POWER BI MINI PROJECT

Data Analysis Report

In this analysis, we imported multiple tables from our data source into Power BI Desktop. The tables imported include:

1. AdventureWorks_Calender
2. AdventureWorks_Customers
3. AdventureWorks_Product_Categories
4. AdventureWorks_Product_Subcategories
5. AdventureWorks_Products
6. AdventureWorks_Returns
7. AdventureWorks_Territories
8. AdventureWorks_Sales_2015
9. AdventureWorks_Sales_2016
10. AdventureWorks_Sales_2017

We established relationships between these tables based on common fields such as Product Key, Customer Key, Territory Key and Date. These relationships allow us to analyze data across multiple tables and gain insights into our business operations.

Exploratory Data Analysis (EDA)

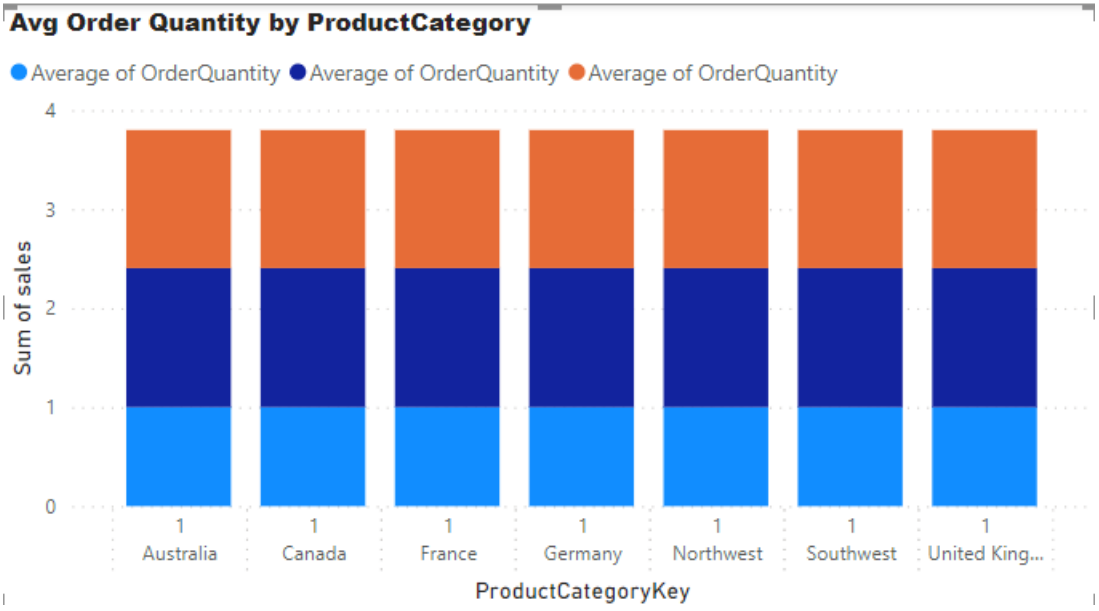
We performed exploratory data analysis (EDA) on the imported tables to understand the structure and characteristics of our data. The key steps involved in EDA are outlined below:

- Removed Error rows, Blank rows and duplicate rows
- Checked for correct data types of each column while transforming
- Analyzed customer demographics such as DOB, gender, and income level.
- Investigated the distribution of orders over time (by year, month, and day).
- Calculated metrics such as total sales revenue, average order value, and order frequency
- Examined the distribution of products by category and subcategory.
- Analyzed sales performance by region, product category, and customer segment.

1.Average Order Quantity by Product Category

Visualization: Stacked column chart

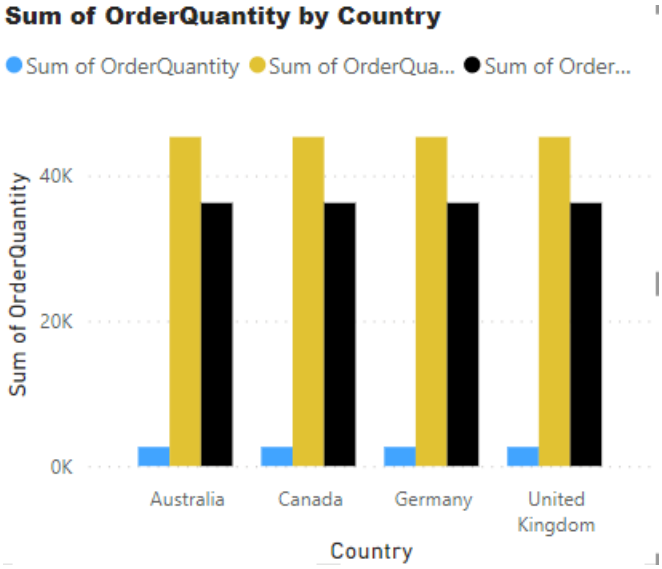
Explanation: This visualization displays the average order quantity for each product category over the years. Stacking the columns by year allows for easy comparison of average order quantities across different categories and how they have changed over time. By analyzing this chart, we can identify which product categories have consistently high or low average order quantities and track any trends or fluctuations over the years.



2.Sum of Order Quantity by Country

Visualization: Clustered bar chart

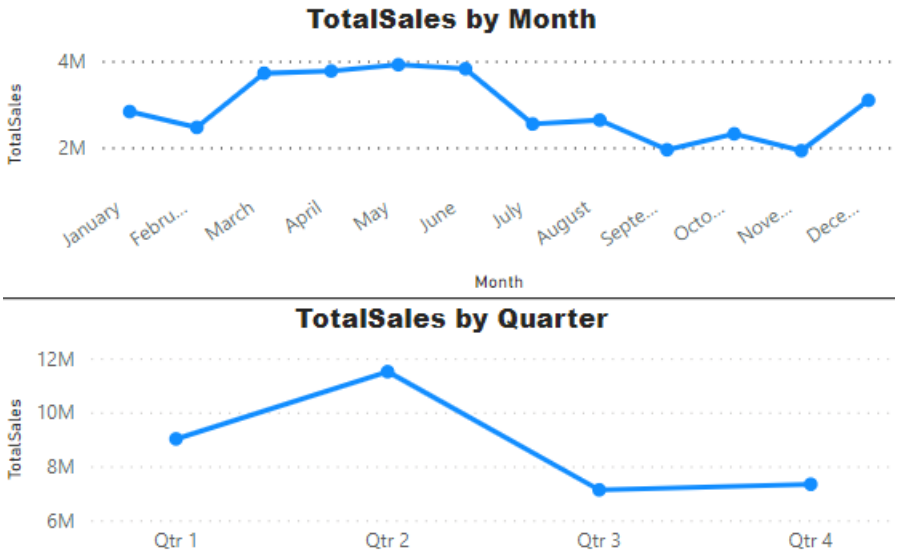
Explanation: This visualization presents the total order quantity for each country, clustered by year. By using a clustered bar chart, we can compare the order quantities across different countries within each year. This allows us to identify which countries contribute the most to overall order quantities and observe any changes or patterns over the years.



3.Total Sales by Month and Each Quarter

Visualization: Line chart

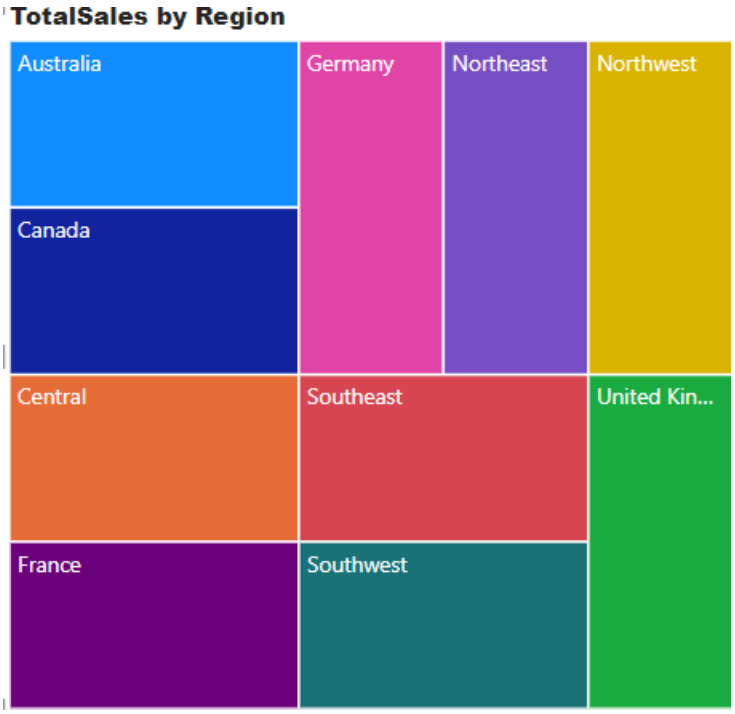
Explanation: The line chart displays total sales over time, broken down by month, and aggregated by quarter. This visualization helps in understanding the seasonal trends in sales and identifying any peaks or dips in sales during specific quarters or months. By examining the line chart, we can identify which quarters or months have the highest or lowest sales and make informed decisions accordingly.



4.Total Sales by Region

Visualization: Tree map

Explanation: The tree map visualization provides a hierarchical view of total sales by region. The size of each rectangle represents the total sales for that region, allowing for easy comparison of sales contributions across different regions. By analyzing the tree map, we can identify which regions contribute the most to total sales and focus our efforts on maximizing sales in those regions.



5.Total Return Quantity by Each Territory Year-Wise

Visualization: Matrix visualization with dropdown for each month of the year

Explanation: The matrix visualization displays the total return quantity for each territory, broken down by year and month. By using a dropdown for each month of the year, users can dynamically filter the data to view return quantities for specific months. This allows for detailed analysis of return trends over time and helps in identifying any seasonal patterns or anomalies.

Total Return Quantity by Territory & Month

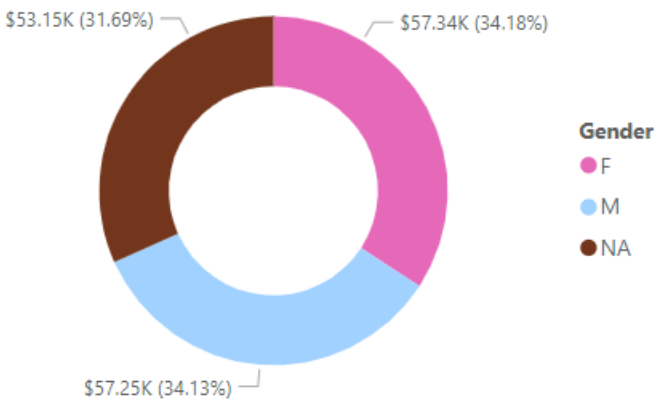
Year	1	4	5	6	7	8	9	10	Total
⊟ 2015	8	14		6	4	15	32	7	86
January		1				1	1	1	4
February	1			1		1	1		4
March		2			1	1	4	1	9
April	1	1		1		2	9		14
May	2	2		1	2	1	3		11
June		2					2		4
July		1				2			3
August	1	2		1		1		1	6
September	1						1		2
October	1			1	1	2	5	1	11
November	1					2	1	1	5
December		3		1		2	5	2	13
⊞ 2016	125	149		103	69	65	164	95	770
⊞ 2017	137	199	1	129	113	83	208	102	972
Total	270	362	1	238	186	163	404	204	1828

6.Average Annual Income of Customers by Gender

Visualization: Doughnut chart

Explanation: The doughnut chart illustrates the average annual income of customers segmented by gender. By visualizing the data in this way, we can easily compare the average income levels between male and female customers. This insight can inform marketing and sales strategies targeted towards specific gender demographics.

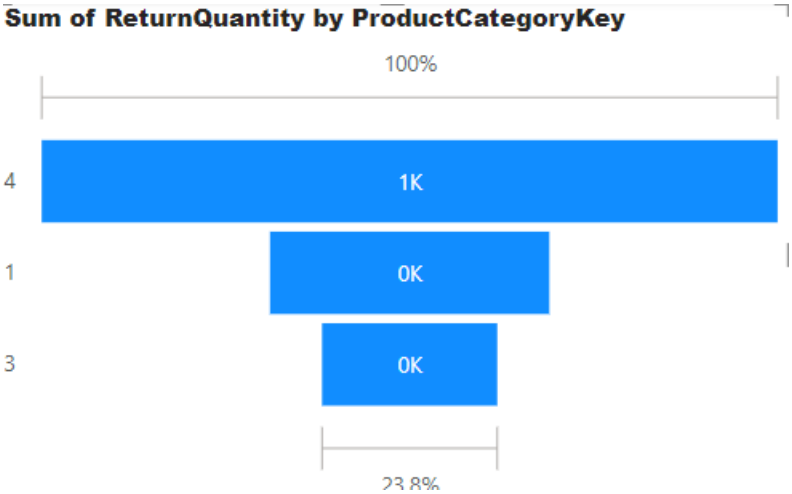
Average of AnnualIncome by Gender



7.Sum of Return Quantity per Year by Product Category

Visualization: Funnel visualization

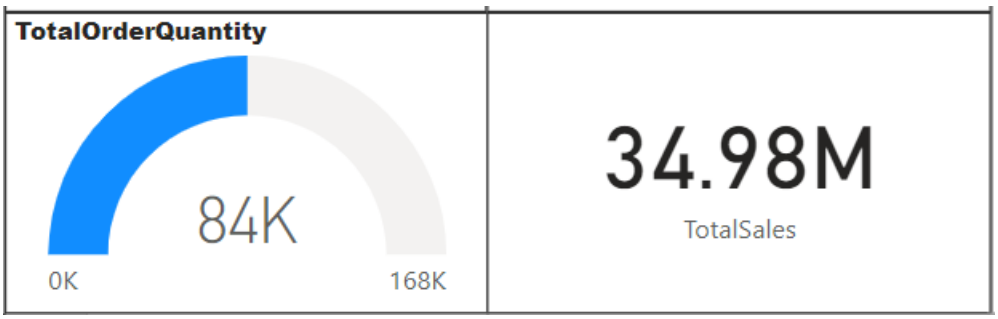
Explanation: The funnel visualization depicts the sum of return quantity for each year, segmented by product category. The funnel shape visually represents the progressive decrease or increase in return quantity from one stage (year) to the next, providing insights into which product categories have the highest or lowest return rates over the years.



8.Total Order Quantity and Total Sales

Visualization: Gauge meter visualization

Explanation: The gauge meter visualization presents the total order quantity for the three years (2015, 2016, and 2017) combined. This visualization provides a clear indication of the overall order volume over the specified period. Additionally, the rank card visualization shows the total sales amount, allowing for comparison and ranking of sales performance.



CONCLUSION

In conclusion, the analysis conducted in this report provides valuable insights into various aspects of our business operations. By examining sales performance, return rates, customer demographics, and regional contributions, we have gained a deeper understanding of key trends and patterns that impact our business.

Some notable findings include:

- Identification of top-performing product categories and regions.
- Analysis of seasonal sales trends and return patterns.
- Understanding of customer demographics and income distribution.
- Evaluation of sales and return quantities over multiple years.

These insights enable informed decision-making and strategic planning to optimize processes, enhance customer satisfaction, and drive business growth. Moving forward, leveraging these findings will be crucial in implementing targeted initiatives and maximizing overall performance.

THANK YOU

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