



POWER BI PROJECT REPORT: FINANCIAL DATA ANALYSIS

VISHANKI



1. Project Overview

Project Title: Financial Data Analysis and Visualization using Power BI

Objective: The goal of this project is to analyze sales and financial data, perform time-based calculations, and create an interactive dashboard using Power BI. This project demonstrates expertise in data modeling, DAX calculations, and visualization techniques.

2. Data Source

Dataset Used: Financial Sample.xlsx

Source Type: Excel Spreadsheet

Key Columns in Dataset:

- Date
- Country
- Segment (Enterprise, Government, Channel Partners)
- Product Category
- Sales Revenue
- Profit
- Discount %

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Financial Sample (2).xlsx - Protected... • Saved to this PC

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	Segment	Country	Product	Discount Band	Units Sold	Manufactur	Sale Price	Gross Sales	Discounts	Sales	COGS	Profit	Date	Month Number	Month Name	Year
2	Government	Canada	Carretera	None	1618.5	\$	3.00	\$ 20.00	\$ 32,370.00	\$ -	\$ 32,370.00	\$16,185.00	\$ 16,185.00	01-01-2014	1 January	2014
3	Government	Germany	Carretera	None	1321	\$	3.00	\$ 20.00	\$ 26,420.00	\$ -	\$ 26,420.00	\$13,210.00	\$ 13,210.00	01-01-2014	1 January	2014
4	Midmarket	France	Carretera	None	2178	\$	3.00	\$ 15.00	\$ 32,670.00	\$ -	\$ 32,670.00	\$21,780.00	\$ 10,890.00	01-06-2014	6 June	2014
5	Midmarket	Germany	Carretera	None	888	\$	3.00	\$ 15.00	\$ 13,320.00	\$ -	\$ 13,320.00	\$ 8,880.00	\$ 4,440.00	01-06-2014	6 June	2014
6	Midmarket	Mexico	Carretera	None	2470	\$	3.00	\$ 15.00	\$ 37,050.00	\$ -	\$ 37,050.00	\$24,700.00	\$ 12,350.00	01-06-2014	6 June	2014
7	Government	Germany	Carretera	None	1513	\$	3.00	\$ 350.00	\$ 5,29,550.00	\$ -	\$ 5,29,550.00	#####	\$ 1,36,170.00	01-12-2014	12 December	2014
8	Midmarket	Germany	Montana	None	921	\$	5.00	\$ 15.00	\$ 13,815.00	\$ -	\$ 13,815.00	\$ 9,210.00	\$ 4,605.00	01-03-2014	3 March	2014
9	Channel Partners	Canada	Montana	None	2518	\$	5.00	\$ 12.00	\$ 30,216.00	\$ -	\$ 30,216.00	\$ 7,554.00	\$ 22,662.00	01-06-2014	6 June	2014
10	Government	France	Montana	None	1899	\$	5.00	\$ 20.00	\$ 37,980.00	\$ -	\$ 37,980.00	\$18,990.00	\$ 18,990.00	01-06-2014	6 June	2014
11	Channel Partners	Germany	Montana	None	1545	\$	5.00	\$ 12.00	\$ 18,540.00	\$ -	\$ 18,540.00	\$ 4,635.00	\$ 13,905.00	01-06-2014	6 June	2014
12	Midmarket	Mexico	Montana	None	2470	\$	5.00	\$ 15.00	\$ 37,050.00	\$ -	\$ 37,050.00	\$24,700.00	\$ 12,350.00	01-06-2014	6 June	2014
13	Enterprise	Canada	Montana	None	2665.5	\$	5.00	\$ 125.00	\$ 3,33,187.50	\$ -	\$ 3,33,187.50	#####	\$ 13,327.50	01-07-2014	7 July	2014
14	Small Business	Mexico	Montana	None	958	\$	5.00	\$ 300.00	\$ 2,87,400.00	\$ -	\$ 2,87,400.00	#####	\$ 47,900.00	01-08-2014	8 August	2014
15	Government	Germany	Montana	None	2146	\$	5.00	\$ 7.00	\$ 15,022.00	\$ -	\$ 15,022.00	\$10,730.00	\$ 4,292.00	01-09-2014	9 September	2014
16	Enterprise	Canada	Montana	None	345	\$	5.00	\$ 125.00	\$ 43,125.00	\$ -	\$ 43,125.00	\$41,400.00	\$ 1,725.00	01-10-2013	10 October	2013
17	Midmarket	United States of America	Montana	None	615	\$	5.00	\$ 15.00	\$ 9,225.00	\$ -	\$ 9,225.00	\$ 6,150.00	\$ 3,075.00	01-12-2014	12 December	2014
18	Government	Canada	Paseo	None	292	\$	10.00	\$ 20.00	\$ 5,840.00	\$ -	\$ 5,840.00	\$ 2,920.00	\$ 2,920.00	01-02-2014	2 February	2014
19	Midmarket	Mexico	Paseo	None	974	\$	10.00	\$ 15.00	\$ 14,610.00	\$ -	\$ 14,610.00	\$ 9,740.00	\$ 4,870.00	01-02-2014	2 February	2014
20	Channel Partners	Canada	Paseo	None	2518	\$	10.00	\$ 12.00	\$ 30,216.00	\$ -	\$ 30,216.00	\$ 7,554.00	\$ 22,662.00	01-06-2014	6 June	2014
21	Government	Germany	Paseo	None	1006	\$	10.00	\$ 350.00	\$ 3,52,100.00	\$ -	\$ 3,52,100.00	#####	\$ 90,540.00	01-06-2014	6 June	2014
22	Channel Partners	Germany	Paseo	None	367	\$	10.00	\$ 12.00	\$ 4,404.00	\$ -	\$ 4,404.00	\$ 1,101.00	\$ 3,303.00	01-07-2014	7 July	2014
23	Government	Mexico	Paseo	None	883	\$	10.00	\$ 7.00	\$ 6,181.00	\$ -	\$ 6,181.00	\$ 4,415.00	\$ 1,766.00	01-08-2014	8 August	2014
24	Midmarket	France	Paseo	None	549	\$	10.00	\$ 15.00	\$ 8,235.00	\$ -	\$ 8,235.00	\$ 5,490.00	\$ 2,745.00	01-09-2013	9 September	2013
25	Small Business	Mexico	Paseo	None	788	\$	10.00	\$ 300.00	\$ 2,36,400.00	\$ -	\$ 2,36,400.00	#####	\$ 39,400.00	01-09-2013	9 September	2013
26	Midmarket	Mexico	Paseo	None	2472	\$	10.00	\$ 15.00	\$ 37,080.00	\$ -	\$ 37,080.00	\$24,720.00	\$ 12,360.00	01-09-2014	9 September	2014
27	Government	United States of America	Paseo	None	1143	\$	10.00	\$ 7.00	\$ 8,001.00	\$ -	\$ 8,001.00	\$ 5,715.00	\$ 2,286.00	01-10-2014	10 October	2014
28	Government	Canada	Paseo	None	1725	\$	10.00	\$ 350.00	\$ 6,03,750.00	\$ -	\$ 6,03,750.00	#####	\$ 1,55,250.00	01-11-2013	11 November	2013
29	Channel Partners	United States of America	Paseo	None	912	\$	10.00	\$ 12.00	\$ 10,944.00	\$ -	\$ 10,944.00	\$ 2,736.00	\$ 8,208.00	01-11-2013	11 November	2013
30	Midmarket	Canada	Paseo	None	2152	\$	10.00	\$ 15.00	\$ 32,280.00	\$ -	\$ 32,280.00	\$21,520.00	\$ 10,760.00	01-12-2013	12 December	2013
31	Government	Canada	Paseo	None	1817	\$	10.00	\$ 20.00	\$ 36,340.00	\$ -	\$ 36,340.00	\$18,170.00	\$ 18,170.00	01-12-2014	12 December	2014
32	Government	Germany	Paseo	None	1513	\$	10.00	\$ 350.00	\$ 5,29,550.00	\$ -	\$ 5,29,550.00	#####	\$ 1,36,170.00	01-12-2014	12 December	2014
33	Government	Mexico	Velo	None	1493	\$	120.00	\$ 7.00	\$ 10,451.00	\$ -	\$ 10,451.00	\$ 7,465.00	\$ 2,986.00	01-01-2014	1 January	2014
34	Enterprise	France	Velo	None	1804	\$	120.00	\$ 125.00	\$ 2,25,500.00	\$ -	\$ 2,25,500.00	#####	\$ 9,020.00	01-02-2014	2 February	2014
35	Channel Partners	Germany	Velo	None	2161	\$	120.00	\$ 12.00	\$ 25,932.00	\$ -	\$ 25,932.00	\$ 6,483.00	\$ 19,449.00	01-03-2014	3 March	2014
36	Government	Canada	Velo	None	1006	\$	120.00	\$ 350.00	\$ 3,52,100.00	\$ -	\$ 3,52,100.00	#####	\$ 90,540.00	01-06-2014	6 June	2014

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3. Data Preparation and Cleaning

I followed a structured approach to clean and prepare the data before analysis:

3.1 Importing the Data

- Opened **Power BI Desktop** and selected **Get Data → Excel Workbook**.
- Connected to Financial Sample.xlsx and loaded the dataset into Power BI.

3.2 Data Cleaning and Transformation

- **Checked for missing values** using the **Power Query Editor**.
 - Used **Remove Empty Rows** and **Replace Values** where applicable.
- **Formatted the date column** to ensure proper time-based calculations.
 - Converted date fields to Date/Time format.
- **Created new calculated columns** where necessary, using DAX expressions.
 - Example: Extracting the year from the date field using:
$$\text{Year} = \text{YEAR}(\text{Sales}[\text{Date}])$$
- **Ensured proper data types for numerical fields** such as revenue and profit.
- **Created relationships between tables** (if applicable) using the **Manage Relationships** feature.
- **Renamed columns and standardized naming conventions** to maintain clarity.

4. Data Analysis using DAX (Data Analysis Expressions)

To derive meaningful insights, I implemented DAX calculations for various financial metrics.

4.1 Calculated Measures

1. Total Sales

$$\text{Total Sales} = \text{SUM}(\text{Sales}[\text{Revenue}])$$

2. Total Profit

$$\text{Total Profit} = \text{SUM}(\text{Sales}[\text{Profit}])$$

3. Profit Margin (%)

$$\text{Profit Margin} = \text{DIVIDE}([\text{Total Profit}], [\text{Total Sales}], 0) * 100$$

4. Discount Impact on Revenue

$$\text{Discount Impact} = \text{SUM}(\text{Sales}[\text{Revenue}]) * (\text{SUM}(\text{Sales}[\text{Discount \%}]) / 100)$$

4.2 Time Intelligence Calculations

1. Sales Last Year

$$\text{Sales LY} = \text{CALCULATE}([\text{Total Sales}], \text{SAMEPERIODLASTYEAR}(\text{Sales}[\text{Date}]))$$

2. Sales Growth (%)

$$\text{Sales Growth \%} = \text{DIVIDE}([\text{Total Sales}] - [\text{Sales LY}], [\text{Sales LY}], 0) * 100$$

3. Running Total Sales

$$\text{Running Sales} = \text{CALCULATE}([\text{Total Sales}], \text{DATESYTD}(\text{Sales}[\text{Date}]))$$

5. Dashboard Development and Visualizations

I created an interactive dashboard in Power BI to present insights visually. The dashboard consists of:

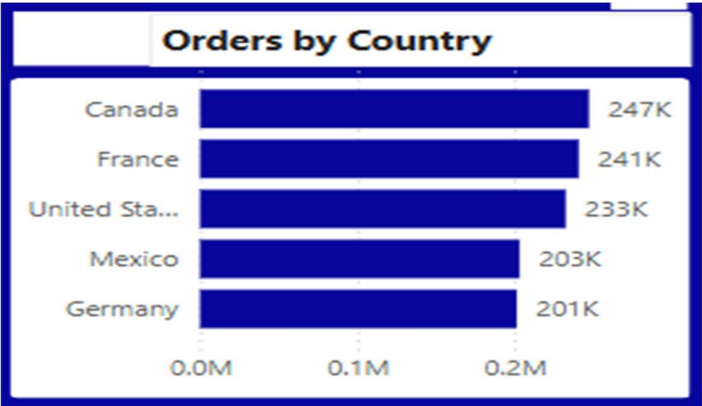
5.1 Key Performance Indicators (KPIs)

- Total Sales (Current vs Prior Year)
- Total Profit
- Profit Margin
- Discount % Impact on Sales

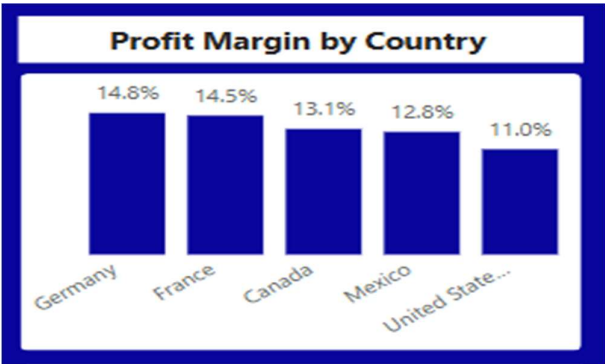


5.2 Charts and Visuals

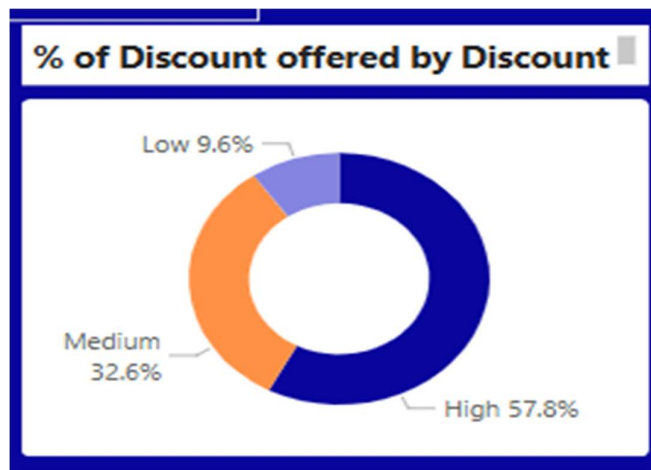
1. Bar Chart: Orders by Country



2. Column Chart: Profit Margin by Country



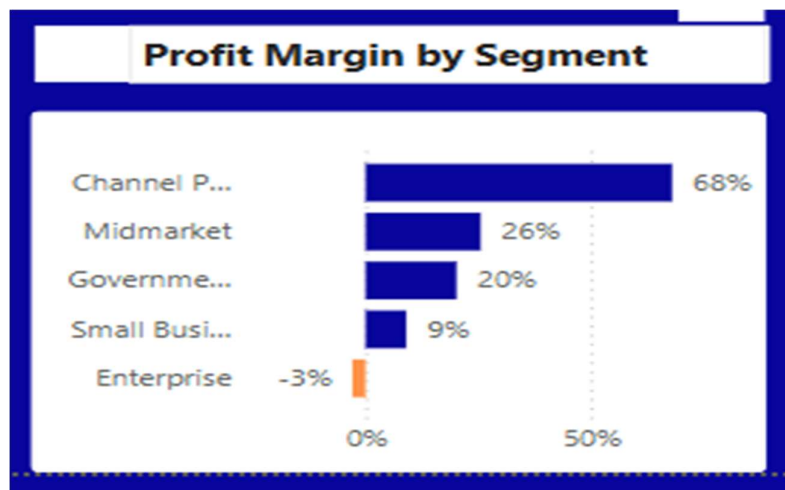
3. **Pie Chart:** % of Discounts Offered (Low, Medium, High)



4. **Line Chart:** Sales Trend Over Time



5. **Stacked Bar Chart:** Profit Margin by Segment and Products



5.3 Filters and Interactivity

- Slicers for Year, Segment, and Country

- **Drill-through capabilities** to analyze data at different levels
- **Dynamic filters** for comparative analysis

6. Business Insights and Findings

- **Germany and France have the highest profit margins (~14.8%),** while the **United States has the lowest (~11%).**
- **Channel Partners segment has the highest profit margin (~68%),** while **Enterprise segment is unprofitable (-2.92%).**
- **High discounts (57.8%) impact revenue significantly,** while low discounts (9.6%) contribute to better margins.
- **Sales show a strong upward trend over time,** with significant growth in recent years.

7. Conclusion and Learnings

This project helped me strengthen my Power BI skills in:

- **Data modeling and transformation** using Power Query.
- **Advanced DAX calculations** for financial analysis.
- **Building dynamic and interactive dashboards** to present insights effectively.
- **Time intelligence analysis** to compare sales trends over different periods.

8. Future Improvements

- Integrate **SQL database** instead of Excel for real-time data updates.
- Implement **forecasting techniques** using Power BI's predictive analytics.
- Enhance dashboard UI/UX with **custom visuals and themes.**

End of Report