

# Ecommerce Sales Analysis

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## 1.0 STEPS IN PROJECT

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|-------------------------------------|-------------------------|
| 1. Problem Statement                | 6. Data Modelling       |
| 2. Import Data in MS SQL Server     | 7. Creating Date Table  |
| 3. Connecting Power BI to MS SQL DB | 8. Data Visualization   |
| 4. Data Cleaning                    | 9. Creating Dashboard   |
| 5. Data Processing                  | 10. Generating Insights |

## 2.0 PROBLEM STATEMENT

An E-commerce Sales Company based in the United State seeks to create a sales dynamic dashboard with specific features to display year-to-date (YTD) sales information and generate insights for the following scenarios:

1. Create a KPI Banner showing YTD Sales, YTD Profit, YTD Quantity sold, YTD Profit Margin: This would be a visual display at the top of the dashboard summarizing key performance indicators.
2. Find Year on Year growth for each KPI and show a YTD spark line for each measure in the KPI to understand the monthly trend for each fact: This involves calculating the growth compared to the previous year and representing trends using spark lines—a small, word-sized graphic with typographic resolution.
3. Find YTD Sales, PYTD Sales, YoY Sales growth for different customer category. Add a trend icon for each category: This requires analyzing sales data to compare current YTD and previous year's YTD sales, as well as the year-on-year sales growth for each customer category, with an icon to depict the trend.
4. Find YTD Sales performance by each State: The dashboard should display sales performance broken down by state.
5. Top 5 and Bottom 5 Products by Sales: Identifying the best and worst-performing products based on sales figures.
6. YTD Sales by Region to know best and worst performing region all over country: Analysis of sales data by region to determine which are performing best and worst.
7. YTD Sales by Shipping Type to get the best shipping type percentage: Breaking down sales according to the type of shipping used to determine the most effective method.

## 3.0 SOFTWARES USED TO DEVELOP THE REPORT

- Power BI - Version: 2.116.966.0, 64-bit
- MS SQL Server – 19.0.2

- Microsoft Excel-2021

#### 4.0 Power BI Functionalities Used

- How to connect Power BI to MS SQL server and Flat Files
- Data Modeling with three tables
- Data cleaning in Power Query
- How to create a Date Table in Power BI
- Time Intelligence function (TOTALYTD, SAMEPERIODLASTYEAR)
- Creating Dynamic and Complex KPI's
- Basic to Advanced Dax Queries
- Conditional Formatting's, Adding dynamic icons in Power BI
- Different DAX functions like Calculate, Sum, Sumx, Filter, values, selectedvalue, return, concatenate, divide, var, etc.
- Creating different charts, maps and formatting them

#### 5.0 Data source

The primary data sets were obtained from Kaggle website

(<https://www.kaggle.com/datasets/iabdulw/ecommerce-customer-data>)

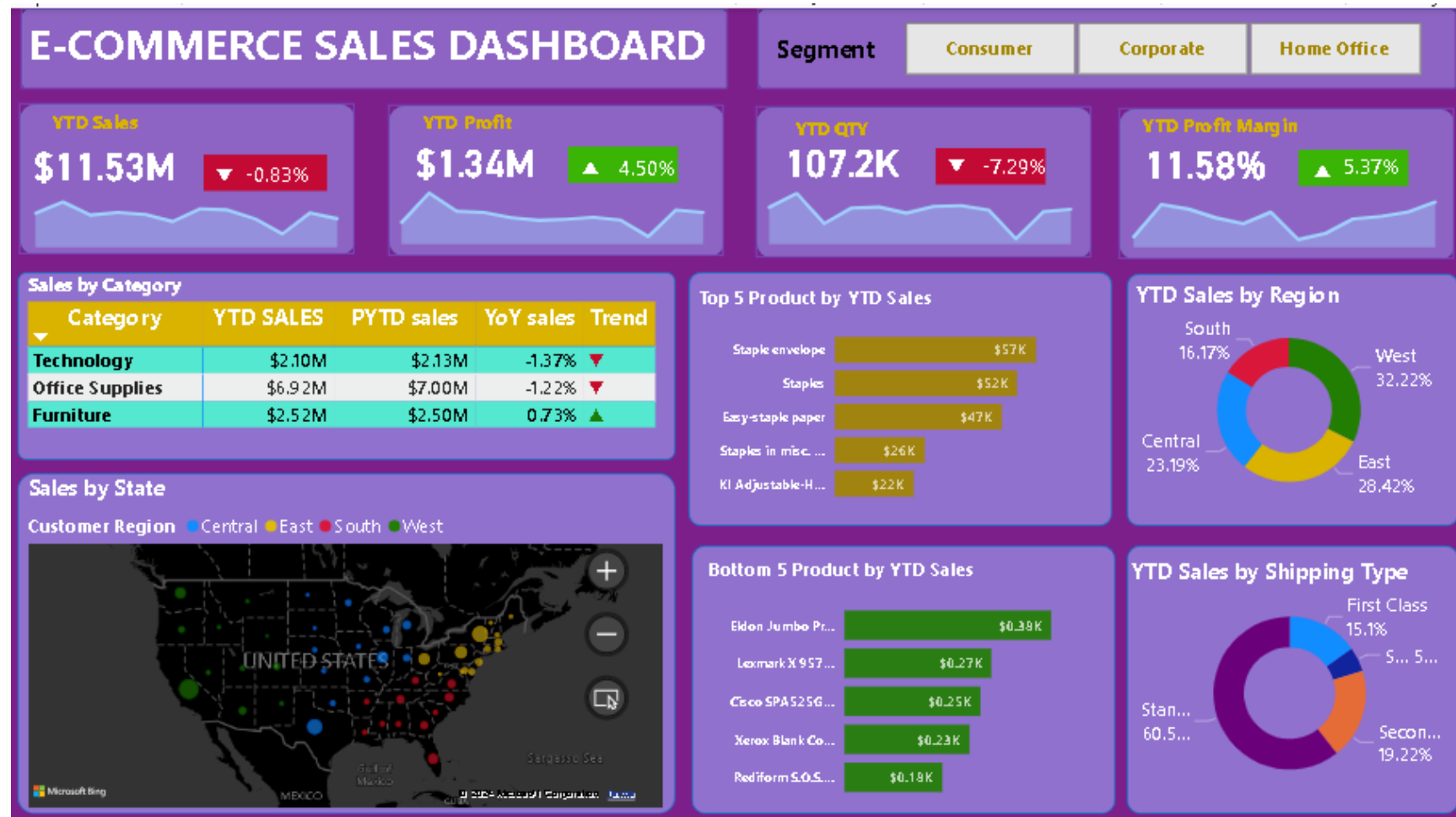
The dataset 'ecommerce\_data.csv' cover various aspects of ecommerce sales, including customer details, order information, and financial metrics like sales and profit. This dataset can be used for a wide range of analyses, such as customer segmentation, sales trends, and shipping performance. The dataset contains 113,270 entries with 21 columns.

The dataset **us\_state\_long\_lat\_codes.csv** contains geographical information for U.S. states. There are 52 entries.

#### 6.0 Import Datasets and Data Modelling

The two datasets were imported into the Microsoft SQL server to. Power BI was then connected to MS SQL Database. A 'Calendar table' was created, and the three tables were modelled by connecting the dimension tables 'Calendar table' and 'us\_state\_long\_lat\_codes' table to the fact table Ecommerce.

## 7.0 Data Visualization and Dashboard



## 7.1 Results and Findings

### 7.1.1 KPI Banner (YTD Sales, Profit, Quantity Sold, Profit Margin)

- YTD Sales: \$11,533,640.96
- YTD Profit: \$1,335,266.99
- YTD Quantity Sold: 107,218 units
- YTD Profit Margin: 11.58%

### 7.1.2 Year on Year Growth

- YoY Sales Growth: -0.83%
- YoY Profit Growth: 4.50%
- YoY Quantity Sold Growth: -7.29%

### 7.1.3 Sales by Customer Category

The analysis of Year-to-Date (YTD) Sales, Previous Year-to-Date (PYTD) Sales, and Year-on-Year (YoY) Sales growth for different customer segments in 2022 compared to 2021.

<u>Consumer Segment</u>	<u>Corporate Segment</u>	<u>Home Office Segment</u>
YTD Sales 2022:	YTD Sales 2022:	YTD Sales 2022:
\$5,978,216	\$3,496,845	\$2,058,580
YTD Sales 2021:	YTD Sales 2021:	YTD Sales 2021:
\$6,010,983	\$3,519,911	\$2,099,128
YoY Sales Growth: -0.55%	YoY Sales Growth: -0.66%	YoY Sales Growth: -1.93%

### 7.1.4 YTD Sales Performance by State

The Year-to-Date (YTD) Sales performance for 2022, sorted by each U.S. state, is as follows:

California: \$2,335,532	Pennsylvania: \$662,607	Ohio: \$552,924
New York: \$1,286,688	Washington: \$587,782	Florida: \$449,323
Texas: \$1,169,659	Illinois: \$562,958	North Carolina: \$290,793

Michigan: \$278,980	Minnesota: \$108,445	Iowa: \$32,469
Virginia: \$259,051	Connecticut: \$90,659	Kansas: \$31,861
Arizona: \$251,233	Missouri: \$79,213	New Hampshire: \$31,503
Tennessee: \$213,148	Oklahoma: \$76,461	Idaho: \$23,992
Georgia: \$211,157	Alabama: \$71,506	Montana: \$19,028
Colorado: \$196,050	Arkansas: \$71,097	District of Columbia: \$16,230
Indiana: \$156,823	Rhode Island: \$66,457	Vermont: \$13,301
Massachusetts: \$151,352	Utah: \$66,117	Maine: \$9,359
Kentucky: \$149,939	Mississippi: \$56,763	North Dakota: \$9,099
New Jersey: \$148,005	South Carolina: \$46,557	South Dakota: \$8,491
Oregon: \$147,803	Louisiana: \$45,882	West Virginia: \$5,086
Maryland: \$132,189	New Mexico: \$44,095	Wyoming: \$1,610
Wisconsin: \$120,606	Nevada: \$43,017	
Delaware: \$111,555	Nebraska: \$39,184	

California leads in sales, followed by New York and Texas. The states are listed in descending order of their sales performance.

#### 7.1.5 Top 5 Products by Sales

- Staple envelope: \$57,090.84
- Staples: \$51,670.28
- Easy-staple paper: \$47,395.21
- Staples in misc. colors: \$25,529.67
- KI Adjustable-Height Table: \$22,391.72

#### 7.1.6 Bottom 5 Products by Sales

- Rediform S.O.S. Phone Message Books: \$179.99

- Xerox Blank Computer Paper: \$229.95
- Cisco SPA525G2 5-Line IP Phone: \$250.00
- Lexmark X 9575 Professional All-in-One Color Printer: \$269.98
- Eldon Jumbo ProFile Portable File Boxes Graphite/Black: \$379.89

#### 7.1.7 YTD Sales by Region

- West Region: \$3,716,258
- East Region: \$3,277,916
- Central Region: \$2,674,249
- South Region: \$1,865,218

The West region leads in sales, followed by the East, Central, and South regions.

#### 7.1.8 YTD Sales by Shipping Type

- First Class: 15.10%
- Same Day: 5.17%
- Second Class: 19.22%
- Standard Class: 60.51%

"Standard Class" shipping contributes the most to sales, accounting for over 60% of the total sales. "Second Class" follows, then "First Class," and finally, "Same Day" shipping has the smallest share.

### 7.2 Conclusion

Key findings indicate a slight decline in sales across customer segments in 2022 compared to 2021, with California leading in state-wise sales and the West region leading in regional sales. Standard Class shipping contributes most to sales.

### 7.3 Recommendations

- Investigate the causes of sales decline across customer segments and states, focusing on market trends or customer preferences changes.
- Analyze the high performance of the West region and California to replicate successful strategies in other regions and states.
- Explore the potential to enhance sales through different shipping types, given the dominance of Standard Class shipping.