FINANCIAL PERFORMANCE &PROFITABILITY ANALYSIS

Bayerische Motoren Werke AG (BMW Group)

Prepared By: Martin Mulei
Role: Financial & Data Analyst
Tools Used: Excel | Power BI | DAX | Power Query
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EXECUTIVE SUMMARY

This project delivers a comprehensive financial and operational performance analysis of Bayerische Motoren Werke AG using a structured dashboard built from a 50,000-row Kaggle dataset integrating revenue, sales volume, product segmentation, and regional distribution.

The primary objective was to transform raw financial and operational data into measurable performance indicators that evaluate:

- Revenue trajectory and volatility
- Profitability consistency
- Sales efficiency
- Regional contribution
- Target performance variance

The dashboard reveals that while BMW achieved significant unit growth (+233% vs. target), revenue growth did not increase proportionally, suggesting pricing pressure or sales mix shifts. Profit margins averaged 25% but demonstrated historical volatility, with dips below 10% in weaker years. Revenue contraction during 2021–2022 was followed by recovery in 2023–2024, indicating resilience but limited structural stability.

Regional analysis shows Asia leading in revenue contribution ($3.3T), closely followed by Europe and North America, while Africa presents growth potential. Gross profit concentration in large engine vehicles (41%) reflects strong premium positioning but also introduces segment dependency risk.

Overall, BMW demonstrates diversified regional performance and strong premium profitability; however, margin volatility and revenue inconsistency highlight the need for improved alignment between pricing strategy, cost efficiency, and long-term growth planning.

BUSINESS PROBLEM

BMW operates within a capital-intensive, innovation-driven automotive industry facing:

- Electrification and EV transition pressures
- Regulatory emission standards
- Commodity cost volatility
- Cyclical demand patterns
- Regional demand fluctuations

Although financial statements provide historical data, they do not clearly illustrate:

- Whether growth is structurally sustainable
- If unit expansion enhances profitability
- Which regions provide stable contribution
- How margin stability aligns with strategic positioning
- Whether performance aligns with internal targets

This project addresses these gaps by organizing financial and operational metrics into an integrated dashboard framework that enables executive-level performance evaluation.

PROJECT OBJECTIVES

The project was designed to:

1. Measure revenue growth over time and identify volatility patterns.
2. Evaluate profitability performance through gross profit and margin trends.
3. Compare actual revenue and units sold against budgeted targets.
4. Analyze the efficiency of unit-to-revenue conversion.
5. Assess geographic contribution and diversification.
6. Identify concentration risk within product and engine categories.
7. Deliver structured insights aligned with strategic decision-making.

DATA SOURCE & STRUCTURE

The project utilizes a Kaggle dataset containing 50,000 rows and 16 columns of BMW-related operational and financial data.

Dataset Composition

1. Product & Model Variables

- Model name (e.g., 5 Series, i8, X3)
- Production year
- Engine size category (Small, Medium, Large)
- Fuel type
- Transmission
- Region of sale

2. Operational Variables

- Mileage (KM)
- Units sold
- Sales category (High, Mid, Low)

3. Financial Variables

- Price (USD)
- Revenue
- Derived cost metrics
- Gross profit
- Performance classification

The dataset integrates categorical segmentation and quantitative financial metrics, enabling multi-dimensional analysis across time, geography, and product type.

DATA PREPARATION & TRANSFORMATION

To ensure analytical reliability, a structured cleaning and transformation workflow was implemented.

Excel Phase

- Applied advanced lookup and validation functions.
- Standardized formatting.
- Verified revenue consistency across units and price.
- Identified anomalies before import.

Power Query Phase

- Promoted headers.
- Corrected data types.
- Removed irrelevant columns.
- Conducted column quality checks.
- Resolved 3 errors and 2 missing values.

Feature Engineering

The following calculated fields were introduced:

- Cost per Unit (modeled estimate)
- Total Cost
- Gross Profit
- Revenue Share (% of total)
- Revenue Variance (% vs. target)

These additions strengthened profitability and performance analysis.

DATA MODELING

To enhance analytical capability, the dataset was modeled using structured relationships.

Custom Tables Created

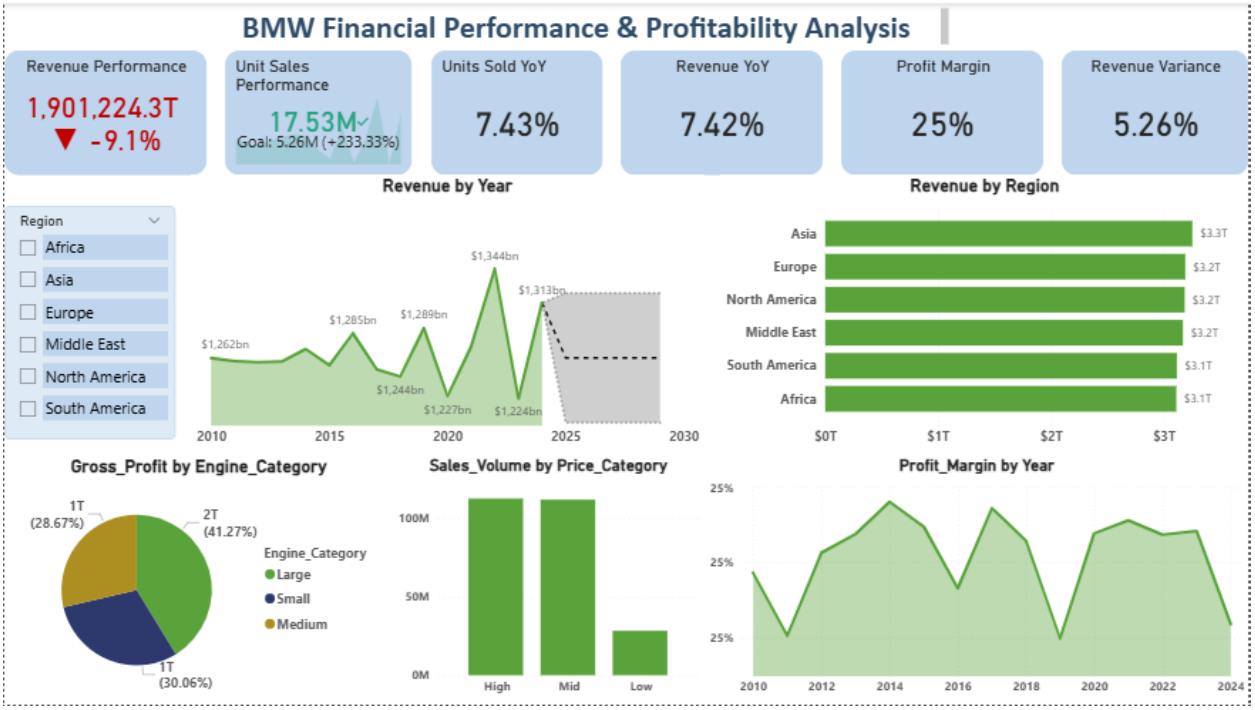
1. Date Table
    - Enabled Year-over-Year growth analysis
    - Supported time-based filtering
2. Region Table
    - Standardized geographic classification
    - Enabled clean segmentation and filtering
3. Budgeted Revenue Table
    - Stored performance targets
    - Enabled variance and performance gap analysis

Key DAX Measures

- Total Revenue
- Total Units Sold
- Gross Profit
- Profit Margin %
- Revenue YoY %
- Units YoY %
- Revenue Variance %
- Revenue Share %
- Unit Sales Performance Index

This modeling approach supports dynamic filtering, cross-segmentation, and trend analysis.

VISUALIZATION & DASHBOARD STRUCTURE



The dashboard was designed for executive usability, structured into four analytical sections:

1. Executive KPI Overview

Displayed via top KPI cards:

- Total Revenue: $1.31T vs Target $1.44T (–9.09%)
- Units Sold: 17.53M vs Target 5.26M (+233%)
- Revenue YoY: 7.42%
- Units YoY: 7.43%
- Profit Margin: 25%
- Variance: 5.26%

These KPIs provide immediate performance visibility.

2. Revenue & Margin Trend Analysis

- Revenue by Year (2010–2030)
    - Shows decline in 2021–2022
    - Recovery post-2023
    - Moderate projected growth
- Profit Margin Trend
    - Average ~25%
    - Dips below 10% indicate cost exposure risk

3. Regional Performance Analysis

Revenue distribution:

- Asia: $3.3T (largest contributor)
- Europe: ~$3.2T
- North America: ~$3.2T
- Middle East: ~$3.2T
- South America: ~$3.17T
- Africa: ~$3.1T

The balanced distribution reduces overdependence on a single market, though Asia leads marginally.

4. Product & Engine Category Analysis

- Gross Profit Distribution:
    - Large Engines: 41%
    - Medium: 30%
    - Small: 29%
- Sales Volume by Price Category:
    - High & Mid dominate (~100M each)

- Low segment significantly lower (~25M)

This confirms strong premium positioning but reveals concentration risk.

KEY INSIGHTS

1. Volume-Revenue Misalignment
   Significant unit growth has not proportionally increased revenue, indicating either discounting or shift toward mid-tier products.
2. Margin Sensitivity
   Historical dips below 10% suggest vulnerability to supply chain or commodity cost fluctuations.
3. Revenue Volatility
   Recovery post-2022 shows resilience, but absence of consistent upward trajectory signals cyclical exposure.
4. Premium Segment Dependence
   Large-engine vehicles dominate gross profit, increasing sensitivity to luxury demand cycles.
5. Regional Balance with Emerging Opportunity
   Africa and South America show slightly lower contribution, representing strategic growth opportunities.

RECOMMENDATIONS

1. Improve Revenue Conversion Efficiency
   Align pricing strategy with volume growth to prevent margin dilution.
2. Diversify Profit Base
   Strengthen profitability in medium and small engine categories.
3. Introduce Recurring Revenue Streams
   Expand after-sales services, digital features, and EV ecosystem monetization.
4. Margin Protection Strategy
   Improve cost control measures and supply chain resilience.
5. Geographic Expansion Strategy
   Increase strategic investment in emerging regions to reduce reliance on mature markets.