



## DATA VISUALISATION

# Project Implementation Guide: BlinkIT Analysis

This guide outlines the steps to implement the BlinkIT analysis project, from gathering requirements to generating insights. Follow the steps below for a successful data analysis project.



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## Project Overview:

The analysis focuses on sales performance, customer satisfaction, and inventory distribution of BlinkIT, based on the dataset "**BlinkIT Grocery Data.xlsx**". The dataset contains **8,524 rows and 12 columns**, covering product and store information, sales revenue, and customer ratings.

### Dataset Columns:

1. **Fat Content Category:** Indicates the fat content level of the product. Examples include Regular, Low Fat, etc.
2. **Product ID:** A unique identifier assigned to each product.
3. **Product Category:** The category to which the product belongs. Examples include Fruits and Vegetables, Frozen Foods, Health and Hygiene, etc.
4. **Store Establishment Year:** The year when the store was established.
5. **Store ID:** A unique identifier assigned to each store.
6. **Store Location Tier:** The tier or classification of the store's location. Examples include Tier 1, Tier 2, Tier 3.
7. **Store Size:** The size of the store. Examples include Small, Medium, Large.
8. **Store Type:** The type of store. Examples include Supermarket Type1, Supermarket Type2, Grocery Store, etc.
9. **Product Visibility:** The visibility level of the product in the store. This might indicate how prominently the product is displayed.
10. **Product Weight (kg):** The weight of the product in kilograms.
11. **Sales Revenue (\$):** The total revenue generated from sales of the product, measured in US dollars.
12. **Customer Rating:** The rating given by customers for the product, often on a scale from 1 to 5.



## Project Steps:

1. **Requirement Gathering / Business Requirements :** Understand and document what needs to be analyzed and reported. This includes identifying key metrics (KPIs) and the type of visualizations required.
2. **Data Walkthrough:** Review the dataset to understand its structure, content, and quality. This involves checking the data for completeness and accuracy.
3. **Data Connection:** Connect Power BI (or other BI tools) to the dataset. This involves setting up data sources and ensuring that the data can be imported and used for analysis.
4. **Data Cleaning / Quality Check: Objective:** Clean the data to remove any errors, inconsistencies, or missing values. This includes standardizing formats and ensuring that the data is ready for analysis.
5. **Data Modeling:** Create a data model that defines the relationships between different data elements. This step includes setting up tables, relationships, and hierarchies.
6. **DAX Calculations:** Create DAX (Data Analysis Expressions) formulas to calculate key metrics and perform complex data analysis. This includes calculating totals, averages, and other KPIs.
7. **Dashboard Layout:** Design the layout of the dashboard. This includes deciding where to place charts, tables, and other visual elements to create an intuitive and user-friendly interface.
8. **Charts Development and Formatting:** Develop and format charts and visualizations based on the requirements. This includes choosing the appropriate chart types and customizing their appearance.
9. **Dashboard / Report Development:** Build the final dashboard or report in Power BI. This involves integrating all charts, tables, and visualizations into a cohesive report.
10. **Insights Generation:** Analyze the data and the visualizations to generate insights. This includes identifying trends, patterns, and opportunities for optimization based on the analyzed data.



## 1. Business Requirement:

The goal is to analyze BlinkIT's sales performance, customer satisfaction, and inventory distribution to find key insights and opportunities for optimization. This will be achieved using various KPIs and visualizations in Power BI.

### KPI Requirements:

1. **Total Sales:** Calculate the overall revenue from all products sold.
2. **Average Sales:** Determine the average revenue per sale.
3. **Number of Items:** Count the total number of different products sold.
4. **Average Rating:** Calculate the average customer rating for products sold.

### Chart Requirements:

1. **Total Sales by Fat Content:**

- **Objective:** Analyze how fat content affects total sales.
- **Chart Type:** Donut Chart
- 2. **Total Sales by Product Type:**
  - **Objective:** Evaluate the performance of different product types in terms of total sales.
  - **Chart Type:** Bar Chart
- 3. **Fat Content by Store for Total Sales:**
  - **Objective:** Compare total sales across different stores segmented by fat content.
  - **Chart Type:** Stacked Column Chart
- 4. **Total Sales by Store Establishment:**
  - **Objective:** Assess how the age of the store impacts total sales.
  - **Chart Type:** Line Chart
- 5. **Sales by Outlet Size:**
  - **Objective:** Analyze the relationship between outlet size and total sales.
  - **Chart Type:** Donut/Pie Chart
- 6. **Sales by Outlet Location:**
  - **Objective:** Examine the geographic distribution of sales.
  - **Chart Type:** Funnel Map
- 7. **All Metrics by Outlet Type:**
  - **Objective:** Provide a comprehensive view of all key metrics by outlet type.
  - **Chart Type:** Matrix Card

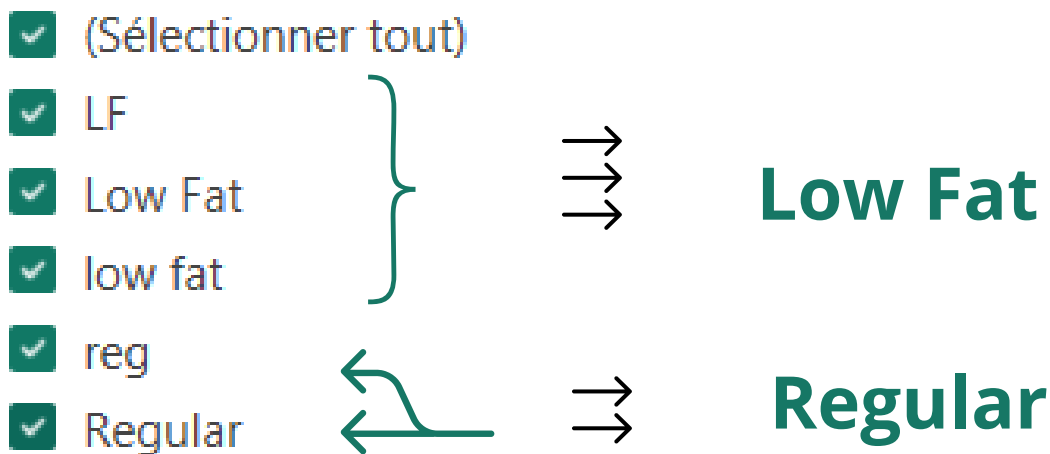


## 2. Data Walkthrough

During the initial exploration of the dataset, several inconsistencies and issues were identified that needed to be addressed:

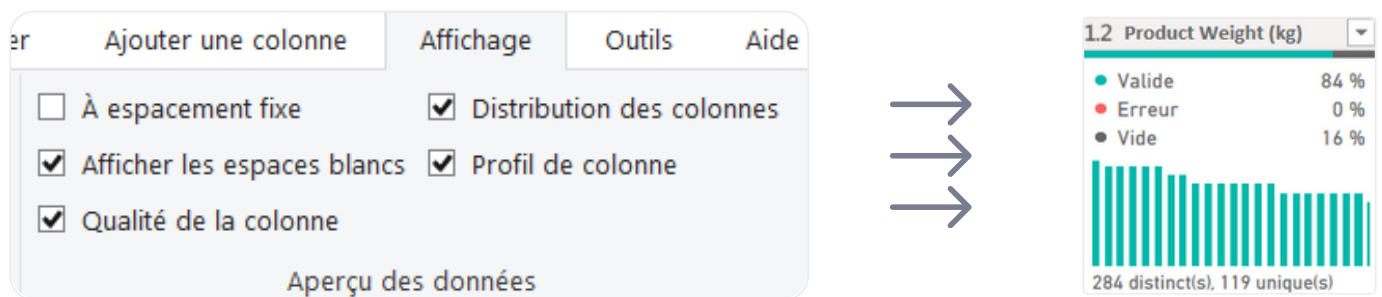
### Inconsistent Values in the "Fat Content Category" Column:

- The **"Fat Content Category"** had variations in the way values were written:
  - **Low Fat** was recorded in three different ways:
    - low fat (all lowercase)
    - Lf (abbreviation)
    - Low Fat (proper capitalization)
  - **Regular** was written in two different ways:
    - reg (abbreviation)
    - regular (full word)



### Null values in the "Product Weight (kg)" column:

- Some entries had missing values in this column, which may impact further analysis if not addressed.



These data quality issues need to be resolved before moving to the next steps of the analysis

## 3. Data Connection:

In this step, the dataset was imported into Power BI for further analysis. The file "**BlinkIT Grocery Data.xlsx**" was connected as a data source by following these steps:

1. **Open Power BI.**
2. **Go to the "Home" tab** and click on "**Get Data**".
3. Select "**Excel**" as the data source.
4. **Browse** for the file "**BlinkIT Grocery Data.xlsx**" and import it.
5. **Load the data** into Power BI for further cleaning, modeling, and analysis.

Once the data was loaded successfully, the next phase involved cleaning and checking for data quality issues.



## 4. Data Cleaning / Quality Check:

During the data cleaning phase, the following steps were executed:

### 1. Inconsistent Values in the "Fat Content Category" Column:

- **Objective:** Standardize inconsistent entries for accurate analysis.
- **Steps in Power Query:**
  1. **Open Power Query Editor:**
    - In Power BI, go to the "Home" tab and click on "**Transform Data**".
  2. **Select the Column:**
    - Locate the "**Fat Content Category**" column.
  3. **Replace Values:**
    - Right-click on the column header and select "**Replace Values**".
    - **Replace "low fat" with "Low Fat"**.
    - **Replace "Lf" with "Low Fat"**.
    - **Replace "reg" with "Regular"**.
    - **Replace "regular" with "Regular"**.
  4. **Apply Changes:**
    - Click "**Close & Apply**" to save changes and return to the main Power BI interface.

### 2. Null Values in "Product Weight (kg)" Column:

- **Objective:** Identify that this column contains null values, but no action was taken since this column is not critical for the current project.
- **Action:** No resolution was performed as the column is not used in the analysis.

With these steps completed, the data is now cleaned and ready for the subsequent stages of data modeling and visualization.



## 5. Data Modeling:

For this project, with a single table, the data modeling focuses on preparing the data for analysis by defining appropriate data types and ensuring data integrity.

### 1. Define Data Types:

- **Objective:** Ensure that each column is assigned the correct data type to support accurate analysis.
- **Actions:**
  - **Numeric Columns:**
    - "**Sales Revenue (\$)**": Set as **Decimal Number** for accurate financial calculations.
    - "**Product Weight (kg)**": Set as **Decimal Number** to handle weights with precision.
    - "**Customer Rating**": Set as **Decimal Number** to reflect ratings with possible decimal values.

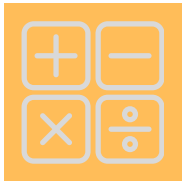
- **Text Columns:**

- **"Fat Content Category"**: Set as **Text** for categorical analysis.
- **"Product ID"**: Set as **Text** to preserve unique identifiers.
- **"Product Category"**: Set as **Text** to categorize products.
- **"Store ID"**: Set as **Text** to handle unique store identifiers.
- **"Store Location Tier"**: Set as **Text** to categorize store locations.
- **"Store Size"**: Set as **Text** to define the size categories.
- **"Store Type"**: Set as **Text** to specify store types.
- **"Product Visibility"**: Set as **Text** to describe visibility status.

## 2. Review Data Structure:

- **Objective:** Ensure that the data structure supports accurate and effective analysis.
- **Actions:**
  - **Check Column Formats:** Verify that all columns are correctly formatted based on their data types.
  - **Validate Data Integrity:** Look for and address any inconsistencies or errors, such as incorrect data entries or unexpected null values.
  - **Ensure Data Accuracy:** Confirm that the data aligns with expected values and meets project requirements.

By focusing on these aspects, the data will be well-prepared for the next stages of analysis and visualization.



## 6. DAX Calculations:

In this step, the focus is on creating calculated columns and measures for effective analysis using the single table in the dataset. Here's how the data modeling was approached

### 1. Create Measures:

- **Objective:** Add measures to perform calculations and analysis on the data.
- **Actions:**
  - **Total Sales:**
    - **Description:** Calculates the total revenue from all products sold.
    - **DAX Formula:**

**Total Sales = SUM('BlinkIT Grocery Data'[Sales Revenue (\$)])**

- **Average Sales:**

- **Description:** Computes the average revenue per sale.
- **DAX Formula:**

**Avg Sales = AVERAGE('BlinkIT Grocery Data'[Sales Revenue (\$)])**

- **Number of Items:**
  - **Description:** Counts the total number of product entries in the dataset.
  - **DAX Formula:**

**Num of Products = COUNTROWS('BlinkIT Grocery Data')**

- **Average Rating:**
  - **Description:** Calculates the average customer rating for products.
  - **DAX Formula:**

**Avg Ratings = AVERAGE('linkIT Grocery Data'[Customer Rating])**

## 2. Validate Measures:

- **Objective:** Ensure that the calculated measures are accurate and provide meaningful insights.
- **Actions:**
  - **Check Results:** Compare the results from the measures with sample calculations to confirm accuracy.
  - **Adjust if Necessary:** Refine the measures if any discrepancies or errors are found.

With these measures in place, the dataset is now prepared for creating visualizations and generating insights in Power BI.



## 7. Dashboard Layout:



## 8. Charts Development and Formatting:

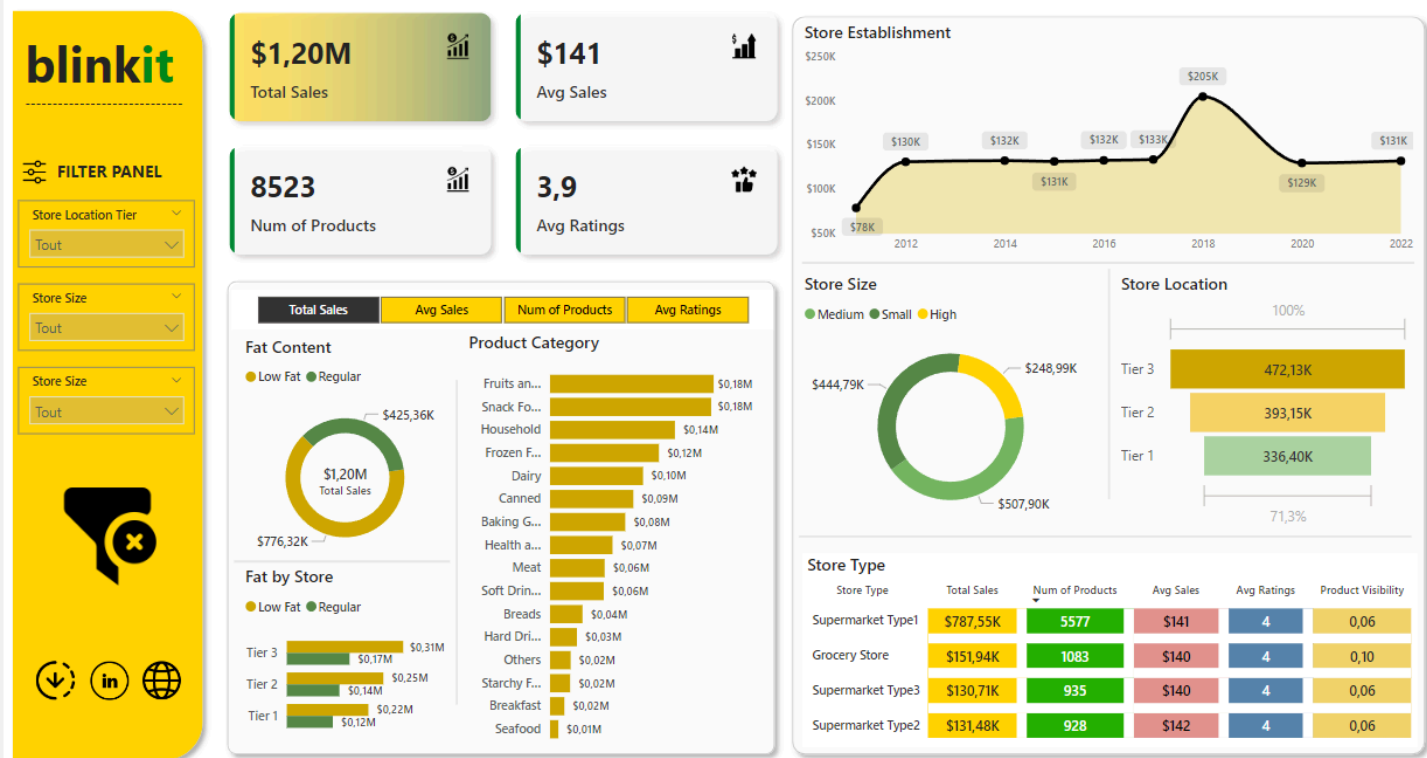
In the **Charts Development and Formatting** phase, visualizations were designed to clearly represent BlinkIT's data. A Donut Chart shows total sales by fat content, highlighting how fat categories affect revenue. A Bar Chart compares total sales across product types. The Stacked Column Chart visualizes sales by store, segmented by fat content, while the Line Chart tracks the impact of store age on sales. A Donut/Pie Chart reveals the relationship between outlet size and sales, and a Funnel Map displays sales distribution by location. Lastly, a Matrix Card aggregates all key metrics by outlet type for a comprehensive view.

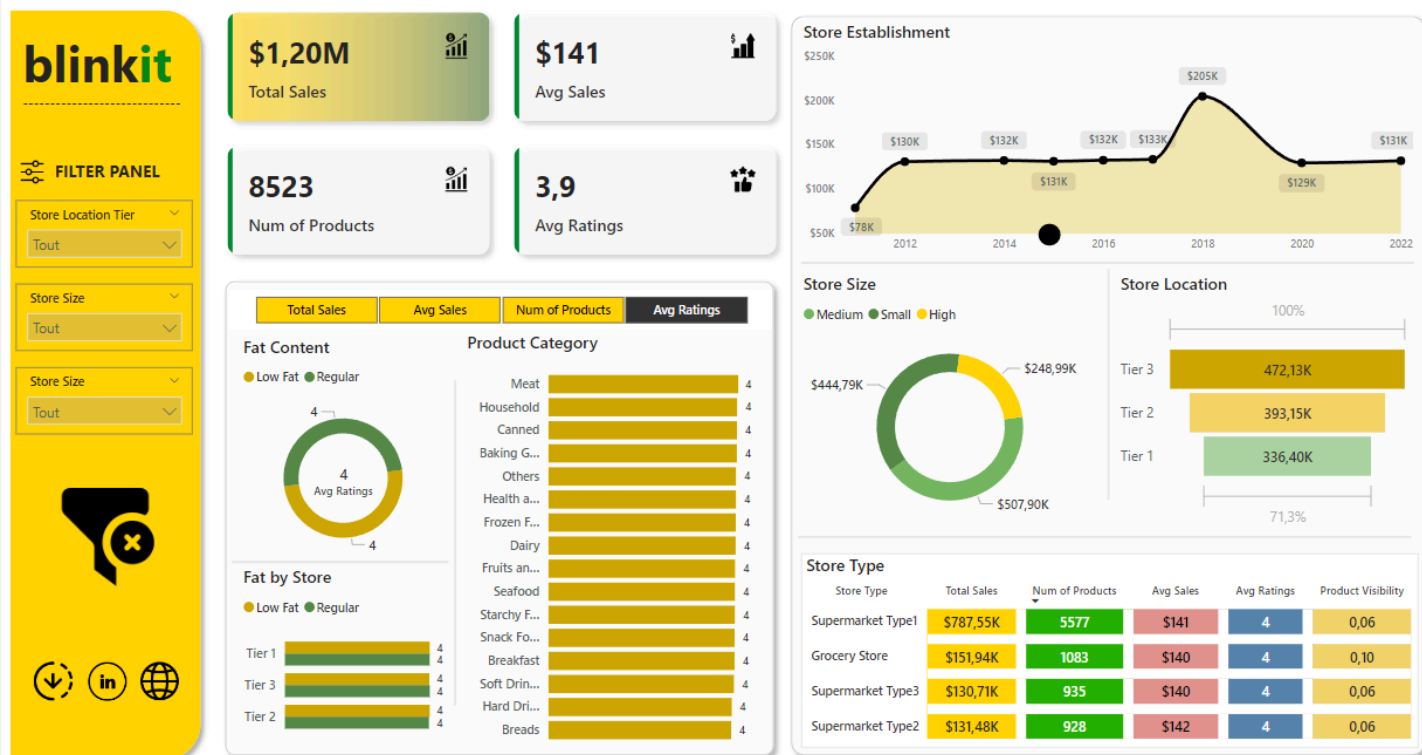
## 9. Dashboard / Report Development:

In the **Dashboard / Report Development** phase, the focus was on consolidating the visualizations and metrics into a cohesive and interactive dashboard in Power BI. The dashboard integrates various charts and visual elements to provide a comprehensive view of BlinkIT's sales performance. It includes the Donut, Bar, Stacked Column, Line, and Donut/Pie Charts, as well as the Funnel Map and Matrix Card, each offering insights into different aspects of the data. The layout was carefully designed to ensure that key metrics and trends are easily accessible, allowing users to quickly identify patterns and make informed decisions. The interactive



elements of the dashboard enable users to filter and drill down into specific data points, enhancing the overall analytical capability of the report.





# Contact Us

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