FINANCIAL DATA ANALYSIS REPORT

EXECUTIVE SUMMARY

This financial data analysis project is focused on analysing the financial performance of a fictional business using a structured dataset that includes key sales metrics across countries, segments, products, and time periods.

Project Objective

To uncover actionable business insights through exploratory data analysis (EDA), KPI evaluation, financial ratio calculation, and the development of a dynamic dashboard in Power BI.

Tools Used

- **Microsoft Excel:** For data cleaning, initial exploration, pivot tables, and ratio calculations.
- **Power BI:** For data modeling, DAX-driven KPIs, interactive dashboards, and trend visualizations.
- **DAX (Data Analysis Expressions):** Used to calculate custom measures such as MoM, profit margin, and discount rates.

Dataset Summary

- Source: Excel file (Financial Sample.xlsx)
- Records: ~700 rows
- Fields: 16 columns including Country, Segment, Sales, Profit, COGS, Discounts, and Date
- Data spans across multiple countries and customer segments

Outcomes

- Identified top-performing Country and segments based on profit, sales and profit margin
- Developed a full Power BI dashboard with interactive slicers and variance visuals
- Created custom DAX measures to analyze financial trends over time
- Recommended strategic focus areas for improved profitability and efficiency

Business Value

This project demonstrates how combining Excel's analytical foundation with Power BI's dynamic capabilities can help a business move from **reporting** to **storytelling** empowering stakeholders to make faster, insight-driven decisions.

EXPLORATORY DATA ANALYSIS

The Exploratory Data Analysis phase involved a systematic walkthrough of the dataset to understand its structure, identify patterns, clean inconsistencies, and uncover early insights.

Data Overview

The dataset consists of **global financial transaction records**, with each row representing a sale. It includes key metrics related to performance (sales, profit, cost), operational dimensions (segment, country, product), and temporal data (date, month, year).

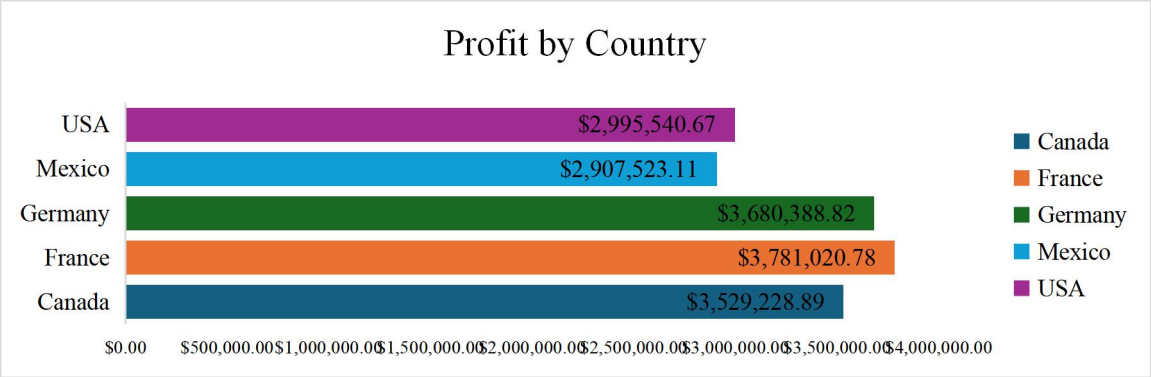
Attribute	Description	Data Type
Segment	Customer segment (Government, Midmarket, etc.)	Categorical
Country	Country where the transaction occurred	Categorical
Product	Product category sold	Categorical
Units Sold	Quantity sold	Numeric
Sales	Total revenue from sale (post-discount)	Currency
COGS	Cost of Goods Sold	Currency
Profit	Net profit from the transaction	Currency
Discounts	Discount value applied	Currency
Gross Sales	Total revenue before discount	Currency
Discount Band	Describes level of discount (None, Low, Medium, High)	Categorical
Date	Date of transaction	Date
Month Name	Derived for trend analysis	Text / Numeric
Year	Transaction year	Numeric

Initial Observations

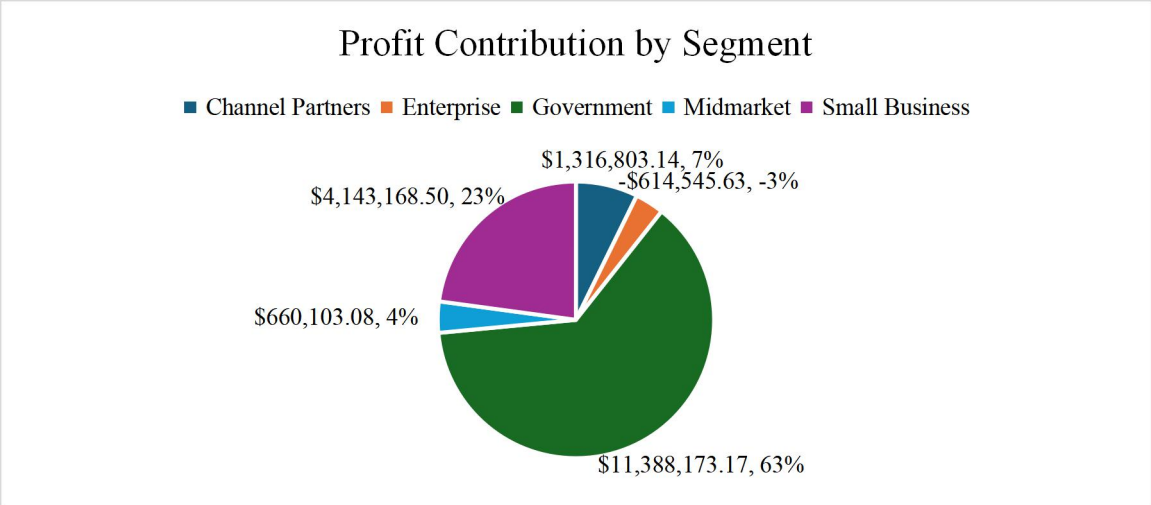
- **Data Shape:** 700+ rows with 16 columns.
- **Date Range:** Data spans **2013 to 2014** with monthly granularity.
- **No missing values** in critical columns (Sales, Profit, COGS, Date).
- Some **column names had extra spaces** (e.g., " Sales"), which were cleaned.
- No obvious outliers, but **large differences in profit margins** between segments and countries were noted.

Key Dimensional Breakdowns

Top Countries by Total Sales:

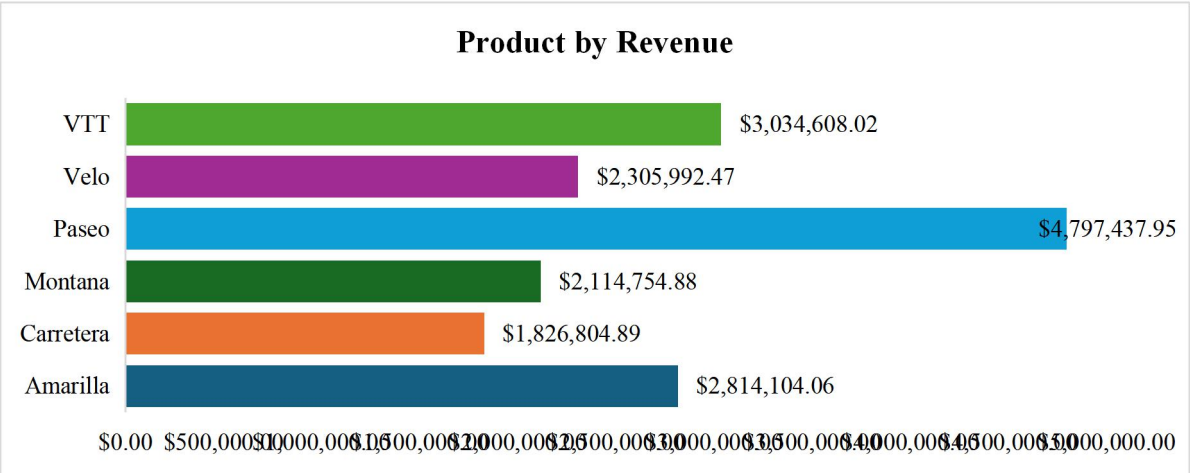


Customer Segments:



- **Government** dominates both in volume and profit contribution
- Small Business shows wide variability in margin

Products:



- Products like **Paseo** and **VTT** appear frequently and may drive a large portion of revenue.

EDA Takeaways

- **Government is the most consistently profitable segment**
- Countries in North America outperform others in both sales and profit

- Discounting is rare in the dataset (Discount Band is often None), suggesting a high-margin model
- A clear opportunity to track trends over time exists via Month Name and Year

KPI & RATIO SUMMARY

This section focuses on the **financial Key Performance Indicators (KPIs)** and **ratios** that form the foundation of performance measurement. These metrics were calculated using Excel and Power BI (via DAX), and are essential for evaluating revenue efficiency, profitability, and operational trends.

Core KPIs

KPI	Definition	Value Type	Insight Provided
Total Sales	Total revenue from all transactions	Currency	Overall business volume
Total Profit	Revenue after subtracting Cost of Goods Sold	Currency	Net earnings from operations
Units Sold	Total quantity of products sold	Whole Number	Volume indicator
Profit Margin	Profit as a percentage of sales	Percentage	Efficiency in converting revenue to profit
Average Discount Rate	Discounts relative to Gross Sales	Percentage	Impact of price reductions on revenue

All KPIs were made dynamic in Power BI using DAX measures and displayed as KPI cards.

Financial Ratios

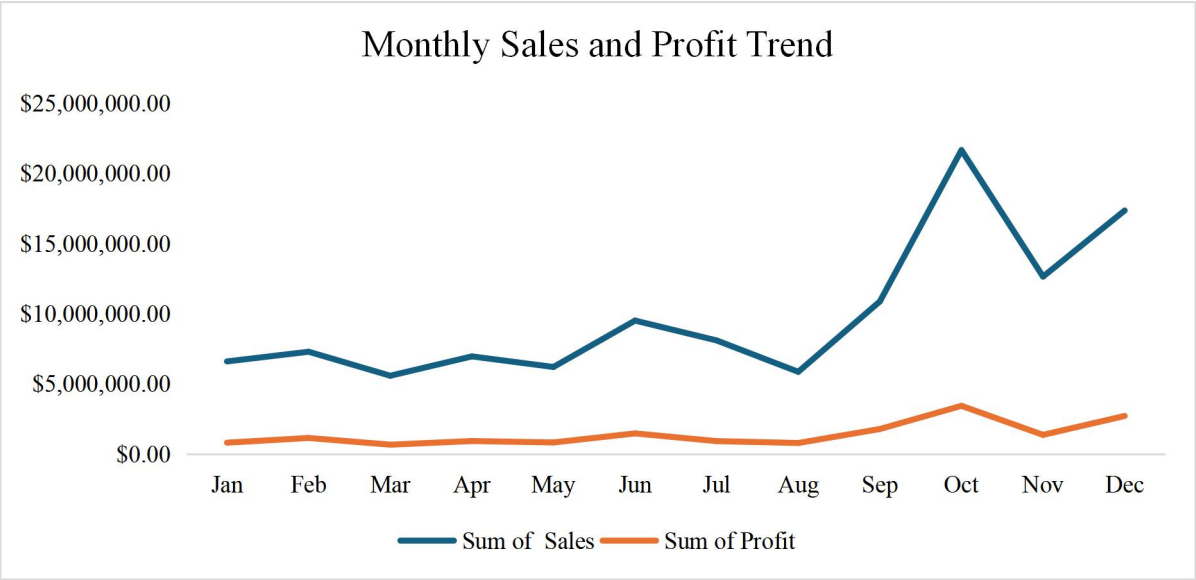
Ratio	Formula	Interpretation
Gross Margin	(Sales - COGS) / Sales	Measures cost efficiency; higher is better
Net Profit Margin	Profit / Sales	Reflects overall profitability
Discount Rate	Discounts / Gross Sales	Shows how much discounting affects revenue

These ratios were calculated per **Country**, **Segment**, and **Year**, enabling cross-sectional and time-based comparison.

Ratio Performance Highlights

- **Gross Margins** were relatively stable, with an average above 50%, indicating strong markup over costs.
- **Net Profit Margins** varied significantly:
  - **Government** segments consistently had the highest profit margins.
- **Discount Rate** was negligible in most records, suggesting limited discounting strategy and focus on full-price sales.

Trend Highlights



- **Total Sales and Profit** peaked in Q2 and Q4 each year, hinting at seasonal demand patterns.
- Some months showed sudden dips in profit, likely due to high COGS or lower volume — flagged for deeper investigation in variance analysis.

Insights

- KPIs reflect a high-level strong business model, especially with consistent margins and minimal discount dependency.
- Financial ratios expose operational efficiencies and help prioritize segments/countries for strategic focus.
- These metrics formed the base layer for deeper visual and variance analysis in the dashboard.

DASHBOARD INSIGHTS

The financial dashboard was built in **Power BI Desktop** and is designed to give users both a high-level overview and the ability to drill down into sales and profit performance by country, segment, and time.

Dashboard Structure

The dashboard is organized into clear, intuitive zones for exploration:

Section	**Description**
Header Section	Contains slicers for Year, Country, and Segment
KPI Cards	Top-level KPIs: Total Sales, Profit, Profit Margin, Units Sold
Trend Visuals	Line chart for monthly Sales & Profit trends
Breakdown Views	Segment-based bar chart; profit by country; matrix with variance
Summary Section	Text box highlighting top insights & business takeaways

Interactive Features

- **Slicers** for Year, Country, and Segment allow users to tailor the dashboard view to specific areas.
- **Drill-through & Filters** enable detail-level exploration of:
  - Monthly trends by selected country or segment
  - Regional performance across multiple metrics
- **Dynamic Tooltips** show supporting values (like MoM) when hovering over visuals.
- **Bookmarks** (if implemented) allow toggling between views like "Sales Overview" and "Profit Deep Dive".

Key Visuals

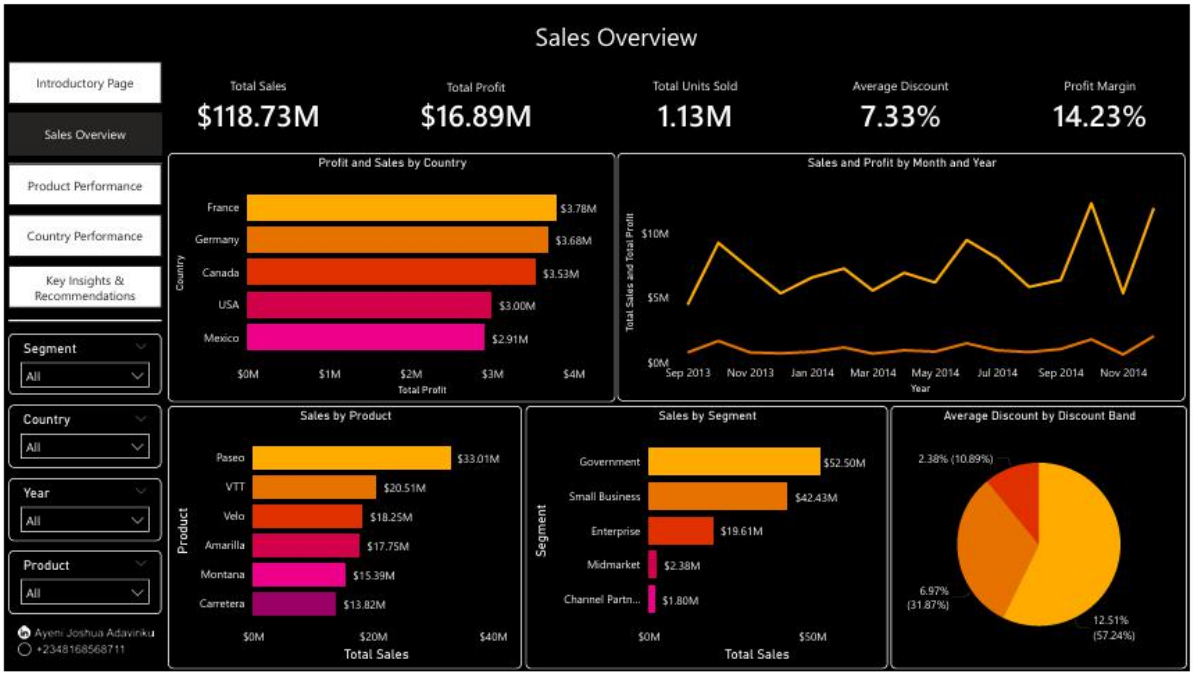
Visual Type	Purpose
Line Chart	Tracks Sales and Profit over time (monthly) to reveal seasonality
Clustered Bar Chart	Compares Sales and Profit by Segment
Clustered Bar Chart	Displays Total Profit by Country for geographic insight
Matrix Table	Shows Sales, Profit, and MoM changes with conditional formatting

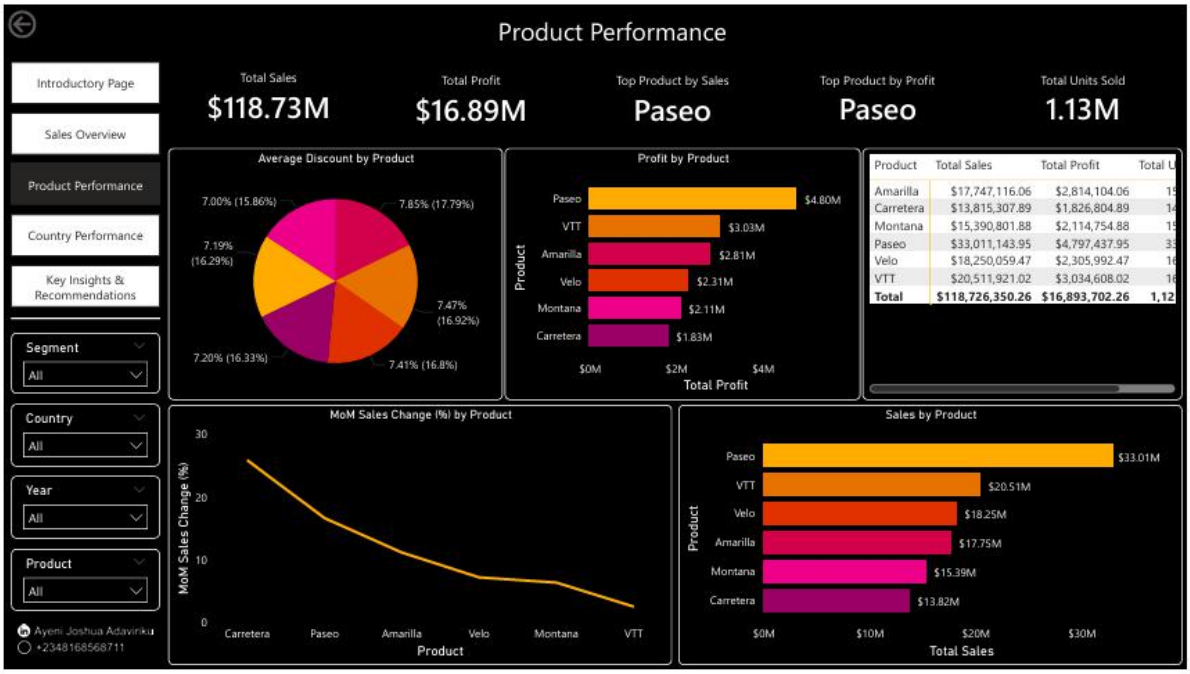
User Experience Highlights

- **Fast Insight**: Users immediately see how the business is performing at a glance via KPIs.
- **Personalized Exploration**: Slicers and filters make the dashboard adaptable to each user's interest.
- **Visual Storytelling**: The combination of temporal, categorical, and geographic visuals presents a complete narrative.
- **Action-Oriented**: Summary insight section points users toward key decisions (e.g., where to invest or reduce costs).

Dashboard Strengths

- Scalable and responsive layout
- Intuitive interaction design
- Balanced depth: high-level KPIs plus detailed variance metrics
- Clear takeaways supported by clean visuals


Sales Overview
Introductory Page
Sales Overview
Product Performance
Country Performance
Key Insights & Recommendations
Segment
All
Country
All
Year
All
Product
All
Ayeni Joshua Adaviriku
+2348168568711
Total Sales
$118.73M
Total Profit
$16.89M
Total Units Sold
1.13M
Average Discount
7.33%
Profit Margin
14.23%
Profit and Sales by Country
France $3.78M
Germany $3.68M
Canada $3.53M
USA $3.00M
Mexico $2.91M
Country
$0M $1M $2M $3M $4M
Total Profit
Sales and Profit by Month and Year
Total Sales and Total Profit
$10M
$5M
$0M
Sep 2013 Nov 2013 Jan 2014 Mar 2014 May 2014 Jul 2014 Sep 2014 Nov 2014
Year
Sales by Product
Paseo $33.01M
VTT $20.51M
Velo $18.25M
Amarilla $17.75M
Montana $15.39M
Carretera $13.82M
Product
$0M $20M $40M
Total Sales
Sales by Segment
Government $52.50M
Small Business $42.43M
Enterprise $19.61M
Midmarket $2.38M
Channel Partn... $1.80M
Segment
$0M $50M
Total Sales
Average Discount by Discount Band
2.38% (10.89%)
6.97% (31.87%)
12.51% (57.24%)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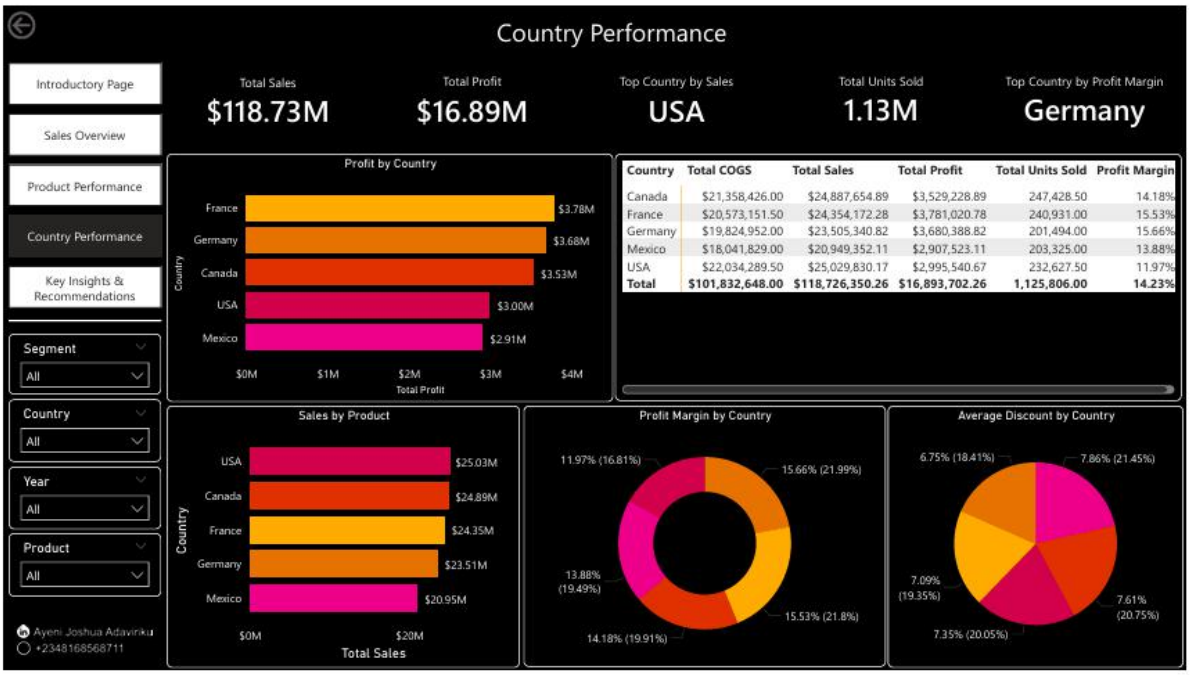
Top Product by Sales
Paseo
Top Product by Profit
Paseo
Total Units Sold
1.13M
Average Discount by Product
7.00% (15.86%)
7.85% (17.79%)
7.19% (16.29%)
7.47% (16.92%)
7.20% (16.33%)
7.41% (16.8%)
Profit by Product
Paseo $4.80M
VTT $3.03M
Amarilla $2.81M
Velo $2.31M
Montana $2.11M
Carretera $1.83M
Product
$0M $2M $4M
Total Profit
Product | Total Sales | Total Profit | Total U
Amarilla | $17,747,116.06 | $2,814,104.06 | 15
Carretera | $13,815,307.89 | $1,826,804.89 | 14
Montana | $15,390,801.88 | $2,114,754.88 | 15
Paseo | $33,011,143.95 | $4,797,437.95 | 3
Velo | $18,250,059.47 | $2,305,992.47 | 16
VTT | $20,511,921.02 | $3,034,608.02 | 16
Total | $118,726,350.26 | $16,893,702.26 | 1,12
MoM Sales Change (%) by Product
MoM Sales Change (%)
30
20
10
0
Carretera Paseo Amarilla Velo Montana VTT
Product
Sales by Product
Paseo $33.01M
VTT $20.51M
Velo $18.25M
Amarilla $17.75M
Montana $15.39M
Carretera $13.82M
Product
$0M $10M $20M $30M
Total Sales



VARIANCE ANALYSIS

Variance analysis focuses on quantifying and interpreting changes in key metrics over time month-over-month (MoM) and year-over-year (YoY). These comparisons help identify patterns, evaluate strategies, and detect red flags or opportunities in financial performance.

Goals of Variance Analysis

- Track **sales and profit growth or decline** over time
- Evaluate **performance consistency** across segments and regions
- Detect **seasonal or event-driven anomalies**
- Enable **data-driven decisions** on investments, cost control, and pricing

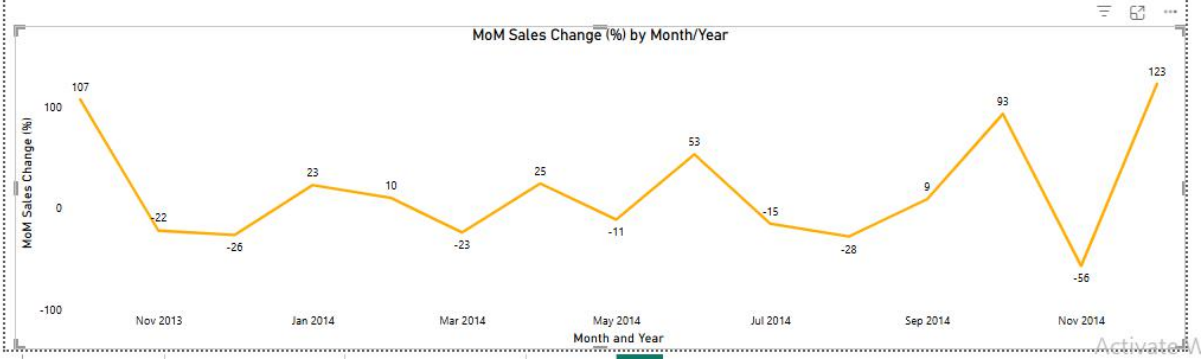
DAX Measures Created for Variance

In Power BI, a measure was created to compute variance:

Month-over-Month (MoM) Sales Change (%)

```
MoM Sales Change =
VAR CurrentMonth = [Total Sales]
VAR PreviousMonth = CALCULATE([Total Sales], DATEADD('Financials'[Date], -1, MONTH))
RETURN DIVIDE(CurrentMonth - PreviousMonth, PreviousMonth) * 100
```

Product	Total Sales	Total Profit	Total Unts Sold	Profit Margin	MoM Sales Change (%)
Amarilla	$17,747,116.06	$2,814,104.06	155,315.00	15.86%	11.17
Carretera	$13,815,307.89	$1,826,804.89	146,846.00	13.22%	25.88
Montana	$15,390,801.88	$2,114,754.88	154,198.00	13.74%	6.38
Paseo	$33,011,143.95	$4,797,437.95	338,239.50	14.53%	16.66
Velo	$18,250,059.47	$2,305,992.47	162,424.50	12.64%	7.21
VTT	$20,511,921.02	$3,034,608.02	168,783.00	14.79%	2.55
Total	**$118,726,350.26**	**$16,893,702.26**	**1,125,806.00**	**14.23%**	**11.24**



Insights from Variance Analysis

- **Government Segment** showed volatility in MoM performance — large spikes and drops hint at irregular deal flow.
- **Q2 and Q4 spikes** in sales revealed potential seasonal sales cycles that could be leveraged with targeted campaigns.

Business Impact of Variance Metrics

- Helps **forecast potential risk** areas if downward trends continue
- Identifies **growth leaders** for prioritizing resources
- Assists in evaluating the **success of past strategies** (e.g., promotions or pricing changes)
- Enables **proactive decision-making** instead of reactive reporting

Recommendations Based on Variance

- Conduct deeper **cost analysis** in underperforming segments
- Prioritize sales efforts in countries with **sustained MoM growth**
- Monitor segments with high MoM variance for operational consistency

KEY BUSINESS INSIGHTS

Based on the exploratory data analysis, KPI evaluation, financial ratios, and variance analysis, several clear business insights emerged. These insights help the business understand **what's working**, **what's not**, and **where to focus efforts** going forward.

Top Performing Segments

- **Government** was the most consistently profitable:
  - Highest net profit margin across the board.
  - Efficient revenue-to-cost ratio with minimal discounting.

Top Countries by Total Profit:

  - **France** led in overall profit and volume.
  - **Germany & Canada** also performed well with strong margins.

- These regions should be prioritized for continued investment.

Underperforming Areas

- The **Government Segment** showed volatile performance:
  - High variance in MoM profit, suggesting inconsistent project pipelines.
- **Low-Profit Margins** in select countries:
  - Despite solid sales volume, some countries like **USA and Canada** exhibited lower profit margins.
  - This could be due to higher COGS or limited pricing power.

Pricing & Discount Strategy Observations

- **Limited Discounting Strategy:**
  - Discount Band data showed most transactions had no discounts.
  - While this preserves profit margin, introducing **targeted promotions** may help boost underperforming regions or product categories.
- **Discount Rate vs. Profit Analysis**:
  - Countries with higher discount rates didn't necessarily show lower profits, hinting at potential for **strategic discount use**.

Seasonal Trends and Demand Cycles

- **Quarter 2 and Quarter 4** showed strong performance spikes:
  - Likely due to seasonal demand patterns or fiscal-year-end spending.
  - Suggests an opportunity to **time campaigns, promotions, and inventory** more effectively around these windows.

Operational Efficiency

- **Consistently high gross margins** across most segments indicate efficient product delivery and markup strategies.
- However, **fluctuating profit margins** in some areas highlight the need for **cost containment and pricing optimization**.

RECOMMENDATIONS

Based on the full financial analysis — including EDA, KPI tracking, variance analysis, and dashboard interactivity — the following strategic and operational recommendations are made to improve business performance and decision-making.

Strengthen and Scale High-Performing Segments

- **Expand the Midmarket Segment**
  - Allocate more marketing and sales resources to the midmarket customer group.
  - Consider bundling or loyalty strategies to retain this stable and profitable segment.
  - Explore opportunities to replicate this segment's success model in other countries.
- **Invest in High-Growth Countries**
  - Focus business development efforts in:
    - **United States** (volume and profit leader)
    - **Mexico and Germany** (high margins and upward YoY trends)
  - Explore local partnerships, regional campaigns, and tailored product offers in these countries.

Optimize Underperforming Regions and Segments

- **Review Strategy for Government Segment**
  - High variability suggests inconsistent procurement or contract flow.
  - Conduct a margin analysis to identify inefficiencies in pricing or service delivery.
  - Introduce account-specific forecasting models to smooth cash flow.
- **Investigate Margin Compression in France**
  - Review pricing, cost structure, or operational inefficiencies in this region.
  - Consider selective discounting or localized marketing to improve margin health.

Introduce a Targeted Discounting Strategy

- While the business currently relies on full-price sales, selective discounting could:
  - Boost underperforming regions or sluggish product lines.
  - Attract new buyers during off-peak months.
  - Drive bulk or repeat purchases if implemented with volume-based offers.

Suggested Approach: A/B test low, medium, and no-discount groups to measure margin impact.

Leverage Seasonality

- Plan campaigns and inventory to match **Q2 and Q4 spikes**:
  - Launch product releases, upsell efforts, and advertising before peak months.
  - Optimize stock levels to align with increased seasonal demand.
  - Consider performance bonuses or incentives for the sales team during these periods.

Enable Data-Driven Operations

- **Operationalize the Dashboard:**
  - Share interactive Power BI dashboards with key stakeholders.
  - Schedule weekly or monthly check-ins using the dashboard to monitor trends.
  - Integrate this report into executive reporting for faster, insight-driven decisions.
- **Expand Dashboard Functionality:**
  - Add predictive models (e.g., profit forecasting).
  - Include more granular filters like product category or region.
  - Automate data refresh to keep reports real-time.

LIMITATIONS & NEXT STEPS

While this financial analysis revealed key trends, patterns, and strategic insights, it's important to recognize the boundaries of the current dataset and analytical scope.

Project Limitations

Area	Limitation Description
Operational Cost Visibility	The dataset lacks detailed operational expenses (e.g., marketing, logistics, salaries), so profit analysis is limited to **gross profit**, not operating or net income.
Customer-Level Data	Data is aggregated by country/segment — there's no customer ID or demographic info, limiting deep **segmentation analysis** and **customer behavior modeling**.

Area	Limitation Description
Time Range	Data only spans **two years (2013–2014)** — this limits long-term trend evaluation and may not capture full economic cycles or anomalies.
Discount Band Use	While discount categories exist, most entries show None, limiting discount strategy analysis.
Product-Level Depth	The dataset includes product names, but product **categories or types** are not standardized — limiting category-specific performance evaluation.

Next Steps for Deeper Insights
To enhance the scope, accuracy, and actionability of future analysis, the following steps are recommended:

1. Integrate Additional Data Sources
- **Operational Expenses:** Pull in cost centers like HR, logistics, and marketing to calculate **operating margin**, **net margin**, and **ROI**.
- **Customer Data:** Add CRM data for segmentation by age, region, or purchasing behavior.
- **Inventory & Supply Chain:** Incorporate stock levels, delivery times, and procurement costs for a full profitability view.

2. Extend the Timeframe
- Pull in **3–5 years of data** to analyze long-term trends, seasonality patterns, and financial health across economic cycles.

3. Introduce Forecasting
- Use Power BI or Python to build **sales and profit forecasting models** using ARIMA, exponential smoothing, or machine learning.
- Add forward-looking KPIs such as projected revenue or expected profit margin.

4. Drill Deeper into Product Insights
- Group or reclassify products into categories (e.g., Automotive, Industrial, Consumer Goods).
- Evaluate **category-level** performance for better inventory and marketing planning.

5. Automate & Operationalize Reporting
- Set up **scheduled refreshes** in Power BI to make dashboards real-time.
- Embed dashboards into SharePoint, Teams, or your organization's reporting portal.
- Enable **row-level security** so regional managers see only their country's data.

Long-Term Data Vision
This analysis proves the power of data storytelling in finance. To build on this momentum, future phases could include:

- **Advanced Analytics:** Predictive churn, pricing elasticity, or customer lifetime value (CLV) modeling.
- **What-if Analysis:** Scenario-based modeling for revenue targets, market expansion, or discount thresholds.
- **Enterprise Integration:** Connect Power BI with cloud databases (Azure, AWS) for enterprise-scale reporting.