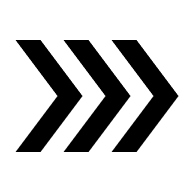
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| A graph of growth and progress  AI-generated content may be incorrect. | | | | |
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|  | **Sales Performance Analytics *A Comprehensive Analysis of the Sales Dataset Using Power BI***  **Transforming Sales Data into Strategic Business Insights** | | |  |
|  |  | | Prepared by: Nada mohamed  asmaa Shaban Moahmed Yamany |  |

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| People at a desk pointing | | | |
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| Chevron arrows with solid fill | Data Understanding  This project presents a comprehensive Sales Performance Analytics solution developed using Power BI. The objective of this analysis is to evaluate overall business performance by examining the Sales Dataset across multiple dimensions, including time, geography, products, and sales channels. The dashboard provides key performance indicators (KPIs) such as Sales, Profit, Cost, and Quantity, enabling stakeholders to monitor trends, identify growth opportunities, and detect areas that require improvement. By transforming raw sales data into meaningful and actionable insights, this solution supports data‑driven decision‑making and enhances strategic business planning. | |  |

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| **COLUMNS CHARACTERISTICS** DEFINING THE COLUMNS AND DATA TYPES **A blue and purple diagram with several cubes  AI-generated content may be incorrect.**  **Overall Column Overview:**  The Sales Dataset contains a comprehensive set of structured features that describe the company’s sales operations. These columns include both numerical and categorical variables that represent transactional data, product details, geographic information, sales channels, and marketing activities.  The dataset is organized to support multi‑dimensional analysis, allowing performance evaluation across time, location, products, and distribution channels. By understanding these columns, we can accurately measure business performance and generate meaningful analytical insights.  **Key Columns and Their Analytical Importance:**  Within the Sales Dataset, certain columns play critical role in enabling accurate analysis and model relationships. These key columns ensure data integrity and support multi-dimensional reporting.   * **Primary Keys** such as Product Key uniquely identify records within dimension tables. * **Foreign Keys** in the Sales fact table connect transactions to dimensions such as Date, Geography, Product, and Channel. * **Measure Columns** including *Sales Amount, Cost, Profit, and Quantity* are used to calculate KPIs. * **Time Columns** such as *Year and Month* enable time-based comparisons and trend analysis.   These key columns form the foundation of the data model and ensure consistency across analytical calculations. | |





**Table Summary Box:**

The following table summarizes the structure of the Sales Dataset and illustrates the relationship between the fact and dimension tables within the Snowflake data model.

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| Table Name | Table Type | Description |
| Sales | Fact | Stores transactional sales measures such as Sales, Cost, Profit, and Quantity. |
| Date | Dimension | Contains time-related attributes such as Year, Quarter of Year, Month Name, and Day of Week Name for time-based analysis. |
| Geography | Dimension | Includes geographic attributes such as Continent Name, Country, Region Country Name, and Geography Type. |
| Product | Dimension | Contains product-level information including ProductName, Brand Name, Manufacturer, Unit Cost, and Unit Price. |
| Product Subcategory | Dimension | Groups products into subcategories linked through Product Subcategory Key. |
| Product Category | Dimension | Represents high-level product classification above subcategories. |
| Channel | Dimension | Identifies the sales channel using Channel and Channel Name fields. |
| Stores | Dimension | Contains store-related attributes such as Store Name, Store Type, Status, and Selling Area Size. |
| Promotion | Dimension | Includes promotion details such as Promotion Name, Discount Percentage, StartDate, and End Date. |
| Marketing | Fact | Stores marketing engagement metrics such as Clicks linked to Date. |

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| Chevron arrows with solid fill |  | |
| **CREATING MEASURES**  **A blue circle with text  AI-generated content may be incorrect.**  **MEASURES OVERVIEW:** The measures in this report are designed to calculate key business metrics based on the Sales fact table and its related dimension tables. Below is a brief overview of selected measures and how they support the dashboard.   * **Active Promotions:**   This measure calculates the number of promotions that are active during the selected period  A computer screen shot of a computer code  AI-generated content may be incorrect.   * **Dynamic Time Mode:**   This table is used as a controller to switch between different time calculation logics (YTD, Time Range, Custom). It is a disconnected table created using the DATATABLE function.     * **Clicks YTD:** Calculates total clicks from the beginning of the year until the selected date. * **Clicks YTD LY:** Calculates Year-To-Date clicks for the same period in the previous year. * **Clicks Period 1&2:** This measure calculates clicks for a user-defined custom period using a disconnected date table.        * **The TREATAS function:** Is applies the selected custom dates as a filter to the Marketing table * **Time Range (YD-LY)**   Calculates clicks for the selected rolling time range shifted to the previous year.       * **DATESINPERIOD:** defines the rolling window. * **DATEADD:**shifts from the same window to last year. * **COALESCE:**ensures that blank values return 0. * **Clicks Current:** This measure dynamically returns the current clicks value based on the selected time mode. * **Clicks LY:** | |
| **Objective:** Implements Dynamic Row-Level Security (RLS) to restrict data access based on the user's login email (USERPRINCIPALNAME).   * **RLS**   **Granular Access:** Filters the ProductSubcategory column to match only the specific values assigned to the user in the security table.  **Administrative Override:** Grants full data visibility if the user is assigned the **"ALL"** keyword in the security mapping.  **Logic Integration:** Combines list-based validation (IN) with a global condition (CONTAINS) to evaluate row visibility.  **Scalability:** Ensures automated permission updates via the security table without requiring manual changes to the DAX model.  **Growth Rate:**    **Objective:** Calculates the percentage variance between the current period's performance and the Same Period Last Year (**SPLY**).  **Dynamic Context:** Utilizes SELECTEDMEASURE() within a Calculation Group to allow the logic to apply to any measure (Sales, Profit, etc.) dynamically.  **Time Intelligence Logic:** Leverages CALCULATE to shift the filter context specifically to **"SPLY"** for retrieving the prior year's value.  **Accuracy & Safety:** Uses the DIVIDE function to perform the growth calculation safely, preventing "Division by Zero" errors.  **Output:** Returns the growth rate (e.g., +10% or -5%) by comparing the current value against the historical baseline.  **YTD:**      **Objective:** Calculates the Year-To-Date (YTD) performance for the same period in the previous year.  **Dynamic Flexibility:** Utilizes SELECTEDMEASURE() to allow the calculation to automatically apply to any selected metric, such as Sales or Quantity.  **Time Shift Logic:** Employs the SAMEPERIODLASTYEAR function to shift the current date context back by exactly one year.  **Aggregation:** Uses TOTALYTD to ensure the measure correctly accumulates values from the beginning of the previous fiscal year up to the corresponding date.  **Context Control:** Wraps the expression in CALCULATE to override the standard filter context with specific historical time intelligence. | |
| * **TOP CATEGORY**     **ALL**  Removed all filters from Product Category  **TOPN (…, [Total Sales], DESC)**  Ranked all categories by Total Sales in descending order  **TOPN (1, …)**  Selected the top-selling category (Top 1)  **SELECTEDVALUE**  Extracted the category name  **CALCULATE**  Returned the result as a measure with the applied filter     * **CONTINENT SALES**   **CALCULATE**  used to modify the filter context and calculate total sales with the filters we define.  **ALL**  used to remove any filter on the country column from slicers or visuals, ensuring the continent total remains constant. | |



* **COUNTRY % OF CONTINENT**

**DIVIDE**

used to calculate the country’s sales as a percentage of the continent total.

Benefit of DIVIDE over normal → handles division by zero automatically, avoiding errors.

**Numerator** [Total Sales] → sales of the country according to the current filter.

**Denominator** [Continent Sales] → total continent sales ignoring any country filter

* **CONTINENT SALES**



**SELECTEDVALUE**

used to capture the selected value from the slicer on the Date table.

* **ORDER NEXT 7 DAYS**



**VAR Selected Date= [Selected Date]** → defines a variable to store the date selected from the slicer for easy reuse.

**RETURN**

specifies the final result of the measure after defining the variable.

**CALCULATE**

used to modify the filter context and apply new conditions on the calculation.

**COUNT**

counts the number of orders (rows) in the Order Date column.

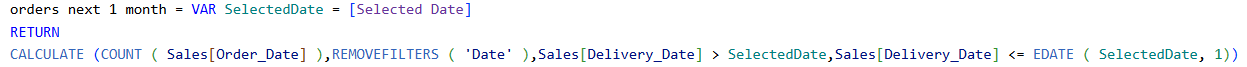
REMOVEFILTERS

removes any filter on the Date table, ensuring the count relies only on Delivery Date and is independent of slicers or Order Date filters.

**Sales [Delivery Date] > Selected Date** → filter condition to get orders with delivery date after the selected date.

**Sales [Delivery Date] <= Selected Date + 7** → filter condition to get orders scheduled within the next 7 days from the selected date.

* **ORDER NEXT 1 MONTH**



**VAR Selected Date = [Selected Date]** → defines a variable to store the date selected from the slicer for easy reuse.

**RETURN**

specifies the final result of the measure after defining the variable.

**CALCULATE**

used to modify the filter context and apply new conditions on the calculation.

**COUNT**

counts the number of orders (rows) in the Order Date column.

**REMOVEFILTERS**

removes any filter on the Date table, ensuring the count relies only on Delivery Date and is independent of slicers or Order Date filters.

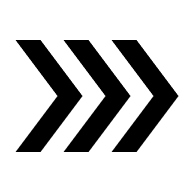
**Sales [Delivery Date] > Selected** Date → filter condition to get orders with delivery date after the selected date.

**Sales [Delivery Date] <= EDATE (Selected Date, 1** → filter condition to get orders scheduled within the next month from the selected date.

**EDATE**

adds one month to the selected date, correctly handling different month lengths.

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 **DASHBOARD BUILDING**

The developed Power BI dashboard provides a dynamic and interactive sales performance analysis solution.

It integrates time intelligence techniques including Year-To-Date (YTD), Rolling Time Range, and Custom Period comparison, enabling flexible evaluation of current versus last year performance. Key performance indicators such as Total Sales, Profit, Profit Margin, Cost % of Sales, Returns, and Clicks are measured against predefined business targets to assess achievement levels. Interactive features such as **drill-through functionality** allow users to navigate from summary KPIs to detailed performance breakdowns, enabling deeper analytical insights.

Additionally, **custom tooltips** were implemented to provide contextual KPI details without overcrowding the main report view, ensuring a clean and executive-friendly dashboard design. The implementation of dynamic DAX measures and mode-based switching logic ensures flexibility, scalability, and accurate decision-support reporting.

**A computer dashboard with a computer and a phone

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