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Assignment Coversheet

Please complete all details required clearly. For softcopy submissions, please ensure this cover sheet is included at the start of your document or in the file folder.

Assignment & Course Details:

Subject Code: *(e.g. XCAT1234)* **XBDS 3014**		**Subject Name** *(e.g. Fundamentals of Computing)*: **DATA VISUALIZATION & INTERACTIVE DESIGN**	
Course *(e.g. Bachelor in Computing)* : Bachelor in Computer Science			
Lecturer Name: **Dr. Zuliani Zulkoffli**			
Assessment Due Date: *(dd/mm/yy)*	**4/4/2024**	**Assessment Title:**	**DATA VISUALIZATION & INTERACTIVE DESIGN ASSIGNMENT 1**

I/We declare that:

- *This assignment is my/our own original work, except where I/we have appropriately cited the original source.*
- *This assignment or parts of it has not previously been submitted for assessment in this or any other subject.*
- *I/We allow the assessor of this assignment to test any work submitted by me/us, using text comparison software for plagiarism.*
  (For more information, Please read the Academic Integrity Guidelines)

Name : Wong Yen Chik **Student ID:** 0133621 **Email :** wongyenchik@gmail.com **Mobile No:** 01110595371 **Signature:** wong **Date:** **30/3/2024**	**Name :** **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**	**Name :** **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**
Name : **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**	**Name :** **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**	**Name :** **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**

For office use only – Lecturer comments (if applicable)

Marks Breakdown

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1.0 Introduction

A sales dashboard serves as a vital tool for businesses, offering a comprehensive snapshot of sales performance metrics and trends. It provides valuable insights that enable informed decision-making and strategic planning to drive revenue growth and enhance operational efficiency. In this sales dashboard, it encompasses key indicators such as sales each month, sales each quarter, product category sales, each product sales and customer shopping habits based on their demographic data.

1.1 Research Question

- What is the sales trend in each year?
- What is the sales trend in each quarter?
- What is the sales distribution throughout the month?
- What is the sales in each product category?
- What is the sales of each product?
- How does customer's purchase behavior across different territories affect the distribution of deal sizes?
- How does customer's purchase behavior across different countries affect the distribution of deal sizes?
- How does customer's purchase behavior across different cities affect the distribution of deal sizes?
- What is the sales for each territory?
- What is the sales for each country?
- What is the sales for each city?

1.2 Methods to accomplish Aims

In pursuit of our objectives in optimizing sales strategies and fostering growth for businesses, we aim to leverage Excel to construct a comprehensive sales dashboard utilizing data extracted from a Kaggle dataset comprising around 10,000 records detailing company sales information. Through experimentation with various visualization techniques, we seek to provide valuable insights for stakeholders, enabling informed decision-making and strategic planning to enhance sales performance.

1.3 Preview of Main Results

Figure 1.0 - Sales Dashboard

As you can see in the sales dashboard using Excel, we provide a comprehensive overview of sales performance metrics and trends to enable informed decision-making and strategic planning for our organization. Through the utilization of Excel's powerful tools and features, we have visualized sales trends on a yearly, quarterly and monthly basis, allowing stakeholders to identify patterns in sales over time. Additionally, our dashboard will delve into sales by product category and individual product, providing insights into which product lines are driving revenue growth. Last, we will analyze customer purchase behavior across different territories, countries, and cities to understand how regional factors influence the distribution of deal sizes and sales.

2.0 Methodology

2.1 Data Acquisition

The dataset utilized in this research originates from Kaggle and contains 10,414 records detailing company sales information.

2.2 Data Preprocessing

Data preprocessing encompasses various techniques and methods applied to raw data to prepare it for subsequent data visualization steps. The pre-processing steps we have taken in our dataset are:

- Recalculate value for PRICEEACH column with the algorithm below because some value does not align with the value of sales.

  =[@SALES]/[@QUANTITYORDERED]

- Add a new DATERANGE column will be used during the visualization of the sales throughout the month by using the algorithm below.

  =IF(DAY([@ORDERDATE]) <= 10, "Start", IF(AND(DAY([@ORDERDATE]) > 10, DAY([@ORDERDATE]) <= 20), "Middle", "End"))

- Recalculate the ORDERDATE value because some value format is not date format.

  =IF(ISTEXT(AD2), DATE(MID(AD2,FIND("/", AD2, FIND("/", AD2) + 1)+1,4),LEFT(AD2, FIND("/", AD2) - 1),MID(AD2, FIND("/", AD2) + 1, FIND("/", AD2, FIND("/", AD2) + 1) - FIND("/", AD2) - 1)), DATEVALUE(TEXT(AD2, "mm/dd/yyyy")))

- Change the “Japan” value in the TERRITORY column to “APAC” to ensure the consistency in the data as Japan is also under APAC.

  =IF(AF2="Japan","APAC",AF2)

2.3 Data Visualisation

2.3.1 Sales Timeline

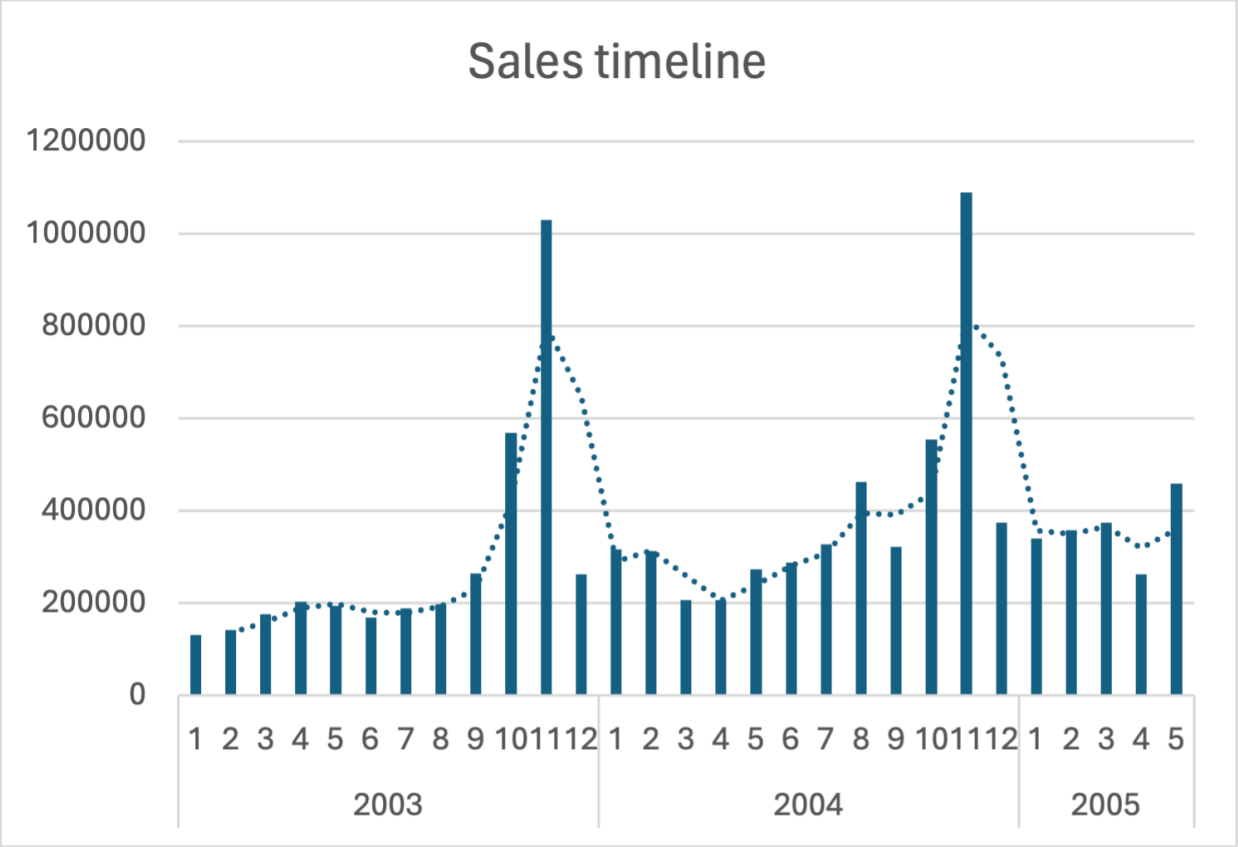

Figure 2.0 – Sales Timeline

Figure 2 shows the sales timeline for the company each month from January of 2003 to May of 2005. As you can see, November consistently emerges as the month with the highest sales figures compared to other months. This graph is plotted by filtering the sales data with each month within each year.

2.3.2 Sales by Quarter

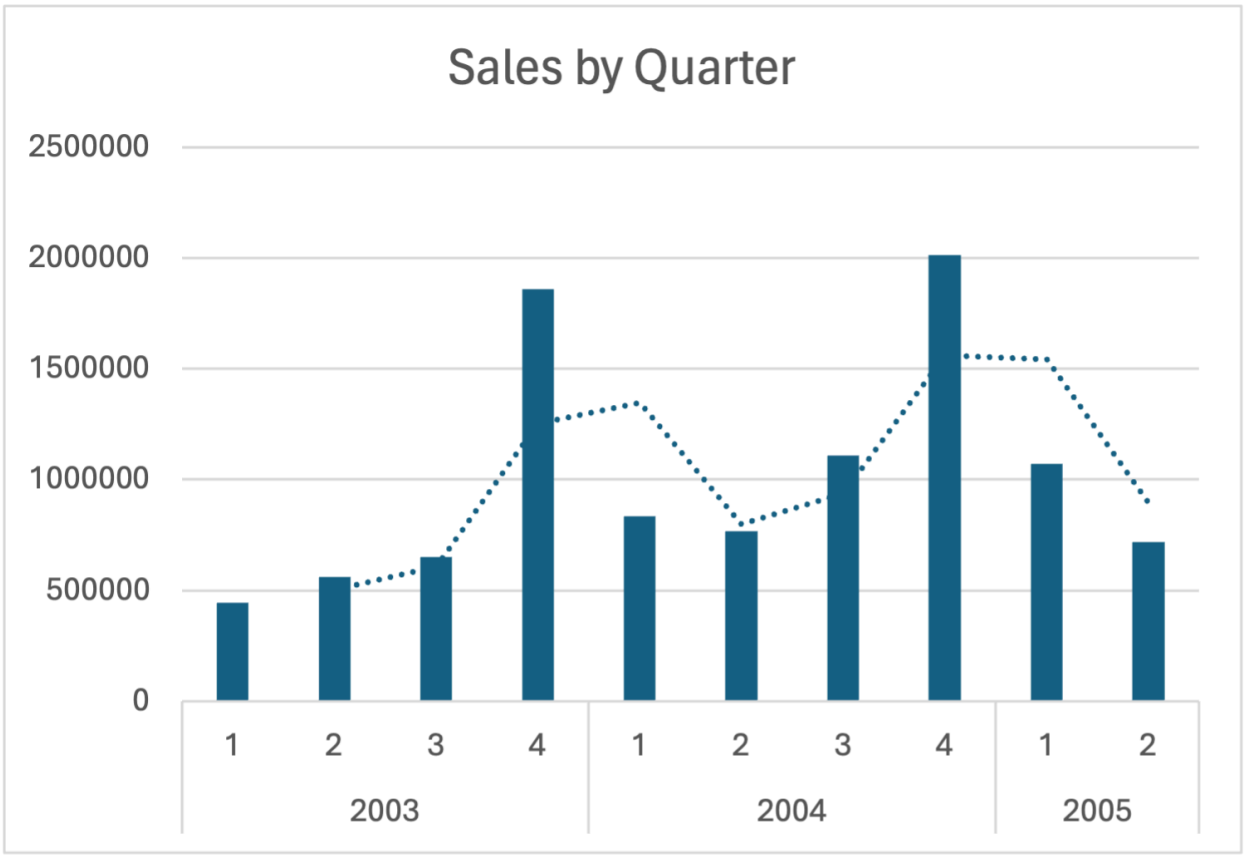

Figure 3.0 – Sales by Quarter

Figure 3 shows the sales timeline for the company each quarter from 2003 to 2005. As you can see, the 4th quarter consistently emerges as the quarter with the highest sales figures compared to other quarters. This pattern occurs because November's sale is way higher than other months.

2.3.3 Sales Distribution Throughout the Month

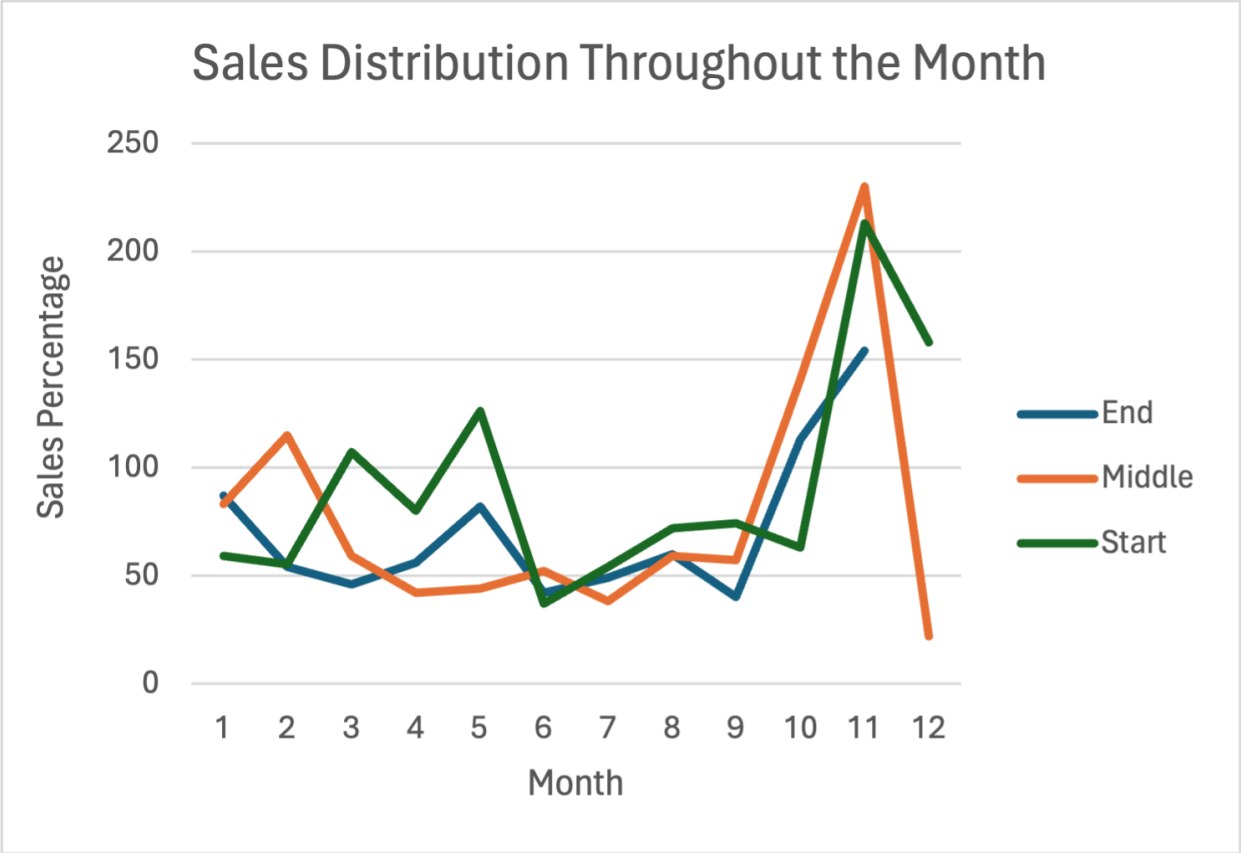

Figure 4.0 – Sales Distribution Throughout the Month

Figure 4 shows the sales made distribution throughout the month. Notably, people tend to make purchases at the start of new months from March to September. However, they tend to make purchases in the middle of month in October, November, January and February. Interestingly, people rarely make purchases at the end of month except for January.

2.3.4 Product Category Sales

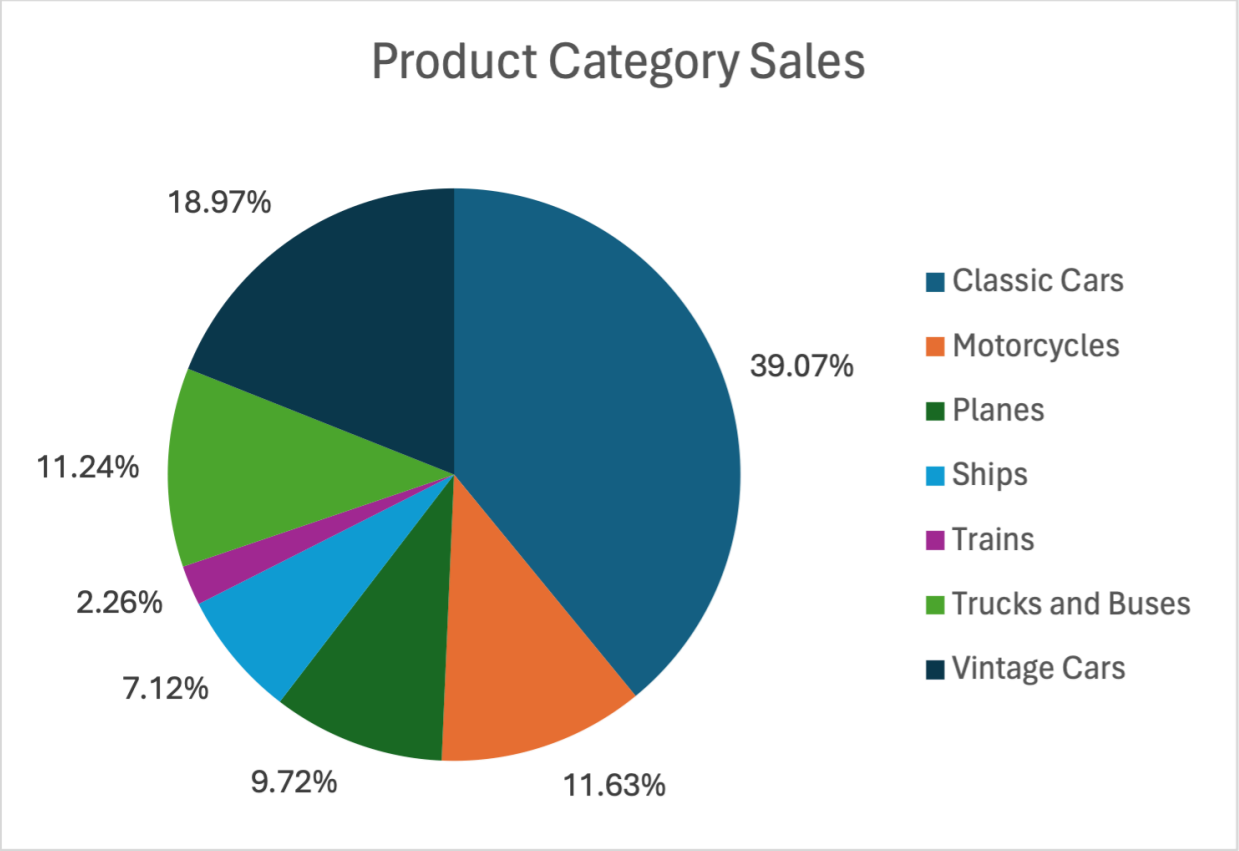

Figure 5.0 – Product Category Sales

Figure 5 shows the sales made by different product categories. Classic cars have occupied most of the company's sales, followed by vintage cars, motorcycles, trucks and buses. Train has constituted the least percentage of the sales.

2.3.5 Product Sales

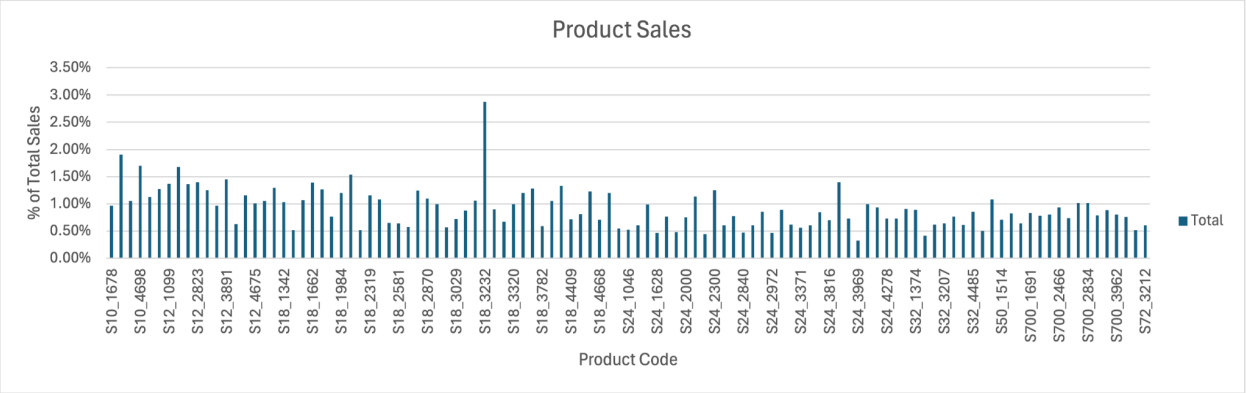

Figure 6.0 – Product Sales

Figure 6 shows the sales made by each product. Notably, product S18_3232 has constituted way more percentage of the total sales compared to other products.

2.3.6 Count of Different Deal Size Order based on Territory

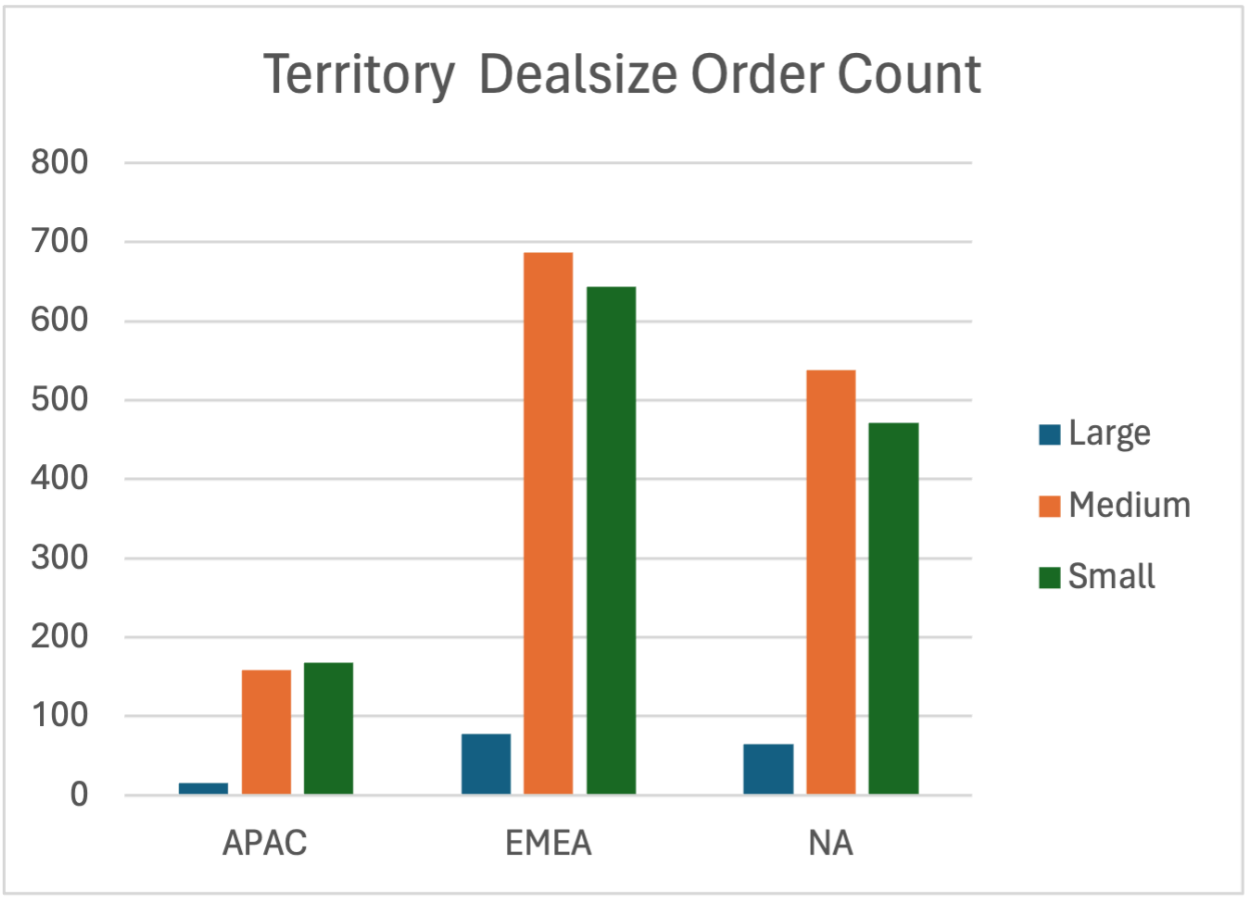

Figure 7.0 – Territory Deal Size Order Count

In Figure 7, the distribution of different deal size orders across territories is presented, offering valuable insights into purchasing behavior within each region. One striking observation is the number of medium and small deal size orders is way higher than large deal size orders across all territories.

2.3.7 Count of Different Deal Size Order based on Country

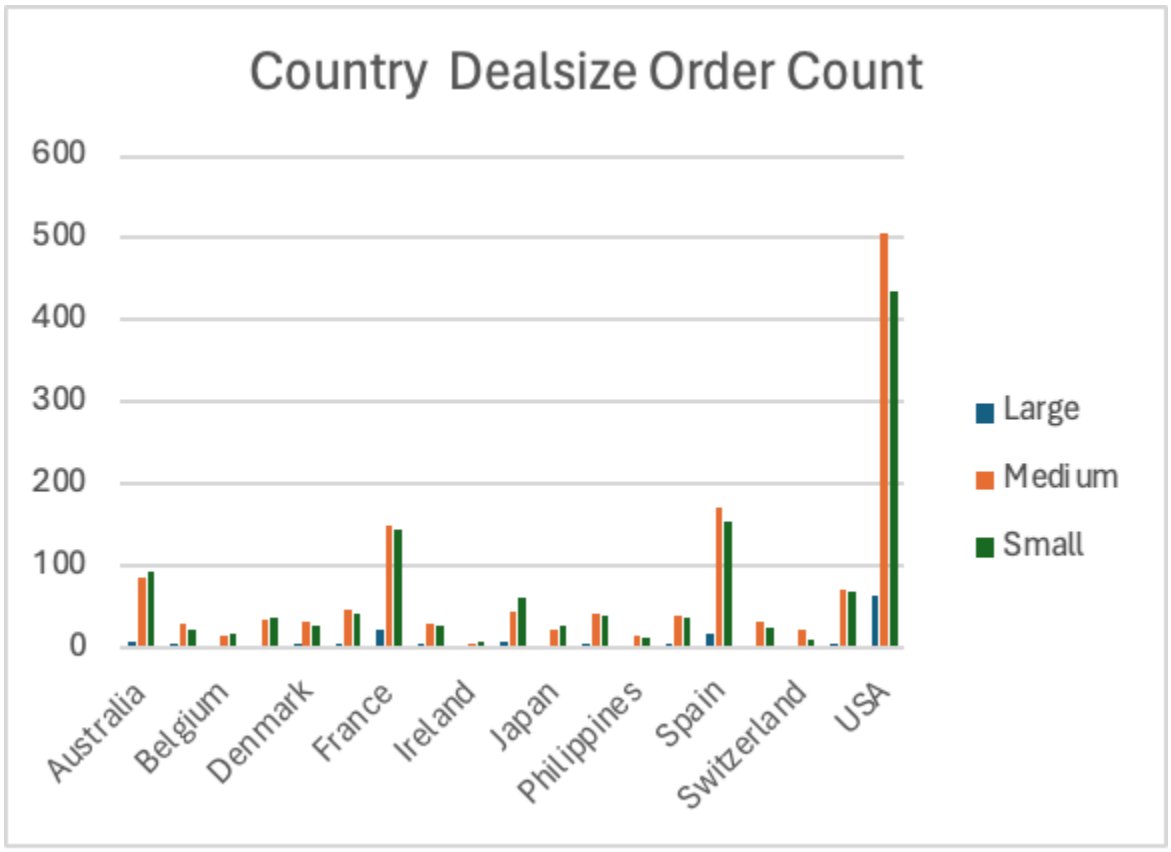

Figure 8.0 – Country Deal Size Order Count

In Figure 8, the distribution of different deal size orders across countries is presented. One striking observation is that almost all of the countries have more medium size order than small and large size order. However, Italy and Canada have small size orders compared to medium and large size orders.

2.3.8 Count of Different Deal Size Order based on City

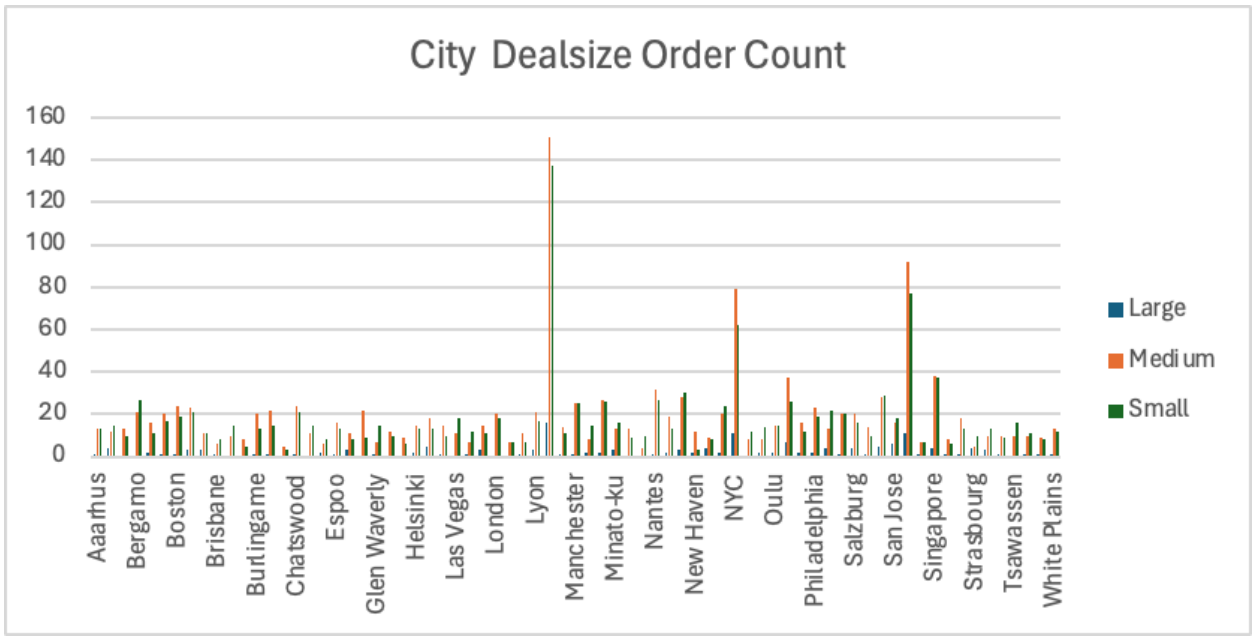

Figure 9.0 – City Deal Size Order Count

In Figure 9, the distribution of different deal size orders across cities is presented. One striking observation is that almost all of the cities have more medium size order than small and large size order.

2.3.9 Sales based on Territory

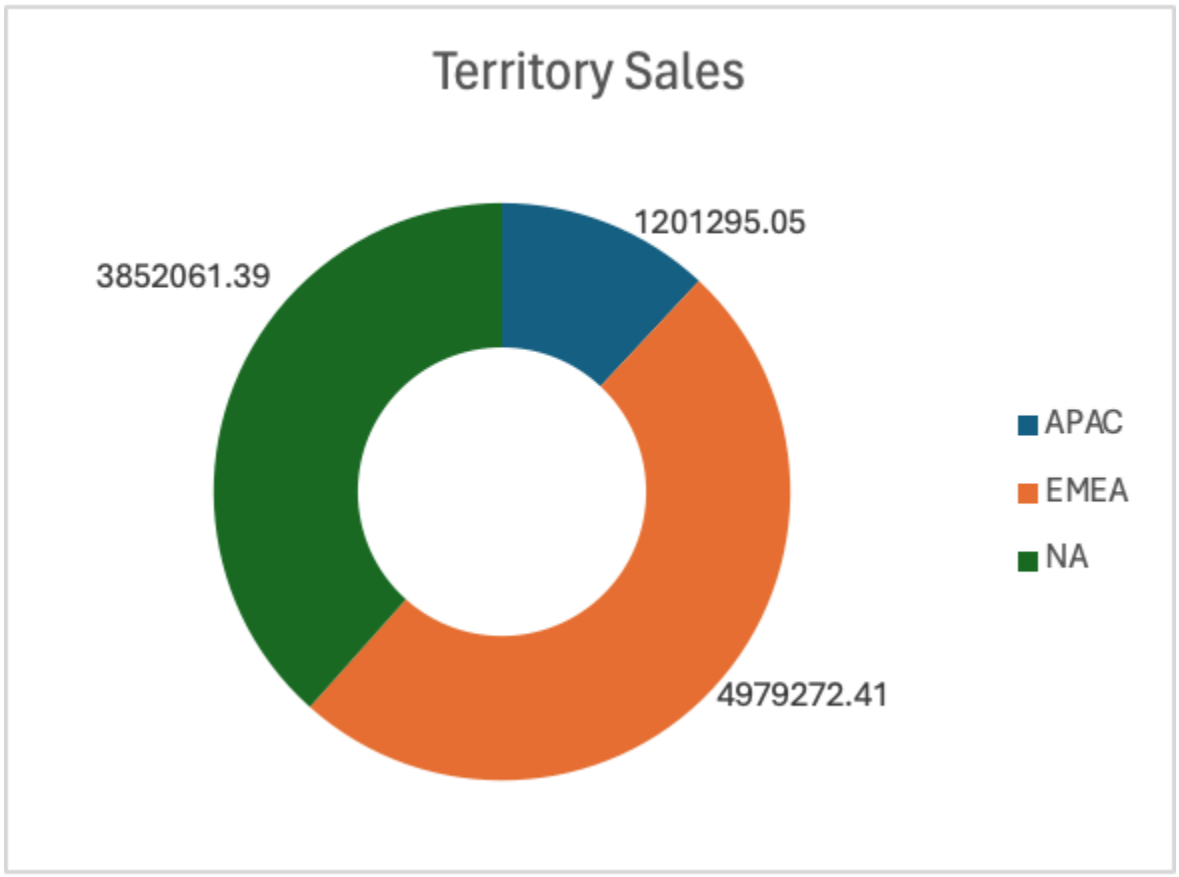

Figure 10.0 – Territory Sales

In Figure 10, a notable observation is that the EMEA (Europe, Middle East, and Africa) region accounts for nearly half of the company's total sales, with a sales value of 4979272.41. In contrast, the APAC (Asia-Pacific) region contributes only a small portion to the company's sales, totaling 1201295.05.

2.3.10 Sales based on Country

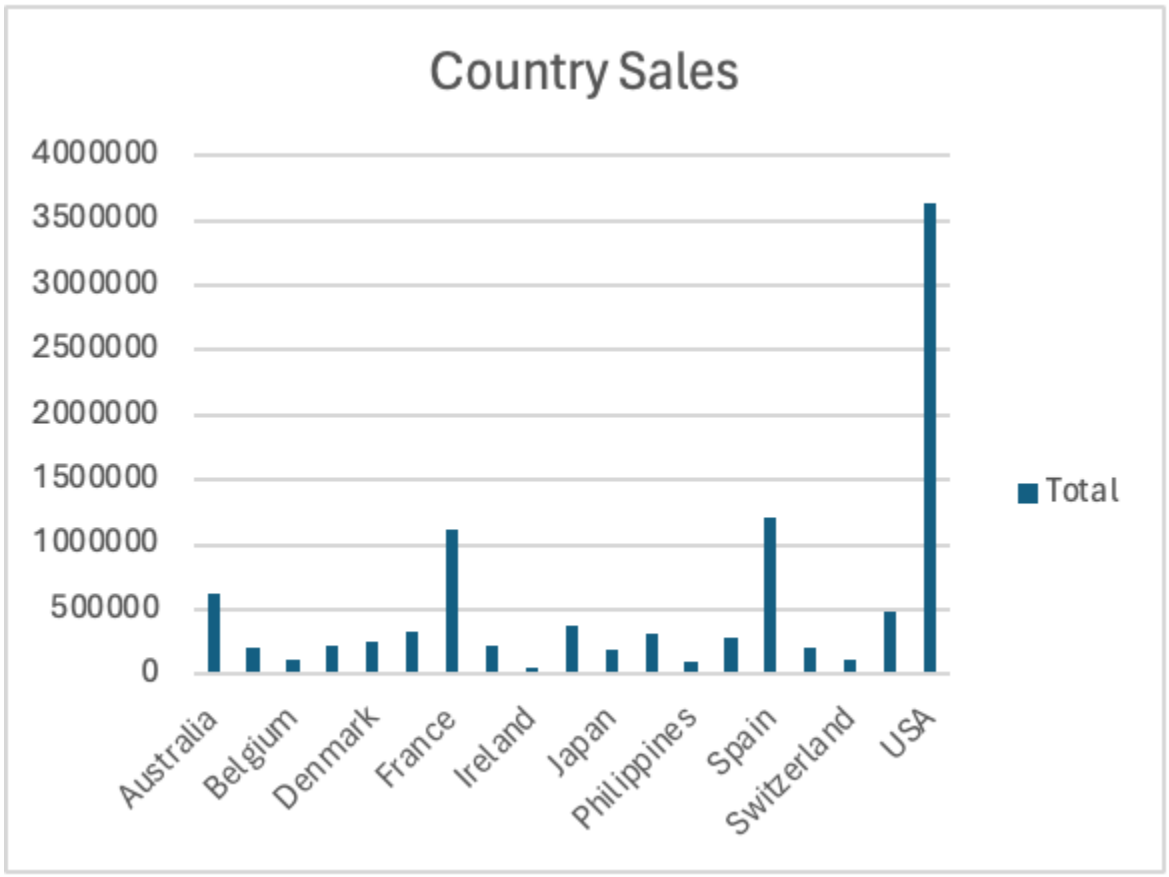

Figure 11.0 – Country Sales

In Figure 11, a prominent insight is the significant contribution of the USA to the company's total sales, with a sales value of around 3500000. Additionally, France and Spain emerge as noteworthy contributors to the company's sales performance, each accounting for around 1000000.

2.3.11 Sales based on City

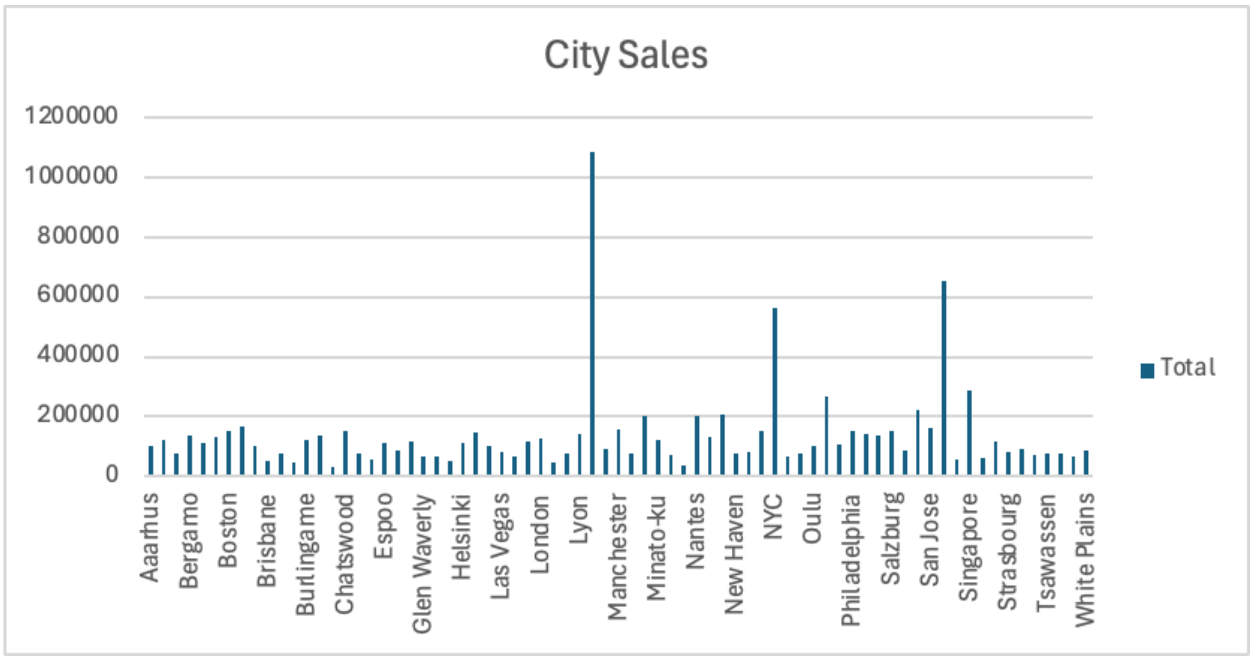

Figure 12.0 – City Sales

In Figure 12, a prominent insight is the significant contribution of Madrid to the company's total sales, with a sales value of around 1000000. Additionally, San Rafael and NYC emerge as noteworthy contributors to the company's sales performance, each accounting for around 500000 to 600000.

2.4 Filter

2.4.1 Order Date

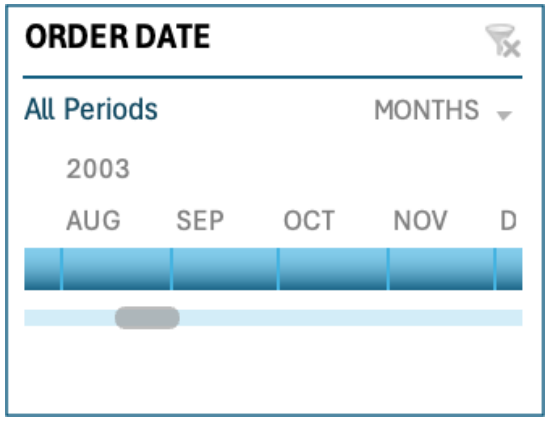

Figure 13.0 – Order Date

In Figure 13, this filter allows the stakeholder to filter all the graphs based on the selected period.

2.4.2 Product Category

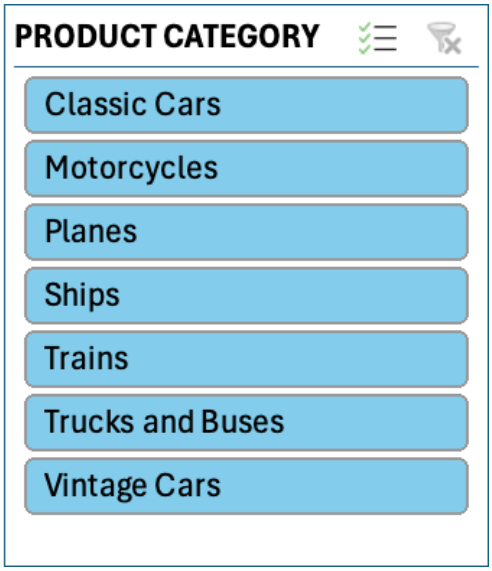

Figure 14.0 – Product Category

In Figure 14, this filter allows the stakeholder to filter all the graphs based on the selected product category.

2.4.3 Status

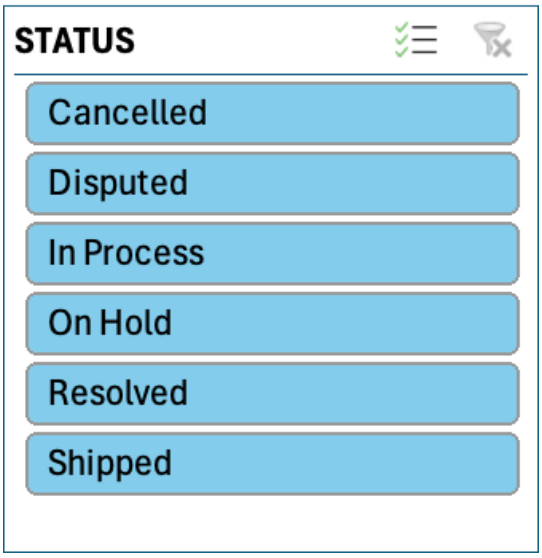

Figure 15.0 – Status

In Figure 15, this filter allows the stakeholder to filter all the graphs based on the selected status.

2.4.4 Deal Size

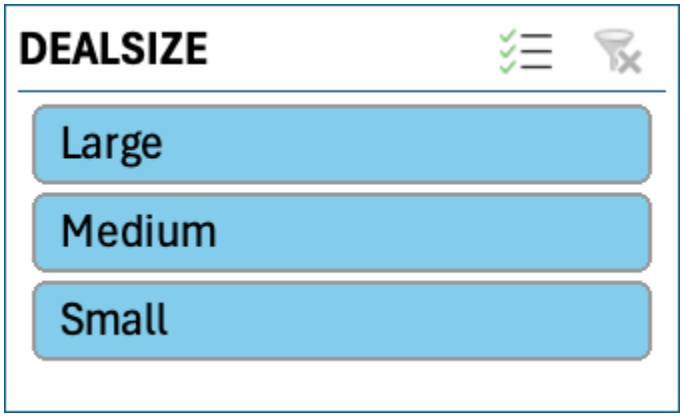

Figure 16.0 – Deal Size

In Figure 16, this filter allows the stakeholder to filter all the graphs based on the selected deal size.

2.4.5 Territory

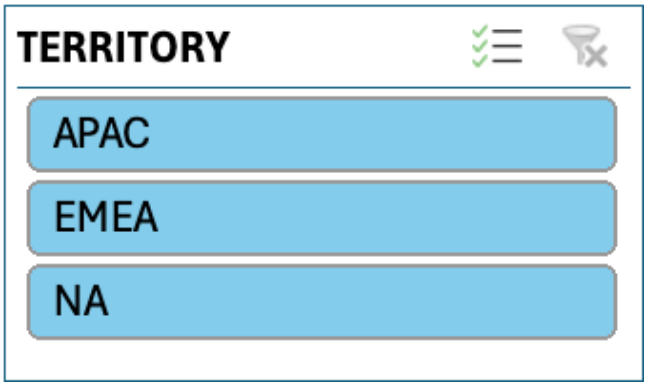

Figure 17.0 – Territory

In Figure 17, this filter allows the stakeholder to filter all the graphs based on the selected territory.

2.4.6 Country

Figure 18.0 – Country

In Figure 18, this filter allows the stakeholder to filter all the graphs based on the selected country.

3.0 Results and Discussion

Here is the result produced by the sales dashboard by applying the filter.

Figure 19.0 – Filtered Sales Dashboard

In Figure 19, a filtered sales dashboard is showcased, providing a focused view of sales data based on specific criteria. The selected filter narrows down the period from August 2003 to November 2003, focuses on product categories including classic cars, motorcycles, and vintage cars, and filters for shipments with a status of "shipped" and deal sizes categorized as medium and small. Moreover, the territory is restricted to EMEA (Europe, Middle East, and Africa), with countries including Austria, Belgium, Denmark, Finland, France, Germany, and Ireland included in the analysis. Each graph within the dashboard dynamically updates to reflect the filtered criteria, offering tailored insights into sales performance within the specified parameters.

4.0 Conclusion

In conclusion, the sales dashboard serves as a powerful tool for businesses, offering a comprehensive and dynamic platform to analyze and visualize sales data. Through the utilization of various filters and parameters, stakeholders can gain valuable insights into sales performance across different timeframes, product categories, territories, and customer segments. The dashboard facilitates informed decision-making by highlighting trends and patterns, enabling organizations to identify opportunities for growth, optimize sales strategies, and enhance overall business performance. By leveraging the capabilities of the sales dashboard, businesses can adapt to changing market conditions, tailor their approach to meet customer needs, and drive sustainable revenue growth. Ultimately, the sales dashboard empowers organizations to make data-driven decisions, foster collaboration across departments, and achieve their sales objectives effectively in a competitive marketplace.