

Project Report: E-Commerce Dashboard Analysis by Kaspars Gillespie

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1. Introduction

In this project, we analyse sales and profitability data from an e-commerce dataset to provide insights into product performance, shipping modes, and regional trends. The goal is to create a sales dashboard to visualise key metrics and derive actionable business insights, facilitating better decision-making for the company.

2. Summary of the Dataset

The dataset contains information on e-commerce transactions, including:

- **Order Information:** Order ID, Order Date, Ship Date, Ship Mode, Order Priority
- **Product Details:** Product Category, Product Name, Quantity, Discount
- **Financial Metrics:** Sales, Profit, Shipping Cost
- **Customer Details:** Customer ID, Customer Name, City, State, Country, Region
- **Timeline:** Month of the order placement
- **Other Attributes:** Aging used to create a histogram bin

3. Analysis Performed

The following analyses were conducted using the provided dataset:

3.1 Data Formatting and Cleaning

- Highlighted duplicate records.
- Applied conditional formatting to show data changes using an icon set.
- Formatted date columns (Order Date, Ship Date) to the dd-mm-yy format.
- Currency fields been formatted to British pound (£)
- Profit values been updated with star symbol

Format all cells based on their values:

Format Style:

Icon Sets

Reverse Icon Order

Icon Style:

Custom

Show Icon Only

Display each icon according to these rules:

Icon		Value	Type
<div><div>★</div></div>	when value is	<div><div>>=</div><div>90</div><div>↑</div></div>	<div>Number</div>
<div><div>★</div></div>	when < 90 and	<div><div>>=</div><div>30</div><div>↑</div></div>	<div>Number</div>
<div><div>☆</div></div>	when < 30		

3.2 Sales & Profit Table Creation

- Prepared month-wise tables for **Sales** and **Profit** on a separate worksheet.

3.3 Region-wise Analysis

- Found the average **Profit** for each Product Category, region-wise.
- Found the average **Sales** for each Product, region-wise.

3.4 Product Performance

- Identified the top 3 highest performing products and bottom 3 lowest performing products in terms of Profit.

3.5 Visualisation

- Created a chart of month-wise **Sales** and **Profit** trends.
- Visualised the region-wise **Profit** table.

3.6 Statistical Analysis

- Performed statistical analysis (e.g., mean, median, standard deviation) on **Sales** and **Profit** data to gain deeper insights into the dataset.

3.7 Sales Dashboard Creation

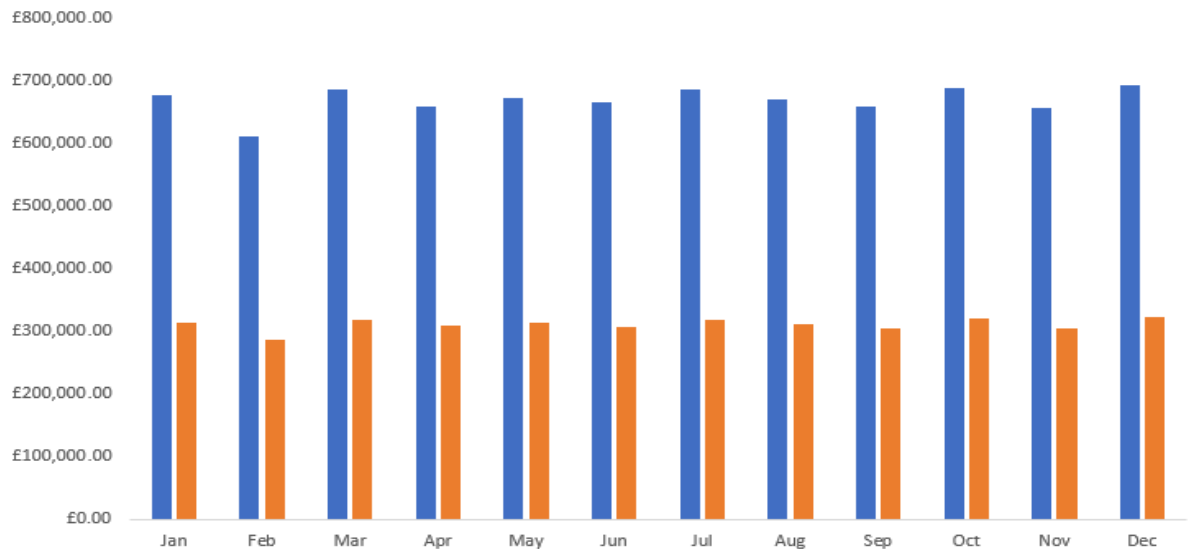
- Designed an interactive sales dashboard summarising key metrics such as:
 - Total Sales
 - Total Profit
 - Region-wise analysis
 - Product Category analysis
 - Average Sales and Profit
 - Profit margin

4. Data Insights

From the tables and visualisations, we derived the following insights:

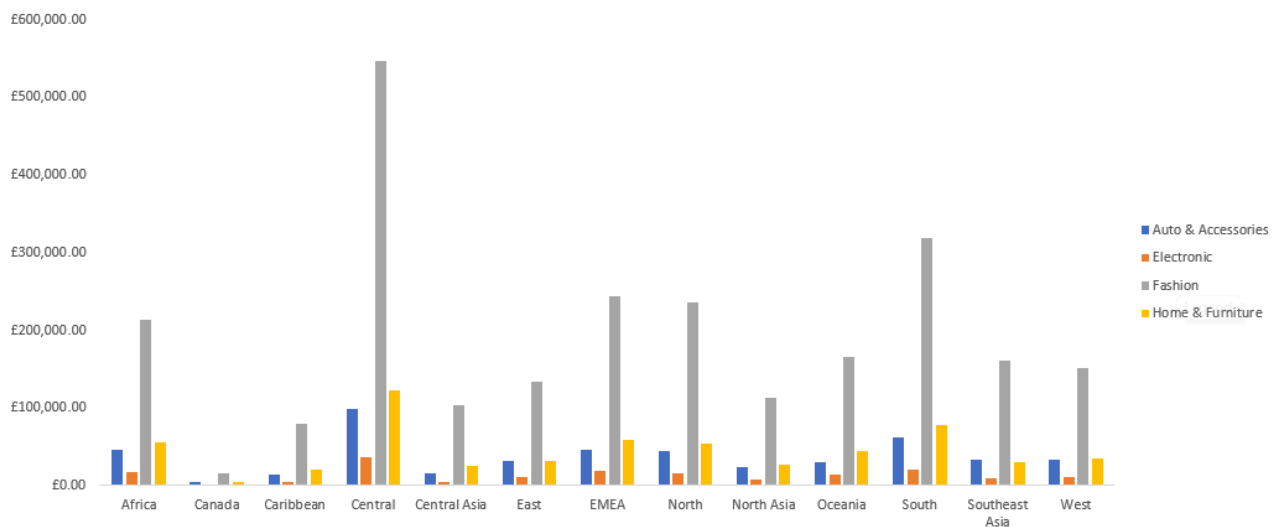
4.1 Month-wise Insights

- The sales and profit figures remained relatively consistent throughout the year, with only slight fluctuations month-to-month. Both sales and profit values stayed within a narrow range, showing stable performance across all months.
- This highlights that there were no significant peaks or drops in sales and profit over the year, emphasising overall stability.



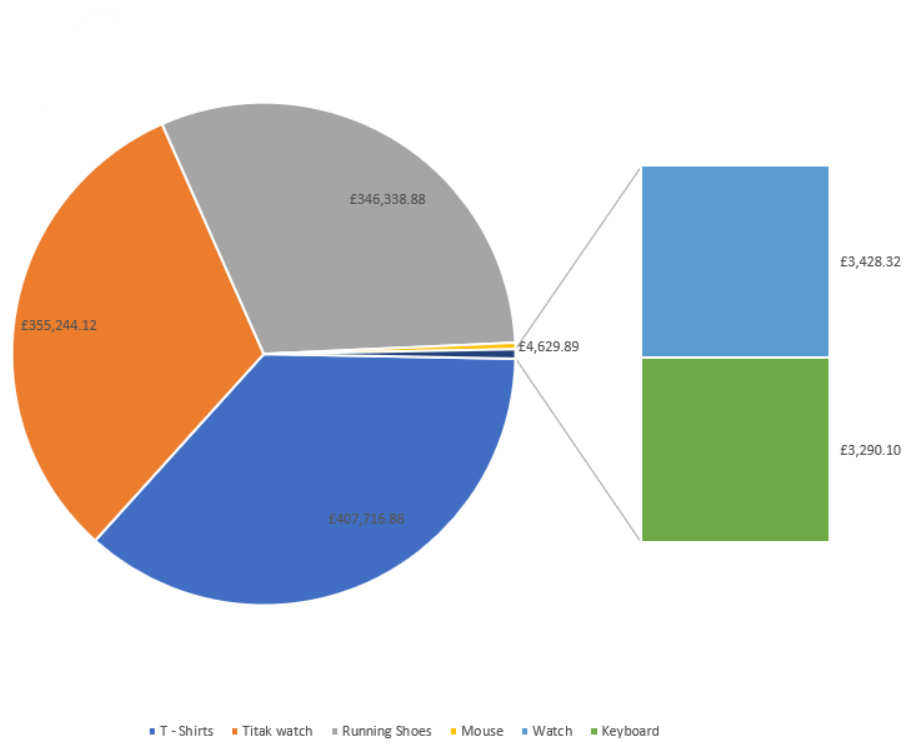
4.2 Region-wise Insights

- **Central region** consistently generated the highest profit, while **Canada** underperformed in terms of both sales and profit.
- Fashion category showed best performance in all regions



4.3 Product Performance

- The top 3 performing products (based on profit):
 1. **T-Shirts**
 2. **Titak watch**
 3. **Running shoes**
- The bottom 3 lowest performing products (based on profit):
 1. **Mouse**
 2. **Watch**
 3. **Keyboard**



5. Statistical Analysis of Sales & Profit Data

Sales Data:

- The **average sales** across the dataset were **156.43**.
- The **standard deviation** of sales was **65.78**, indicating a moderate variance in the data, meaning that while there was some fluctuation in sales values, they largely stayed within a reasonable range of the mean.
- The **minimum** sales recorded were **33**, while the **maximum** reached **250**.
- The sales data showed a **slight negative skewness** (-0.1578), suggesting that there were slightly more higher-value sales outliers than lower ones.
- The **kurtosis** (-1.43) indicates a light-tailed distribution compared to a normal distribution, meaning fewer extreme outliers in the sales data.

Profit Data:

- The **average profit** was **72.72**, with a **standard deviation** of **49.10**, suggesting a moderate level of variability in profitability.
- The **minimum profit** recorded was **£0.51**, while the **maximum profit** was **£167.50**.
- The profit data had a **positive skewness** (0.1774), indicating that there were more lower profits with some high-profit outliers.
- The **kurtosis** (-1.49) also points to a light-tailed distribution for profit, meaning fewer extreme profit values than expected in a normal distribution.

These results reflect a reasonably consistent performance in terms of both sales and profit, though there is some variance, particularly in profit, which could be influenced by factors such as discounts or product categories.

6. Conclusions

- **Most Profitable Products:** The highest profit was generated by **Fashion** in the **Central region**.
- **Least Profitable Products:** The lowest profit came from **Electronics** in **Canada** suggesting over-discounting or high shipping costs.
- **Regional Insights:** **Central** outperformed others, whereas **Canada** needs targeted improvement.

The sales dashboard provides a comprehensive overview of key trends and allows for quick, actionable insights to optimise business performance.
