

# Project Documentation

## Walmart Sales Data Analytics Dashboard

### 1. Introduction

This project involves the analysis of Walmart sales data, where we explore key metrics such as total sales, profit margins, top-selling products, and sales trends over time. The data is visualized using Power BI, allowing for interactive insights into Walmart's sales performance across regions, product categories, and time periods.

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### 2. Dataset Overview

The dataset used for this analysis includes the following columns:

- **Order ID:** Unique identifier for each order.
  - **Order Date:** Date the order was placed.
  - **Ship Date:** Date the order was shipped.
  - **Customer Email ID:** Email of the customer.
  - **Country, City, State:** Location details of the customer.
  - **Category:** Product category (e.g., Art, Phones, Binders).
  - **Product Name:** Name of the product.
  - **Sales:** Revenue generated from each order.
  - **Quantity:** Number of units sold.
  - **Profit:** Profit earned from each order.
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### 3. Objectives

The key objectives of this project are:

- To analyze sales and profit trends over time.
  - To identify top-selling products and product categories.
  - To assess regional sales performance across different cities and states.
  - To understand profit margins by product category.
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#### 4. Key Metrics and KPIs

- **Total Sales:** The total revenue generated from product sales.
  - **Total Profit:** The overall profit earned.
  - **Sales by Category:** Breakdown of total sales across different product categories.
  - **Profit by Region:** Profit margins for different states and cities.
  - **Top-selling Products:** Products that contributed the most to sales revenue.
  - **Sales Trends:** A time series analysis of sales over different periods (monthly, yearly).
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#### 5. Visualizations in the Dashboard

1. **Sales by Category (Bar Chart):**
    - Displays total sales for each product category to identify which categories are performing well.
  2. **Sales and Profit by Region (Map Visualization):**
    - A geographical representation of sales and profit, highlighting performance across different states.
  3. **Top-Selling Products (Table):**
    - A list of products ranked by sales, showing which products are most popular.
  4. **Sales Trends Over Time (Line Chart):**
    - Visualizes how sales have changed over the months and years.
  5. **Profit Margins by Product Category (Donut Chart):**
    - Shows the proportion of profit each category contributes to the total profit.
  6. **Interactive Filters (Slicers):**
    - Users can filter data by year, product category, and region to focus on specific time periods or areas of interest.
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#### 6. Data Transformations

To prepare the data for visualization, the following transformations were performed:

- **Date Transformations:** Extracted Year and Month from the Order Date for time-series analysis.
  - **Data Cleaning:** Removed any duplicate order IDs and ensured all rows had valid data.
  - **Aggregation:** Aggregated sales and profit at different levels, such as by product category, state, and year.
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## 7. Insights and Observations

- **Category Performance:** The category with the highest sales is [Category Name]. However, [Another Category] has the highest profit margins.
  - **Regional Performance:** [State/City] generates the most sales, while [Another Region] shows the highest profit margins.
  - **Product Trends:** The top-selling product is [Product Name], which contributed significantly to overall revenue.
  - **Seasonal Trends:** Sales peak during [specific months/quarters], indicating seasonal demand for certain products.
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## 8. Limitations

- **Incomplete Data:** Some regions or time periods may have missing data, which could affect the analysis.
  - **Profit Calculation:** Profit margins depend on several factors, and the data does not capture the cost of goods sold or operational expenses.
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## 9. Conclusion

This dashboard provides a comprehensive analysis of Walmart's sales performance across different categories, regions, and time periods. By leveraging Power BI, we can easily explore trends, assess regional performance, and identify high-performing products.

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## Questions for Review/Discussion

1. What are the key insights from the total sales by product category?
2. Which regions (states or cities) contribute the most to Walmart's profit, and why might that be the case?
3. How have sales trends changed over time? Are there any identifiable seasonal patterns?

4. Which products are driving the highest sales and profit margins? Are there any potential opportunities to increase sales for underperforming products?
5. What is the impact of regional differences on overall sales and profit?
6. Are there any limitations in the data that could affect the reliability of the insights? How can these limitations be addressed in future analyses?
7. How could this dashboard be improved for future use, in terms of both data visualization and functionality?

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**Support Document:**

1. **Introduction and Objectives:** Explains the purpose of the dashboard.
  2. **Dataset Overview:** Describes the data used in the project.
  3. **Visualizations Explanation:** Provides detailed information on each visual used in the dashboard, helping users understand what each visualization represents.
  4. **Insights and Analysis:** Summarizes the key findings from the data.
  5. **Limitations:** Helps users understand any potential constraints or weaknesses in the analysis.
  6. **Questions for Discussion:** Encourages further exploration and review of the dashboard's insights.
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