

SUBSCRIPTION PERFORMANCE AND CHURN PREDICTION

Ted & Poppy Pet Shop has expanded its pet food delivery service to an international subscription model and aims to analyze churn drivers to recommend customer retention strategies



Ted & Poppy

*a fictional study case

What do we want to know?

- Understand the performance of subscription-based service
- Identify key variables influencing customer churn prediction

200,000 existing customers for Q4'2024



29 variables

categorized into demographics, purchase behavior, customer engagement and satisfaction

What we did

Assumptions

- No multicollinearity among selected variables
- Independent observations
- Model scalability considered

Data Preparation

- Variable engineering
- Categorization of variables
- Conducted Bivariate analysis
- Data was partitioned into 75% for training and 25% for testing



Data Wrangling

Maps raw data into a usable format



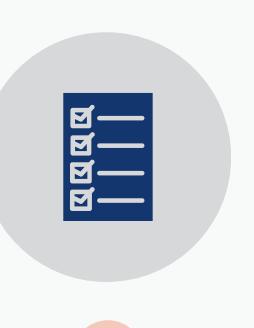
Exploratory Data Analysis

Identifies patterns, detects anomalies, and extracts insights



Model Classification

KNN
XGBoost
LightGBM
Random Forest
Logistic regression



Performance Metrics

Accuracy
Sensitivity
F1-score



Best Model Fit

Based on best performance metrics and fastest computational power



Prediction

What we have observed

🔍 Churn rate based on...



🔍 Opportunity Window



Key Findings

from support tickets raised in December 2024

- 44% of customers who **did not respond** to the satisfaction survey **churned** despite having **no payment issues**
- 33% of **satisfied customers** have **churned** without experiencing any **payment issues**

Prediction results

23.5%

are predicted to churn

83%

prediction accuracy

86%

retained customers identified at-risk

90%

accurately identify churner & reduce false alarms

Top 3 influencing variables

- Customer satisfaction
- Customer issues
Payment and support ticket
- Location

Confusion matrix

	True Retain	False Churn
True Retain	35,777	2,453
False Churn	6,272	5,499

What to do next

Top Priority (short-term goal)

- Enhance customer service quality by implementing the key performance indicators [1]
- Offer adaptable subscription packages to satisfied customers who are predicted to churn, with upgrades at no additional cost
- Introduce incentivized based retention strategies to re-engage disengaged customers

Long-term goal

- Switch to a reliable payment network provider and offer payment options based on customer's need
- Conduct market research analysis to identify and address churn in underperforming countries
- Implement recovery strategies to provide personalized support and build goodwill and gain trust [2]

References

[1] Pan, Jeh-Nan & Kuo, Tzu Chun. (2010). Developing a new key performance index for measuring service quality. Industrial Management and Data Systems. 110. 823-840. 10.1108/02635571011055072.

[2] Wirtz, Jochen. (2018). Winning in Service Markets Series, Vol. 11: Designing Complaint Handling and Service Recovery Strategies.

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