Techwalnut Innovations
Technical Assessment

Business Analyst Task

Task Code: **TW-TSK-BA-25-01**

Objective

A supermarket chain is preparing for an upcoming expansion in the next quarter. To ensure growth and profitability, the management wants to understand **market performance, customer behavior, and operational efficiency**. By analyzing past sales data, they aim to identify the most profitable regions, customer segments, and product categories, while also addressing challenges such as discounts, returns, and delivery delays.
Analyze the dataset containing sales, profitability, and operational data. Use **Google Sheets (Pivot Tables, Charts, and AI Explore feature)** to perform the analysis and derive insights.

Problem Statements

1. **Profitability Analysis by Segment & Region**
    - 1.1. Determine which **region-customer segment combination** contributes the highest profit margin.
    - 1.2. Identify any **loss-making regions or product categories** due to excessive discounts or high return rates.
2. **Impact of Discounts on Profitability**
    - 2.1. Analyze the relationship between **discount percentage and overall profitability**.
    - 2.2. Highlight cases where discounts increased sales volume but **reduced net profits**.
3. **Operational Efficiency (Delivery Time vs. Profitability)**
    - 3.1. Compare **Delivery Days** across regions and categories.
    - 3.2. Assess whether **longer delivery times** are negatively correlated with profit margins.
    - 3.3. Analyse and detect whether a relationship exists between profitability and operational efficiency, and determine the nature and extent of this relationship.
    - 3.4. Highlight quarterly profitability trends to identify patterns over time.
4. **Customer Return & Retention Risk**
    - 4.1. Identify the **customer segments, regions, or products** that exhibit the **highest return rates**.
5. **Product Category & Subcategory Deep-Dive**
    - 5.1. Within **Electronics, Furniture, and Office Supplies**, determine which **subcategories/products** generate **80% of the total profits** (Pareto 80/20 principle)
6. **AI-Based Forecasting (Bonus Task)**

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6.1. Using Google Sheets' AI Explore tool or add-ons, create a **3-month profit forecast** based on historical data.

6.2. Provide recommendations for regions/products where **profitability can be maximized**.

Deliverables

1. Pivot Tables (Profitability, Discounts, Returns, Delivery Efficiency).
2. Visual charts summarizing key insights.
3. Summary (5–6 points) of findings with **business recommendations**.

Resources

Link to Google Sheets with Data: TW-TSK-BA-25-01- Business Analyst Task(Sample Data)

Submission Guidelines

1. **Submission Components:** Each submission must include the following:

1.1. PDF Report

1.1.1. Include pivot tables, charts/graphs (screenshots), and a short written summary (5–6 key insights with recommendations).

1.2. Google Sheet

1.2.1. Contain all pivot tables, charts, and calculations.

1.2.2. Must be shared with *"Anyone with the link → Viewer access."*

2. **File & Folder Naming Convention**

2.1. A dedicated folder must be created by each student inside the common Google Drive.

2.2. Folder name format: Role_FullName_TaskID

2.2.1. Example: **BusinessAnalyst_AkashMehta_TSK-BA-25-01**

2.3. Inside this folder:

2.3.1. PDF Report → **BA_Report_FullName.pdf**

2.3.2. Google Sheet → **BA_Sheet_FullName.xlsx**

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3. Submission Drive

3.1. All students must upload their work to the common Google Drive folder shared by the coordinator.

3.2. Create your own subfolder as per the naming convention.

3.3. Submissions sent via email or personal links will not be accepted.

4. Deadline

4.1. The final submission must be completed by Sunday, 21st September, at 7:00 PM.

4.2. Late submissions will not be evaluated unless pre-approved.

5. Role Identification

5.1. This task is assigned for the role: Business Analyst (Task Code: TW-TSK-BA-25-01).

5.2. The role name and task code must be clearly mentioned on the cover page of the PDF report.

Prompt Engineer Task

Task Code: **TW-TSK-PE-25-01**

Objective

Design a 5–6 screen application for a given business or operational use case using AI tools (like ChatGPT, Claude, Gemini, MidJourney, Figma AI, or other UI-generating AI). The focus is on prompt engineering, iterative refinement, and generating functional, visually coherent screens.

Problem Statement: Office Pantry Management Application

You are tasked with designing an application for office pantry management that supports two types of users: **the company admin and the vendor**. The company admin is responsible for managing and maintaining logs of tea, coffee, biscuits, and other pantry items consumed by employees or visitors. They can track consumption on a daily or per-visit basis and generate consolidated reports to monitor overall usage.

The vendor, on the other hand, is responsible for setting the prices of pantry items and monitoring total quantities sold. Based on the consumption logs provided by the admin, the vendor can generate monthly invoices and download them for billing purposes.

The objective of the application is to streamline the entire process of logging, tracking, and billing pantry consumption, ensuring accurate records for the admin while automating billing and invoicing for the vendor.

1. **Application Design Using AI**

    1.1. Use AI to generate wireframes or UI mockups for each screen of the application.
    1.2. Each screen should have a clear purpose and functionality, aligned with the use case provided.
    1.3. Ensure the screens are consistent in design language, color, and layout.
    1.4. **Key Deliverables:**
        1.4.1. 5–6 screens for the application
        1.4.2. Screens must demonstrate navigation flow, interactive elements, and key functionalities

2. **Prompt Engineering for AI**

    2.1. Write effective AI prompts to generate the screens, including all UI elements, text, and layout instructions.
    2.2. Iterate on AI outputs to refine the screens based on feedback or gaps in design.
    2.3. Include variations to test different layouts, color schemes, or functionality enhancements.
    2.4. **Key Deliverables:**
        2.4.1. Prompt effectiveness (measured by how closely AI output matches intended design)
        2.4.2. Iteration efficiency (number of iterations needed to finalize a screen)
        2.4.3. Consistency and completeness of generated screens

Prompt Engineer Task

Task Code: **TW-TSK-PE-25-01**

3. Documentation & Process Transparency

- 3.1. Maintain a complete record of all AI interactions used to generate screens.
- 3.2. Document all prompts, AI outputs, and refinements in chronological order.
- 3.3. Include rationale for changes and why certain prompts worked better.
- 3.4. **Key Deliverables:**
  - 3.4.1. Completeness of AI chat logs
  - 3.4.2. Clarity of prompt documentation
  - 3.4.3. Traceability from prompt → AI output → final screen

Deliverables

1. Screens of the application (5–6 screens) in any viewable format (PNG, PDF, Figma, etc.).
2. An entire AI chat transcript was used to generate the screens, including prompts, responses, and iterations.
3. Optional: Brief summary (3–5 points) explaining key design decisions, prompt strategies, and learning outcomes.

Submission Guideline

1. **Submission Components:** Each submission must include:

   - 1.1. **Screens**:
     - 1.1.1. 5–6 application screens in PNG/PDF/Figma link.

   - 1.2. **Documentation**:
     - 1.2.1. A PDF report containing:
       - 1.2.1.1. All prompts and iterations in chronological order.
       - 1.2.1.2. Explanations of changes and final outcomes.
       - 1.2.1.3. Summary of design decisions and learnings (3–5 points).

   - 1.3. **AI Transcript**:
     - 1.3.1. Exported or copied transcript of AI chats used for the task. (Mandatory)

2. File & Folder Naming Convention

- 2.1. A dedicated folder must be created by each student inside the shared Google Drive
- 2.2. Folder Name Format: Role_FullName_TaskID
  - 2.2.1. Example: PromptEngineer_AkashMehta_TSK-PE-25-01
- 2.3. Inside this folder:

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2.3.1. Screens → PE_Screens_FullName.pdf/png/figma
2.3.2. Transcript → PE_Transcript_FullName.pdf

3. Submission Drive

3.1. All students must upload their work to the common Google Drive folder shared by the coordinator.

3.2. Create your own subfolder as per the naming convention.

3.3. Submissions sent via email or personal links will not be accepted.

4. Deadline

4.1. The final submission must be completed by Sunday, 21st September, at 7:00 PM.

4.2. Late submissions will not be evaluated unless pre-approved.

5. Role Identification

5.1. This task is assigned for the role: **Prompt Engineer**

5.2. Task Code: TW-TSK-PE-25-01

5.3. The role name and task code must be clearly mentioned on the **cover page** of the PDF report.