Customer Churn Prediction in a Mobile Financial Services (MFS) Company - Project Report

Executive Summary

In this project, I focused on predicting customer churn in a Mobile Financial Services (MFS) company using advanced data science techniques. The project aimed to provide actionable insights to optimize customer retention strategies.

Project Overview

Objectives
Predict customer churn to enhance retention efforts.
Utilized a dataset containing transaction details and customer information from the MFS company.

Key Steps

1. Data Exploration and Preprocessing:
    a. Cleaned data, handled missing values, and ensured data integrity.
    b. Conducted Exploratory Data Analysis (EDA) to identify patterns.

2. Feature Engineering:
    a. Engineered transaction and customer features for model input.

3. Model Selection and Training:
    a. Selected and trained machine learning models suitable for churn prediction.

4. Churn Prediction:
    a. Evaluated model performance and applied it to identify potential churners.

5. Insights and Recommendations:
    a. Provided interpretable results and actionable recommendations based on data findings.

Results and Impact

Model Evaluation

Accuracy:
Achieved an accuracy of 0.65 in predicting customer churn.

Confusion Matrix:
[[9982 27855]
 [16197 71262]]

Classification Report:

	precision	recall	f1-score	support
0	0.38	0.26	0.31	37837
1	0.72	0.81	0.76	87459
accuracy			0.65	125296
macro avg	0.55	0.54	0.54	125296

weighted avg 0.62 0.65 0.63 125296

Top Contributing Factors to Churn

- average_transaction_amount: 30.29% importance
- total_transaction_amount: 30.01% importance
- txn_amount: 22.82% importance
- transaction_frequency: 13.50% importance
- txn_type_encoded: 3.38% importance

Top Features Contributing to Churn

- average_transaction_amount
- total_transaction_amount
- txn_amount
- transaction_frequency
- txn_type_encoded

Actionable Recommendations

Personalized Marketing Campaigns:

1. Engage customers with personalized offers based on high transaction amounts.
2. Leverage insights from average_transaction_amount and total_transaction_amount.

Enhanced Customer Support:

1. Improve customer support services to address issues and concerns promptly.
2. Proactive communication to understand and resolve customer pain points.

Loyalty Programs:

1. Implement loyalty programs to incentivize continued usage and customer satisfaction.
2. Tailor programs based on transaction frequency to encourage regular engagement.

Product/Service Enhancements:

1. Introduce new features or services based on transaction patterns and customer feedback.
2. Stay agile and responsive to evolving customer needs.

Revenue Analysis

Actual Churn Rate: 69.74%
Predicted Churn Rate: 73.62%
Total Revenue: $1453253398.51
Revenue Loss due to Churn: $1013502505.01

Proposed Optimization Strategies

1. Targeted Marketing Campaigns:
    1. Identify and engage at-risk customers through personalized marketing.
    2. Focus on customers with high predicted churn probability.

2. Loyalty Programs:
    1. Implement tailored loyalty programs to retain high-value customers.
    2. Monitor and adjust programs based on customer behavior.

3. Enhanced Customer Support:
    1. Improve customer support to mitigate issues leading to churn.
    2. Utilize insights from customer feedback for continuous improvement.

4. Product/Service Enhancements:
    1. Introduce new features addressing identified pain points.
    2. Seek customer input for future product development.

Conclusion

This report provides a comprehensive overview of the customer churn prediction project, including model performance, key contributing factors, and actionable recommendations. The insights gained from this project can significantly impact the MFS company's retention strategies, ultimately leading to improved customer satisfaction and business success.

Feel free to reach out for more detailed information or to discuss how these insights can be applied to elevate the success of your company.

Thank you for considering this report, and I look forward to further discussions!

Best Regards,

Md. Ashiqur Rahman
Data Science & Analytics Specialist
Linkedin: https://www.linkedin.com/in/ashiqur0202/
Github: https://github.com/ashiqur0202/