Final Project Documentation

Supply Chain

Track:

Power BI Engineer

Group ID:

DEPI_MNF2_DAT2_G1

Team Members

Mohamed Khallaf(Team Leader)

Mohamed Naser

Khaled Meligy

Ahmed Gharib

Instructor:

Amr Soliman

1.Project Overview:

This supply chain Dashboard Shows performance across multiple years, North America regions, and product segments.

The analysis covers sales, profit, orders, returns, top-performing states and cities, subcategory sales growth, and customer segments.

Used Tools:

- Python Data Analysis
- Power BI Desktop
    - Power Query
    - DAX (Data Analysis Expressions)
    - Data Modeling

Data Overview:

- **Fact Table :** Retails_Order
- **Dimensions :** Calender_Date, State

Data Modeling

The data model follows a star schema approach:

- **Central Fact Table:** Dim Retails_Order

Linked Dimension Tables:

- Calender_Date
- State

Key measures and DAX calculations were created to enable insightful analysis, such as:

- Total Sales, Profit, Orders, Returns
- CY Sales, PY Sales
- CY Profit, PY Profit
- CY Order, PY Order
- CY Return, PY Return
- Icon_color_1, Icon_color_2
- Sales Change %, Profit Change %
- Order Change %, Return Change %
- Ship Mode Measure
- Profit Ratio %
- Avg. Delivery Days

2. Key Insights and Analysis:

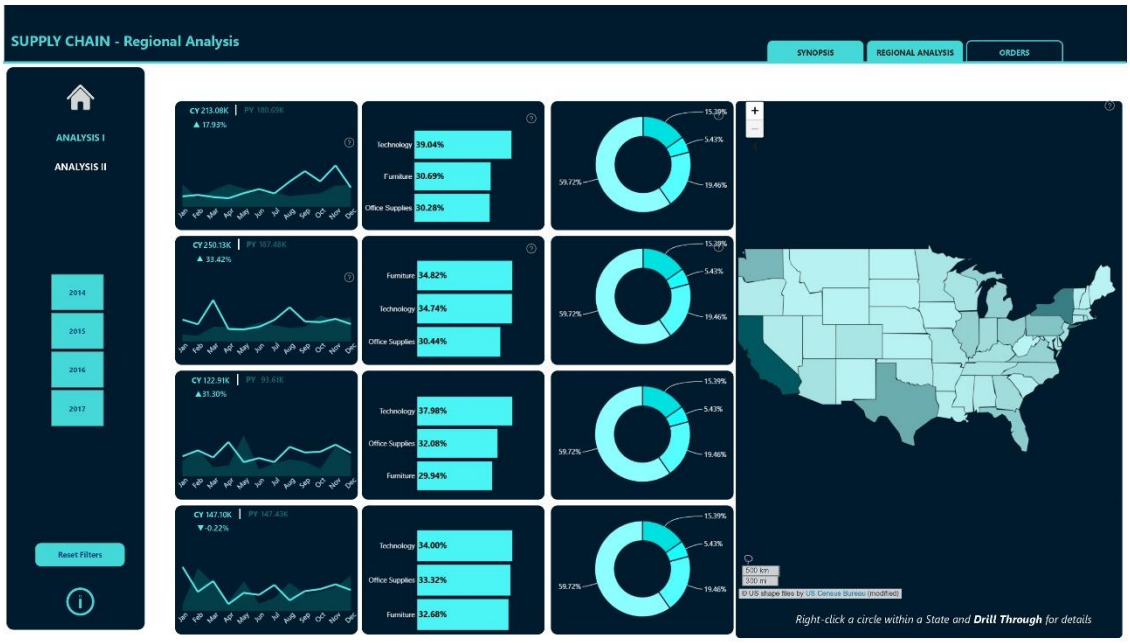
Overall, Sales & Performance (Dashboard 1 - Analysis View)

- **Sales (Current Year - CY):** $733.22K (↑20.36% from PY)
- **Profit:** $93.44K (↑14.24%)
- **Orders:** 3,312 (↑28.02%)
- **Returns:** 289 (↑46.7%)
- **Sales Trend:** Positive Growth over 4 years, especially strong in 2017.
- **Highest Sales Region:** West ($725.45K), followed by East.
- **Top Contributing Segment:**
- Consumer Segment (Texas).
- **Top Performing State:** California with $457.68K in sales.

Actions:

- Focus efforts on the West and East regions.
- Increase support and inventory for consumer segment.
- Investigate the cause behind high returns (↑46.7%) to reduce loss.

Regional Analysis (Dashboard 2 - Regional View)



- **Product Category Performance:**
  - **Technology:** Leading category across multiple regions.
  - **Sales & Profits:** Sales & Profits per Region

Actions:

- Diversify offerings in Furniture and Office Supplies based on region preferences.

(Dashboard 3 – Order)

Order ID	Customer Name	Region	State	Segment	Ship Mode	Order Date	Delivery Days	Revenue	Revenue Bars	Profit	Profit
CA-2014-145317	Sean Miller	South	Florida	Home Office	Standard Class	Tuesday, March 18, 2014	35	23,661.23		-1,789.73	
CA-2016-118689	Tamara Chand	Central	Indiana	Corporate	Standard Class	Wednesday, February 10, 2016	1065	18,336.74		8,762.39	
CA-2017-140151	Raymond Buch	West	Washington	Consumer	First Class	Thursday, March 23, 2017	6	14,052.48		6,734.47	
CA-2017-127180	Tom Ashbrook	East	New York	Home Office	First Class	Sunday, October 22, 2017	8	13,716.46		4,597.17	
CA-2014-139892	Becky Martin	Central	Texas	Consumer	Standard Class	Saturday, August 09, 2014	854	10,539.90		-1,878.79	
CA-2017-166709	Hunter Lopez	East	Delaware	Consumer	Standard Class	Friday, November 17, 2017	5	10,499.97		5,039.99	
CA-2014-116904	Sanjit Chand	Central	Minnesota	Consumer	Standard Class	Tuesday, September 23, 2014	20	9,900.19		4,668.69	
CA-2016-117121	Adrian Barton	Central	Michigan	Consumer	Standard Class	Saturday, December 17, 2016	4	9,892.74		4,946.37	
US-2016-107440	Bill Shonely	East	New Jersey	Corporate	Standard Class	Saturday, April 16, 2016	12	9,135.19		2,381.16	
CA-2016-158841	Sanjit Engle	South	Virginia	Consumer	Second Class	Tuesday, February 02, 2016	180	8,805.04		2,825.29	
CA-2016-143714	Christopher Conant	East	Pennsylvania	Consumer	Standard Class	Monday, May 23, 2016	16	8,539.02		1,094.95	
CA-2014-143917	Ken Lonsdale	West	California	Consumer	Second Class	Friday, July 25, 2014	6	8,319.29		376.83	
US-2017-168116	Grant Thornton	South	North Carolina	Corporate	Same Day	Tuesday, April 11, 2017	0	8,167.42		-3,825.34	
US-2015-126977	Peter Fuller	East	New York	Consumer	Standard Class	Thursday, September 17, 2015	60	7,678.23		543.28	
CA-2017-100111	Seth Vernon	East	New York	Consumer	Standard Class	Wednesday, September 20, 2017	84	7,359.92		1,571.80	
CA-2014-145541	Tom Boeckenhauer	East	New York	Consumer	Standard Class	Sunday, December 14, 2014	7	6,999.96		2,239.99	
CA-2015-145352	Christopher Martinez	South	Georgia	Consumer	Standard Class	Monday, March 16, 2015	24	6,412.77		3,192.07	
CA-2014-128209	Greg Tran	East	New York	Consumer	Standard Class	Monday, November 17, 2014	10	6,160.62		676.46	
US-2016-143819	Karen Daniels	East	New York	Consumer	Standard Class	Sunday, January 03, 2016	484	6,125.82		2,253.43	
CA-2015-114811	Keith Dawkins	East	New York	Corporate	Same Day	Tuesday, August 11, 2015	0	5,850.51		2,509.09	
CA-2017-138289	Andy Reiter	Central	Michigan	Consumer	Second Class	Monday, January 16, 2017	6	5,802.70		2,602.09	
US-2014-106992	Sean Braxton	Central	Texas	Corporate	Second Class	Friday, September 19, 2014	4	5,579.94		-761.99	
US-2016-140158	Daniel Raglin	East	Rhode Island	Home Office	Standard Class	Sunday, April 10, 2016	366	5,549.41		2,640.48	
CA-2017-143112	Todd Sumrall	East	New York	Corporate	Standard Class	Wednesday, May 10, 2017	369	5,509.14		1,398.35	
CA-2017-135909	Jane Waco	West	California	Corporate	Standard Class	Friday, October 13, 2017	21	5,325.88		1,938.38	
CA-2017-149881	Nick Crebassa	West	California	Corporate	First Class	Wednesday, January 04, 2017	118	5,282.65		445.17	
CA-2016-108196	Cindy Stewart	East	Ohio	Consumer	Standard Class	Friday, November 25, 2016	0	5,016.55		-6,892.37	

- **Orders Metrix**

  Shows each order's details: Order ID, Customer, Region, Ship Mode, Order Date, Delivery Days, Revenue, Profit,

Actions:

- Identify unprofitable orders and products.
- Track high-value customers and products.
- Monitor supply chain efficiency. Improve slow deliveries.
- Optimize usage of faster or cost-effective shipping.

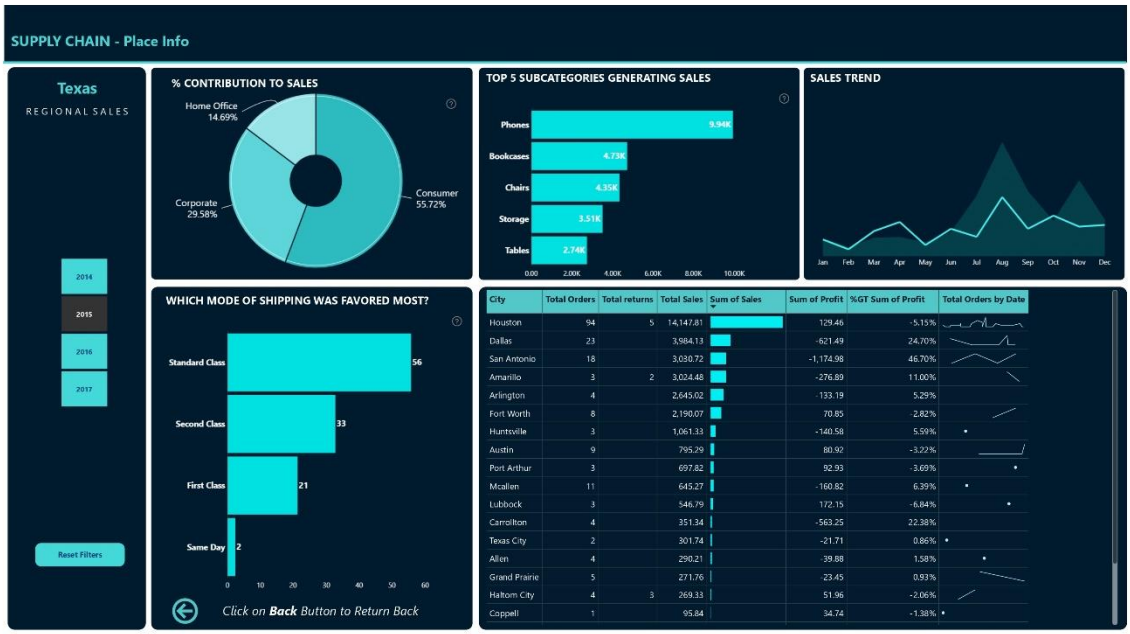
(Dashboard 4 – Analysis ||)

- **Scatter Plot (** Profit vs. Sales by Sub-Category **)**
- **Line Chart:**
  - Discount vs. Total Returns per Month
  - Discount vs. Profit per Month
  - Discount vs. Sales per Month

Actions:

- Products like **Tables** have high sales but **low or negative profit** → Optimize pricing or cost.
- **Phones and Chairs** are both **high sales + high profit** → Focus more marketing efforts here.

(Dashboard 5 - Place Info View)



- **Sales Distribution by Segment:**
  - **Consumer:** 55.72%
  - **Corporate:** 29.58%
  - **Home Office:** 14.69%
- **Top 5 Subcategories:**
  - Phones, Bookcases, Chairs, Storage, Tables.
- **Preferred Shipping Mode:** Standard Class
- **Top Performing Cities:**
  - Houston (14.1K sales), followed by Dallas and San Antonio.
- **Cities with Negative Profit:** Amarillo, Lubbock, Dallas

Actions:

- Continue to push Phones and Furniture subcategories.
- Address profitability in Dallas and Amarillo – possible high return or shipping costs.
- Improve shipping efficiency – explore cost-effective alternatives to Standard Class.
- Increase focus on high-potential cities like Houston for campaigns.

→ End ←