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**Analysis Topic:** Predicting Customer Lifetime Value using Gamma-Gamma model and Beta-Geometric Negative Binomial Distribution.

Objective: The objective of this analysis is to estimate the Customer Lifetime Value (CLV) for each customer in the online sales dataset using the Gamma-Gamma model and the Beta-Geometric Negative Binomial Distribution. CLV is a crucial metric for businesses as it helps in understanding the long-term value of customers and making informed marketing and customer acquisition decisions.

Problem Statement: Given an online sales dataset with information on invoices, products, quantities, prices, customer IDs, and countries, the challenge is to develop models that can predict the CLV for each customer. Specifically, I aim to answer the following questions:

1. Who are the top 10 customers we expect to make a purchase within 1 week?
2. Who are the top 10 customers we expect to make a purchase within 1 month?
3. Who are the top 10 customers we expect to make a purchase within 3 months?
4. What is the expected average profit from each customer?

Resources used in this analysis:

* Microsoft excel
* Python programming language

The results of this analysis can be found in a new dataset ‘clv\_prediction’.

Recommendations:

Based on the results of the analysis, here are some recommendations:

1. Targeted Marketing Campaigns: Reach out to the top 10 customers identified for each time frame (1 week, 1 month, and 3 months) with special offers, discounts, or personalized recommendations to encourage repeat purchases and increase customer loyalty.
2. Customer Engagement Strategies: Engage with these top customers through targeted email campaigns, social media interactions, or loyalty programs to keep them actively engaged with the brand and encourage them to make more frequent purchases.
3. Customer Experience Enhancements: Focus on improving the overall customer experience to retain these top customers and attract new ones. This could involve streamlining the checkout process, providing excellent customer support, or offering hassle-free returns and exchanges.
4. Cross-selling and Upselling Opportunities: Analyze the purchase patterns of these top customers to identify opportunities for cross-selling or upselling related products or services that complement their previous purchases, thereby increasing the average order value and maximizing revenue.
5. Retention Strategies: Implement targeted retention strategies for these top customers, such as exclusive perks, VIP programs, or early access to new products, to incentivize them to continue purchasing from the company and prevent churn.
6. Continuous Monitoring and Analysis: Regularly monitor customer behavior and purchase patterns to identify any changes or trends over time. Continuously refine and adapt marketing strategies and campaigns based on new insights to maintain customer engagement and drive long-term profitability.