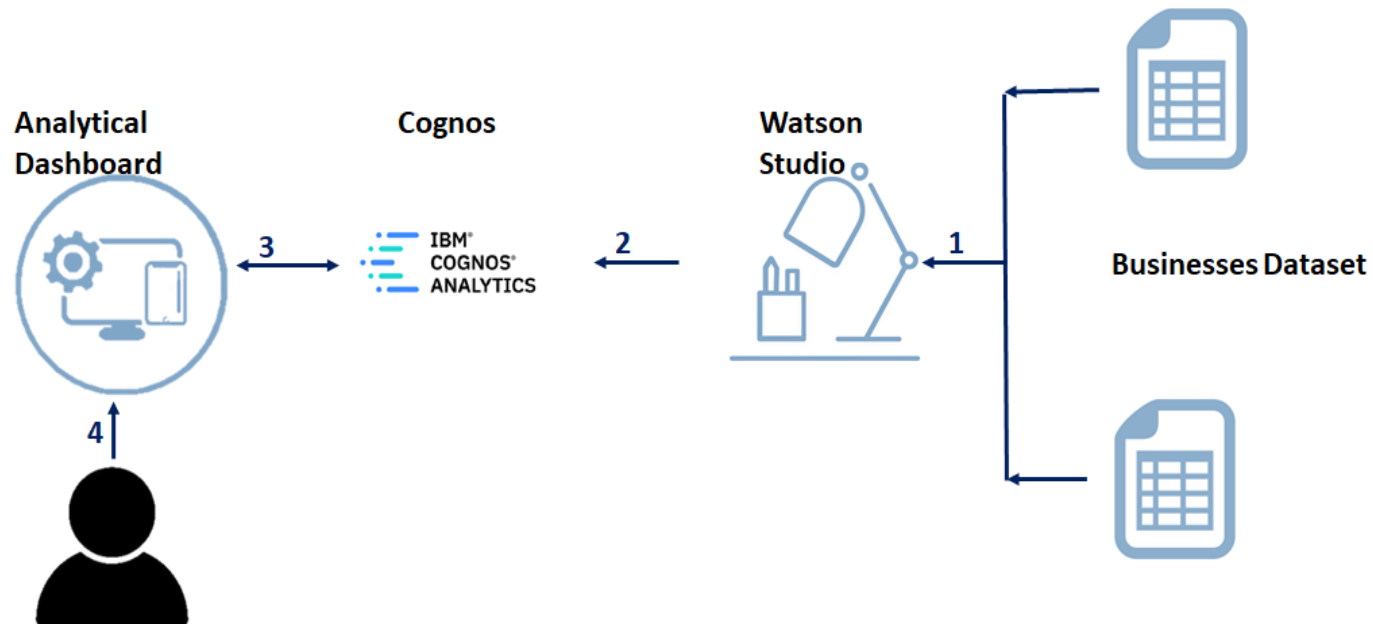


# A

## NALYTICS TOOL FOR ECOMMERCE BUSINESSES



# TASKS

## 1) Pre- Requisites

- IBM Academic Initiative Account and IBM Cloud Account
  - STATUS: Completed
- Download the Watson Studio Desktop
  - STATUS: Completed
- Datasets
  - STATUS: Downloaded Kaggle Datasets

## 2) Dataset

- Business Dataset from Kaggle considered for analysis(Expected to be used):
  - <https://www.kaggle.com/juhi1994/superstore>

'Row ID' - This is nothing but Serial No.

'Order ID' - ID created when a product order is placed.

'Order Date' - Date on which a customer places his/her order.

'Ship Date' - Date on which the order is shipped.

'Ship Mode' - Mode of shipment of each order.

'Customer ID' - ID assigned to each customer who places an order.

'Customer Name' - Name of Customer.

'Segment' - Section from where the order is placed.

'Country' - Country details of this data set. We are looking only for US store data.

'State' - States of US are listed here.

'Postal Code' - pin code

'Region' - grouped into region wise

'Product ID' - Product ID of each product

'Category' - Category to which each product belongs to.

'Sub-Category' - Sub-Category of each Category

'Product Name' - Name of products.

'Sales' - Selling Price of each product.

'Quantity' - number of quantity available for a particular product.

'Discount' - Discount available on each product.

'Profit' - Profit gained on each product.

### **3) Create An IBM Academic Initiative and Cloud Account**

- Details
  - STATUS: Completed

### **4) Download The Watson Studio Desktop Software**

- Details
  - STATUS: Completed
  - Registered mail ID: si2021ibm01948@smartinternz.com



## **Steps To Be Followed To Complete The Project**

- ⇒ Launch Cognos Analytics in cloud software
- ⇒ Upload data files
- ⇒ Create Visualizations to provide insights
- ⇒ Create an analytical dashboard and make it available for end User

# BUILDING MY PROJECT

👉 Create & Launch Cognos Analytics Service

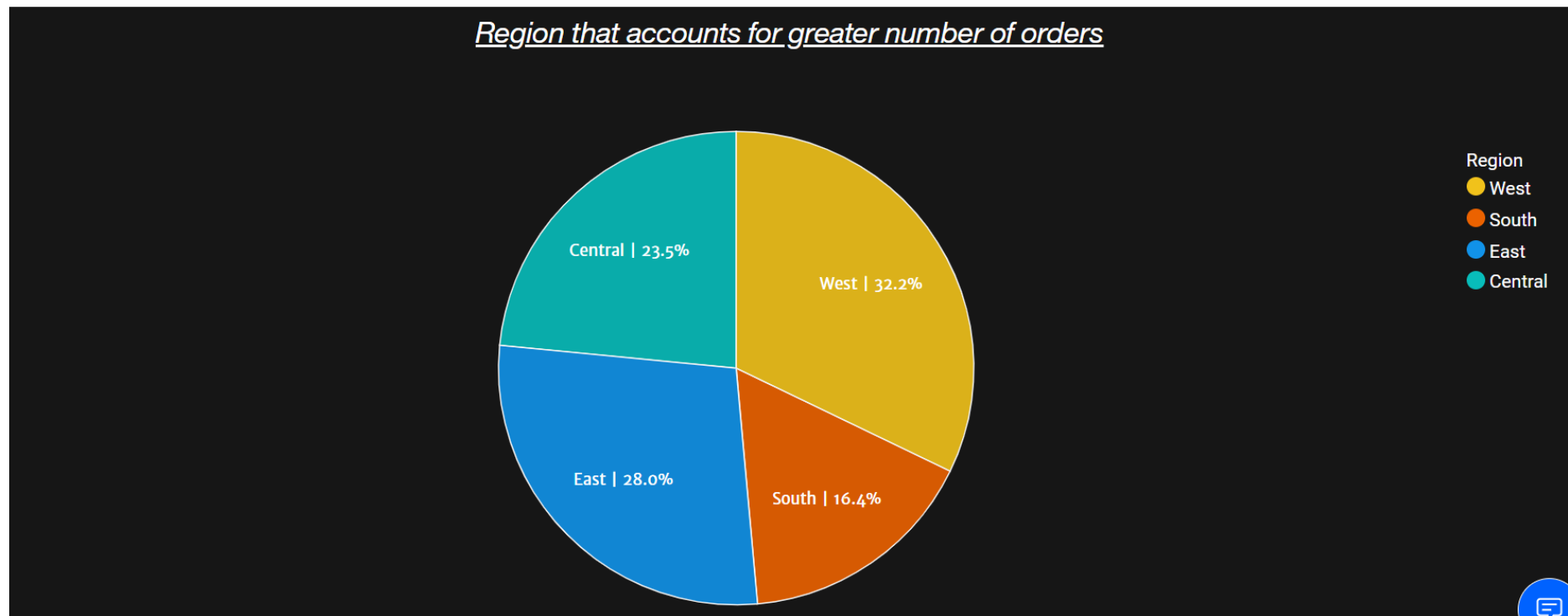
👉 Launch Cognos Analytics in cloud software

👉 Start Building Your Dashboard

With the increase in consumer demand , the E-commerce space has boomed. This also lead to an increase in fierce competition in today's online marketplace. The ecommerce industry sells a diverse product line of grocery items and merchandise products, such as food, pharmaceuticals, apparel, games and toys, hobby items, furniture and appliances. The analysis of such industry is of great importance as it gives insights for the sales and profits of various products.

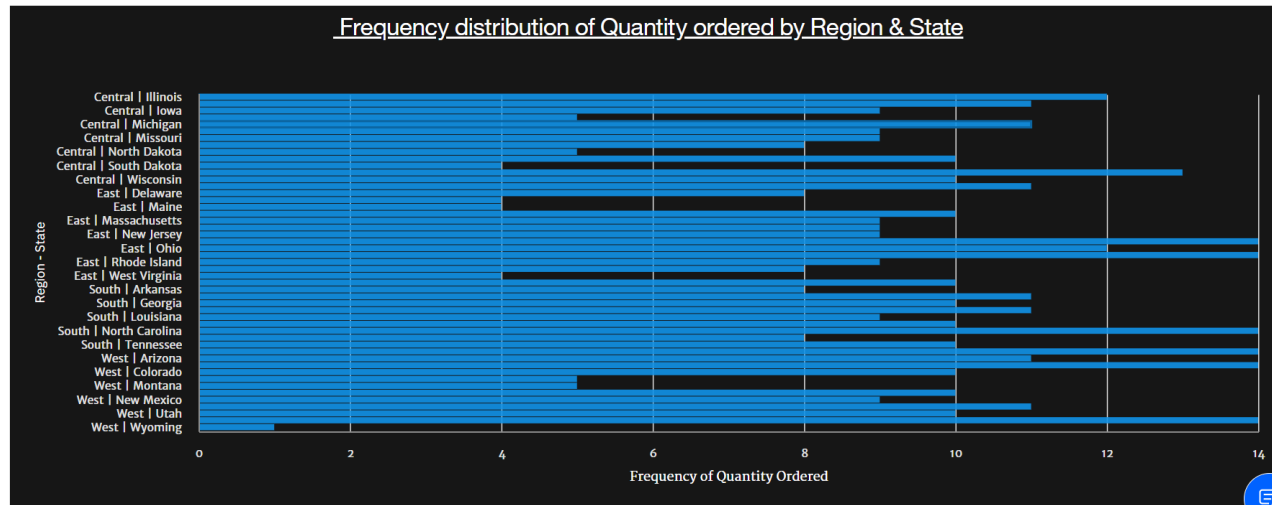
The objective is to develop an Analytical Dashboard where the owner/user will understand the growth/potential of the business in the market by analyzing the various factors affecting the current market demand. Statistics such as follows can be worked upon -

*1. Region that accounts for greater number of orders.*

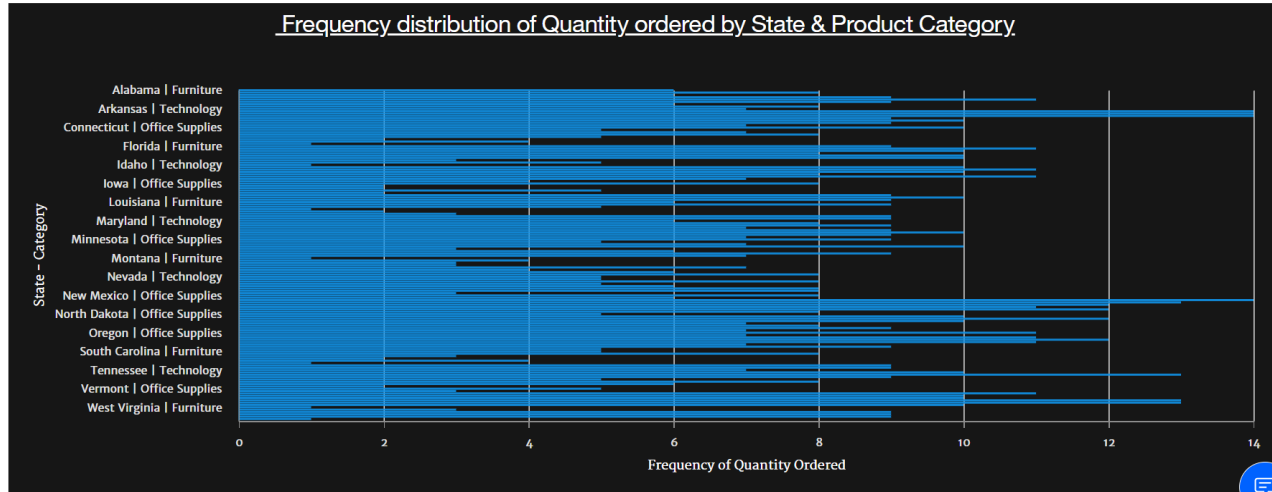


The pie chart visualization helps us to see which regions account for greater percentage of orders(West) and focus the future strategies to gain better order results from other regions as well which are currently slow on the order rate(South).

## 2. Frequency distribution of quantity ordered.

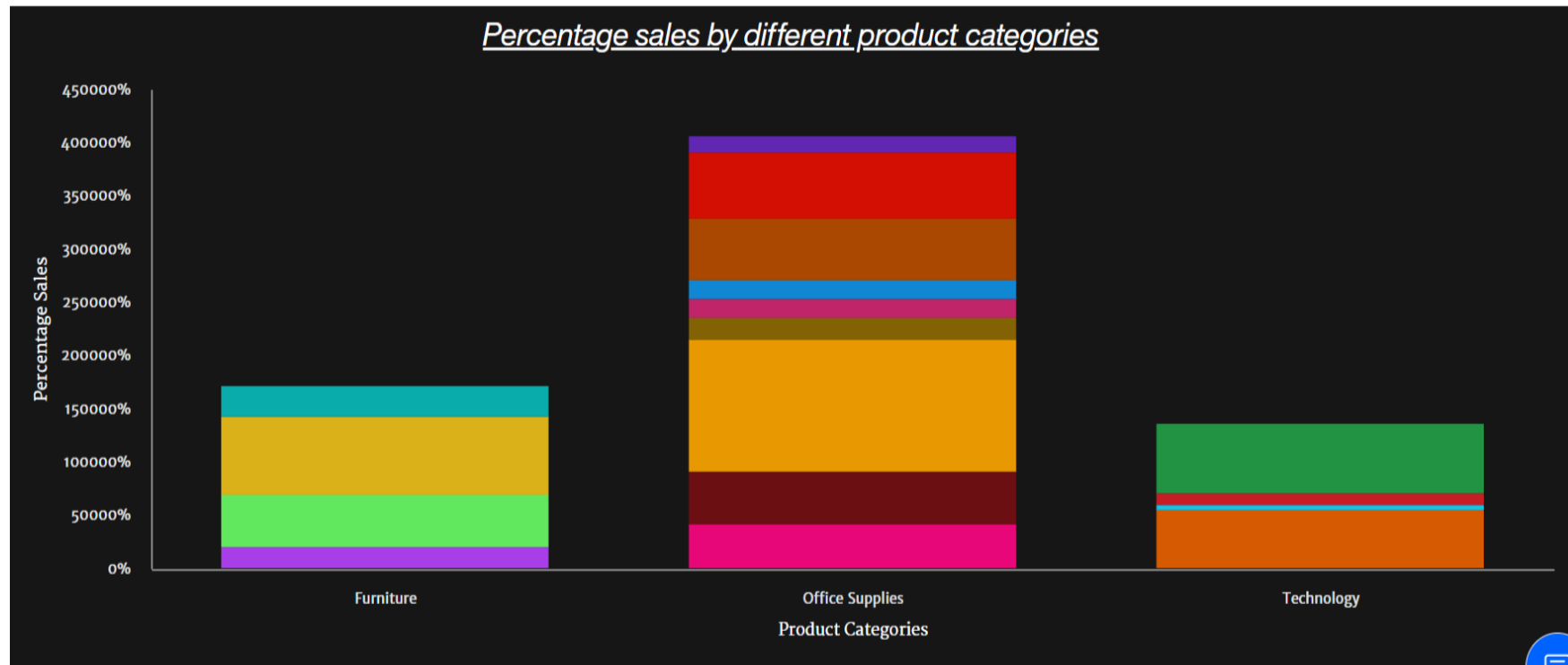


This frequency distribution first drills through the Regions and States within where greater quantity is being ordered. For example, we see, in the South Region- Louisiana accounts for 9 distinct order quantity. If a person in this same region orders item XYZ more frequently, this product might be recommended to other users from same region. This type of insight helps owners in acquiring and retaining more and more customers.



This frequency distribution further drills down to give insights on the product categories which are being mostly ordered in the States. For example, in the state of Louisiana, the product category which majorly accounts for the orders is Furniture. This helps us to sell more of the same or different product categories according to the needs of customers, thus enhancing product recommendation process for customers as well.

### 3. Percentage sales by different product categories



This visualization helps to narrow down the best selling products, focus marketing and selling strategies to sell more of other product categories as well. Here we can see how Office supplies is the best selling product category.

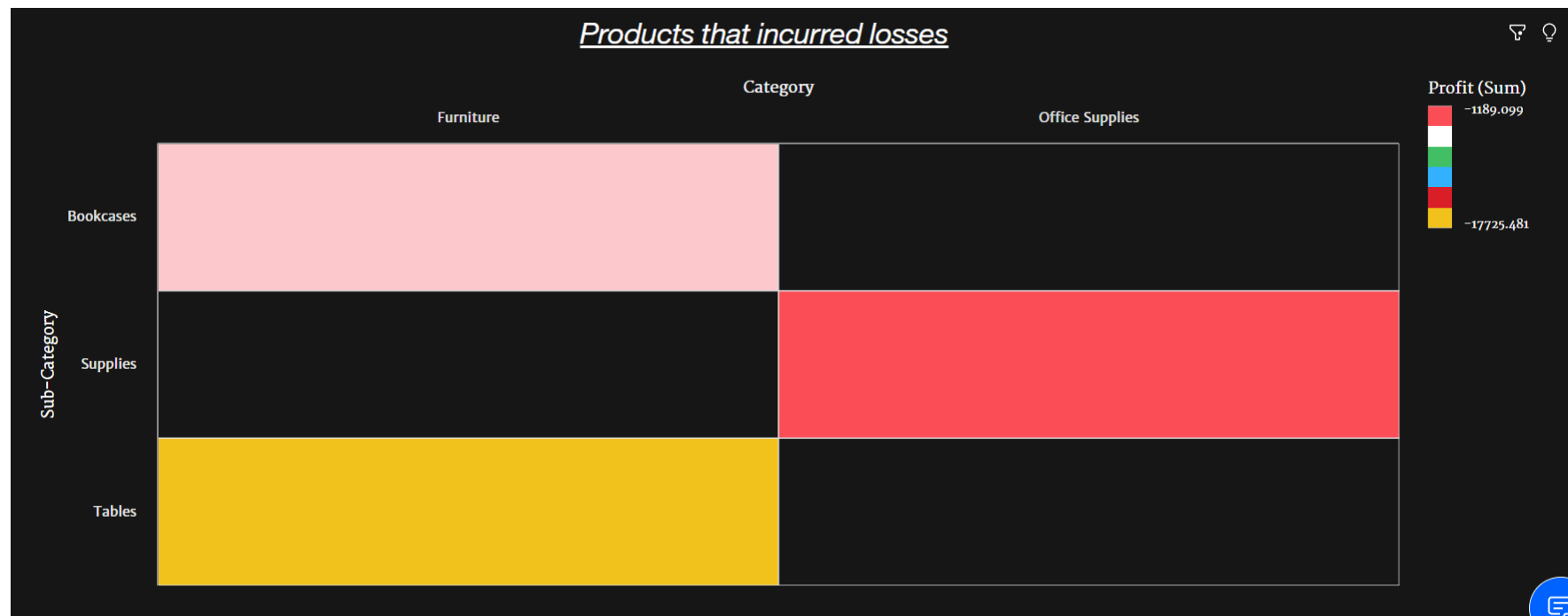
#### 4. Profitable products or their sub products in last few years



This heatmap visualization shows the total profits generated by different product categories and their sub categories in each year. As already highlighted in above visualization, Office supplies are the front runners in each years' profit generation. Here we can further see the individual profits generated by the sub-categories in each year and focus on different strategies to gain more profit from all the sub-categories in every upcoming years and quarters.

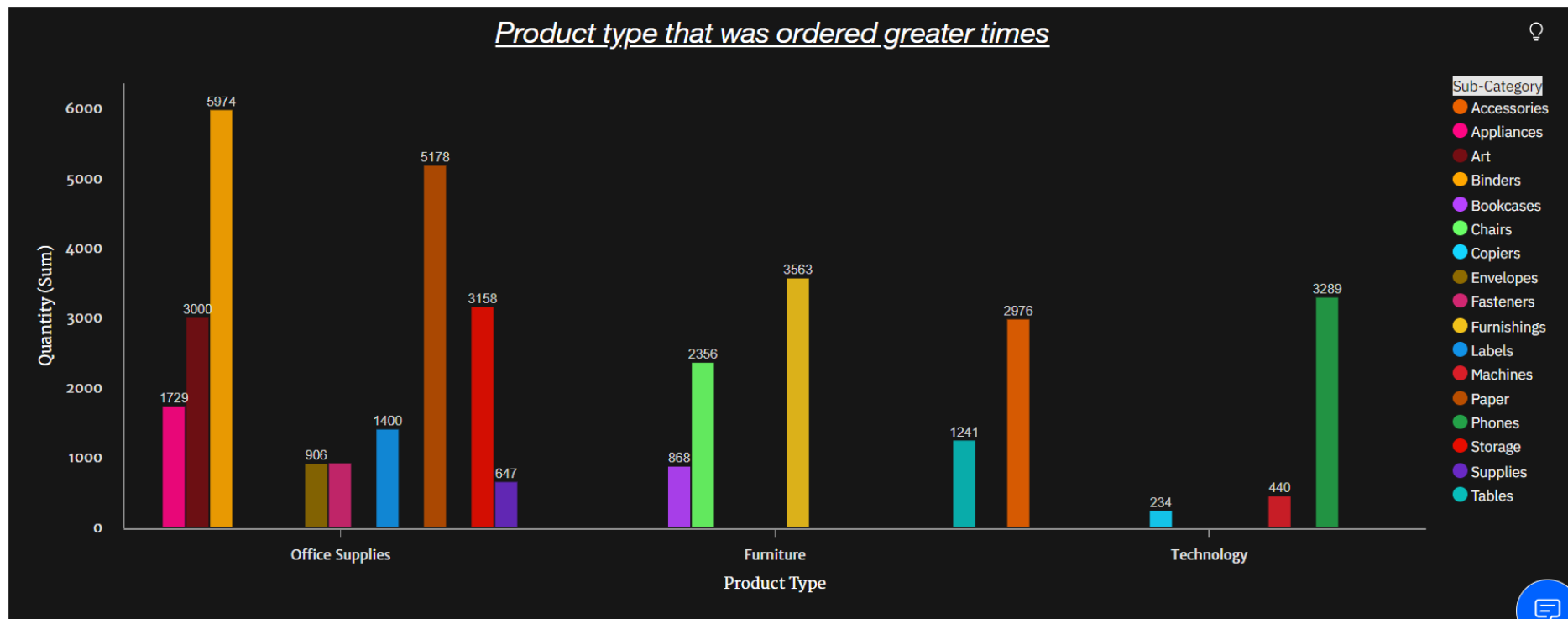


### 5. Products that incurred losses



This heatmap helps us gain insights to which products are incurring losses and change the selling patterns to adjust the losses with profit on the same products. Using the legend on the right side, we see that major losses are incurred on the sale of Tables in the Furniture category.

## 6. Product type that was ordered greater times



This visualization helps to see the total quantity ordered for product categories and sub categories in the same place. We are able to see that Furnishings and Paper are the most ordered product sub-categories within the broader product category of Office Supplies. We gain insights on poorly performing sub-categories and can devise new plans for increasing their sales as well.

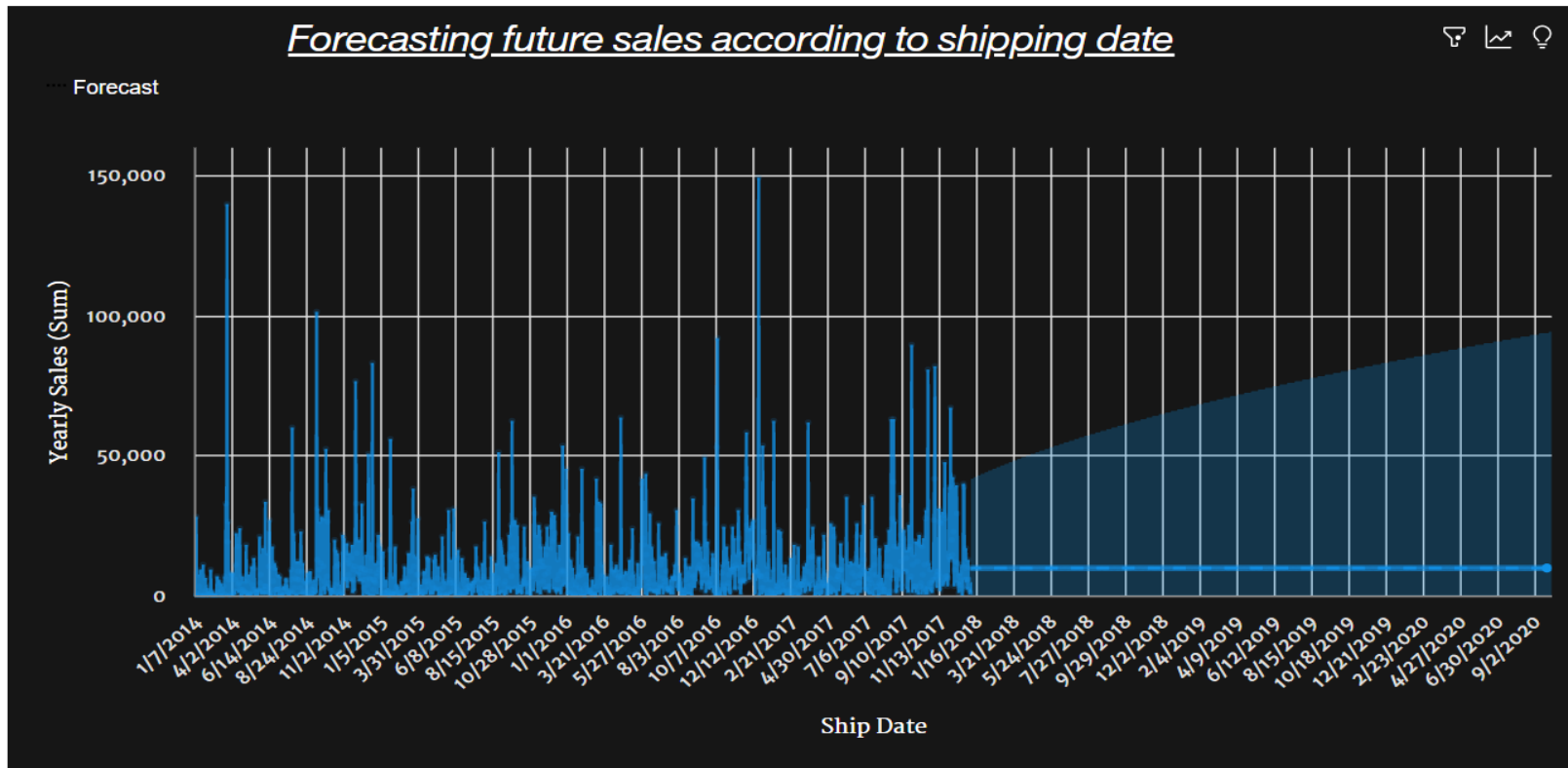
## 7. Yearly sales for various states

<u>Yearly Sales(Product wise) for various States</u>											
	h Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Summary
2014	1.62K	229K	39.2M	238K	0K	7.12M	10.5M	0K	281K	0K	3.46B
2015	0K	1.41M	26.8M	184K	41K	2.12M	6.44M	0K	786K	0K	3.89B
2016	0K	389K	42M	69.3K	77.1K	6.78M	8.94M	0K	2.28M	6.41K	6.01B
2017	36.9K	4.99M	49.1M	133K	13.5K	1.23M	52.2M	21.8K	822K	0K	9.08B
2018	0K	64.784	9.31K	0K	0K	0K	859.14	0K	0K	0K	779K
Summary	55.3K	20.9M	634M	2.46M	446K	63.1M	261M	21.8K	14.9M	6.41K	87B

This crosstab visualization gives us two types of summaries-

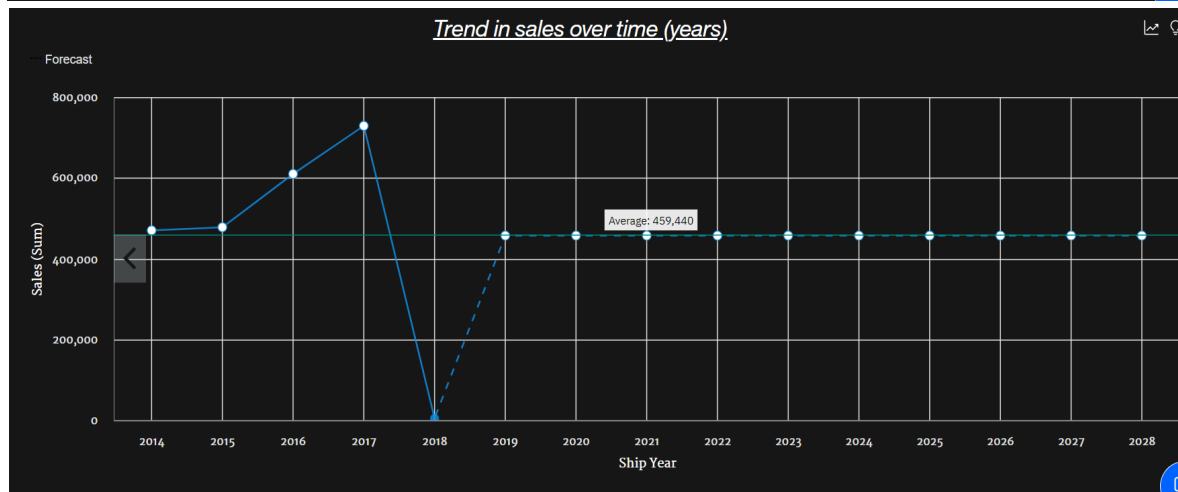
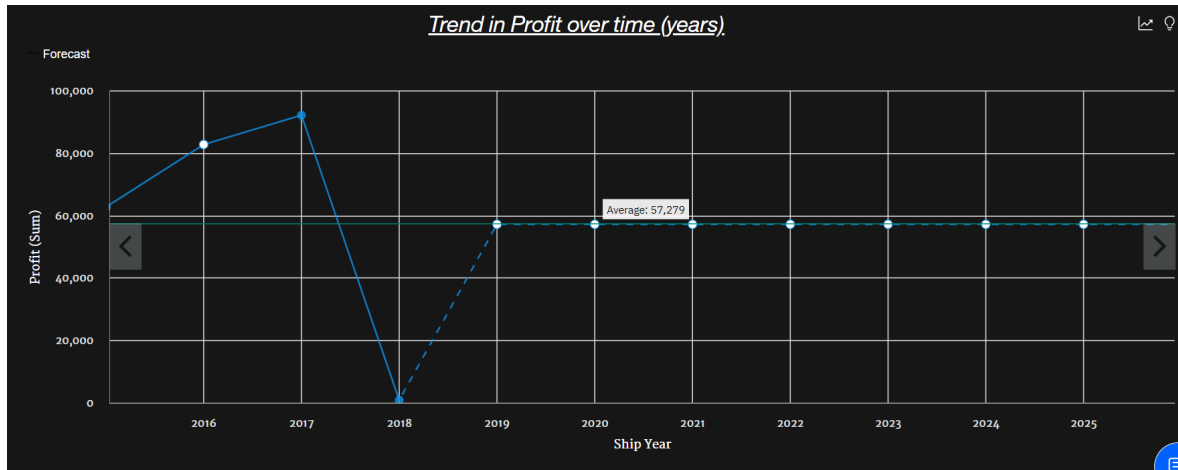
1. The horizontal summaries gives us the yearly sales summation for all the states and helps us see if our efforts are paying off with increased sales data for each passing year.
2. The vertical summation helps us see how each country has performed over the years and how we can strategize better to draw in more business in the upcoming years.

#### 8. Forecasting future sales according to shipping date



We have used the forecasting feature on IBM Cognos to forecast the future sales from the available data of shipping dates of the past five years. Even though we see the average sales forecast for the next years, but we see a significant increase in the forecast hover for the sales for upcoming shipping dates.

### 9. Trend in profit/sales over time (years/months/quarters)



Since the dataset contains data for profit and sales for lesser number of shipping dates in 2018, we see a downward trend, but the forecasting tool of IBM Cognos rightly predicts a significant increase in the sales from the year 2019 and a positive trend for the following 10 years.

## **Business Impact and Future Scope of the Analytical visualizations**

The proposed analysis gives insights for the sales and profits of various products. This helps the e-commerce business identify various aspects of the shopping pattern and take measures if required for gaining the advantages. The solution will gather all the statistical info and help in showing the complete analysis at a single place. This will also show the following impacts on business:-

- increase customer retention
- increase revenue
- help target and segment audience as per their products
- improve overall productivity
- get ahead of business rivals

Along with meeting customer requirements, providing best service will lead to good word of mouth and increase customer loyalty of the business. This will boost the business from societal point of view.

Future scope of this analytical dashboard and visualizations will be integrating insights from different dashboards having different focus points to gain insights to grow the business and target other product ranges and segments.