Exploratory data analysis Report and business insights:

1. Basic Overview

Datasets Overview

- **Customers Dataset:**
  Displays customer-related information, including demographic or regional data.
  Example: CustomerID, Region, Age, CustomerName.

- **Products Dataset:**
  Details about the products, such as price and category.
  Example: ProductID, ProductName, Category, Price.

- **Transactions Dataset:**
  Contains transactional data, linking customers to purchased products with details like total value and transaction date.
  Example: TransactionID, CustomerID, ProductID, TotalValue, TransactionDate.

Missing Values

- Customers dataset, Products dataset, and Transactions dataset are checked for missing values.
  Example output:

  - **Customers:** Columns and the count of missing values are displayed.

  - **Products:** Missing values in columns like Price are highlighted.

  - **Transactions:** Any missing data in key columns like CustomerID or TotalValue is flagged.

Duplicates

- Duplicates in each dataset are identified.
  Example: If there are duplicate rows in Transactions, the count is shown.

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2. Univariate Analysis

Customers by Region

- A bar chart visualizes the distribution of customers across regions.
  Insight: Identify which region has the highest or lowest customer base.

Product Categories Distribution

- A bar chart shows the number of products in each category.
  Insight: Highlights the most/least popular product categories.

Product Price Distribution

- A histogram (with KDE) displays the spread of product prices.
  Insight: Detect pricing patterns, e.g., most products priced in a specific range or extreme outliers.

Transaction Total Value Distribution

- A histogram (with KDE) visualizes the distribution of transaction total values.
  Insight: Shows how transaction amounts are distributed (e.g., small vs. large purchases).

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3. Multivariate Analysis

Sales Trends Over Time

- Time-series line plot of total sales value over transaction dates.
  Insight: Identifies peaks, dips, or seasonal trends in sales.

Top Customers by Spending

- A horizontal bar chart of the top 10 customers by total spending.
  Insight: Pinpoints high-value customers to focus on for retention.

Top-Selling Products by Revenue

- A horizontal bar chart of the top 10 products contributing the most revenue.
  Insight: Identifies high-demand products driving sales.

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4. Outlier Detection

Box Plot of Product Prices

- A box plot displays price distributions, including potential outliers.
  Insight: Detects unusually high or low product prices that deviate from the norm.