknowledge the limitations of this analysis in order to properly interpret the results. Some of the limitations include:

- Limited data: The dataset used in this analysis may not encompass all the customers or factors that contribute to churn. This limitation could affect the generalizability and representativeness of the findings.
- Complexity of Random Forests: Although Random Forests are a powerful classification technique, they can be complex and time-consuming to train and optimize. This complexity may impact the scalability and practical implementation of the model.
- Imperfect scores: While the analysis achieved high accuracy, precision, recall, and F1 scores, it is essential to recognize that no model is perfect. There is still a possibility of incorrect predictions or misclassifications.

Considering these limitations is crucial for a comprehensive understanding of the analysis. Further research and analysis should be conducted to validate and enhance the findings. Additionally, incorporating additional data sources and exploring alternative modeling techniques may provide more robust insights and recommendations.

Conclusion

In conclusion, the analysis of customer churn and its impact on the telco business using a random forest classifier provided valuable insights. The findings highlighted the significance of customer service calls, total day minutes, and total day charge as key factors contributing to customer churn.

Based on these insights, actionable recommendations were proposed to mitigate customer churn, such as enhancing the customer experience, reducing call wait times, and implementing personalized promotions.

While the analysis demonstrated high accuracy (0.9268), precision (0.6785), recall (0.8558), and an F1 score of 0.7569, it is important to acknowledge the limitations of the analysis, including the limited data and the complexity of random forests.

Further research and analysis are recommended to validate and enhance the findings, considering additional data sources and exploring alternative modeling approaches. By addressing these limitations, businesses can make more informed decisions to effectively reduce customer churn and improve overall performance.

Recommendations

Based on our key findings, we recommend the following strategies to help reduce customer churn:

- **Improve customer service:** Given that customer service calls and total day minutes are identified as significant factors contributing to customer churn, it is crucial for the telco to focus on enhancing customer support. This can be achieved through training customer service agents, implementing effective communication channels, and consistently monitoring and evaluating the customer service process.
- **Offer personalized plans:** To increase customer retention, the telco should consider offering more tailored plans based on individual customer usage patterns, preferences, and budgetary constraints. This customization can provide customers with a sense of value and meet their specific needs, reducing the likelihood of them switching to competitors.
- **Monitor usage patterns:** Regularly monitoring and analyzing customers' usage patterns, such as total day charge and total international charge, can help identify customers who are at a higher risk of churning. By proactively reaching out to these customers, offering personalized incentives or resolving any issues they may have, the telco can improve customer satisfaction and loyalty.
- **Evaluate pricing strategies:** The telco should evaluate its pricing strategies to ensure competitiveness in the market. Conducting market research, analyzing competitors' pricing, and considering adjustments to prices, discounts, or bundled service offerings can help retain customers and prevent them from seeking alternatives.

Implementing these recommendations can lead to several benefits for the business, including improved customer retention, reduced churn rates, and attracting new customers. Additionally, reducing customer churn is cost-effective compared to acquiring new customers, which can have a positive impact on the telco's overall profitability and success.

THANK YOU!