
Challenge Title : Hack Challenge 2021

Bussiness Challenge : Analytics Tool For Ecommerce businesses

Project ID : SPS_PRO_2294

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Team Size : 1

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1. INTRODUCTION

1.1 Overview

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.

1.2 Purpose

To develop an Analytical Dashboard where the owner/user will understand the growth/potential of the business in the market. With this analysis, the e-commerce business can identify various aspects of the shopping pattern and take measures if required.

2. LITERATURE SURVEY

2.1 Existing problem

Raw Data is very complicated to understand. It is be usually present in the excel sheet. In order to make sense of the data to take useful decisions, the data that is present in these excel sheets has to be interpreted. This is very tedious and it is also difficult to analyse the data and identify the pattern or trend in it.

Disadvantages of the traditional methodology for data analysis are:

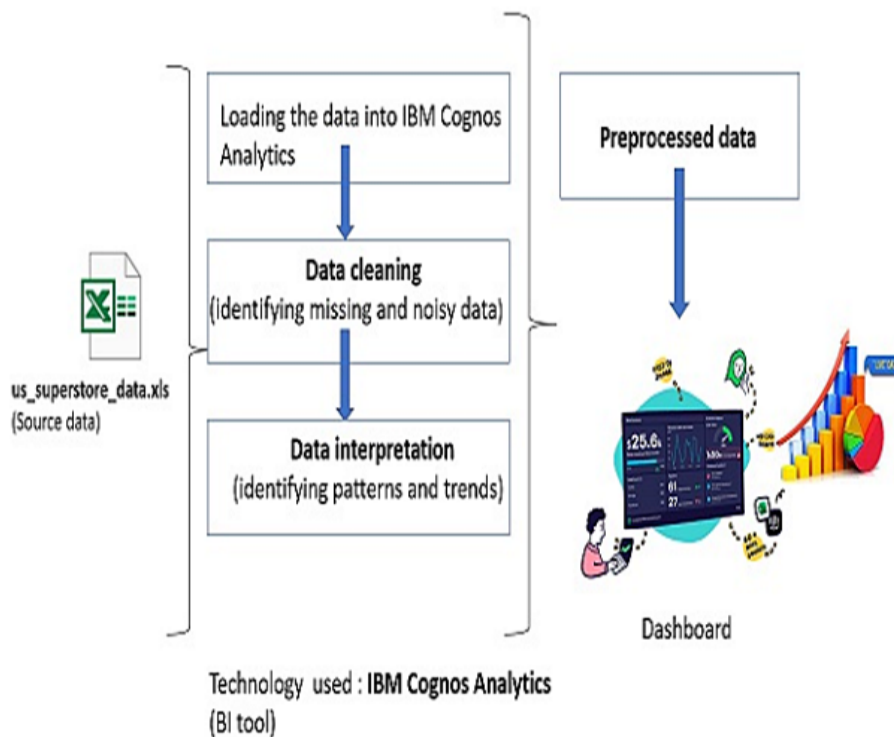
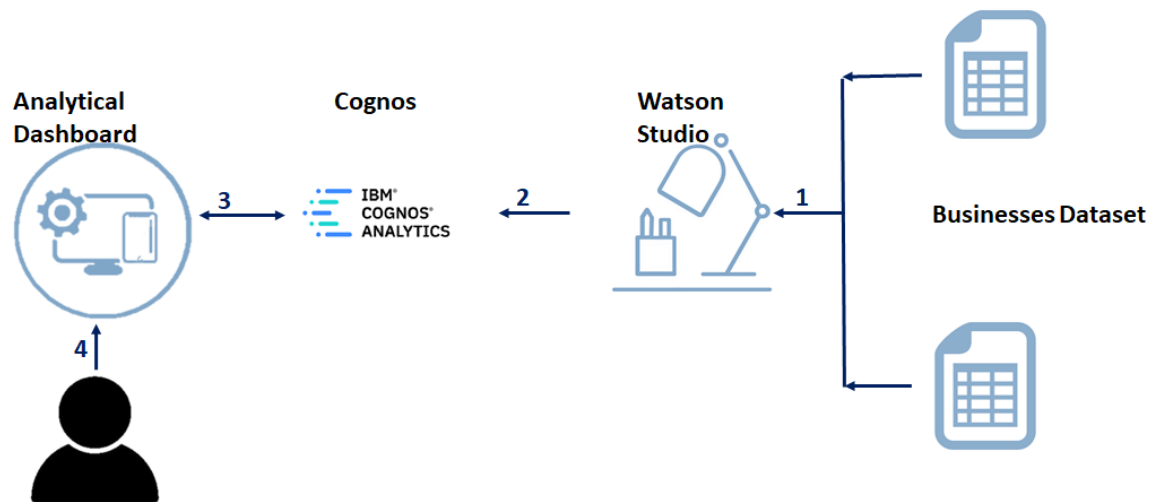
- It is very difficult to make complex data analysis.
- Quick analysis of data is not possible.
- It may not be accurate.
- It limits visibility when creating complex models.
- It makes collaboration more challenging.
- It is inefficient in managing templates and data entry.
- Keeping track of multiple spreadsheets is challenging.

2.2 Proposed solution

Dashboard enables us to view the performance at a glance in various fields. It integrates sales and marketing performance and gives perfect insights. The real time business dashboard will save enterprise time, money and provides more clarity. It provides clear, reliable and up-to-date information to make important business decisions. By using dashboard marketing assistant or staff doesn't need to spend time on various excel operations to get insights as dashboard provides updates automatically.

3. THEORETICAL ANALYSIS

3.1 Block Diagram



3.2 Hardware / Software designing(requirements)

Hardware requirement : PC/Laptop with Network Connection

Software requirement: IBM Cognos Analytics, IBM Cloud, IBM Watson Studio.

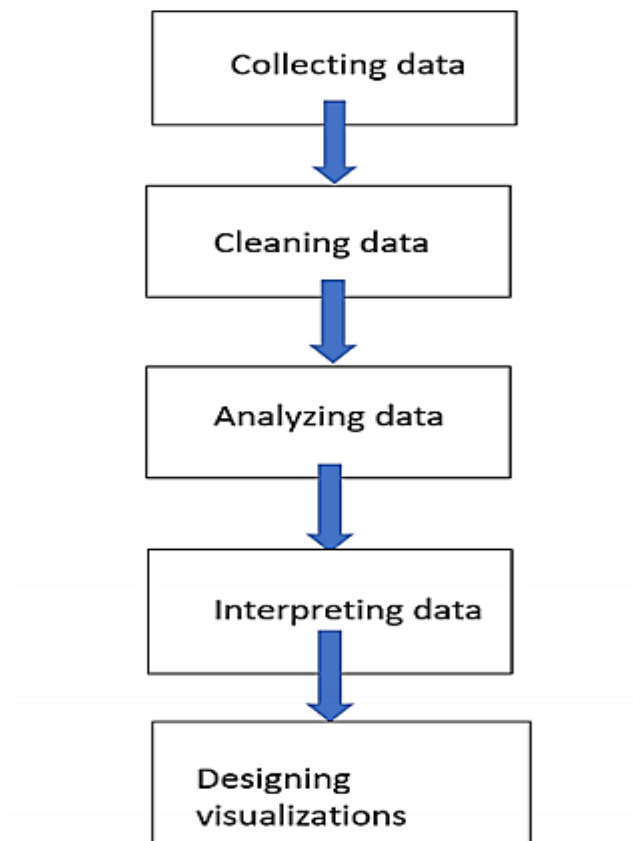
4. EXPERIMENTAL INVESTIGATIONS

DATASET: US Superstore data.xls

Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Country	City	State	Postal Code	Region	Product ID	Category	Sub-Category	Product Name	Sales	Quantity	Discount	Profit
1	CA 2016 152156	11/9/2016	11/11/2016	Second Class	CG 12520	Claire Galt	Consumer	United States	Henderson	Kentucky	42420	South	FUR-BD 10001	Furniture	Bookcases	Burn Somerset	261.96	2	0	41.9136
2	CA 2016 152156	11/9/2016	11/11/2016	Second Class	CG 12520	Claire Galt	Consumer	United States	Henderson	Kentucky	42420	South	FUR-CA 10000	Furniture	Chairs	Hon Delane Pj	731.94	3	0	219.582
3	CA 2016 138688	6/12/2016	6/16/2016	Second Class	DV 13045	Darrin Van Huf	Corporate	United States	Los Angeles	California	90036	West	OFF-IA 10000	Office Supplies	Labels	Self Adhesive J	14.62	2	0	6.8714
4	US 2015 108966	10/11/2015	10/16/2015	Standard Class	SO 20335	Sean O'Donnel	Consumer	United States	Fort Lauderdale	Florida	33311	South	FUR-TA 10000	Furniture	Tables	Bretford CR45C	957.5775	5	0.45	383.031
5	US 2015 108966	10/11/2015	10/16/2015	Standard Class	SO 20335	Sean O'Donnel	Consumer	United States	Fort Lauderdale	Florida	33311	South	OFF-ST 10000	Office Supplies	Storage	Eldon Fold 'N	22.368	2	0.2	2.5164
6	CA 2014 115812	6/9/2014	6/14/2014	Standard Class	BH 11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	FUR-FU 10001	Furniture	Furnishings	Eldon Express	48.86	7	0	14.1694
7	CA 2014 115812	6/9/2014	6/14/2014	Standard Class	BH 11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	OFF-AR 10002	Office Supplies	Art	Newell 332	7.28	4	0	1.9658
8	CA 2014 115812	6/9/2014	6/14/2014	Standard Class	BH 11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	TSC-PH 10002	Technology	Phones	Motor 5320 IP F	907.112	6	0.2	90.7132

- It consists of orders in different states in the regions of South, Central, West, East.
- It also contains the details of several products with the details of the categories. Each category has a list of sub-categories in it.
- The sales details are provided in dollars along with the quantity ordered, discount, profit/loss details.
- In the dataset the details of 9.99K orders are provided. All the orders are of United States corresponding to different states in a particular region.
- The details of loss is included in the profit field with negative value.
- Out of the total number of orders most of them correspond to west of United States. Details of several states in the four regions are also provided.

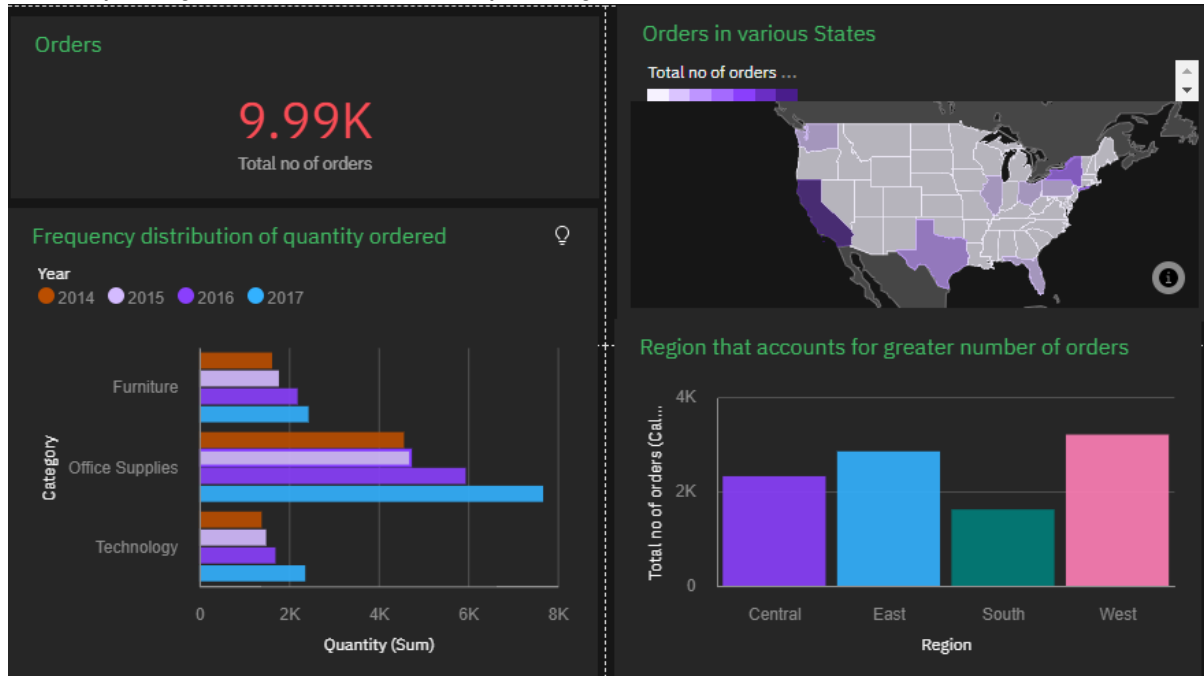
5. FLOWCHART



6. RESULT

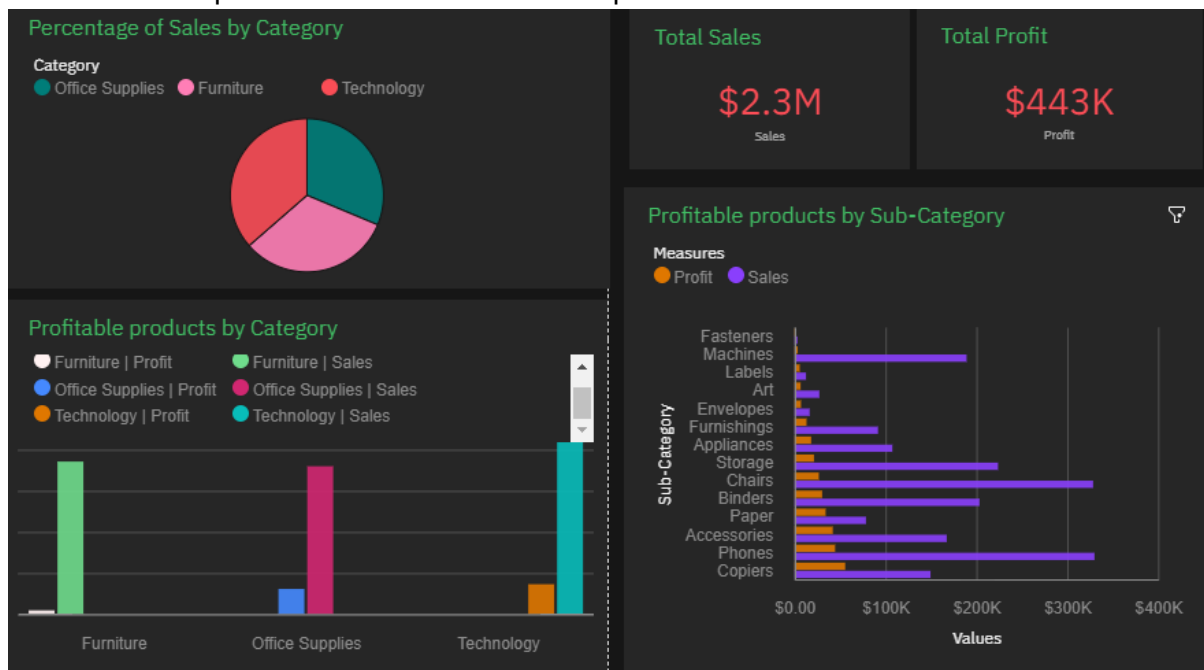
1. Finding Regions that account for greater number of orders:
and

2. Frequency distribution of quantity ordered:



3. Percentage Sales by different product categories:
and

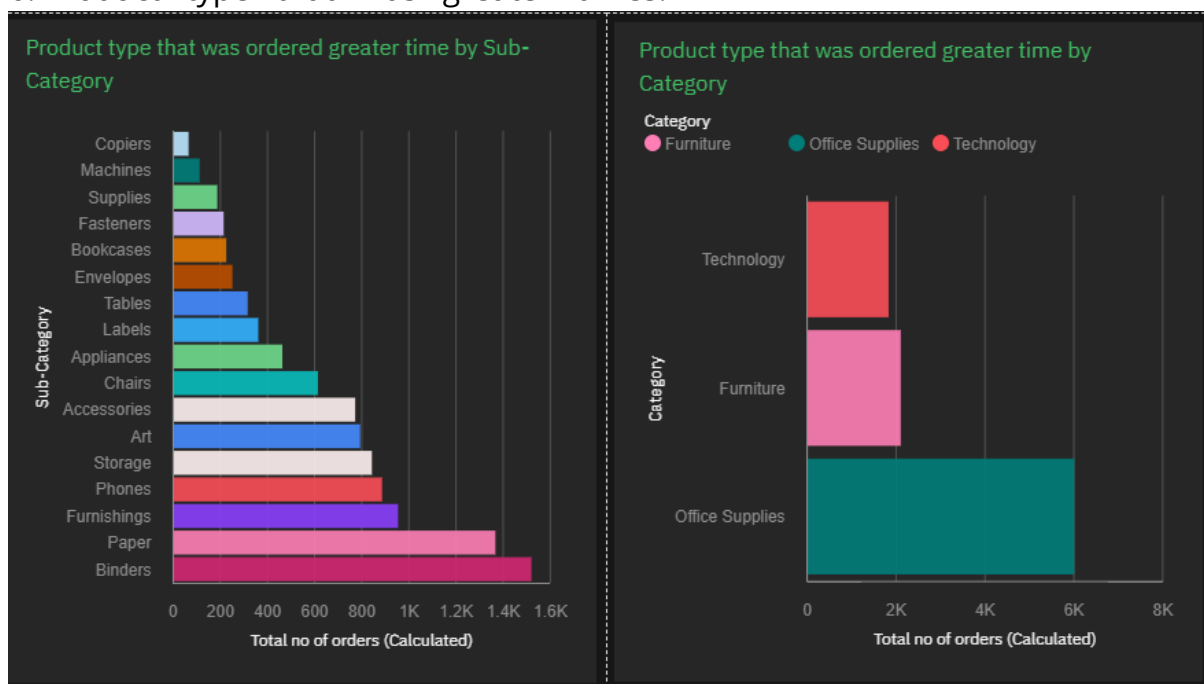
4. Profitable products and their sub-products:



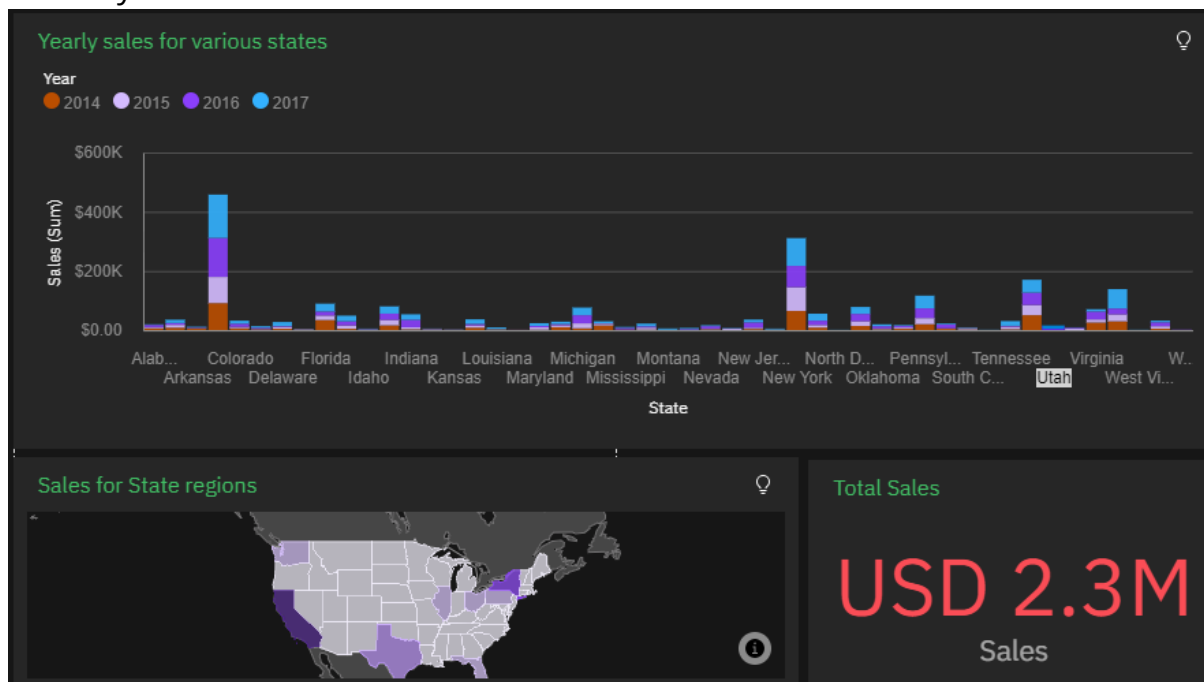
5. Products that incurred losses:



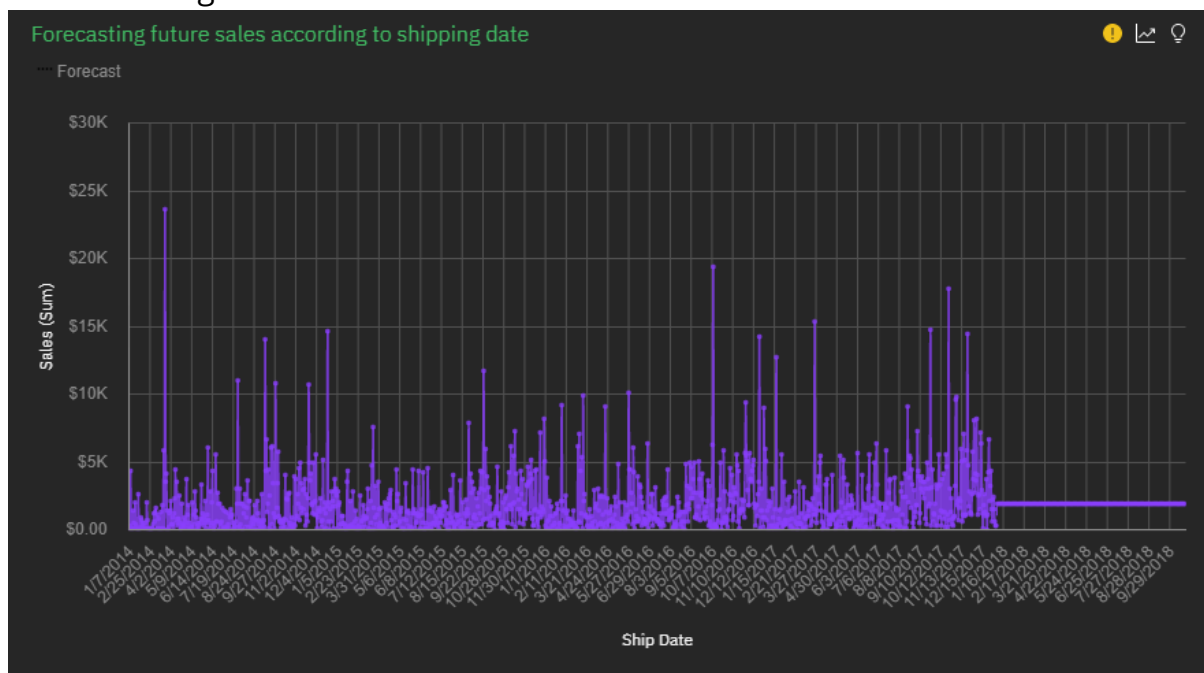
6. Product type that was greater times:



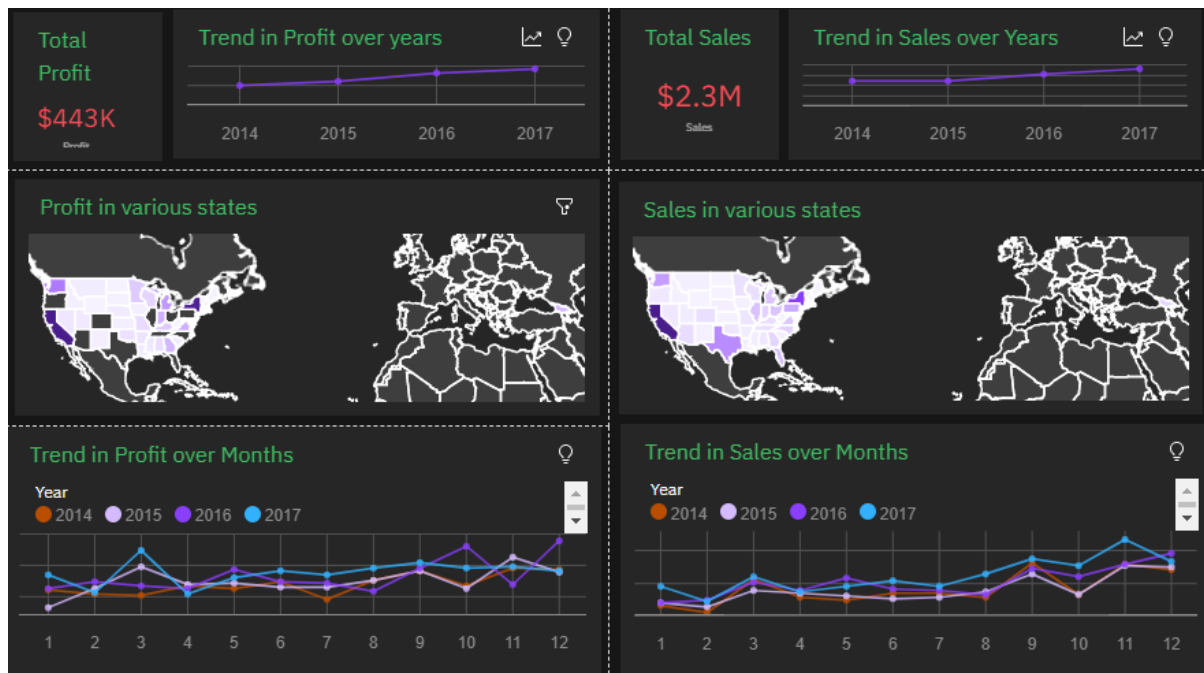
7. Yearly Sales for various states:



8. Forecasting future sales:



9. Trend in Profits/Sales overtime:



7. ADVANTAGES & DISADVANTAGES

The Analytics tool that is being developed for the e-commerce business is Analytical dashboard.

7.1 Advantages

- It monitors the ecommerce performance without missing even a small detail.
- This dashboard gives the ecommerce team a clear overview about various aspects.
- It helps in tracking and analyzing the core elements in real time on day-to-day basis.
- Using various metrics it is possible to potentially track various aspects of business including details of profitable products, regions, sales trends, order details, products that incurred loss.
- It can also be used to forecast the future sales based on the analysis of current sales.
- It also provides the functionality of filtering, sorting and formatting of data.
- With the help of this analysis ecommerce businesses can identify various aspects of business and trends and take decisions appropriately.

7.2 Disadvantages

- Total cost of IBM Cognos is more than other tools.
- It has minimal forecasting capability.
- May not work smoothly with large datasets.

8. APPLICATIONS

Creation of dashboard using IBM Cognos Analytics can be done for analyzing the data related to e-commerce or retail. Analytical dashboard is the absolute solution to visualize the data with ease. Dashboard gives a huge benefit to any organization. Dynamic dashboards enable easy and flexible access to the required information to many people. Dashboard provides stunning visualizations of data in the real time. It depicts patterns, relations and other findings. Satisfying the customer needs is very important for any ecommerce business. For this analysis of the industry in various aspects like sales and profit is very helpful.

9. CONCLUSION

Analytical dashboards are the most suitable and stands to be the perfect solution of summarizing data. Usually, data is very large and in order to take decisions on such vast data, visualizations are generally used. The pictorial representation of data is very easy to understand and interpret. Analytical dashboards provide trends of various metrics over time, highly interactive and enable deeper analysis.

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10. FUTURE SCOPE

In future dashboards with multiple, disparate data streams with high computing power can be built which can be used to handle volume of big data and artificial intelligence to make sense of it. The use of data visualization may increase both for low and high complexity analytics. Use of real time dashboards can lead to updations in few milliseconds. And for an ecommerce portal prioritizing and solving issues at right time is vital and can be done with dashboard.

11. BIBLIOGRAPHY

References:

1. <https://www.kaggle.com/juhi1994/superstore-analysis>

2.

<https://www.ibm.com/docs/en/cognos-analytics/11.1.0?topic=stories-get-started-dashboards>