VICTORIA SOLUTIONS
CONSULTING GROUP

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| Project Title (Example – Week1, Week2, Week3) | Week-1 |

## Project Guidelines and Rules

1. **Formatting and Submission**
   - **Format:** Use a readable font (e.g., Arial/Times New Roman), size 12, 1.5 line spacing.
   - **Title:** Include Week and Title (Example - Week 1: TravelEase Case Study.)
   - **File Format:** Submit as PDF or Word file to contact@victoriasolutions.co.uk
   - **Page Limit:** 4–5 pages, including the title and references.

2. **Answer Requirements**
   - **Word Count:** Each answer should be 100–150 words; total 800–1,200 words.
   - **Clarity:** Write concise, structured answers with key points.
   - **Tone:** Use formal, professional language.

3. **Content Rules**
   - Answer all questions thoroughly, referencing case study concepts.
   - Use examples where possible (e.g., risk assessment techniques).
   - Break complex answers into bullet points or lists.

4. **Plagiarism Policy**
   - Submit original work; no copy-pasting.
   - Cite external material in a consistent format (e.g., APA, MLA).

5. **Evaluation Criteria**
   - **Understanding:** Clear grasp of business analysis principles.
   - **Application:** Effective use of concepts like cost-benefit analysis and Agile/Waterfall.
   - **Clarity:** Logical, well-structured responses.
   - **Creativity:** Innovative problem-solving and examples.
   - **Completeness:** Answer all questions within the word limit.

6. **Deadlines and Late Submissions**

- **Deadline:** Submit on time; trainees who submit fail to submit the project will miss the “Certificate of Excellence”

7. **Additional Resources**
   - Refer to lecture notes and recommended readings.
   - Contact the instructor or peers for clarifications before the deadline.

**START YOUR PROJECT FROM HERE:**

# Week 1: Shop Ease Case Study

## 1. Cleaned Dataset.

**Inspection data:** This dataset has 20 rows of transactions and 10 columns: Transaction_ID (numeric), Date (date), CustomerID (categorical), Product (categorical), Category (categorical), Quantity (numeric), Price (numeric), Total_Amount (numeric with one missing value), Payment_method (categorical), Region (categorical).

**Eliminate Duplicates:** No duplicate rows were detected (0 duplicates)

**Missing Values:** There was one missing value in Total_Amount on the transaction_ID 1001, so the value was initialized as Quantity Price (1 = 800 = 800). Other missing values did not exist.

**Normalize Formats:** Dates have been normalized to the standard YYYY-MM-DD datatype. Numeric columns (Quantity, Price, Total_Amount) were verified that these are numeric types with no symbols or inconsistency.

**Export:** The purged data was formatted in a fresh CSV file (cleanedsalesdata.csv**).**

**Ethical Implications**: There is no sensitive customer information (e.g. emails or phone numbers); Customer_IDs are anonymized, which means that they do not violate data privacy regulations such as GDPR.

## 2.Exploratory Data Analysis Summary:

**Dataset Overview:** Evaluated 20 sales transactions in between January and June 2024. Some important numerical characteristics: The mean Total Amount per transaction is 396.50 (std dev 390.42), the Quantity on average 1.60 units, the Price on average 298.75.

**Key Trends and Patterns:** Total sales: 7,930. Electronics are the largest (94.5% of sales), with the highest sales of January (2,100) and April (1,740). Lowest sales in March (325). Seasonal pattern: Higher sales in Q1/Q2 start (Jan/Feb/Apr), dip in March/May. Repeat customers: Only 2 (C001 and C002, each with 2 purchases).

**Correlations:** There is a strong positive correlation between Price and Total amount (0.89) meaning the more expensive items drive the revenue. Negative Quantity and Price (-0.42)

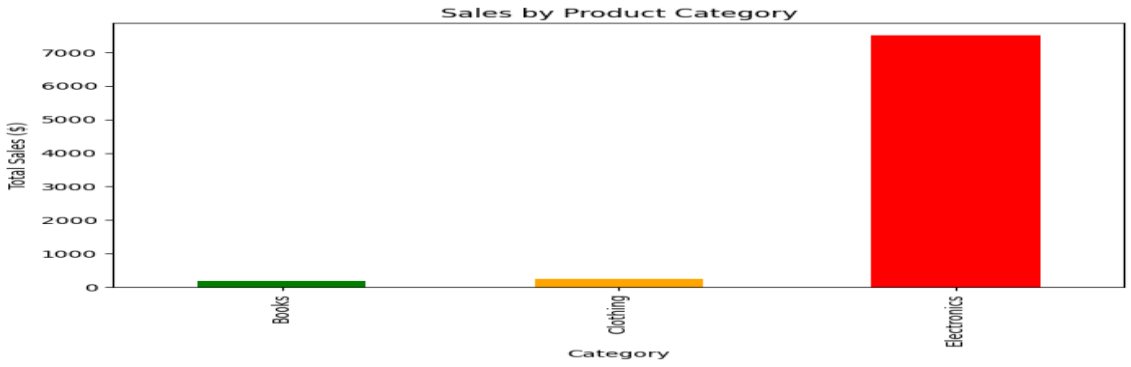
meaning items purchased in bulk on cheaper goods. No advertising expenditure / discount data, so correlations were restricted to the metrics available.

**Customer Behaviour:** Most popular categories: Electronics (e.g., Smartphones at 3,000 total). Best-selling months: January/April. Trends: South region is the highest sales maker (3,225); top payment option is cash (3,225). Customers like high value Electronics (e.g., Laptops/Smartphones).

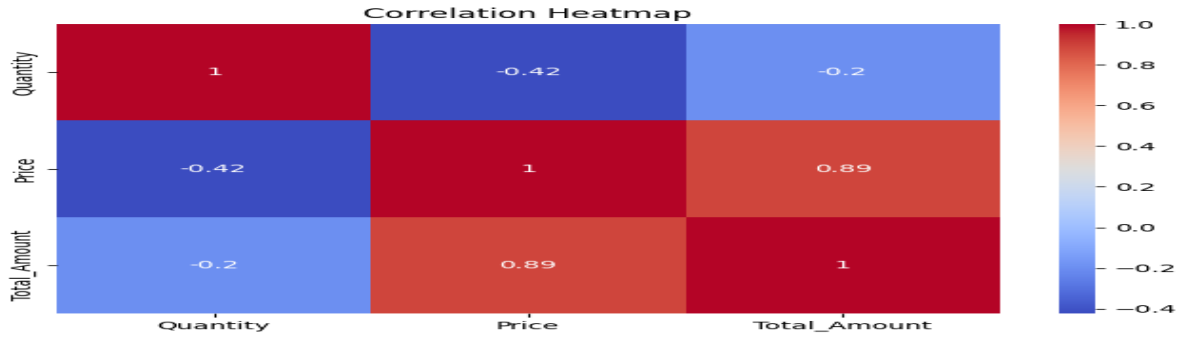
## 3.Three Data Visualizations (Plots):

Visualization 1: Monthly Sales Trends (Line Graph) This line graph indicates the fluctuations in monthly sales showing that sales were maximum in January (2,100) and April (1,740) with a huge decline in March (325) and helps to draw seasonal patterns.


Visualization 2: Sales by Product Category (Bar Chart) This bar chart illustrates the superiority of Electronics as the one with the highest sales (7,500), as compared to Books (180) and Clothing (250), highlighting the importance of this category in revenue.




Visualization 3: Correlation Heatmap This heatmap shows that the correlations are high e.g., Price and Total_Amount (0.89), and that, there exists a negative Quantity-Price relationship (-0.42) that gives clues on the patterns of purchasing behavior.



# Final Data Insights Report:

## Shop Ease Sales Analysis:

A Data-Driven Narrative for Growth Imagine Picture Shop Ease as a high-energy digital mall, in which each purchase forms a larger story of customer preferences and corporate business potential. Being a Data Analyst, I have examined our sales data (January-June) of 2024, which is 20 transactions, with a total amount of 7,930, in order to identify actionable data. This report turns the meaningless numbers into an exciting narrative, trends, behaviours and approaches to attaining superior sales outcomes and consumer contentment all without violating ethical data handling.

Our data is about Electronics who is the main character. The category brings in the revenue of 7,500 (94.6% of the total sales) with Smartphones and Laptops performing the strongest. This dominance is vividly depicted in the bar chart of sales by category which highlights a customer demand of tech product over Books (180) or Clothing (250) as the demand. But seasonal cycles provide a twist: The line chart of sales per month shows peaks in January (2,100, perhaps due to post-holiday sales) and April (1,740), and low points in march (325) and May (1,025). These trends imply that the demand can be affected by external factors, including economic cycles or offers, averaging at 1,322 per month.

Another important consideration that can be made by exploring character-relationships data further- our customers- the correlation heatmap can be analysed to understand key insights. There is a great correlation of 0.89 between Price and Total Amount and a negative correlation of -0.42 between Quantity and Price, the high-ticket sales are driven by high-priced products and high bulk purchases are driven by low-priced products. The loyalty of customers is weak, as there are only two regular customers (C001 and C002), but regional trends are promising: the South is the most advanced with the cash payment of 3,225. As it is, we know that there are chances of high valuation in tech without advertising metrics, but this analysis would be improved by increasing measures.

Our story ethically respects privacy: Anonymized Customer_IDs, and we do not give personal information.

The solution will be in the tactical recommendations that can drive ShopEase. Focus on Electronics stock in the high months (January/April) with specific restocking and loyalty mailings to frequent buyers. During off-peak seasons, add cross-promotion of mixes include tech with Clothing or Books to spread the appeal differently. Finally, include advertising tracking that will help correlate spending with sales, which will allow making decisions based on data. Simply put, the data of Shop Ease tells the story of the uncharted success of technology.

With the enhancement of strengths, dealing with seasonality, and customer cultivation, it is possible to produce a sequel of the continuous development and happy customers.

**Bonus Challenge:** How to increase the sales in the worst-selling months. Worst months: March (325) and May (1, 025), with low Electronics volume and low numbers of customer repeats.

Strategy 1: Use specific discounts (10-20%) of underperforming segments such as Clothing and Books in these months in combination with popular Electronics offerings to encourage cross-outlets and increase the average rates of transactions.

Strategy 2: Roll out region-based emailing in the South (remaining sales are the greatest) with new Electronics entry, mid-monthly to create a demand and ensure that slow months become a chance at the repeat-business.

# References:

Matplotlib Development Team. (2025) Matplotlib: Visualization with Python. Website: matplotlib.org/ (last visited: 28 August 2025). [Helps with visualization technique (e.g., line graphs, bar charts) suggested in the project.

Seaborn Development Team. (2025) Seaborn: Data visualization in statistics. Accessible at: https://seaborn.pydata.org/ (Accessed: 28 August 2025). [Applicable to the visualization technique used with correlation heatmap.

Kotler, P. and Keller, K.L. (2022) Marketing Management. 16th edn. Harlow: Pearson Education. [Relevant to business plans such as promotions and loyalty programs.