E-Commerce Data Analysis || ChatGPT

Columns details

Here’s a list of columns for your e-commerce dataset:

1. Order ID
2. Customer ID
3. Customer Name
4. Customer Email
5. Order Date
6. Order Time
7. Product ID
8. Product Name
9. Category
10. Sub-Category
11. Quantity
12. Unit Price
13. Total Sales
14. Discount
15. Tax Amount
16. Shipping Cost
17. Payment Method
18. Shipping Address
19. Order Status
20. Return Status
21. Profit
22. Store Location
23. Order Source

With a 500-row e-commerce dataset, you can perform a wide range of analyses, from basic to advanced. Here's a list of analyses you can perform:

Basic Analysis

1. **Descriptive Statistics** – Calculate summary statistics such as total sales, average order value, total number of orders, and total customers.
2. **Top-Selling Products** – Identify the products that contribute the most to total sales.

3. **Sales by Product Category** – Calculate total sales and profit by category and sub-category.
4. **Customer Segmentation by Location** – Analyze sales and number of customers by region or city.
5. **Order Status Analysis** – Track the number of orders by status (Shipped, Delivered, Returned, Cancelled).
6. **Return Rate** – Calculate the percentage of returned orders.
7. **Average Shipping Costs** – Find the average shipping costs across all orders.
8. **Discount Impact** – Calculate the total amount of discounts given and analyze how discounts affect sales.
9. **Payment Method Preference** – Analyze the frequency of each payment method used (e.g., Credit Card, PayPal).

Intermediate Analysis

10. **Profitability Analysis** – Identify which products, categories, or customer segments are most profitable.
11. **Customer Lifetime Value (CLV)** – Estimate the lifetime value of each customer based on their purchase history.
12. **Sales Trends Over Time** – Create time-series analysis to identify trends in sales by day, week, or month.
13. **Cohort Analysis** – Analyze customer behavior based on the month of their first purchase (i.e., track how different customer cohorts behave over time).
14. **RFM Analysis (Recency, Frequency, Monetary)** – Group customers based on how recently they purchased, how often, and how much they spend.
15. **Order Source Performance** – Compare sales and profit based on the order source (Website, App, In-Store).
16. **Shipping Time Analysis** – Measure the time between order date and delivery to see how it affects customer satisfaction.
17. **Customer Retention Analysis** – Identify returning customers and analyze repeat purchase behavior.
18. **Cancellation and Return Rate Trends** – Track and analyze cancellations and returns over time.

Advanced Analysis

19. **Sales Forecasting** – Use time-series forecasting (e.g., ARIMA, exponential smoothing) to predict future sales based on historical data.
20. **Market Basket Analysis** – Use association rules to find products that are frequently bought together (e.g., using the Apriori algorithm).
21. **Customer Churn Prediction** – Use predictive modeling (e.g., logistic regression, decision trees) to predict which customers are likely to stop purchasing from you.
22. **Price Sensitivity Analysis** – Analyze how price changes (discounts or increases) affect sales and profit.

23. **Customer Segmentation** – Use clustering algorithms like K-means to segment your customers based on purchase behavior (e.g., frequency, amount spent, and recency).
24. **Inventory Optimization** – Forecast product demand and optimize stock levels to avoid overstock or stockouts.
25. **A/B Testing** – Analyze the impact of different marketing strategies, product offerings, or pricing changes by comparing results from test groups.
26. **Churn Analysis by Product** – Identify which products have the highest return rates or are frequently associated with churned customers.
27. **Seasonal Sales Patterns** – Identify seasonal patterns in sales (e.g., which months have higher sales) and optimize inventory or promotions accordingly.

By applying these analyses, you can gain insights into customer behavior, product performance, and overall business operations, helping to make informed decisions for growth.

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