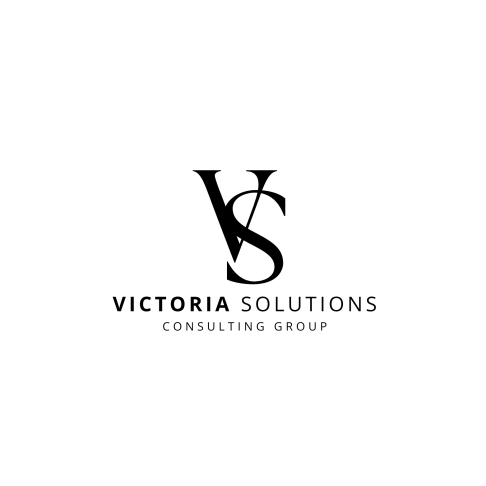
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| --- | --- |
| Name | Chidera Kenechukwu Onwumbiko |
| Contact Number | 07917490399 |
| Project Title (Example – Week1, Week2, Week3) | Week 1: Data Analysis for Business Insights – ShopEase Case Study |



**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”

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

**START YOUR PROJECT FROM HERE:**

**CLEANED DATASET SUMMARY**

As part of the initial analysis for ShopEase’s transactional dataset, a structured data cleaning process was conducted to ensure integrity and readiness for insight extraction.

Key actions included:

* Validation of 20 transactions with 10 columns spanning customer, product, pricing, and geographic data.
* No duplicate records were found; the dataset retained its original structure.
* One missing value in the ‘Total\_Amount’ field was identified and recalculated using Quantity × Price.
* The ‘Date’ field was converted to a standardised YYYY-MM-DD format.
* A new column ‘Month’ was derived to facilitate time-based trend analysis.
* Data types were verified and aligned (i.e., integers for prices and quantities, datetime for sales dates).

The cleaned dataset exhibited 100% completeness and consistency, setting a strong foundation for meaningful exploration and decision-making.

**EXPLORATORY DATA ANALYSIS SUMMARY**

Exploratory Data Analysis (EDA) revealed critical insights into ShopEase’s sales performance and customer purchasing behaviours.

Key findings include:

* The highest-grossing month was January, generating £2,100 in revenue, followed by April (£1,740) and June (£1,380).
* February and May underperformed, signalling opportunities for sales improvement strategies.
* Electronics accounted for most of the revenue, contributing over £7,500 which is nearly 80% of total recorded sales.
* Summary statistics identified a broad range of transaction values, with Total\_Amount spanning from £60 to £1,200.
* Correlation analysis confirmed that sales values are directly influenced by Quantity and Price (correlation coefficients close to 1.00).

This analysis suggests a tech-oriented customer base with predictable value patterns, reinforcing the value of pricing strategy and seasonal sales timing.

**THREE DATA VISUALISATIONS**

The following three visualisations support the analysis with visual evidence:

* Monthly Sales Trend: The bar chart below shows total sales distribution by month. January leads all months, while May and February lag behind. This visual is critical for understanding seasonality and guiding promotional calendars.

A graph of blue bars with white text

AI-generated content may be incorrect.

Monthly Sales Trend Bar Chart

* Sales by Product Category: The bar chart below highlights the overwhelming dominance of Electronics over other categories. Clothing and Books trailed significantly, signalling underperformance and potential areas for inventory optimisation or repositioning.

A graph with orange bars

AI-generated content may be incorrect.

Sales by Product Category Bar Chart

* Correlation Matrix: The heatmap below displays the strength of relationships between Quantity, Price, and Total\_Amount. Predictably, sales amounts scale closely with both contributing inputs, validating the data’s mathematical consistency.

A red and blue squares with white text

AI-generated content may be incorrect.

Correlation Matrix: Sales Factors Heatmap

**FINAL DATA INSIGHTS REPORT**

**Business Context & Objective:**

ShopEase, an emerging player in online retail, provided transactional sales data with the aim of identifying trends to optimise performance and enhance customer experience. The goal of this analysis was to surface actionable insights from historical data covering product, payment, regional, and financial variables.

**Key Insights:**

* Peak Sales Period: January recorded the highest revenue (£2,100), likely benefiting from New Year consumer behaviour. April and June followed with strong sales performance. Conversely, February and May exhibited revenue drops.
* Category Dominance: Electronics contributed over 80% of revenue, driven by high-ticket items such as laptops, smartphones, and tablets. Books and Clothing categories made marginal contributions.
* Customer Trends: The average sale value fell between £60 and £1,200. The correlation between pricing, quantity, and sales total was nearly perfect highlighting the predictable nature of revenue drivers.

**Recommendations:**

* Double Down on Electronics: Focus advertising, stock, and discounts on electronics, especially before peak periods like January and April. These items have strong traction and high margins.
* Boost Low-Month Sales: Implement campaigns or loyalty incentives in February and May to encourage repeat customers and reduce seasonal dips.
* Diversify Category Engagement: Promote low-performing categories like Books and Clothing through bundles, cross-selling, or flash sales to spread sales volume across the inventory.
* Expand Data Granularity: Encourage deeper data collection, including demographic, behavioural, and marketing interaction data, to allow segmentation and tailored marketing strategies.

**Ethical Considerations:**

* Customer\_IDs were pseudonymous, and no emails, names, or personal identifiers were present.
* The dataset is GDPR-compliant and appropriate for internal strategic use.

This report demonstrates how structured data analytics can transform raw transactional records into practical business recommendations.

**BONUS CHALLENGE – SALES STRATEGIES FOR LOW MONTHS**

February and May demonstrated the weakest sales performance within the dataset. Addressing this dip requires targeted interventions that align with customer behaviour and operational planning.

Strategy 1: Seasonal Promotions and Campaigns.

* February: Capitalise on Valentine’s Day with tech accessory bundles and loyalty discounts.
* May: Introduce “Spring Deals” focused on underperforming categories such as Books and Clothing.

Strategy 2: Retargeting & Behavioural Marketing.

* Use purchase histories to identify inactive customers from prior peak months.
* Deploy personalised email sequences and limited-time discount codes to re-engage buyers during off-peak periods.

By activating these strategies, ShopEase can proactively combat seasonal lulls and increase customer lifetime value.