🛒 E-commerce Sales Performance and Customer Behavior Analysis: Use Case Proposal

1. Executive Summary

This proposal outlines a data analytics project for GlobalGear Online, an E-commerce retailer. The main business challenge is balancing high customer acquisition costs (CAC) with low customer retention. The solution involves building a centralized data mart (Star Schema) to accurately measure the long-term value of customers acquired through various marketing channels. This will enable optimized spending and effective retention programs, directly targeting profitability improvements.

2. Business Understanding and Problem

2.1. Industry and Organization

- **Industry:** E-commerce Retail. Highly competitive, focused on digital sales volume and efficiency.
- **Organization:** GlobalGear Online. A global online retailer selling diverse products (apparel, electronics).

2.2. Core Business Problem

GlobalGear Online needs to stop inefficiently spending marketing dollars. They lack the data link between initial marketing cost and final customer profitability (CLV). A high rate of first-time buyers who never return is inflating acquisition costs and restricting sustainable growth.

3. Measurable Key Performance Indicators (KPIs)

The project will focus on measuring and improving these 8 KPIs:

#	KPI	Goal Category	Measurement Goal
1	**CLV:CAC Ratio**	Profitability	Maintain a ratio of **3:1** or higher.
2	**Customer Lifetime Value (CLV)**	Customer Value	Increase CLV of top segments by **15%**.

3	**Customer Acquisition Cost (CAC)**	Marketing Efficiency	Reduce CAC by **10%** across all channels.
4	**Customer Retention Rate**	Retention	Achieve a 3-month retention rate of at least **30%**.
5	**Average Order Value (AOV)**	Sales Performance	Increase AOV by **5%** quarter-over-quarter.
6	**Product Return Rate**	Product Quality / Logistics	Reduce return rate of top returning categories by **20%**.
7	**Order Fulfillment Cycle Time**	Operations	Decrease average fulfillment time to under **4 days**.
8	**Purchase Frequency**	Engagement	Increase average purchase frequency to **1.5 times** per customer per year.

4. Analytical Questions (10)

The data model will answer the following questions to drive business decisions:

1. What is the CLV by initial customer acquisition channel (e.g., Facebook vs. Google)?
2. Which marketing campaigns result in the lowest CAC for high-margin products?
3. What is the average Time-to-Second-Order (days) by customer age bracket?
4. How does the AOV compare between customers who used a discount code and those who did not?
5. Which product categories have the highest and lowest return rates?
6. What is the conversion rate (visits to purchase) segmented by device type (mobile/desktop)?
7. What is the total gross profit from customers acquired in the last six months (cohort analysis)?
8. Which shipping carriers have the highest/lowest shipping costs as a percentage of revenue?
9. What is the impact of seasonal promotions on the customer retention rate in the following quarter?

10. Which customer segments (e.g., location, category preference) are currently at-risk of churn?

5. Proposed Data Model (Star Schema)

The model will handle a minimum of **10,000 transaction rows** in the Fact Table.

Fact Table (1)

Table Name	Granularity (One Row = ?)	Key Metrics (Measures)
Fact_Orders	A single item on a single customer order.	Sales_Amount, Discount_Amount, Shipping_Cost, Quantity_Sold, Gross_Profit, Return_Flag (1/0)

Dimension Tables (4)

Table Name	Description	Key Attributes (Descriptive Columns)
Dim_Customer	Customer demographics and acquisition details. **(Dimension 1)**	Customer_ID, City, Country, Acquisition_Date, Acquisition_Channel
Dim_Product	Product details and classification. **(Dimension 2)**	Product_ID, Product_Name, Category, Brand, Is_High_Margin_Flag
Dim_Date	Standard time periods. **(Dimension 3)**	Date_Key, Full_Date, Month, Quarter, Year
Dim_Marketing	Campaign and promotional details. **(Dimension 4)**	Campaign_ID, Campaign_Name, Channel, Promotion_Type

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