

# Chain of Departmental Store Analysis

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## Executive Summary:

This report presents an in-depth analysis of weekly sales performance for a chain of department stores. Leveraging Power BI and a robust dataset, we aim to provide actionable insights to the CEO and stakeholders regarding sales trends, comparisons with previous years, and identification of top-performing stores and departments. By understanding the business dynamics and utilizing advanced analytics tools, we empower decision-makers to optimize sales strategies and drive business growth.

## Introduction:

The company operates a chain of departmental stores and seeks to gain a comprehensive understanding of its weekly sales performance. With no existing data pipeline or warehouse, weekly sales data is extracted using a data tool connected to each store's Point of Sale (POS) systems. The Senior Assistant extracts the data files weekly, necessitating the need for an efficient dashboard to analyze and communicate sales insights to the CEO and stakeholders.

## Dataset Overview:

- **Department Dataset:** Contains information about different departments within the stores.
- **Store Dataset:** Provides details about stores and store managers, which is crucial for identifying top performers.
- **Weekly Sales Data:** Encompasses weekly sales figures spanning from 2011 to 2012, offering insights into sales trends and patterns.

## Objective:

The primary objective is to analyze weekly sales data to:

- Understand sales trends over time.
- Compare current year sales with the previous year.
- Evaluate Year-to-Date (YTD) performance for each store and department.
- Identify top-performing stores, departments, and managers.
- Provide actionable recommendations for optimizing sales performance.

## Methodology:

### 1. Data Cleaning and Preprocessing:

- Checked for missing values and duplicates, ensuring data integrity.
- Transformed data types and normalized the dataset for improved analysis.
- Employed Power Query Editor for data cleaning and transformation.

### 2. Data Modeling:

- Implemented a star schema to establish relationships between different tables.

- Utilized calculated measures and Data Analysis Expressions (DAX) to derive key performance indicators (KPIs) such as total sales, YTD sales, and commission.

### 3. **Analysis:**

- Analyzed sales performance over time to identify trends and seasonal variations.
- Compared current year sales with the previous year to assess growth or decline.
- Identified top-performing stores, departments, and managers based on sales performance.
- Derived actionable insights to optimize sales strategies and drive business growth.

## PowerBI:

PowerBI was chosen as the preferred tool for developing the weekly sales dashboard due to several key factors aligned with the scale of the business and its sales operations:

1. **Microsoft Ecosystem Familiarity:** The organization is already well-versed in the Microsoft ecosystem, which includes tools like Excel and SQL Server. PowerBI integrates with these existing tools, facilitating a smoother transition and adoption process for stakeholders.
2. **Advanced Business Intelligence Capabilities:** PowerBI offers advanced business intelligence capabilities, allowing for complex data modeling, interactive visualizations, and sophisticated analytics. This enables deeper insights into sales performance trends, comparisons, and patterns, empowering decision-makers to make informed strategic decisions.
3. **Robust Security Features:** Security is paramount when dealing with sensitive business data. PowerBI provides robust security features, including role-based access control and data encryption, ensuring that confidential sales data remains protected and accessible only to authorized users.

## Calculation of Key Measures:

To provide a comprehensive analysis of weekly sales performance, three key measures were calculated to facilitate comparisons and insights:

1. **Previous Year Sales:** This measure computes the total sales for the previous year (2011). It utilizes the CALCULATE function to filter the 'Weekly Data' table based on the year 2011, summing up the weekly sales accordingly. This measure serves as a reference point for comparing sales performance between the current and previous years.
2. **Current Year Sales:** Similarly, this measure calculates the total sales for the current year (2012). By applying the CALCULATE function with a filter condition for the year 2012, it aggregates the weekly sales data. This measure enables the evaluation of sales performance trends and growth within the ongoing year.
3. **Year-to-Date (YTD) Sales:** This measure computes the cumulative sales from the beginning of the year till the current week. It adds the previous year's sales and the

current year's sales together, providing a holistic view of sales performance over time. YTD sales serve as a key metric for assessing the overall revenue generated by the department stores throughout the year.

These measures play a vital role in the analysis by facilitating comparisons, identifying trends, and evaluating the effectiveness of sales strategies. They empower stakeholders to make informed decisions and drive business growth based on a thorough understanding of sales performance dynamics.

## Dashboard and Data Modeling:

In this section, we present the visual representation of our analysis through the PowerBI dashboard and discuss the data modeling approach employed to derive meaningful insights.

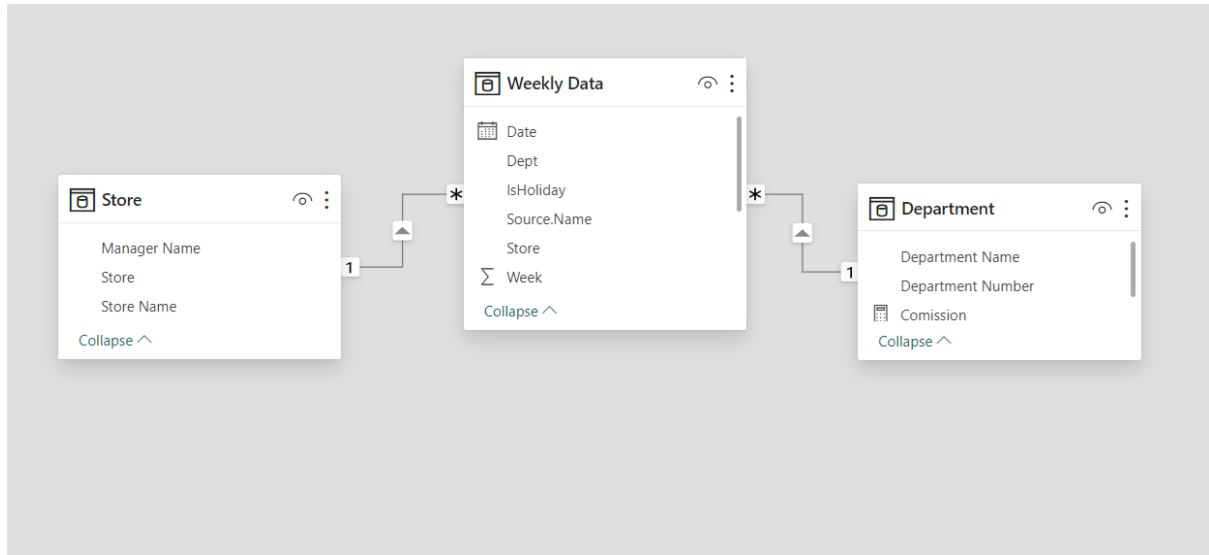
### Dashboard Overview:

The PowerBI dashboard offers a user-friendly interface with interactive visualizations that provide a comprehensive overview of weekly sales performance across various dimensions. Through intuitive design and layout, stakeholders can easily navigate through key metrics and drill down into specific details for deeper analysis.



## Data Modeling Approach:

The data modeling approach employed a star schema to establish relationships between different tables, ensuring efficient data retrieval and analysis. By structuring the data into a dimensional model, we optimized query performance and enabled seamless integration of multiple data sources.



## Key Findings:

### 1. Sales Performance Trends:

- Sales exhibit seasonal patterns, with notable peaks during holiday seasons.
- The current year's sales show growth compared to the previous year, indicating overall business health.

### 2. Top Performing Stores and Departments:

- Identified top-performing stores and departments based on total sales.
- Factors contributing to performance include location, store size, customer demographics, and effective management.

### 3. Commission Calculation:

- Calculated commission for the top 5 performing store managers based on sales performance.
- Year-to-date commission comparison provides insights into manager performance and incentivizes sales growth.

## Recommendations:

### 1. Optimize Sales Strategies:

- Utilize insights from top-performing stores and departments to optimize sales strategies across the organization.

- Implement targeted marketing campaigns and promotions during peak sales seasons to maximize revenue.

## **2. Managerial Support and Training:**

- Provide support and training to underperforming store managers to improve sales performance.
- Share best practices and success stories from top-performing managers to foster a culture of excellence.

## **3. Data Pipeline Enhancement:**

- Invest in establishing a centralized data pipeline or warehouse to streamline data extraction and analysis processes.
- Automate data refresh and dashboard updates to ensure timely access to insights.

## **Conclusion:**

The analysis provides valuable insights into the weekly sales performance of the department stores, enabling data-driven decision-making and strategic planning. By leveraging advanced analytics tools and a comprehensive dataset, the organization can optimize sales strategies, drive performance, and achieve sustainable growth in a competitive market landscape.