Customer Lifetime Value (CLTV) Project Report

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1. Introduction

Customer Lifetime Value (CLTV) is a crucial metric for understanding how valuable a customer is to a business over the entire duration of their relationship. This project aims to analyze transactional data to estimate CLTV and help businesses focus their marketing efforts on the most profitable customers.

2. Abstract

This project involves the analysis of customer transaction data to estimate CLTV using Python and various data science techniques. The CLTV is calculated by examining user purchase behavior and monetary value, allowing us to segment customers into groups based on their expected future value. The final output includes a classification of customers that helps in targeted marketing strategies.

3. Tools Used

- **Python:** Core language for analysis.
- **Pandas:** For data manipulation and cleaning.
- **Matplotlib & Seaborn:** For visualization.
- **Lifetimes:** For CLTV prediction using BG/NBD and Gamma-Gamma models.
- **Jupyter Notebook:** Development environment.

4. Steps Involved in Building the Project

1. **Data Preprocessing**: Loaded and cleaned customer transaction data. Removed null values and canceled transactions.
2. **Feature Engineering**: Created necessary features such as frequency, recency, and monetary value.
3. **Modeling**:
    1. Used the BG/NBD model to predict purchase frequency.
    2. Used the Gamma-Gamma model to predict the average monetary value.
4. **CLTV Calculation**: Combined both models to estimate the CLTV for each customer.
5. **Segmentation**: Divided customers into four segments (A to D) based on their CLTV score using quantiles.
6. **Visualization**: Displayed the distribution of CLTV and customer segments using plots.

5. Conclusion

The CLTV analysis provides a data-driven foundation for customer segmentation and marketing prioritization. By identifying high-value customers, businesses can allocate resources more effectively and enhance long-term profitability. The project successfully demonstrates the application of predictive modeling to estimate customer value.