15 Years of BMW Sales Data (2010–2024)

Final Report

Introduction

BMW is one of Germany's most prominent and globally recognized automotive manufacturers. As a core pillar of the German automotive sector, BMW plays a critical role in supporting employment, exports, innovation, and industrial strength.

The dataset includes detailed attributes such as car model, engine type combustion, fuel type, color and transmission type allowing us to conduct a deeper analysis of product-level trends. By exploring these variables in conjunction with regional sales performance, we aim to uncover patterns in consumer preferences, shifts in market demand, and the impact of regulatory changes. Based on our findings, we will propose strategic actions that BMW can take to regain growth and market share in underperforming regions over the coming years.

The data has limitations, as it only includes total units sold per model rather than individual sales, making it challenging to identify deeper insights or distinctions among different versions of the same model.

Business Impact

The study investigates BMW's sales performance through a comprehensive analysis of regional trends, product lines, and market influences. It first identifies growth patterns and declines across key regions such as Europe, North America, and Asia-Pacific. It then evaluates sales performance across BMW's model range to determine areas of strength and weakness. Lastly, it assesses how increasing competition from electric vehicle producers and evolving consumer demands for sustainability and innovation are influencing BMW's market position.

Data

File Name:	BMW SALES (2010 - 2024)
Description:	BMW sales data (2010–2024) by region, model, and time with key trends
Dataset Details:	50,001 Rows & 11 Columns
Size:	3.314 KB **(**3.24 MB**)**
Source:	Kaggle - Dataset Link

Data Analysis & Computation

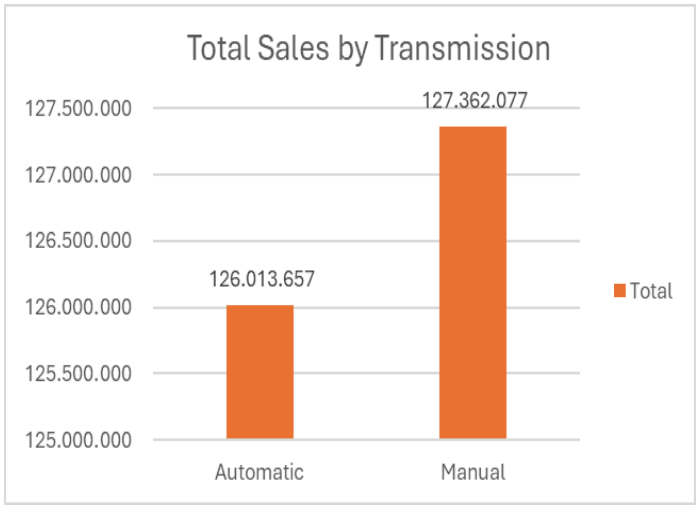
Data Profiling:

- Apply Excel filter to the dataset.
- Examine each attribute's unique value for inconsistency.
- Checking for Null Values.
- Checking for Duplicate Values.
- Pivot Tables were created to summarize and analyze the essential data associated with our problem statement.
- Get statistics of all columns (numerical and categorical)

Data Analysis:

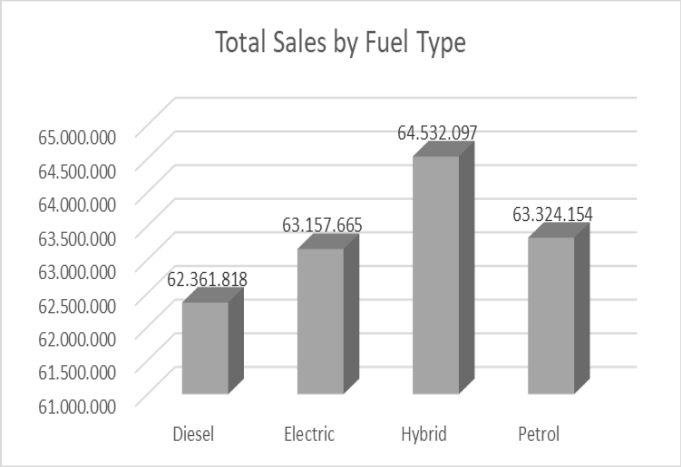
Analysis #1 - Sales by Transmission

Between **2**010 and 2024, BMW recorded strong global sales across both manual and automatic transmission models. Over this 15-year period, 127,362,077 manual transmission vehicles were sold, slightly surpassing 126,013,657 automatic units. This reflects a 1.07% higher preference for manual models. While automatic transmissions continue to dominate the broader market due to their convenience and ease of use, BMW's sales data shows a sustained interest in manual transmission, particularly among driving enthusiasts who value engagement and control.



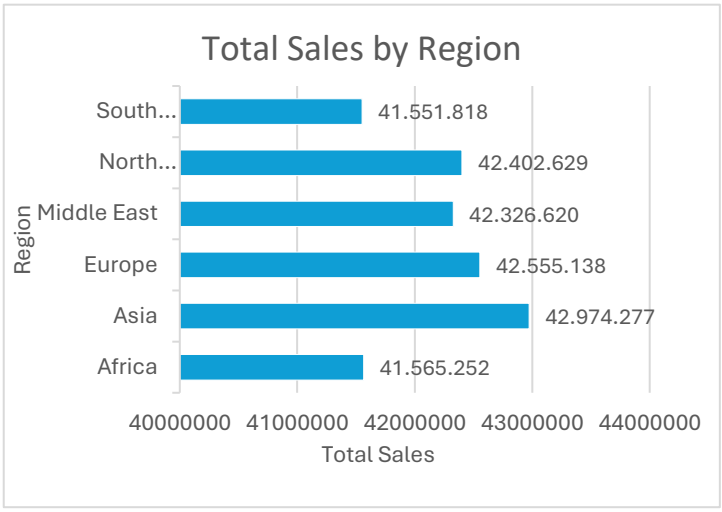
Analysis #2 – Sales by Fuel Type

Between 2010 and 2024, BMW's vehicle sales were evenly spread across different fuel types. Hybrids led with 25.47%, followed closely by petrol (24.99%), electric (24.93%), and diesel (24.61%). With less than a 1% difference between categories, this shows how BMW successfully offered a mix of options to suit both traditional drivers and those looking for newer technologies.



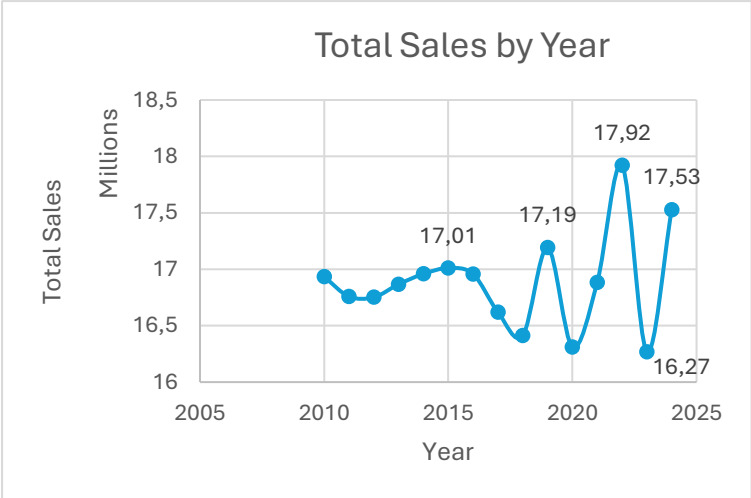
Analysis #3 - Sales by Region

BMW's global sales remained strong and fairly balanced across regions, with annual totals ranging from around 16.3 million to a peak of 17.9 million units in 2022. Asia showed steady growth, increasing from 2.9 million units in 2010 to just over 3 million in 2024, mainly due to rising demand in developing markets. Europe and North America continued to be BMW's most stable and high-performing regions, each contributing over 2.7 million units annually.



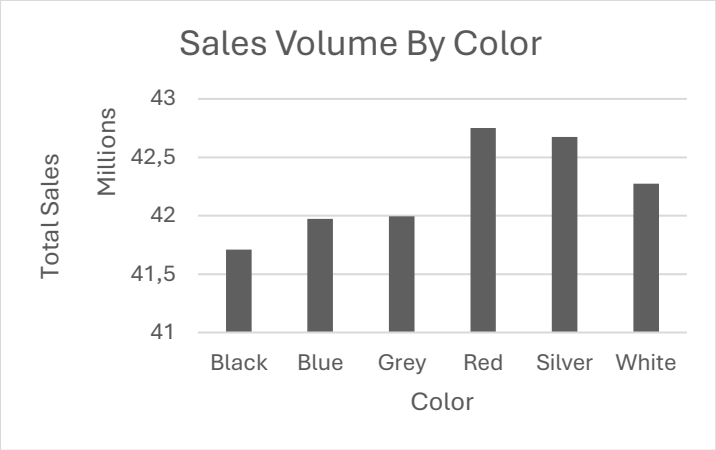
Analysis #4 - Sales by Year

Over the 15-year period, global sales steadily increased by approximately 3.5%, reaching their peak in 2022 at 17.92 million units. A sharp fall followed in 2023, but strong recovery in 2024 highlighted BMW's resilience and steady long-term growth.



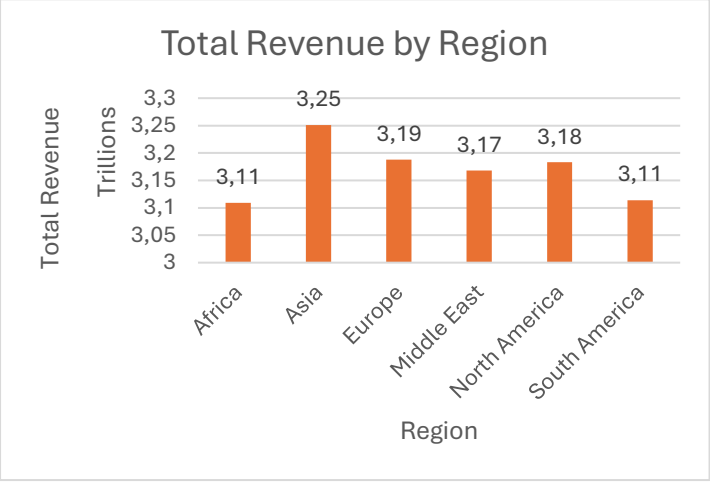
Analysis #5 - Sales by Color

The analysis revealed that Red is the most popular color with 42,750,183 units sold, closely followed by Silver with 42,674,022 units.
In contrast, Black recorded the lowest sales volume at 41,710,693 units, making it the least selected color in the dataset.



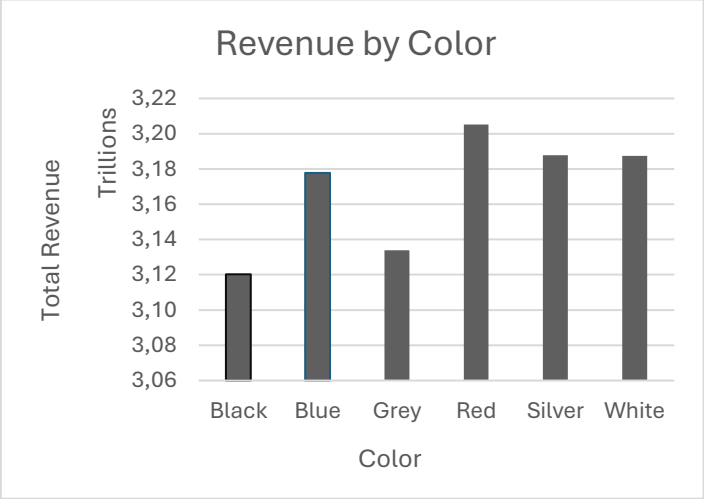
Analysis #6 - Revenue by Region

Asia led BMW's regional sales with about 3.25 trillion units, followed by Europe and North America at around 3.19 and 3.18 trillion. The Middle East showed solid performance at 3.17 trillion, while Africa and South America recorded lower totals near 3.11 trillion each.



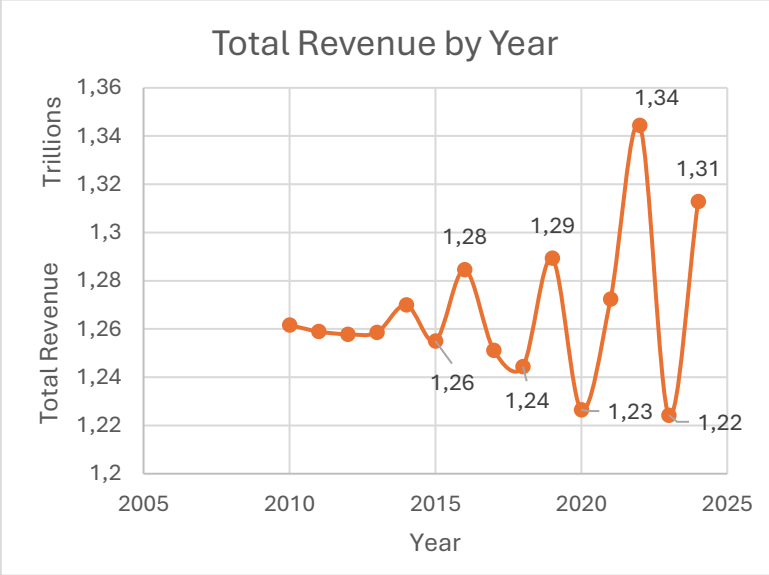
Analysis #7 - Revenue by Color

The data clearly shows that Red generates the highest total revenue at approximately 3.21 trillion dollars, driven by its strong sales volume of over 42.7 million units. Silver follows closely with about 3.19 trillion dollars in revenue, supported by sales of roughly 42.7 million units. Meanwhile, Black records the lowest revenue at approximately 3.12 trillion dollars.



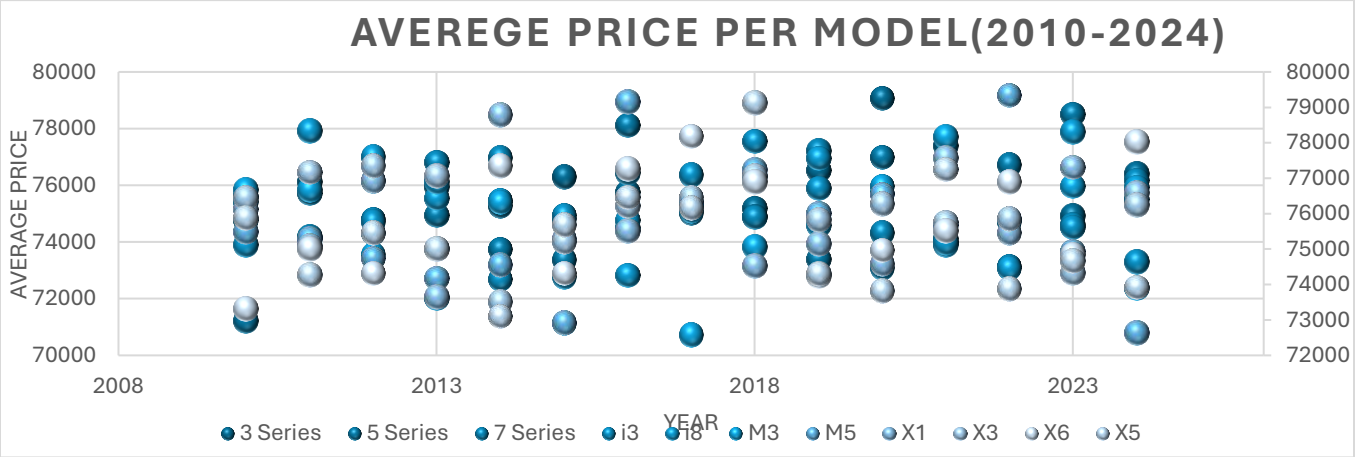
Analysis #8 - Revenue by Year

Global revenue increased from 1.26 trillion in 2010 to 1.31 trillion in 2024, a growth of approximately 4.1%. The peak revenue occurred in 2022, with 1.34 trillion.



Analysis #9 - Average Price per Model

Over this period, the price distribution widened, with the gap between the lowest and highest priced models increasing from approximately $4,700 in 2010 to nearly $6,800 in 2024. Prices have generally increased from 2010 to 2024, but with some ups and downs depending on model. Most expensive models seem to be the i8, 3 series, and 7 Series, while the X6 and M5 are the lowest-priced models. Overall, all BMW models tend to have relatively similar average prices.



Dashboard:

My Dashboard (Link) provides an interactive system to explore BMW's global sales over the past 15 years. It presents data by year, region, transmission type, and fuel type, highlighting trends, peak years, decline points, and regional contributions to give a clear view of BMW's long-term market performance.

Conclusion & Future Work

Conclusion:

Over the past 15 years, BMW's sales and revenues have grown significantly, with Asia consistently being the top-performing region. Consumer preferences for transmission types and fuel models remain balanced, showing only minor differences. Similarly, the prices of BMW models are relatively close, with even the most expensive and least expensive models showing only modest variations, reflecting a consistent pricing strategy across the product range. Our analysis shows that BMW, with such strong sales and revenue, continues to play a key role in the German economy, supporting employment, exports, and innovation in the automotive sector. BMW is likely to remain one of the leading automotive companies in the future, continuing to grow and innovate in the global market.

Future work:

While our dataset focuses on sales, it doesn't reflect population size. Considering that Asia (including the Middle East) accounts for approximately 60% of the global population, BMW could significantly increase its market share by enhancing marketing efforts, offering localized options, and strengthening its presence in this region.

Although Europe and North America have small population sizes, their combined economic strength provides significant opportunities for BMW to expand its market share. Africa, with a lower GDP, is less immediately attractive despite its growing population.

Future research could include individual sales for each vehicle, not just total units per model. This would help us understand which versions sell best and how prices affect sales, providing better insights into BMW's market strategies.

Further expansion of this analysis should include the manufacturing year for each vehicle. Combined with individual sales data, this would allow comparisons between new and older models and provide better insight into whether vehicles with newer technology and eco-friendly features are preferred than older ones.

Another expansion could include the manufacturing cost for each model. Combined with sale prices and sales data, this would allow analysis of correlations between cost, price, and market performance, helping BMW understand how pricing strategies affect demand and profitability for different models.