Customer Support Data Analysis - Executive Summary

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Company: Future Interns
Task Title: Customer Support Data Analysis & Ticket Resolution
Project Type: Data Science & Analytics

Objective

To explore, analyze, and model customer support ticket data in order to uncover patterns that affect customer satisfaction and resolution times. This task aims to derive actionable insights and predict satisfaction outcomes.

Dataset Overview

- Total Records: 2769
- Key Variables Analyzed: Customer Age Ticket Priority Ticket Type Time to Resolution Customer Satisfaction Rating

Key Insights & Trends

Satisfaction by Ticket Type: Billing Inquiry: 3.03 Cancellation Request: 3.03 Product Inquiry: 3.02 Refund Request: 2.93 Technical Issue: 2.96 Billing and Cancellation requests receive higher satisfaction.

Satisfaction by Ticket Priority: Low: 3.05 (Highest) Critical: 2.96 (Lowest) Lower priority tickets tend to lead to happier customers.

Resolution Time & Satisfaction: A slight downward trend observed in a scatter plot. Longer resolution times generally lead to lower satisfaction. Correlation Matrix Findings: Weak negative correlation between Time to Resolution and Satisfaction (-0.08) No strong linear relationships found in the current dataset.

Model Development: Ridge Regression

Model Summary: Raw Mean Squared Error: 2.30 Scaled Mean Squared Error: 2.07 R-squared (Scaled): -0.05 Interpretation: The Ridge Regression model did not generalize well. Indicates non-linear patterns or insufficient features. Suggests the need for advanced modeling (e.g., Random Forest, XGBoost).

Recommendations

1. Integrate Text Analysis: Use sentiment analysis on customer feedback.
2. Try Smarter Models: Use ensemble methods or neural nets.
3. Focus on Key Factors: Streamline resolution of low-priority tickets.
4. Feature Engineering: Derive new features from ticket descriptions and response logs.

Conclusion

- Quick resolutions and low-priority tickets lead to higher satisfaction.
- Billing/Cancellation inquiries tend to score well in ratings.
- Current linear modeling is limited – further data enrichment and smarter models are essential to boost accuracy.

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