DOCUMENTATION

Descriptive Analysis For Power BI Workflow

PREDICTORS | SLIIT

INTER UNIVERSITY POWER BI COMPETITION

SEMI FINAL ROUND

Table Of Contents

Team Details

Team Name: Predictors

University Name: Sri Lanka Institute of Information Technology

Team Members:

Name	Telephone No	Email
Malith Dilshan	0770348784	it21180934@my.sliit.lk
Kavindu Ashen	0704476158	it21164026@my.sliit.lk
Nayani Chamaleen	0716377078	it21182846@my.sliit.lk
Binuri Thilakarathne	0719002184	it21225956@my.sliit.lk
Kavindi Perera	0773199670	it21178368@my.sliit.lk

1. Background

The Power BI dashboard we have developed for the competition is a comprehensive and insightful visualization of order details, carefully crafted to provide a deep understanding of the business dynamics and performance metrics. The dataset comprises two distinct sources, each playing a pivotal role in uncovering key trends, patterns, and opportunities within the company's operations.

The first data set revolves around order information, encompassing crucial aspects such as order dates, customer details, shipping information, and geographical attributes. Through meticulous analysis of this dataset, our Power BI dashboard aims to trends related to customer behavior, regional preferences, and the efficiency of the supply chain. The temporal dimension of the data allows us to explore seasonality, identify peak order periods, and optimize inventory management strategies. Geospatial insights, driven by the inclusion of latitude and longitude coordinates, enable a spatial analysis of sales and customer distribution, potentially uncovering untapped markets or areas of improvement in delivery networks.

Complementing the order information, the second dataset focuses on a detailed breakdown of each order, offering insights into the product-level dynamics of the business. By delving into product categories, sub-categories, and individual items, our Power BI dashboard provides a granular understanding of sales performance, profit margins, and the impact of discounts. This breakdown empowers stakeholders to make informed decisions regarding product offerings, pricing strategies, and inventory management, fostering a data-driven approach to optimizing the product portfolio.

Our approach to designing the Power BI dashboard emphasizes the integration of these datasets, creating a cohesive and holistic view of the business. By linking order details with product breakdowns, the dashboard allows for a seamless exploration of relationships between different dimensions, enabling users to identify correlations that might otherwise remain hidden. The interactive and user-friendly interface ensures that stakeholders can effortlessly navigate through the data, empowering them to derive actionable insights and drive strategic decision-making.

In conclusion, our Power BI dashboard is not just a visualization tool but a powerful instrument for unlocking the untapped potential within the datasets. It serves as a strategic asset for decision-makers, offering a comprehensive understanding of the company's operations and paving the way for data-driven excellence in business management.

2. Steps to Final Work

We completed this task by following some key steps according to the guidelines. Under this section, we will give you an overall idea of our workflow and the additional features we added for the improvement of our final output.

I. Integration of two datasets

First, we merged two datasets called “List of Order” and “Order Breakdown” according to the guidelines. The successful execution of these steps has resulted in a unified dataset, empowering stakeholders to derive meaningful insights from the integrated Order Details and Order Breakdown datasets. The seamless integration, duplicate validation, and data type standardization contribute to the reliability and usability of the Power BI dashboard. These efforts collectively serve to enhance the overall data-driven decision-making process for the organization.

a. Dataset Overview:

i. The initial dataset, "ListOfOrder," contains information on orders, including Order ID, Order Date, Customer Name, City, Country, Region, Segment, Ship Date, Ship Mode, State, longitude (lon), and latitude (lat).

ii. The second dataset, "OrderBreakdown," delves into the detailed aspects of each order, providing insights into Product Name, Discount, Sales, Profit, Quantity, Category, and Sub-Category.

b. Total Order Count:

i. The “ListOfOrder” dataset comprises 4,117 entries.

ii. The “OrderBreakdown” dataset comprises 8,047 entries.

c. Data Integration:

i. Utilizing Power BI's "Merge Queries" functionality, the two datasets were integrated based on a common key, resulting in a merged dataset containing 4,117 entries.

d. Duplicate Check:

i. After merging, a duplicate check was performed to ensure data integrity.

ii. The analysis confirmed that there were no duplicates, validating the successful integration.

e. Data Type Standardization:

i. The data types for the 'Sales,' 'Profit,' and 'Discount' columns were standardized to enhance consistency and facilitate accurate analysis.

f. Title Modification:

i. The title of the "OrderBreakdown" section was modified to enhance clarity or align it with specific branding or user expectations.

II. Find relationships between columns

Following a thorough examination of the dataset, we initiated a process to identify relationships between columns, aiming to uncover patterns and dependencies within the data. Through this analysis, we carefully explored co-occurrences between different columns, revealing complex connections that contribute to a more subtlety understanding of the dataset's underlying structure. This approach enhances our ability to extract meaningful insights and informs subsequent steps in data interpretation and visualization for our Power BI dashboard.

III. Create new columns

After thorough examinations, we proceeded to enhance the dataset by creating new columns through the combination of two existing columns based on their identified relationships. This process involved combining relevant data elements to derive additional insights and better capture the nuanced connections between different aspects of the dataset. New columns combinations listed down below.

a) Created “DaysToProcess” column by using “Oder Date” and “Ship Date” Columns.
b) Created “Expected Price” column by using “Sales” and “Quantity” Columns.
c) Created “Selling Price” column by using “Discount” and newly created “Expected Price” Columns.
d) Created “LossValue” column by using newly created “Expected Price” and “Selling Price” Columns.

IV. Add new measures

We augmented the dataset by introducing new measures designed to extract more precise and valuable information. These additional quantitative indicators were strategically devised to enhance the analytical capabilities of the dataset, providing stakeholders with deeper insights, and facilitating a more nicety understanding of the underlying patterns and trends.

Here are some examples of measures we have added.

i. Average sales per day
ii. Product which has sells by quantity. (Max product by quantity)
iii. Sum of loss
iv. Max sales Date
v. Most Discounted state
vi. Most sales State
vii. Ranking
viii. Sales percentage for all regions
ix. Total sales
x. Subtitle for ranking

V. Dashboard Creation

By implementing all those works we came up with an interactive and insightful dashboard. To present a more precious, interactive, and informative dashboard, we divided all the insights of sales into five sections. Here are those five sections.

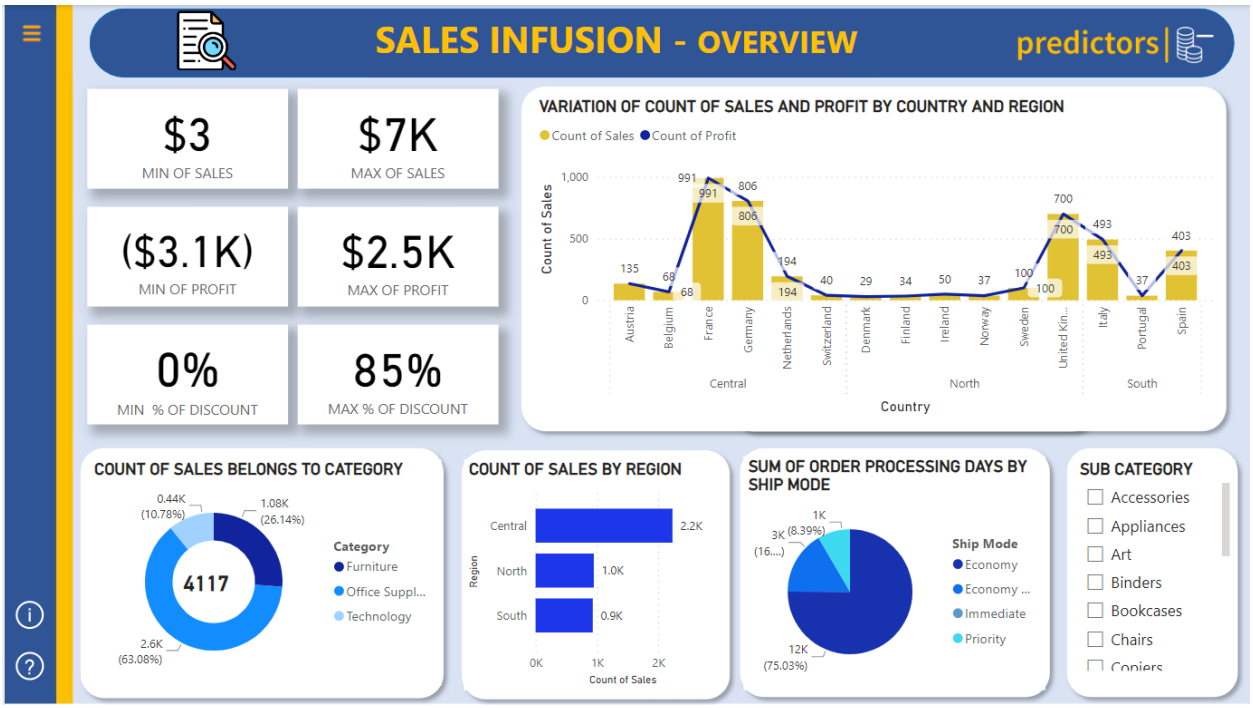
1. Overview of Sales
2. Dynamic Variation of Sales
3. Geographical Analysis
4. Time Series Analysis
5. Segment Analysis

Under the “Snapshots of Final Work” section we will give the exact information about these different analysis sections.

3. Snapshots of the Final Work

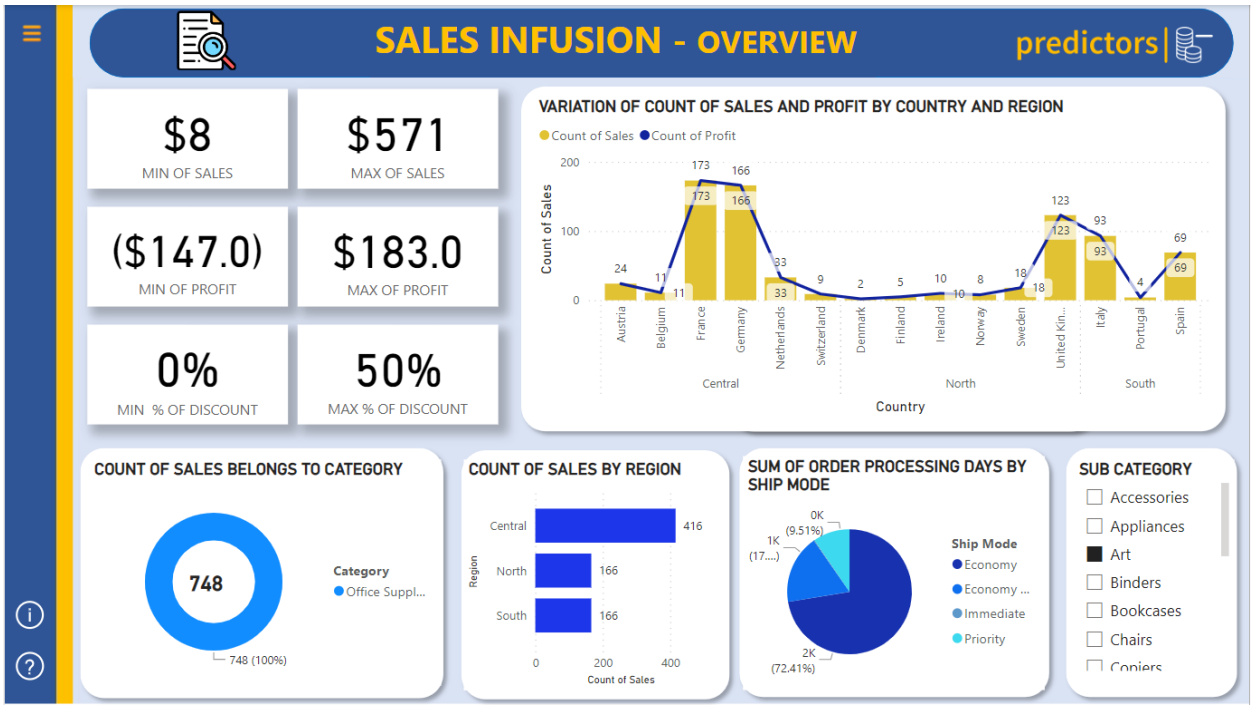
Under these sections, we provide more precious and interactive information of sales by using slicers, bookmarks, charts such as line, column, pie, ribbon, funnel, and donuts charts. As we Decomposition Trees, Word Cloud, Maps, KPI Charts, Clustered bar charts and so on. Let's look at each section in detail.

I. Overview of Sales



This is the overview dashboard of the Sales infusion dataset visualization task. Providing a better understanding of the sales infusion dataset was focused on as the main consideration. By glancing at the dashboard, the user will be able to get an idea about the main pillars of the dataset such as selling categories and regions and their weight on the sales. Apart from that there is featured a bar chart that displays the information about the count of sales vs the country. In the same diagram there is also and line chart which shows the information about the amount of profit with each country. There can be seen six measures about the given dataset namely, min of sales, max of sales, min of profit, max of profit, minimum discount percentage and the maximum discount percentage. By analyzing the given data in those measures, one can acknowledge the minimum profit has become a minus value. That means there has been a loss to the company.

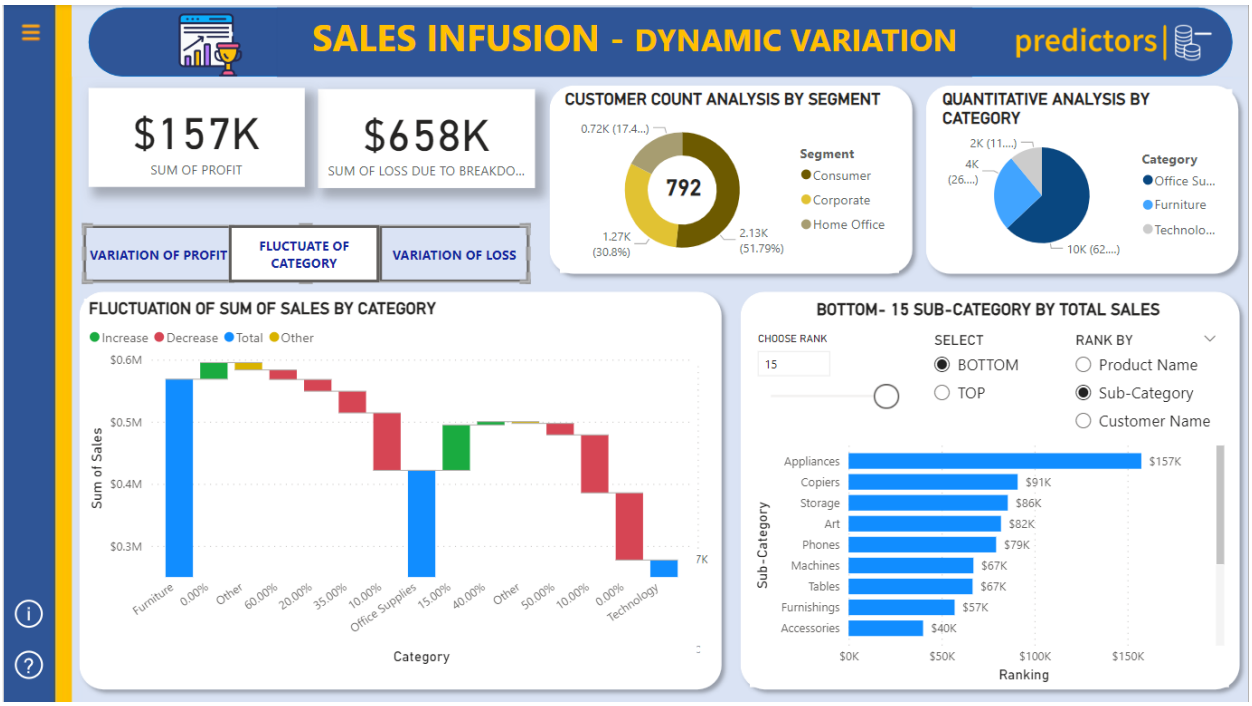
By analyzing the maximum discount percentage, it can be identified that there was an instance that had 85% discount percentage in selling products in the business have range from 3$ to 7000$.



In the overview dashboard it has been featured with a filter option with the subcategories. By using this feature users can reload the whole dashboard with the data related to the selected subcategory. For an example above Dashboard instance have been applied the subcategory filter "Art". By using this feature, it can be analyzed that there are 748 total art product sales recorded included in the dataset. Apart from that the pillars such as product sold with minimum value and the maximum value, minimum and maximum profits obtained from a product related to selected subcategory and the minimum and maximum discount percentages related to given subcategory.

This feature is supposed to be very useful in finding the region-specific subcategories and the Identification of the target audience behavior of each product subcategory. For example, there is a 1.12% increase in priority ship mode user in "Art" related products. Priority ship mode costs much more than the other regular shipping modes. By using that fact, we can assume that the average "Art" category customer has rather more expensing power than a regular customer. That kind of information is very useful in pricing strategies and the marketing campaigns.

II. Dynamic Variations of Sales



In the dynamic variation it has been featured important indicators related to the dataset. In the first value card the total of the whole profit has been displayed allowing user to take idea about the scale of the business at the first glance. In the next card the total loss due to breakdown is displayed. By using that measurement users can obtain an overall idea about company losses and the management in operations inside the business. In the second donut chart customer counts for each segment have been displayed. The data that can be obtained from this chart can be used in implementing marketing events because that diagram displays the information about the whole customer base status. For example, analyzing that information one can observe the market share of individual consumer is the main customer segment. In implementing marketing or advertising projects it must be focused on individual consumers rather than other customer segments to obtain a high selling rate.

There is a pie chart featured from the right side of the customer segment chart. This pie chart displays the count sales relative to the product category. This pie chart information can be used in understanding the overall behavior of the products related to each product category. That analyzation can be useful in implementing stock keeping strategies as it differs the fast-moving item categories from the relatively slow-moving products. According to the above chart the office supplies must be having priority in choosing stock keeping strategies.

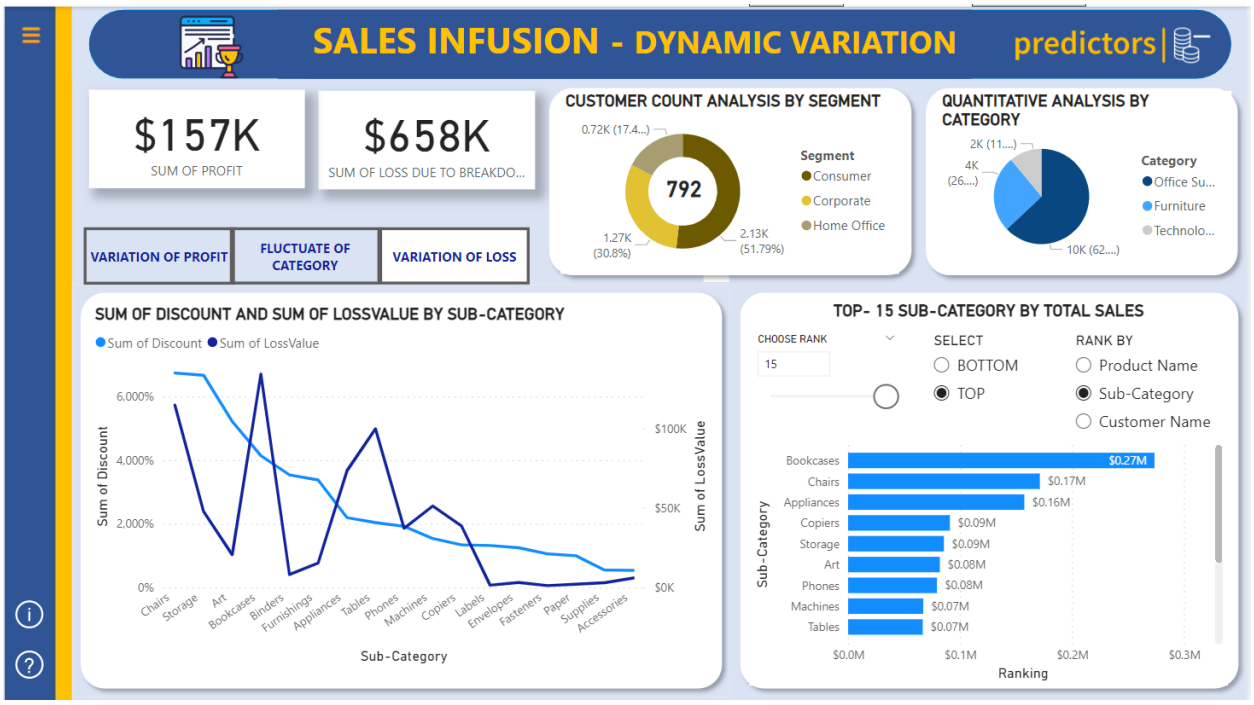
In the bottom corner of the right side, it has been added a bar chart with some filters. It is an advanced graph which provides various information related to total sales. In the first filter it asks the user to input the count of records the user is willing to analyze. The user input for the number of records is taken by range input. Usage of this filter will be more explained by the example that provided after explanation of all three filters. The second filter asks the user to select whether they need the records from the bottom or the top. If the user inserts bottom as the input and the 8

as the first filter the graph will be regenerated with the bottom 8 records of the dataset. Third filter is the most important filter featured in the component. This component meant to be displayed the summation of the total sales. Using the third filter user can group the data in the dataset. The grouped data will have its own summation value and they will become the records for the components. Then the records will be sorted by the descending order with the value of total sale. For example, if user selected top eight sub-category the system will first group the whole data based on the subcategory and will be grouped by the total of sale for each individual subcategory. Then the first eight subcategories with the highest summation of total sales will be included in the bar chart featured below from the filters.

This filtered component can be used in very serious business analyzing tasks such as finding the under-selling product name or most selling subcategories.

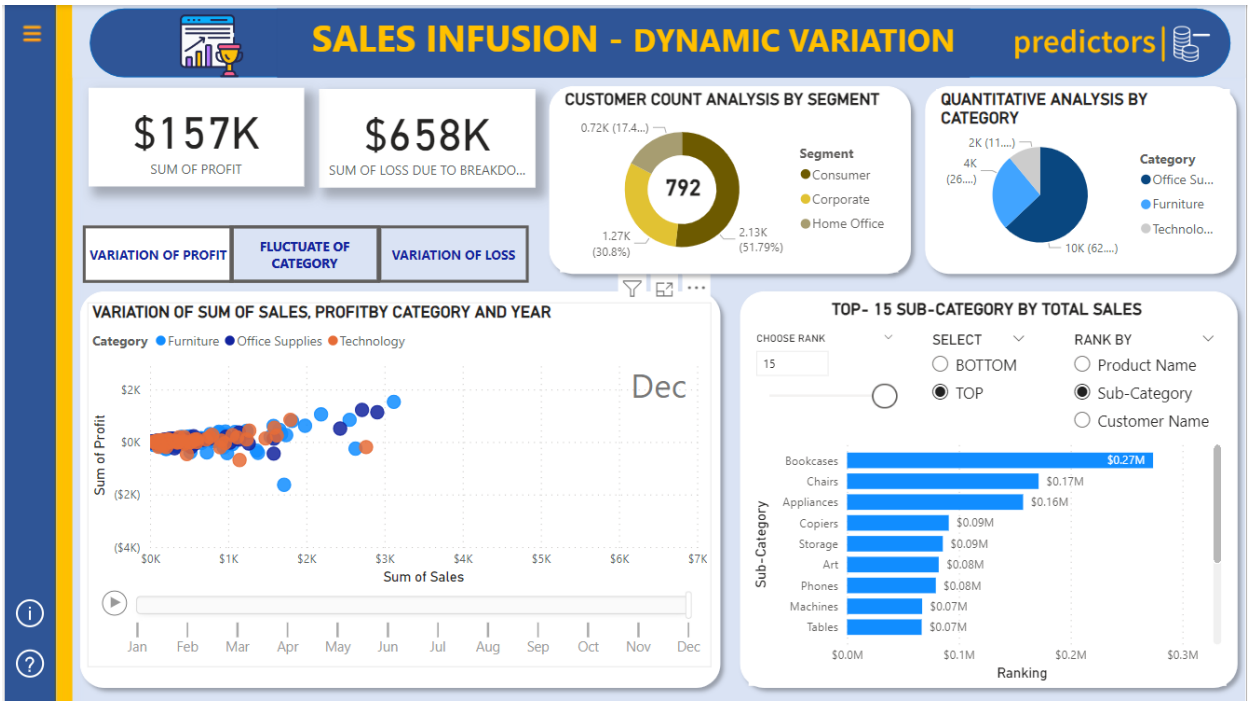
By using the three selectors, the user can switch between three graphs. The graphs that can user is enabled to switch are the variation of profit, fluctuation category and the subcategory.

Apart from the above chart there has been implemented a chart that displays the fluctuation sum of the sales by category. To display that information a waterfall chart has been used. Usually, those waterfall charts are used in places where it is needed to identify the key drivers behind changes in a metric. The length and direction of each bar provides the information to identify which factors contribute the most to the overall change in sales. In this scenario the waterfall chart will visually represent how discounts impact the total sales across different categories. The bars will show whether discounts are contributing positively or negatively to the overall sales figures, and the final bar will represent the total sales after considering all these factors.



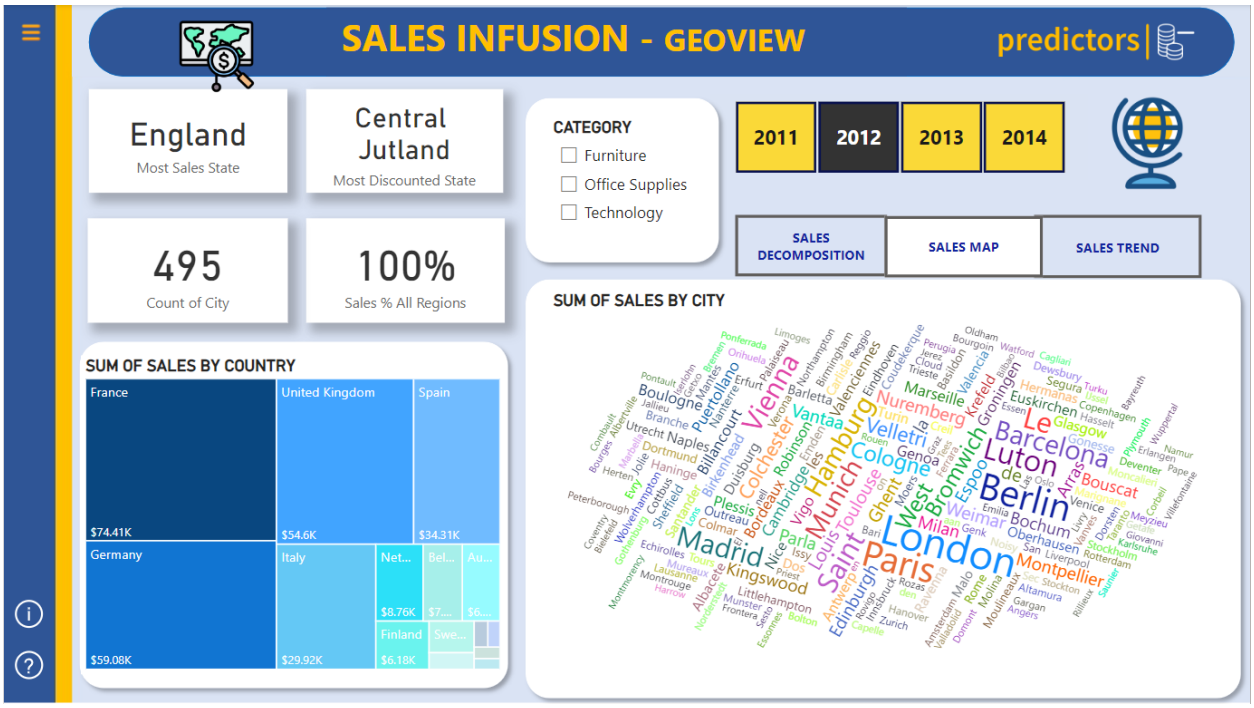
In the above screenshot the variation of loss chart is being selected. Basically, this chart provides the sum of loss and the sum of discount in each category. By using the information given in this graph business analysts can get rough ideas about which subcategory products have the major loss values and using that information they can implement new methods to reduce the cost of loss.

The other indicator featured in the same graph is the sum of discount. Information about the total discount given for each subcategory will be conducted through a deep analysis to find the reasons for the discounts. If there are reasons such as overstocking caused the higher discount rates the information can be used to rearrange the protocols about product storing and marketing.



The other graph featured in the slot was the variation of sum of sales of each main product category. Simply in this graph the user will be able to analyze the profits gained from each category. This graph is implemented as a dynamic graph that user can play and see the variation through time. This behavior lets users' glance through the all-time total profit records without lot of effort.

III. Geographical Analysis of Sales



The third page included in the dashboard displays the geographical information about the dataset. First there is a selector for each year displayed in the right top corner of the dashboard. Using this selector, the user can switch between data of the relevant years. Each time the user selects a year the whole graphs and the other cards are programmed to be refreshed with the relevant data.

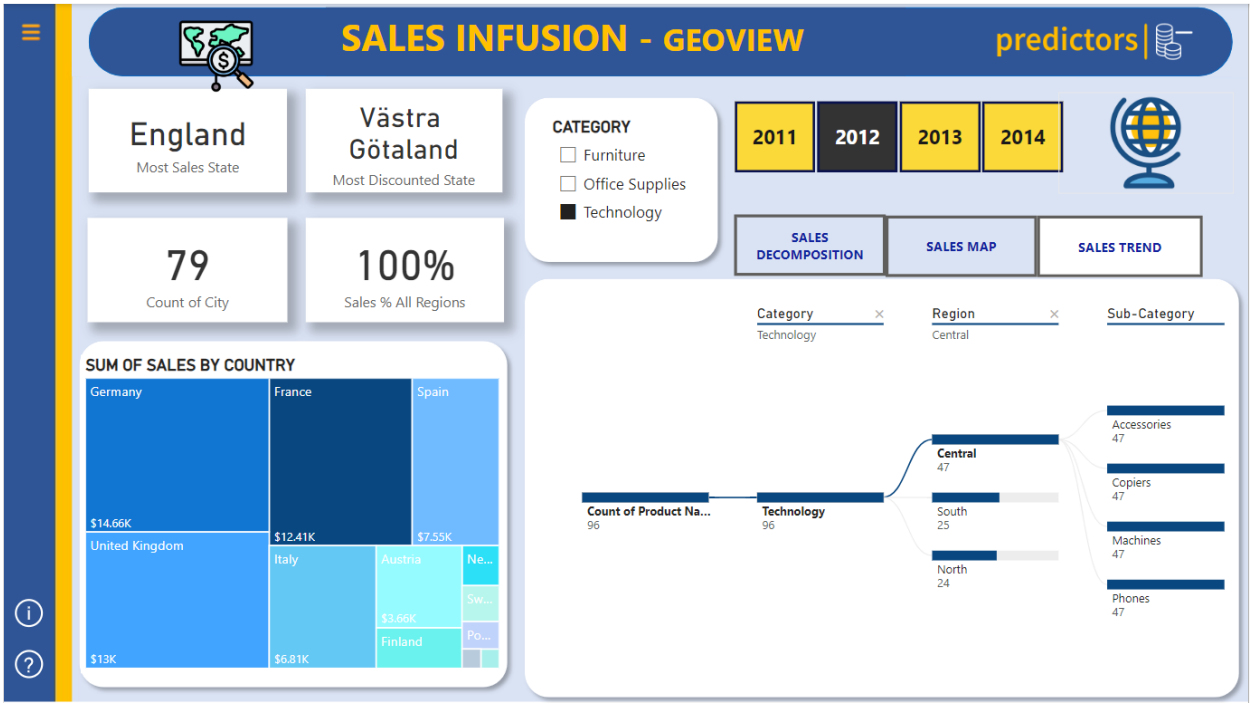
Apart from that there can be identified another filter named category. Using that category selector user can view the information related only to the particular category. For example, if category furniture selected with the 2012 as year the geographical information related to furniture products in 2012 will be loaded in the panel.

The first card appears in the left side top corner indicates the state that had most sales. Beginner staff of the management of the company can get a rough idea about the expansion of the business.

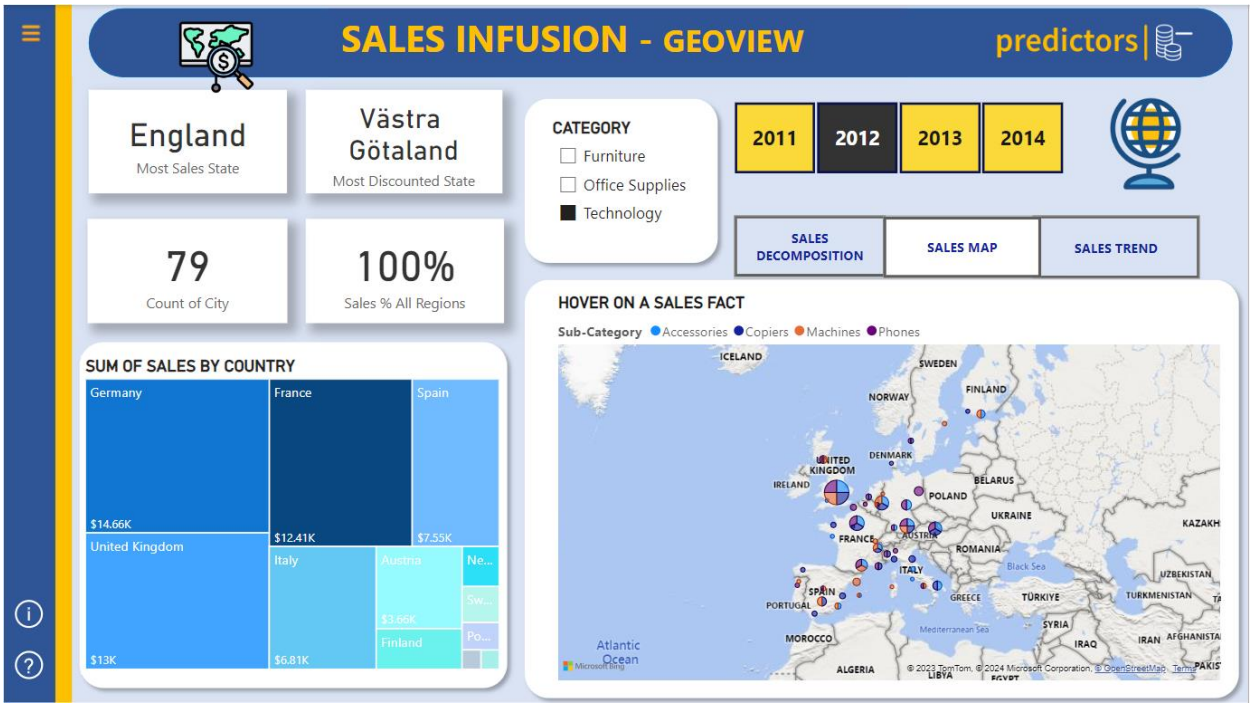
In this kind of business sometimes customers are getting used to misusing the discounts and offers. Most of the time these kinds of activities start from a specific geographic location. For example, it can be considered AliExpress banning 0.01$ products for Sri Lanka. In Sri Lanka people used to create free accounts to obtain one-time discounts again and again. The card indicator named most discounted state will be useful in identifying such scenarios. Count of city indicators can be considered as an indicator of global expansion of the business with the years.

At the left side bottom corner, it has been featured a tree map chart which indicates the total of sales for each country in the mentioned year. This allows users to take idea about the business's capabilities in the countries in a comparable manner.

Then there is a selector that is used in switching between three graphs. The first graph displayed in the above screenshot is a word cloud chart that displays the information about the total sales of major cities. City names with bigger font size indicate the relevant city has a bigger total sale.

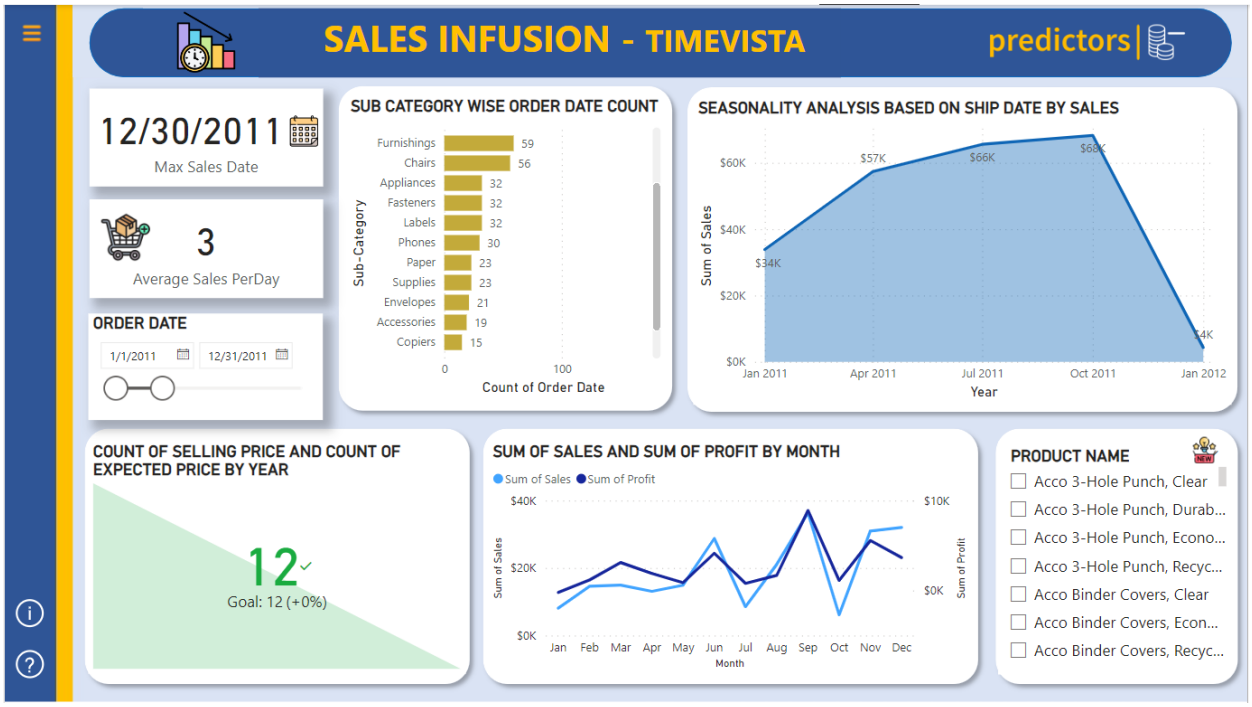


Next graph that the selector switching is a hierarchical bar chart that displays the sales trend. This graph helps users to get the counts and percentages of total sales with the category, region and the subcategory.

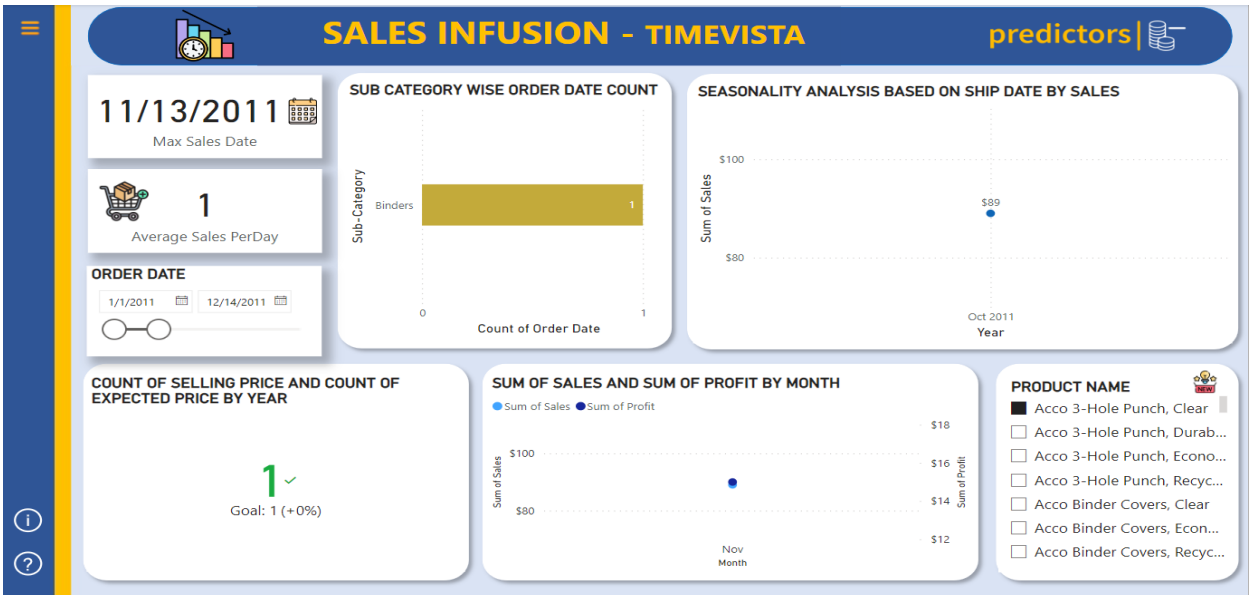


The third and the final graph on the geographic information page is a sales decomposition map. This chart has a map of the main regions of the business. Each city which is a region of a business is included with a small pie chart that displays the sales count related to the city with the subcategory. The pie charts have been programmed to enlarge when users hover over them. That way the dashboard provides a clear chart that provides the detailed information when needed.

IV. Time Series Analysis of Sales



By selecting product name



The fourth page of the dashboard is based on time series analysis of the dataset. At the first glance users can identify there are two filters given in the dashboard. The first one is featured at left bottom corner. It filters the data displayed by the product name and narrows down the records into a single product. The other filter is the most important filter on this page. It contains a date range selector. It narrows down the data that being displayed in the dashboard to a particular time range.

The first information that displayed in the dashboard is max sales date that provide the day with the maximum sale between the given time range. The other information card displays the average sales per day in the given time range. By using these filters analysts will be able to find the patterns in product demand in special seasons.

There is also a featured horizontal bar chart which displays the duration of order in dates with respective to subcategories. Sub-categories with taller bars indicate higher demand or popularity based on the count of order dates. This information can be crucial for focusing marketing efforts or ensuring sufficient stock for popular items.

The distribution of bars provides insights into how evenly or unevenly orders are spread across sub-categories. This can inform decisions related to inventory management or marketing strategies.

Across the years 2011 to 2014, the top two sub-categories based on order date count remained consistent with "Art" and "Binders." However, the third-highest sub-category varied each year, showcasing a dynamic trend.

In 2011, "Bookcase" secured the third position, followed by "Storage" in 2012, "Chairs" in 2013, and a return to "Storage" in 2014. Notably, when aggregating data for all four years, the overall top three sub-categories by order date count were "Art," "Binders," and "Storage."

This analysis provides insights into the evolving popularity of sub-categories over the specified period, highlighting specific variations in the third-highest ranking sub-category on an annual basis.

The visualization helps decision-makers understand the order frequency distribution among different sub-categories.

There is also included an area chart in the top right corner of the dashboard. This visualization shows the overview of sales trends over time, enabling a detailed exploration of seasonality at various levels.

Across the years 2011 to 2014, the Seasonality Analysis based on ship date by sales highlights a consistent trend where the first quarter (Q1) consistently records the least sales, followed by significant increases in subsequent quarters.

In 2011, Q4 emerges as the highest sales quarter, and this pattern shifts to Q3 in 2012. In 2013, Q4 again claims the highest sales, and in 2014, Q3 takes the lead. This observed seasonality pattern implies that the initial quarter of each year experiences lower sales, with subsequent quarters showcasing increased sales, potentially influenced by varying consumer behaviors, marketing strategies, or external factors.

Recognizing and leveraging these seasonal trends can inform strategic decision-making, allowing businesses to optimize resource allocation and tailor marketing efforts to capitalize on historically stronger sales periods, ultimately enhancing overall sales performance.

At the bottom left corner there has been featured and KPI chart. This KPI chart provides a comprehensive view of selling price performance over time, enabling stakeholders to assess trends, validate data, and align with strategic goals. This visualization is a valuable tool for decision-makers seeking actionable insights to enhance overall business performance.

Performance Trends:

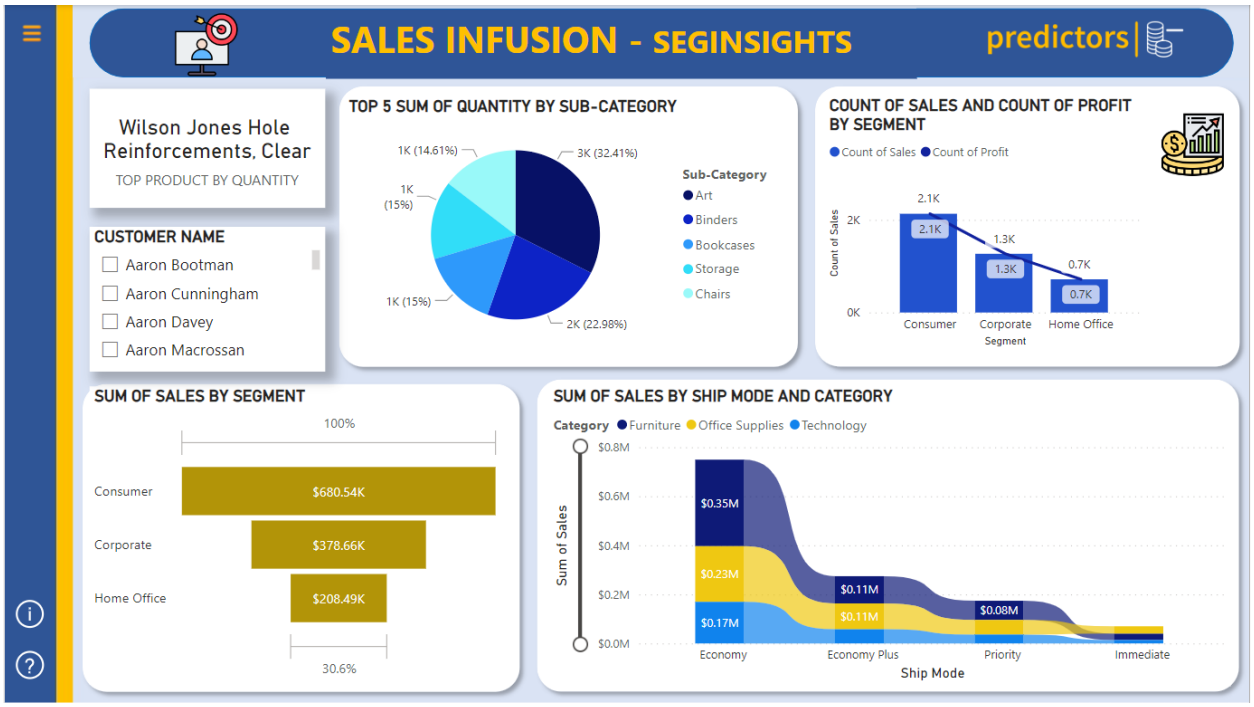
By observing the trend of the selling prices over the years, you can identify patterns and fluctuations in sales performance. Peaks or dips in the count of selling prices may indicate periods of increased or decreased sales activity.

Goal Alignment:

The target line provides a visual reference for the expected count of prices, enabling quick assessments of whether actual performance aligns with predefined goals. This facilitates performance monitoring and goal tracking.

There is a line chart that displays sum of sales and sum of profits with the month in the bottom of the dashboard. This chart is also supposed to be helpful in finding patterns in the sales. By understanding the patterns of the sales the company is gains ability to manage their resources more efficiently with respective to the season.

V. Segment Analysis of Sales



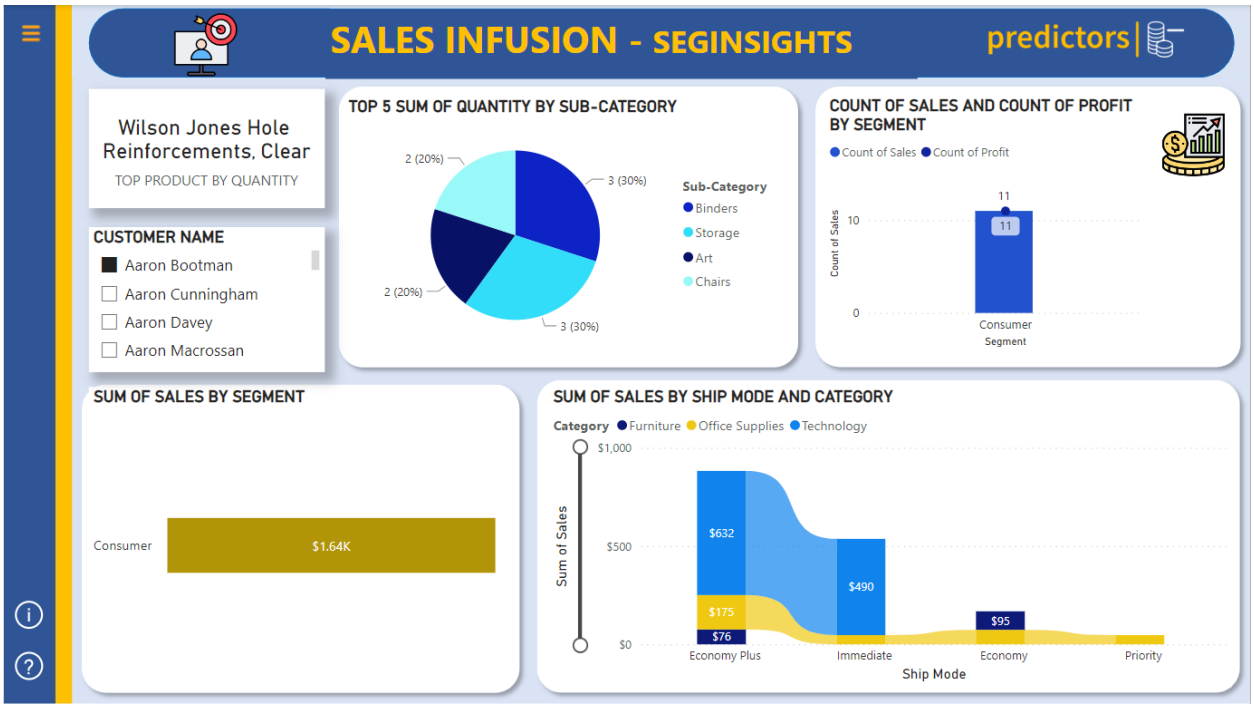
Segment Analysis page is the last page of the dashboard implementation by predictors. In this page the users have been given the ability to analyze the sales record of the business with respective to the market segments.

In this page there can be found only one filter. That filter includes the names of the customers mentioned in the dataset. This filter can be used when there is a requirement to analyze the purchases made by a single customer. This feature is going to be helpful in analyzing the information of corporate customers who make rather higher purchase count than a regular customer.

There is a pie chart that displays the information about quantity by subcategory. This pie chart provides the information to compare between the top 5 subcategories with their total quantity of sales.

There is also a bar chart that indicates the count of the sales and the total profit with each customer segment. This provides an idea about the major customer segments and their value to the company.

There is also a stacked area chart implemented in the dashboard. It displays the information of total sales with category and the ship mode. This chart supposed to be useful for the business analysts when making transportation strategies for different categories. This graph also can be used to make protocols that make the resource usage much more efficient.



4. Conclusion

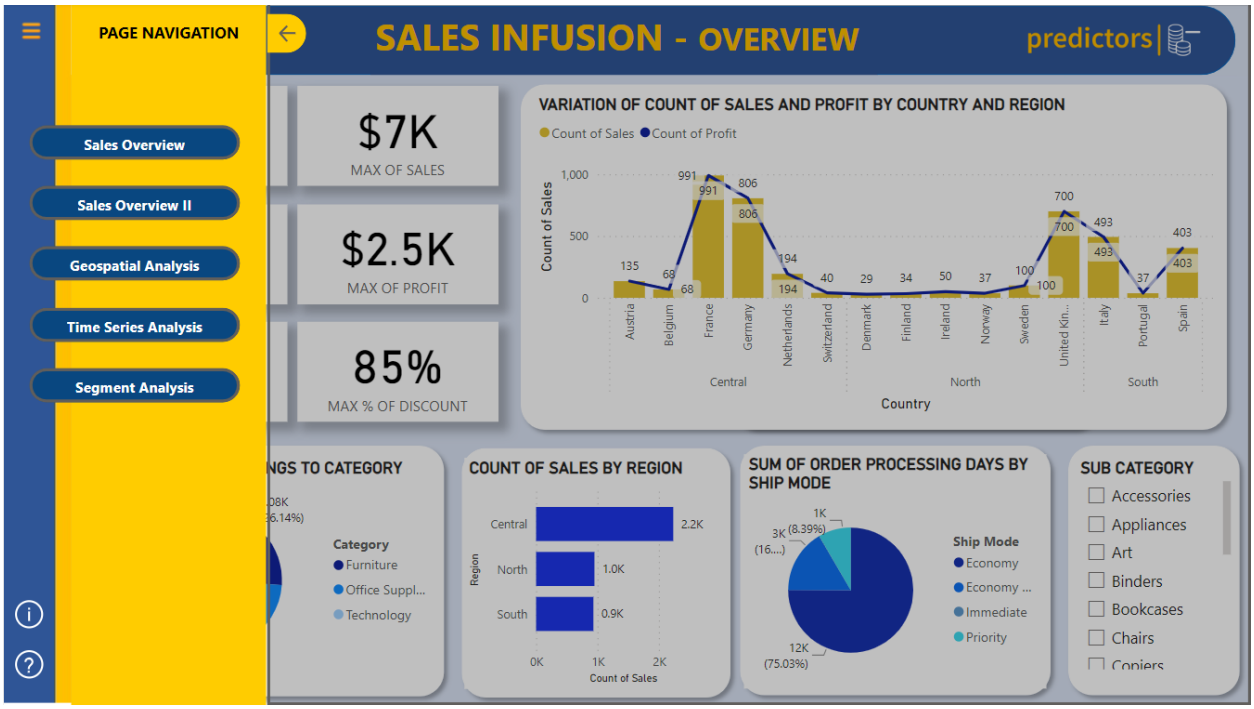
In conclusion, our Sales Analysis Power BI Dashboard stands as a testament to the transformative capabilities of data visualization in strategic decision-making. By seamlessly integrating two crucial datasets, we have provided stakeholders with a nuanced understanding of the business dynamics, enabling them to make informed decisions. The dashboard's emphasis on key insights such as sales overview, dynamic variation, time series analysis, geographical analysis, and segment analysis empowers users to navigate through complex data effortlessly. This user-friendly interface ensures that decision-makers can extract actionable insights promptly, fostering a culture of data-driven excellence. As a powerful instrument for unlocking untapped potential within the datasets, our Sales Analysis Power BI Dashboard serves as a strategic asset, guiding the company towards optimized operations and sustained business growth in an increasingly competitive landscape.

5. Appendix

I. Navigation Panel

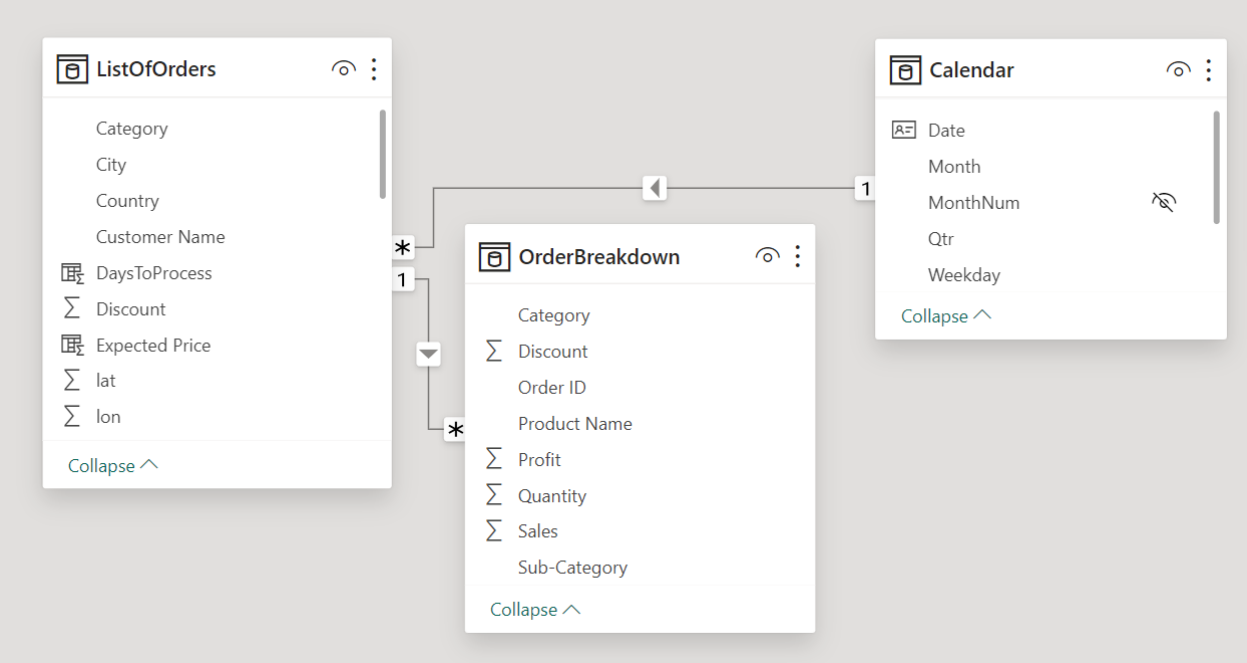
The implementation of page navigation through buttons, bookmarks, and grouping serves the purpose of enhancing the user experience and facilitating seamless exploration of the visualization content. By creating buttons for each page and grouping them, users gain a structured and intuitive navigation system. The addition of bookmarks, specifically "page nav open" and "page nav close," allows for the dynamic visibility control of navigation elements, ensuring a clutter-free interface.

Enabling actions and linking these bookmarks to corresponding pages establishes a user-friendly mechanism to open and close navigation, providing a streamlined experience. This approach optimizes the accessibility of dashboards, making it easier for users to navigate between different sections, fostering a more interactive and organized visualization that enhances overall usability and comprehension.



II. Model View

The raw dataset that was given for analyzation had some modification that needed to be applied before it is used in the power bi dashboard project. The diagram in this section is designed in purpose of summarizing the key changes that have been done to dataset. Therefore, if someone needs to have an idea about modifications that have been done to the dataset or the relationships made between the datasets can refer this diagram.



III. Measures

1. Ranking

Define measures to find the 15 top and bottom total sales by customer name, product name and the sub – category.

Below DAX for this.

i. Ranking

```
Ranking =

    VAR _Top_Product = RANKX(ALL(ListOfOrders[Product Name]), [Total Sales], , DESC)
```

```
    VAR _Bottom_Product = RANKX(ALL(ListOfOrders[Product Name]), [Total Sales], , ASC)

    VAR _Top_Customer = RANKX(ALL(ListOfOrders[Customer Name]), [Total Sales], , DESC)
    VAR _Bottom_Customer = RANKX(ALL(ListOfOrders[Customer Name]), [Total Sales], , ASC)

    VAR _Top_Cat = RANKX(ALL(ListOfOrders[Sub-Category]), [Total Sales], , DESC)
    VAR _Bottom_Cat = RANKX(ALL(ListOfOrders[Sub-Category]), [Total Sales], , ASC)

    VAR _CheckRank =
    IF(CONTAINSSTRING(SELECTEDVALUE('RANK BY'[RANK BY Fields]),"Product Name"),
    IF(SELECTEDVALUE('RANK TYPE'[SELECT])= "Top",_Top_Product, _Bottom_Product),

    IF(CONTAINSSTRING(SELECTEDVALUE('RANK BY'[RANK BY Fields]),"Sub-Category"),
    IF(SELECTEDVALUE('RANK TYPE'[SELECT])= "Top",_Top_Cat, _Bottom_Cat),

     IF(SELECTEDVALUE('RANK TYPE'[SELECT])= "Top",_Top_Customer, _Bottom_Customer)

    ))

RETURN
    IF(_CheckRank <= 'CHOOSE RANK'[CHOOSE RANK Value], [Total Sales])
```

ii. Customize new parameter

A customized parameter named "CHOOSE RANK" has been established, ranging from 1 to 20 with an increment of 1. This parameter, complemented by the DAX code, creates a series of values from 1 to 15 for subsequent use in ranking scenarios. The accompanying "CHOOSE RANK Value" DAX measure dynamically captures the selected value from the "CHOOSE RANK" parameter, defaulting to 1 if none is chosen.

Additionally, another parameter, "BY RANKING," has been introduced to facilitate the selection of specific categories for ranking purposes. This allows users to interactively choose the ranking category in their Power BI report, offering a versatile approach to exploring and analyzing data based on their specific preferences.

```
CHOOSE RANK = GENERATESERIES(1, 15, 1)
```

```
RANK BY = {
    ("Product Name", NAMEOF('ListOfOrders'[Product Name]), 0),
    ("Sub-Category", NAMEOF('ListOfOrders'[Sub-Category]), 1),
    ("Customer Name", NAMEOF('ListOfOrders'[Customer Name]), 2)
}
```

2. Total Sales

```
Total Sales = SUM(ListOfOrders[Sales])
```

3. Subtitle for ranking

The dynamic subtitle serves as an intelligent guide, updating seamlessly as you select customer name, product, or subcategory. Tailor your view, control item numbers, and switch effortlessly between top and bottom analysis. Elevate user experience with real-time insights.

```
SUB_TITLE = VAR _rankType = SELECTEDVALUE('RANK TYPE'[SELECT])
VAR _choosetorank = SELECTEDVALUE('CHOOSE RANK'[CHOOSE RANK])

VAR _selectedrank =
IF(SELECTEDVALUE('RANK BY'[RANK BY Order])=0,"PRODUCT NAME",
IF(SELECTEDVALUE('RANK BY'[RANK BY Order])=1,"SUB-CATEGORY",
"CUSTOMER NAME")
)

RETURN
_rankType&"- "&_choosetorank&" "&_selectedrank&" BY TOTAL SALES"
```

4. Sum of loss

The purpose of introducing this measure is to quantify the financial loss incurred, offering a more nuanced perspective on overall business performance. By incorporating the "Loss" measure into dataset and stakeholders can now assess not just the discounted revenue but also the associated

financial impact, contributing to a more informed decision-making process and a comprehensive evaluation of the dataset.

```
Loss = SUMX(ListOfOrders, ListOfOrders[Expected Price] - ListOfOrders[Selling Price])
```

5. Most sales states

Determine the state with the highest transaction frequency. By aggregating transactional data and utilizing this measure, the Power BI report succinctly highlights the geographic region where customer transactions are most concentrated.

```
MostSalesState =
CALCULATE(
    MAXX(
        TOPN(1, SUMMARIZE(ListOfOrders, ListOfOrders[State], "TotalSales",
SUM(ListOfOrders[Sales])), [TotalSales], DESC),
        [State]
    )
)
```

6. Most Discounted State

Vastra Gotaland has 100 of the overall transactions. Interestingly, this region is associated with the highest discount rate, reaching up to 70%. The substantial discount in Vastra Gotaland could be attributed to various factors, such as targeted promotional strategies, regional market dynamics, or competitive influences. Businesses may be strategically employing aggressive pricing in this area to stimulate sales, capture market share, or respond to specific consumer behaviors prevalent in Vastra Gotaland.

```
MostDiscountedState =
CALCULATE(
    MAXX(
        TOPN(1, VALUES(ListOfOrders[State]), CALCULATE(AVERAGE(ListOfOrders[Discount]))),
        [State]
    )
```

```
)
```

7. Sales % All Regions

```
Sales % All Regions = DIVIDE(SUM('ListOfOrders'[Sales]), CALCULATE(SUM(ListOfOrders[Sales]), ALL('ListOfOrders'[Region])))
```

8. Max Sales Date

Designed to calculate the maximum sales date within the ListOfOrders table. enabling the creation of time-sensitive visualizations or trend analyses based on the identified maximum sales date.

```
MaxSalesDate = MAXX(VALUES(ListOfOrders[Order Date]), DATEVALUE(ListOfOrders[Order Date]))
```

9. Average Sales per day

```
AverageSalesPerDay" is a measure that calculates the rounded average number of sales transactions per day.

AverageSalesPerDay =

ROUND(

    CALCULATE(

        COUNTROWS(ListOfOrders),

        ALLEXCEPT(ListOfOrders, ListOfOrders[Order Date])

    ) / DISTINCTCOUNT(ListOfOrders[Order Date]),

    0

)
```

10. Max product by quantity

MaxProductByQuantity is a measure designed to identify the product with the highest quantity sold. It accomplishes this by first creating a virtual table with the top product based on quantity.

```
MaxProductByQuantity =

VAR TopProduct = CALCULATE(

    MAXX(TOPN(1, ALL(ListOfOrders), ListOfOrders[Quantity], DESC), ListOfOrders[Product Name])

)

RETURN
```

```
    TopProduct
```

IV. Table Creation

1. Calendar

The DAX code "Calendar" in Power BI creates a calendar table by generating a date range spanning from the minimum to the maximum 'Order Date' within the 'ListOfOrders' table. This comprehensive calendar table facilitates time-based analysis.

```
Calendar =

ADDCOLUMNS (

    CALENDAR (MIN('ListOfOrders'[Order Date]), MAX('ListOfOrders'[Order Date])),

    "Year", YEAR ([Date]),

    "Month", FORMAT ([Date], "mmm"),

    "MonthNum", MONTH ([Date]),

    "Weekday", FORMAT ([Date], "ddd"),

    "Weeknum", WEEKDAY ([Date]),

    "Qtr", FORMAT ([Date], "\QQ")

)
```

Date	Year	Month	MonthNum	Weekday	Weeknum	Qtr	Weekend/Weekday
7/1/2011 12:00:00 AM	2011	Jul	7	Fri	6	Q3	Weekday
7/2/2011 12:00:00 AM	2011	Jul	7	Sat	7	Q3	Weekend
7/3/2011 12:00:00 AM	2011	Jul	7	Sun	1	Q3	Weekend
7/4/2011 12:00:00 AM	2011	Jul	7	Mon	2	Q3	Weekday
7/5/2011 12:00:00 AM	2011	Jul	7	Tue	3	Q3	Weekday
7/6/2011 12:00:00 AM	2011	Jul	7	Wed	4	Q3	Weekday
7/7/2011 12:00:00 AM	2011	Jul	7	Thu	5	Q3	Weekday
7/8/2011 12:00:00 AM	2011	Jul	7	Fri	6	Q3	Weekday
7/9/2011 12:00:00 AM	2011	Jul	7	Sat	7	Q3	Weekend
7/10/2011 12:00:00 AM	2011	Jul	7	Sun	1	Q3	Weekend
7/11/2011 12:00:00 AM	2011	Jul	7	Mon	2	Q3	Weekday
7/12/2011 12:00:00 AM	2011	Jul	7	Tue	3	Q3	Weekday
7/13/2011 12:00:00 AM	2011	Jul	7	Wed	4	Q3	Weekday
7/14/2011 12:00:00 AM	2011	Jul	7	Thu	5	Q3	Weekday
7/15/2011 12:00:00 AM	2011	Jul	7	Fri	6	Q3	Weekday
7/16/2011 12:00:00 AM	2011	Jul	7	Sat	7	Q3	Weekend
7/17/2011 12:00:00 AM	2011	Jul	7	Sun	1	Q3	Weekend
7/18/2011 12:00:00 AM	2011	Jul	7	Mon	2	Q3	Weekday
7/19/2011 12:00:00 AM	2011	Jul	7	Tue	3	Q3	Weekday
7/20/2011 12:00:00 AM	2011	Jul	7	Wed	4	Q3	Weekday
7/21/2011 12:00:00 AM	2011	Jul	7	Thu	5	Q3	Weekday
7/22/2011 12:00:00 AM	2011	Jul	7	Fri	6	Q3	Weekday
7/23/2011 12:00:00 AM	2011	Jul	7	Sat	7	Q3	Weekend
7/24/2011 12:00:00 AM	2011	Jul	7	Sun	1	Q3	Weekend
7/25/2011 12:00:00 AM	2011	Jul	7	Mon	2	Q3	Weekday
7/26/2011 12:00:00 AM	2011	Jul	7	Tue	3	Q3	Weekday
7/27/2011 12:00:00 AM	2011	Jul	7	Wed	4	Q3	Weekday
7/28/2011 12:00:00 AM	2011	Jul	7	Thu	5	Q3	Weekday

2. Rank Type

Creating a table with a column named "Sort" and categories labeled as "top," "bottom," or "sort" with values 1 or 2 serves the purpose of introducing a sorting criterion for the data visualization The "Sort" column, with its values indicating the desired sorting behavior, allows users to dynamically control how data is presented. For instance, assigning "1" to "top" might indicate sorting in ascending order, while "2" for "bottom" could signify descending order. Additionally, the category "sort" could be utilized to maintain the default sorting behavior. This customization provides users with a convenient way to tailor the sorting dynamics of their visualizations, offering a more interactive and user-centric experience when exploring and analyzing data in Power BI reports.

SELECT	SORT
TOP	1
BOTTOM	2