Group 4 Excel Data Analysis Project: BlinkIT Grocery Store Sales Analysis

Project Overview

BlinkIT, a rapidly growing grocery retail chain, is looking to optimize its product placement, pricing, and store performance. Your task as a data analyst is to explore the sales dataset, clean and process the data, perform in-depth analysis, and generate actionable insights.

By analyzing the dataset, you will identify trends, compare sales across different store types, evaluate item performance, and recommend strategies to improve profitability.

Dataset Overview

The dataset contains information about various grocery items sold across different BlinkIT outlets. The key attributes include:

- **Item Attributes**:
  - `Item Identifier`: Unique product code
  - `Item Type`: Category of the product (Fruits, Drinks, Household, etc.)
  - `Item Fat Content`: Nutritional classification (Regular, Low Fat, etc.)
  - `Item Visibility`: Shelf visibility percentage
  - `Item Weight`: Product weight (some missing values)
- **Outlet Attributes**:
  - `Outlet Identifier`: Unique store code
  - `Outlet Establishment Year`: Year of opening
  - `Outlet Location Type`: Store location (Tier 1, Tier 2, Tier 3)
  - `Outlet Size`: Store size (Small, Medium, High)
  - `Outlet Type`: Grocery store or supermarket type
- **Sales & Performance Metrics**:
  - `Sales`: Total revenue generated per item
  - `Rating`: Customer rating for the item

Project Objectives

The aim of this project is to:

1. **Clean & preprocess the dataset** to handle inconsistencies.
2. **Analyze sales performance** across different stores and product categories.
3. **Identify trends and patterns** using data visualization.

4. **Generate actionable business insights** to improve store profitability.

Project Tasks & Analysis

🔹 Task 1: Data Cleaning & Preparation

- Handle **missing values** (e.g., fill missing item weights using average weight per item category).
- Standardize **Item Fat Content** values (ensure uniform categories: "Low Fat" vs. "Regular").
- Check for **duplicate records** and remove if necessary.
- Convert **Outlet Establishment Year** to **Outlet Age** for easier analysis.
- Ensure **consistent formatting** for all numeric fields.

🔹 Task 2: Exploratory Data Analysis (EDA)

Sales Analysis

- Find the **total and average sales per item category**.
- Identify the **top 5 best-selling and worst-selling items**.
- Analyze **sales trends based on Outlet Type, Location Type, and Size**.
- Determine if **older outlets** have higher or lower sales than newer ones.

Store Performance Analysis

- Rank stores based on **total revenue** and **average revenue per product**.
- Compare **sales trends across different outlet types** (Supermarket Type 1 vs. Type 2 vs. Grocery Store).
- Check if **Tier 3 locations (big cities) perform better than Tier 1 (small towns)**.

Product Analysis

- Identify which **item type** generates the most revenue.
- Find out whether **Item Visibility impacts sales** (does better shelf placement lead to higher sales?).
- Analyze the effect of **Item Weight on Sales** (do heavier items sell more?).

🔹 Task 3: Data Visualization

Create the following visualizations in Excel:

📊 **Sales Trends:**

- Line chart showing **total sales per year of establishment**.
- Column chart comparing **sales per outlet type**.
- Heatmap using **Conditional Formatting** to highlight high & low-performing stores.

📊 **Product Performance:**

- Bar chart showing **top 5 and bottom 5 selling items**.
- Scatter plot analyzing **Item Visibility vs. Sales**.
- Pie chart showing **sales distribution among different product categories**.

📊 **Store Insights:**

- Pivot Table to summarize **sales by outlet location & type**.
- Treemap visualization of **sales contribution by item type**.

🔹 Task 4: Advanced Analysis

💡 **Correlation Analysis:**

- Perform correlation analysis to check if **higher item visibility leads to higher sales**.
- Analyze if **Outlet Size impacts sales**.

💡 **Sales Prediction (Basic Forecasting):**

- Use a **trendline or forecast sheet** in Excel to predict future sales.
- Apply a **moving average** to smooth out sales trends.

💡 **Profitability Classification:**

- Create a **new column** to classify items into **High Sales, Moderate Sales, Low Sales** using `IF` formulas.
- Use **VLOOKUP** to categorize outlets based on their total revenue.

Deliverables

Students are expected to submit the following:

☑ **Final Excel Workbook**:

- Cleaned dataset
- Pivot tables, charts, and graphs
- Key calculations and summary statistics
- **dashboard in Excel** using slicers and charts to present the findings interactively

☑ **Summary Report:**

- Key findings from the analysis
- Visualizations with explanations
- Business recommendations based on insights