Data Analytics project n°1

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Evening class

Outline

- Project Overview
- Data sources
- Used Methods
- Results
- Presenting the sales performance Dashboard

○ Project Overview

The **Coopernick inc** wants to continue navigating a competitive market landscape.

The direction board recognizes the critical need for data-driven decision-making to enhance sales strategies and drive overall business growth. With a diverse portfolio of products, understanding the nuances of sales performance is essential for optimizing operations and maximizing profitability.

The Product Sales Dataset serves as a vital resource, containing valuable insights into sales trends, product performance, and sales segments dynamics. The board is particularly interested in assessing key performance indicators such as total sales volume, profit margins, and product performance across its various segments and geographical regions.

Note : **Coopernick inc** is a finctional company

○ **Data source**

The data sources utilized for this project were obtained from Moringa School.

For more detailed information, please visit their official website at **https://moringaschool.com.** The specific dataset employed is the Data Analytics Cumulative Project Data, provided in a Microsoft Excel Worksheet format (.xlsx). This dataset serves as the foundation for our analysis, ensuring the insights derived are based on reliable and well-structured data.

The Moringa School resources have been instrumental in guiding the methodology and supporting the overall objectives of the project, contributing to its robustness and relevance in the field of data analytics.

o Used Methods

This project will employ exploratory data analysis (EDA) methods, utilizing descriptive statistics for both descriptive and diagnostic purposes. EDA will facilitate a comprehensive understanding of the dataset's underlying patterns and trends.

The primary tool for data manipulation, analysis, and visualization will be Microsoft Excel, which provides robust functionality for these tasks. Additionally, Microsoft Word and PowerPoint will be used to support reporting and presentation of the findings. This structured approach ensures a thorough examination of the data while effectively communicating the results.

o **Results**

By thoroughly analyzing this dataset, the board aims to identify top-performing products, uncover potential areas for improvement, and better understand customer behavior (via sales). This insight will inform strategic decisions, such as inventory management, targeted marketing campaigns, and product development initiatives.

In summary, the direction board at **Coopernick inc** seeks to leverage the Product Sales Dataset to not only enhance its current sales performance but also to ensure that future business decisions are rooted in comprehensive analysis and informed by concrete data. This proactive approach will enable the company to remain agile and responsive in a rapidly evolving market.

In order to provide insights and enforce the company decision making strategies, our results will focus on the following strategic orientations:

- The most profitable/performant segments;

- The most profitable/performant geographical regions (countries);

- The most successful periods (Month, Quarter and/or Year) for high sales;

- Sales (product)that generate more profit in order to reinforce the company's major product policies;

- Building an interactive dashboard that facilitate a real-time monitoring.

0. Identifying the main insights

0.0. Dataset details

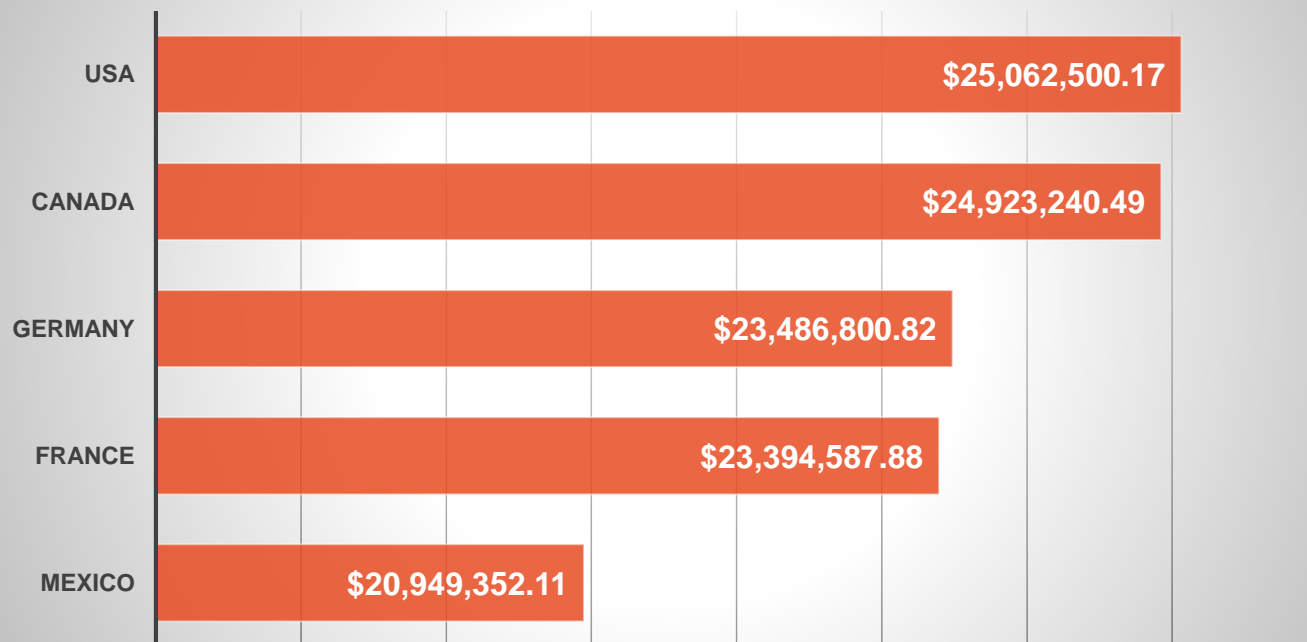| File name	Data Analytics Cumulative Project Data
Extension (file format)	Microsoft Excel Worksheet (.xlsx)
Source	Moringa School
Dimension	(16 columns, 700 rows)
	5 categorical + 9 numeric + 2 date format columns

0.1. Main insights

Item	Description	Insights
1	Countries	5 countries Identified : USA, Germany, Canada, France and Mexico
2	Sales segments	5 segments identified : Government, Small business, Channel Partners, Midmarket and Enterprise
3	Products	6 products identified : Amarilla, Carretera, Montana, Paseo, Velo, VTT
4	Total Sales	$117,816,481.46
5	Total profit	$16,889,039.06 (or 14% of total sales)

Data source: our calculations based on database provided by Moringa school (Data Analytics Cumulative Project Data)

Fig 1: Performant geographic zones identification

1.1. Countries by sales

Country	Sales
USA	$25,062,500.17
CANADA	$24,923,240.49
GERMANY	$23,486,800.82
FRANCE	$23,394,587.88
MEXICO	$20,949,352.11

The visualization above illustrates the sales performance by country. The United States and Canada represent the highest-performing geographical regions for the company, with sales figures of $25,062,500.17 and $24,923,240.49, respectively. Following these, Germany, France, and Mexico demonstrate significant sales as well, reporting figures of $23,486,800.82, $23,394,587.88, and $20,949,352.11, respectively. This data highlights the strong market presence in North America and notable performance in key European and Latin American markets.

1.2. Country by profit

USA 17.8%
Mexico 17.2%
France 22.3%
Germany 21.7%
Canada 21.0%
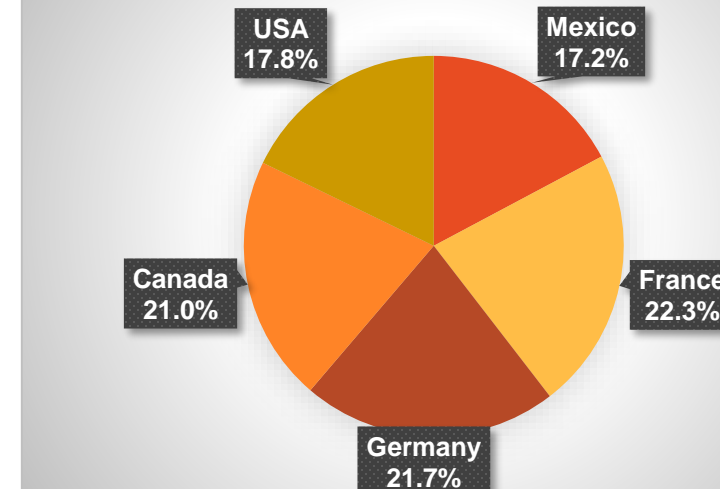
The visualization above illustrates the profits generated by country. Notably, despite ranking fourth in sales performance, France leads in profitability, contributing 22.3% of the company's total profit. Germany follows closely in second place with 21.7%, while Canada ranks third at 21.0%. The United States contributes 17.8%, placing it fourth. Mexico, at 17.2%, closely competes with the USA in terms of profitability, which is particularly striking given that the USA is the top-selling region. This dynamic highlights an intriguing contrast between sales volume and profit generation across these regions..
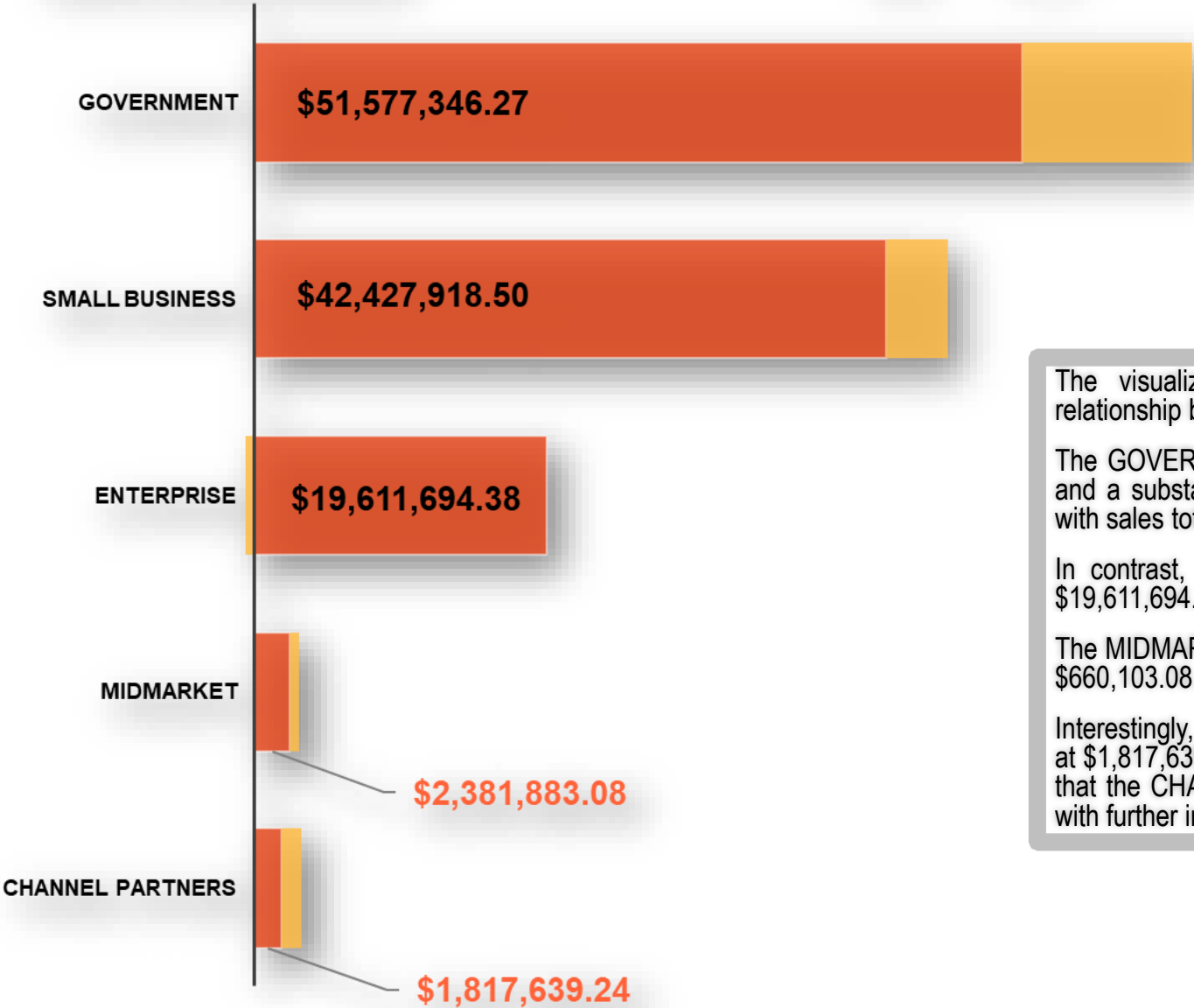
Data source: our calculations based on database provided by Moringa school (Data Analytics Cumulative Project Data)

Fig 2: Most performant sales segment identification

Segment by sales and profit

■ Sales   ■ Profit

Rank	Segment	Profit	
1	Government		$11,388,173.17
2	small business		$4,143,168.50
3	Channel Partners		$1,312,139.94
4	Midmarket		$660,103.08
5	Enterprise		-614545.625
	Total		**$16,889,039.06**

GOVERNMENT $51,577,346.27

SMALL BUSINESS $42,427,918.50

ENTERPRISE $19,611,694.38

MIDMARKET $2,381,883.08

CHANNEL PARTNERS $1,817,639.24

The visualizations effectively address our business concerns by illustrating the relationship between sales and profit across the company's sales segments.

The GOVERNMENT segment ranks first, achieving the highest sales of $51,577,346.27 and a substantial profit of $11,388,173.17. SMALL BUSINESS follows in second place, with sales totaling $42,427,918.50 and a notable profit of $4,143,168.50.

In contrast, the ENTERPRISE segment, despite being the third highest in sales at $19,611,694.38, shows a significant negative profit of $614,545.625, indicating a loss.
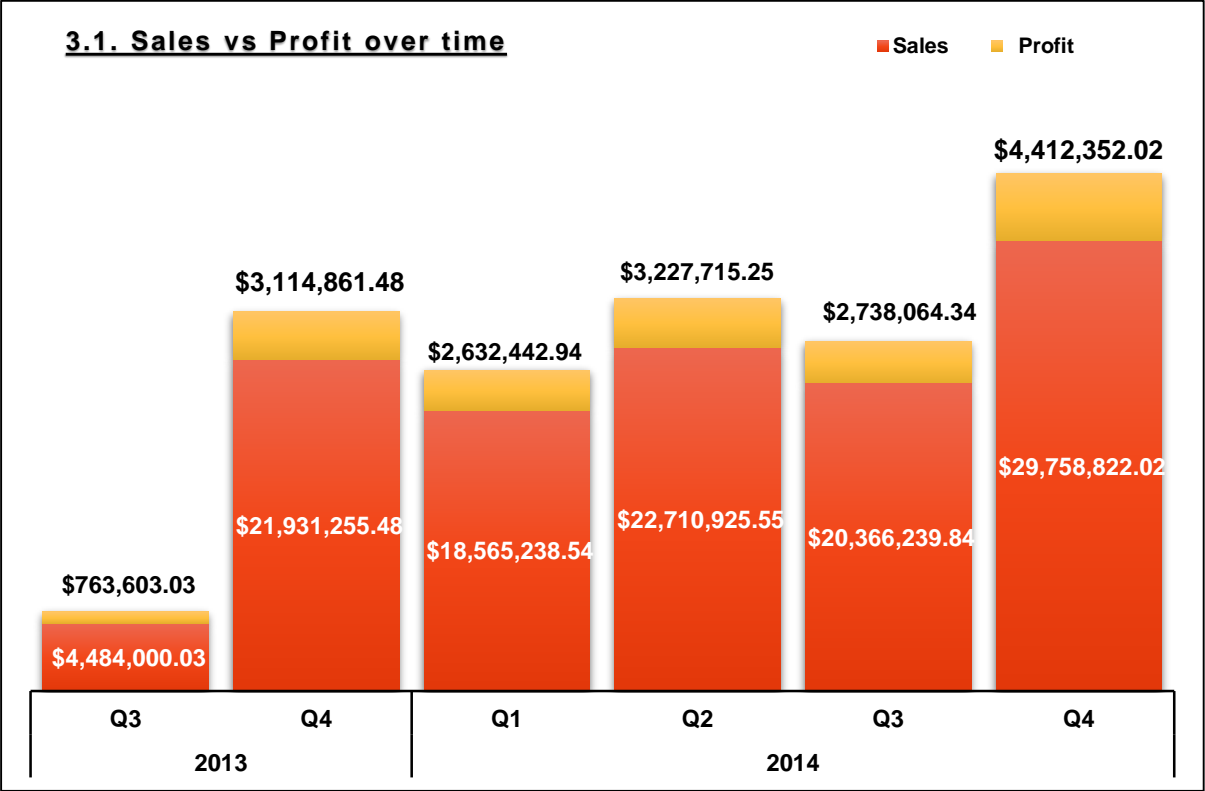
The MIDMARKET segment ranks fourth, generating $2,382,883.08 in sales and a profit of $660,103.08.

Interestingly, although CHANNEL PARTNERS occupies the last position in terms of sales at $1,817,639.24, it ranks third in profitability with a profit of $1,312,139.94. This suggests that the CHANNEL PARTNERS segment has the potential to generate increased profits with further investment in sales initiatives.

Data source: our calculations based on database provided by Moringa school (Data Analytics Cumulative Project Data)

Fig 3 : Sales over years and quarters
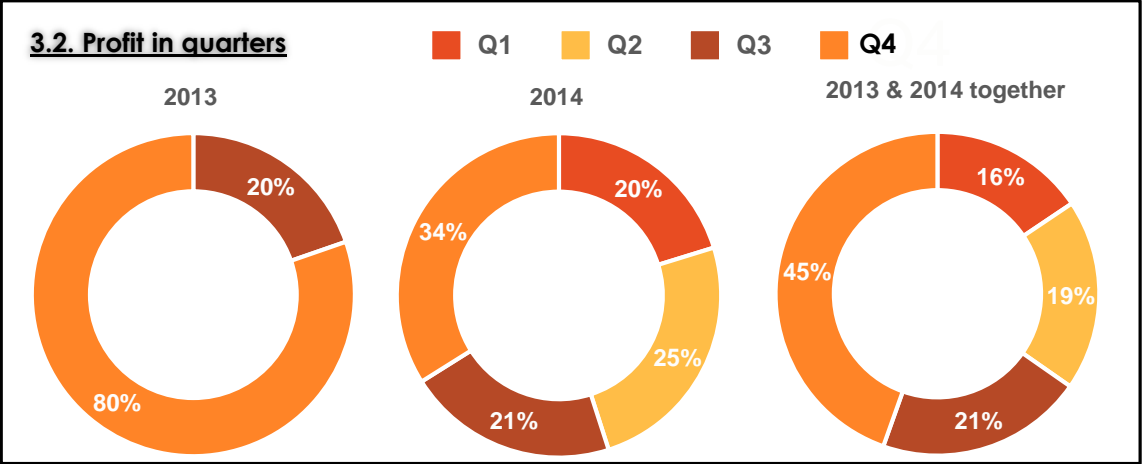
3.1. Sales vs Profit over time

■ Sales ■ Profit

$4,412,352.02

$3,114,861.48

$2,632,442.94

$3,227,715.25

$2,738,064.34

$29,758,822.02

$21,931,255.48

$18,565,238.54

$22,710,925.55

$20,366,239.84

$763,603.03

$4,484,000.03

| Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| 2013 | | 2014 | | | |

3.2. Profit in quarters

■ Q1 ■ Q2 ■ Q3 ■ Q4

2013

2014

2013 & 2014 together

2013: 20%, 80%

2014: 20%, 34%, 21%, 25%

2013 & 2014 together: 16%, 19%, 45%, 21%

The charts above illustrate a robust and sustained dominance of the fourth quarter (Q4) from 2013 to 2014, with profit percentages of 80% and 34%, respectively.

Collectively, this results in an aggregate profit contribution of 45% for both years.

Similarly, the third quarter (Q3) ranked second overall, contributing 21% to the total profit for 2013 and 2014 combined. In individual analysis, Q3 represented 20% of profits in 2013 and 21% in 2014.
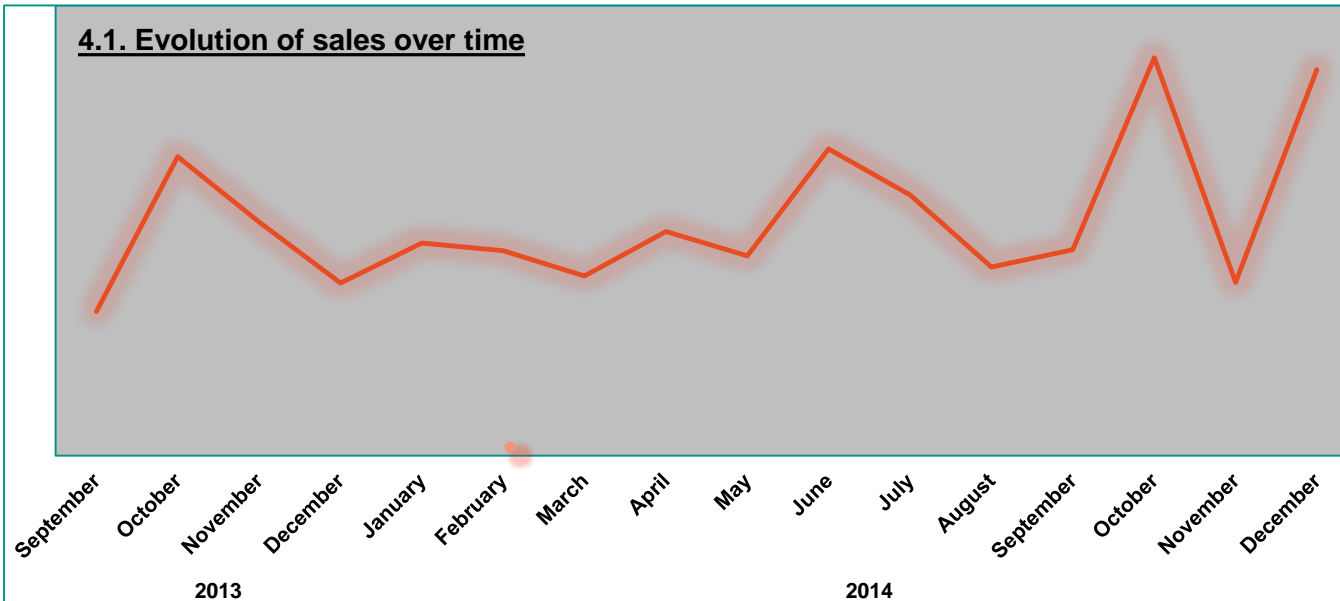
The second quarter (Q2) accounted for 25% of total profit generated in 2014, achieving a profit percentage of 19%. Conversely, the first quarter (Q1) ranked last, generating profits of 20% in 2014 and a combined profit of 16% for both 2013 and 2014.

It is noteworthy that the fourth quarter (Q4) consistently emerges as the most successful period for investment, with sales of $21,931,255.48 in 2013, followed by an increase to $29,758,822.02 in 2014.

The second quarter (Q2) also demonstrated strong performance, achieving sales of $22,710,925.55 and a profit of $2,738,064.34 in 2014.In contrast, the third quarter (Q3) showed systematic improvement from 2013 to 2014. Sales increased from $4,484,000.03 and a profit of $763,603.03 in 2013 to $20,366,239.84 in 2014, resulting in a profit of $2,738,064.34.

The visual representation clearly illustrates significant business growth beginning in Q3 of 2013 and extending into 2014. This trend is further evidenced by a robust start in the first quarter (Q1) of 2014, which recorded sales of $18,565,238.54 and generated a profit of $2,632,442.94.

Data source: our calculations based on database provided by Moringa school (Data Analytics Cumulative Project Data)

Fig 4: Sales and profit trends

4.1. Evolution of sales over time

September October November December | January February March April May June July August September October November December
2013 | 2014

4.2. Evolution of profit over time

September October November December | January February March April May June July August September October November December
2013 | 2014

This analysis investigates two key trends: the temporal evolution of sales and the temporal evolution of profit from 2013 to 2014. A comparative examination of these trends reveals significant similarities in their respective distributions. Both sales and profit demonstrate plurimodal characteristics, indicating the presence of multiple peaks within their data sets. This suggests a recurring pattern in the data points and shapes of both distributions.

Specifically, a detailed statistical analysis of the months of February, April, June, September, October, and December in the years 2013 and 2014 indicates identical behavioral patterns for sales and profit during these periods. This consistency across two consecutive years highlights the potential influence of seasonal factors or market dynamics that consistently affect sales and profitability during these months.

The identification of such parallels in the distributions not only underscores the interconnectedness of sales and profit but also suggests opportunities for targeted strategic planning. Understanding these trends can inform decision-making processes, enabling organizations to optimize performance and capitalize on predictable fluctuations in the market. Further investigation into the underlying factors contributing to these patterns may yield valuable insights for enhancing revenue generation and profit maximization strategies.

Data source: our calculations based on database provided by Moringa school (Data Analytics Cumulative Project Data)
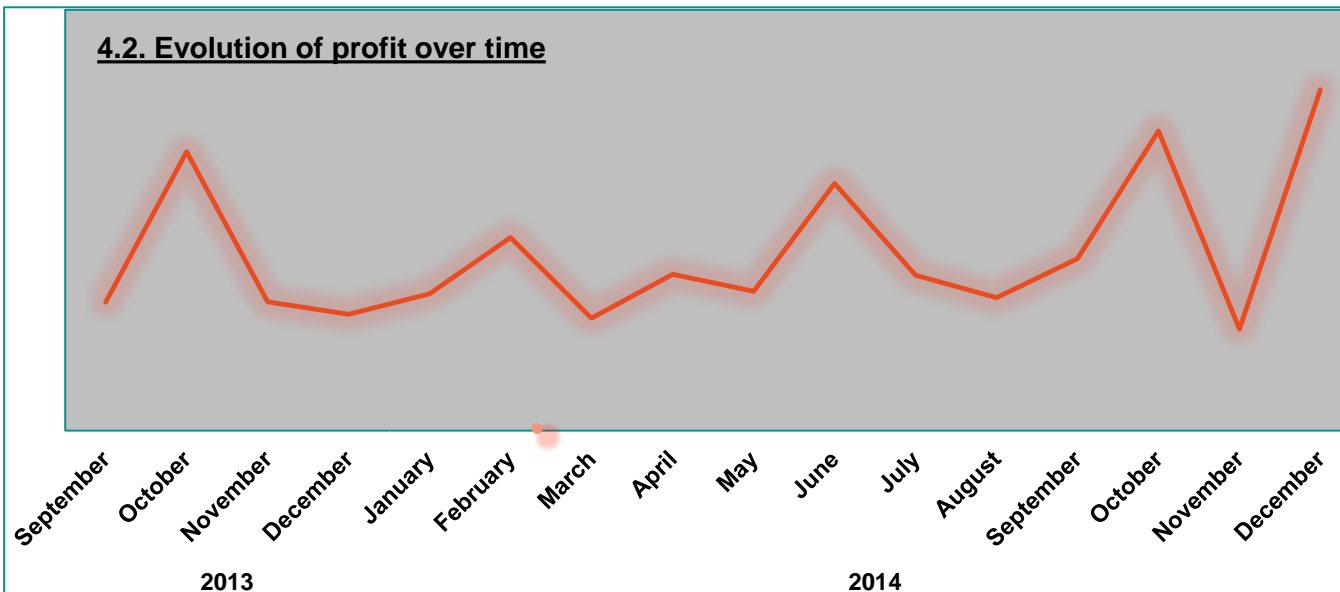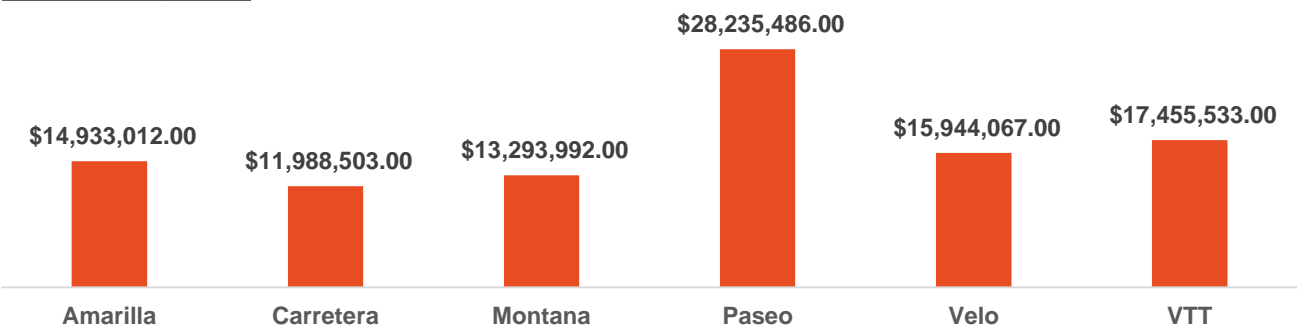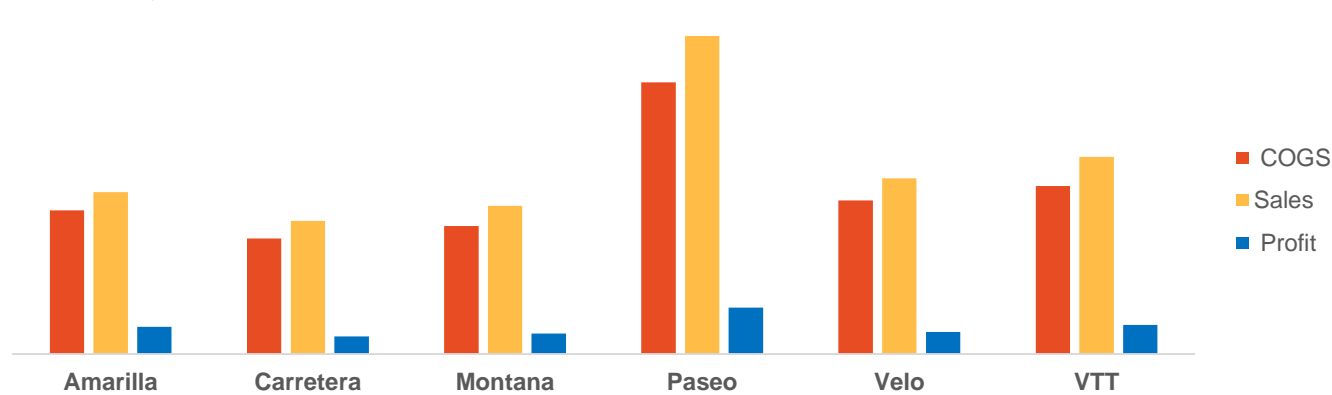
1. Identifying insights by the geographical zones

Fig 5: Sales and profit trends

5.1. Product by COGS

5.2. Product by COGS, sales and profit
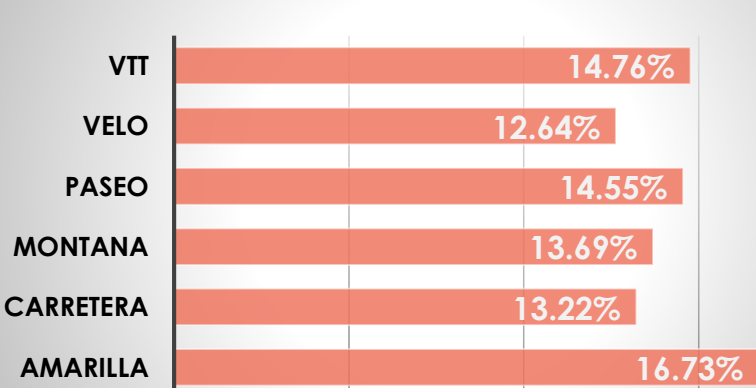

Profit (margin) based on sales

The visuals presented above illustrate the distributions of products based on Cost of Goods Sold (COGS), sales, and profit. Notably, Significant proportional relationships and similarities can be observed among the metrics of Cost of Goods Sold (COGS), sales, and profit. These alignments suggest a consistent pattern in the financial performance of the products within the company's portfolio.

However, its profit margin is disproportionately lower relative to its COGS and sales figures. In contrast, the AMARILLA product, despite having COGS and sales figures that are around the average, demonstrates significantly higher profit margins. This suggests that the company should consider increasing its investment in this product.

Following AMARILLA, the brands VTT and MONTANA also show notable performance, along with other products in subsequent positions.

It is important to note that the total profit accounts for 14% of the company's overall sales.

The above chart indicates that the sales have yielded profits that are distributed equitably across its product offerings. Specifically, approximately 50% of the company's products exhibit profit margins exceeding the average of 14.27% and the median profit margin of 14.12%. The remaining products generate profits that are closely aligned with these average and median figures.

This analysis reveals a significant balance in profit generation among the various products sold. Notably, the product AMARILLA achieved the best profit margin at 16.73%, followed by VTT and PASEO with profit margins of 14.76% and 14.55%, respectively. The products MONTANA, CARRETERA, and VELO produced profit margins of 13.69%, 13.22%, and 12.64%, respectively.

Presenting the sales performance Dashboard
(2013 – 2024)

The presented dashboard will play a crucial role in enhancing sales performance by providing a centralized platform for data visualization and analysis. It will offer real-time insights into key performance indicators (KPIs). This facilitates the real-time monitoring, informed decision-making and strategic planning.

Note: The dashboard presented on the following page is a static representation of our interactive dashboard created in Microsoft Excel. For an enhanced user experience and to fully utilize its interactive features, please refer to the accompanying Excel file.

Sales performance Dashboard

2013 - 2024

$117,816,481.46 TOTAL SALES

$16,889,039.06 TOTAL PROFIT

segment

- Channel Partners
- Enterprise
- Government
- Midmarket
- small business

country

- Canada
- France
- Germany
- Mexico
- USA

Quarter

- Q4
- Q3
- Q2
- Q1

Year

- 2013
- 2014

Sales vs Profit over time

■ Sales ■ Profit

- 2013 Q3: $763,603.03
- 2013 Q4: $3,114,861.48
- 2014 Q1: $2,632,442.94
- 2014 Q2: $3,227,71…
- 2014 Q3: $2,738,064.34
- 2014 Q4: $4,412,35…
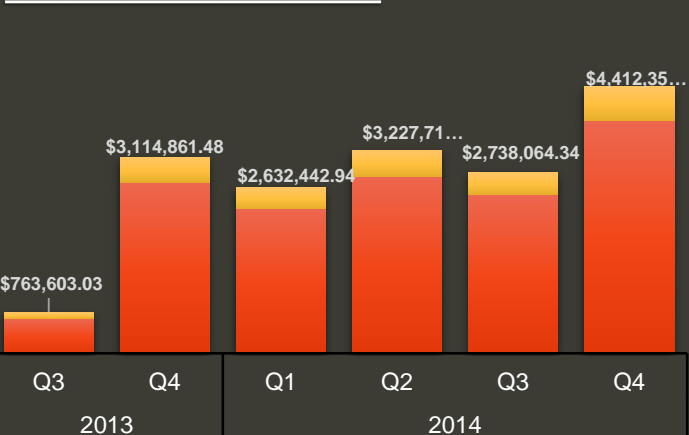
Discounts offered by product

Product	Discount
Amarilla	14.0%
Carretera	12.2%
Montana	12.6%
Paseo	28.2%
Velo	17.1%
VTT	15.8%

Products sold	Cost
Amarilla	$14,933,012
Carretera	$11,988,503
Montana	$13,293,992
Paseo	$28,235,486
Velo	$15,944,067
VTT	$17,455,533
Grand Total	$101,850,593

Products by profit, sales and discounts
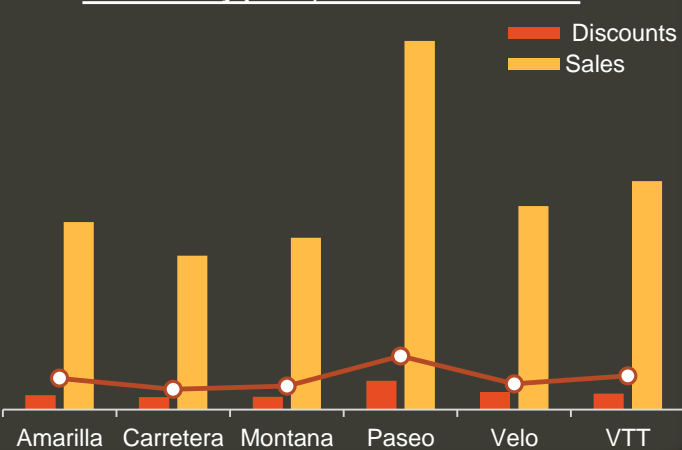
■ Discounts ■ Sales

Amarilla Carretera Montana Paseo Velo VTT

Segment by sales and profit

■ Sales ■ Profit

- GOVERNMENT: $51,577,346.27
- SMALL BUSINESS: $42,427,918.50
- ENTERPRISE: $19,611,694.38
- MIDMARKET: $2,381,883.08
- CHANNEL PARTNERS: $1,817,639.24

Evolution of sales over time

September October November December January February March April May June July August September October November December

2013   2014

Evolution of profit over time

September October November December January February March April May June July August September October November December

2013   2014
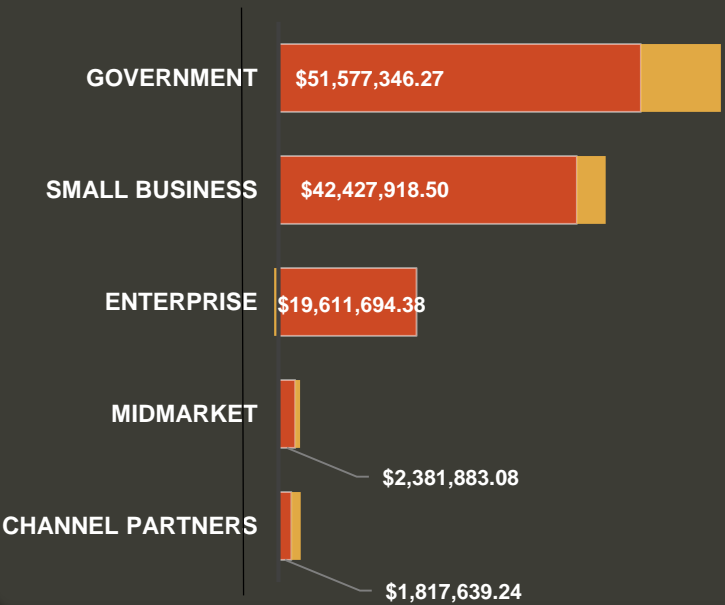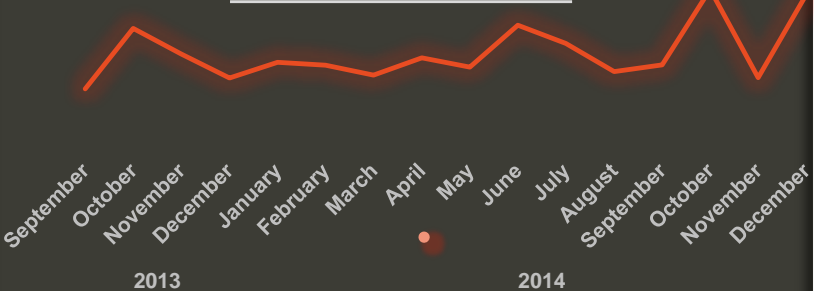
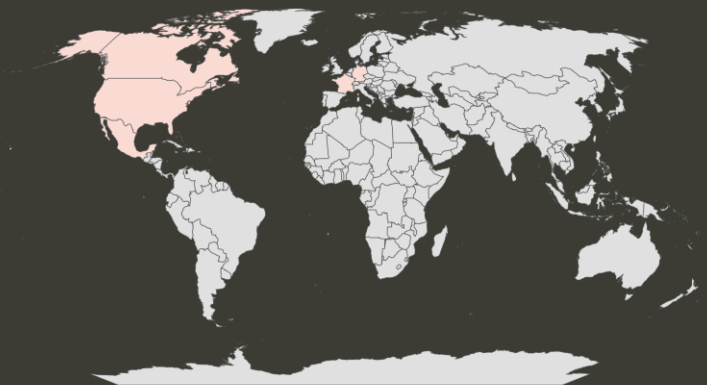## Sales by Region

25062500.17

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Muchas Gracias

Yannick MPOYI