**Sales Data Analysis Report**

**1. Overview**

This report summarizes key insights from the **Sales Data Analysis Dashboard**, highlighting trends in sales, customer demographics, and product performance. The visualizations provide an interactive way to explore the data and identify patterns.

**2. Dashboard Visualizations & Insights**

**📈 Line Chart: Sales Trend Over Time**

* **What it shows:** The number of products sold (Quantity Sold) over time (by month, quarter, and year).
* **Key Insights:**
  + Sales fluctuated significantly, with peaks in **mid-2023 (81 units sold)** and **early 2022 (50+ units sold)**.
  + There was a **sharp drop in mid-2022 and early 2023**, indicating possible seasonality or external market influences.
  + Understanding what caused the sales spikes (promotions, holiday seasons, etc.) could help replicate success.

**📊 Scatter Plot: Customer Age vs. Quantity Sold**

* **What it shows:** The relationship between **customer age** and **purchasing behaviour**.
* **Key Insights:**
  + Customers of all ages made purchases, but the distribution is **scattered** without a strong correlation.
  + Some age groups (possibly in their 30s-40s) purchased more, while others made fewer purchases.
  + This can help in **targeting promotions for age groups** with higher engagement.

**🗺️ Map: Sales Distribution by Region**

* **What it shows:** The total quantity of products sold in each region (North, South, East, West).
* **Key Insights:**
  + **South and North regions** had the highest sales, with **large data points indicating higher quantity sold**.
  + The **West region had lower sales**, which could indicate a need for better marketing strategies or expansion.
  + Analysing why **some regions perform better** could help optimize sales strategies.

**📊 Bar Chart: Product Sales by Category**

* **What it shows:** The **number of products sold** in each product category.
* **Key Insights:**
  + **Electronics is the best-selling category** (62 units), followed by **Home Appliances (54 units)**.
  + **Clothing and Accessories have moderate sales**, indicating a niche market.
  + There are **13 blank values**, suggesting missing product category information that needs to be fixed in data cleaning.

**🟠 Pie Chart: Sales Distribution by Product Category**

* **What it shows:** Percentage breakdown of total sales by product category.
* **Key Insights:**
  + **Electronics holds the largest share (31%)**, followed by **Home Appliances (27%)**.
  + **Clothing and Accessories make up a smaller portion**, but still contribute to total revenue.
  + The **(Blank) category (6.5%)** suggests missing data that needs attention.

**3. Recommendations**

🔹 **Further analysis on sales spikes** – Identify what caused high sales periods to optimize future strategies.  
🔹 **Focus on high-performing regions** – Leverage marketing in the **South and North**, and improve sales in the **West region**.  
🔹 **Improve data quality** – Address missing **product categories** and correctly classify all items.  
🔹 **Age-based targeting** – Different age groups show varied purchase behaviour, so marketing strategies should be adjusted accordingly.

