1. INTRODUCTION

1.1 Overview

With the increase in consumer demand, the E-commerce space has boomed. This also led to an increase in fierce competition in today's online marketplace. The e-commerce 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 an industry is of great importance as it gives insights into the sales and profits of various products.

1.2 Purpose

The object of this challenge is to develop an Analytical Dashboard where the owner/user will understand the growth/potential of the business in the market.

2. LITERATURE SURVEY

2.1 Existing problem

Analytics allow you to quantify the effects of making a change to your marketing strategy, and that's invaluable to the process of improving and optimizing online marketing campaigns. The biggest benefit of utilizing proper analytics is being able to identify strengths and weaknesses.

2.2 Proposed solution

The object of this challenge is to develop an Analytical Dashboard where the owner/user will understand the growth/potential of the business in the market. So he can find out statistics such as –

- A region that accounts for a greater number of orders
- Frequency distribution of quantity ordered
- Percentage sales by different product categories
- Profitable products or their sub-products in the last few years
- Products that incurred losses
- Product type that was ordered greater times
- Yearly sales for various states
- Forecasting future sales according to shipping date.
- The trend in profit/sales over time (years/months/quarters).

With this analysis, the e-commerce business can identify various aspects of the shopping pattern and take measures if required.

3. THEORITICAL ANALYSIS

## 3.1 Block diagram Diagrammatic overview of the project.
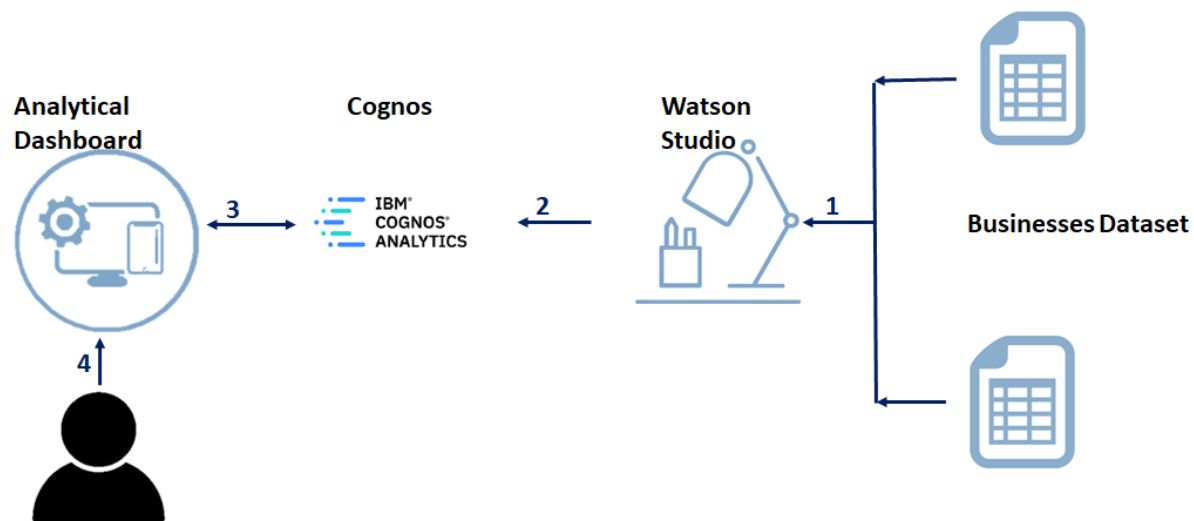
3.2 Hardware / Software designing Hardware and software requirements of the project

- Processor: Minimum 1 GHz; Recommended 2GHz or more.
- Ethernet connection (LAN) OR a wireless adapter (Wi-Fi)
- Hard Drive: Minimum 32 GB; Recommended 64 GB or more.
- Memory (RAM): Minimum 1 GB; Recommended 4 GB or above.
- Internet Connection Required
- Internet Browser (Recommended: Chrome)
- IBM Cognos Anaytics
- IBM Watson Assistant

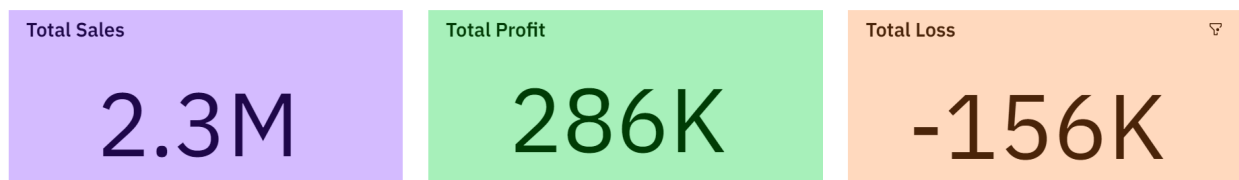# 4. EXPERIMENTAL INVESTIGATIONS

Data analytics can help eCommerce businesses measure the effectiveness of marketing campaigns, inform holistic marketing programs, gain more omni-channel traction, and improve decision-making.

5. FLOWCHART

**ARCHITECTURAL FLOW OF ANALYTICS TOOL FOR ECOMMERCE BUSINESSES**
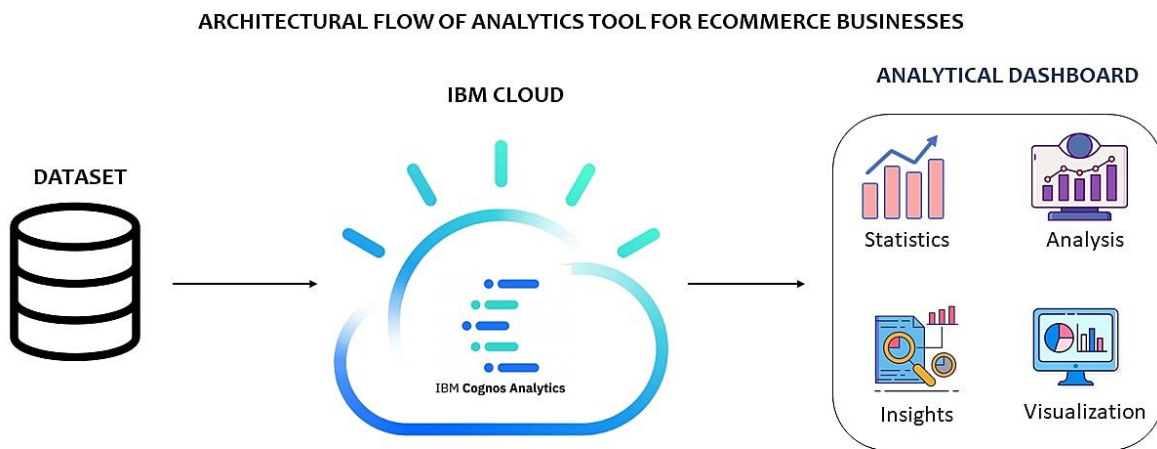
6. RESULT

Final findings (Output) of the project along with screenshots.

Total Sales	Total Profit	Total Loss
2.3M	286K	-156K

Top 3 Regions that accounts for greater number of orders

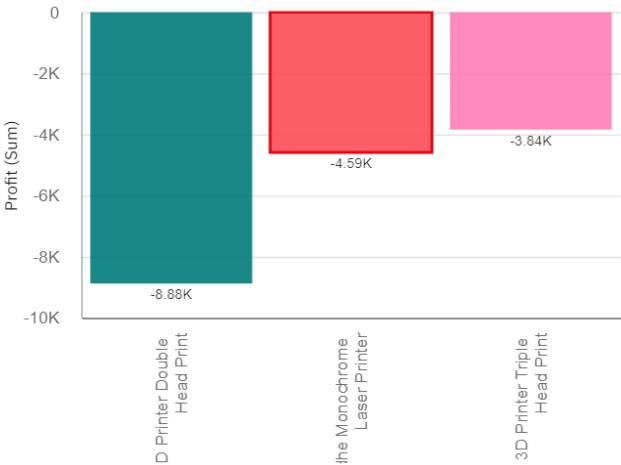| Rank (Quantity)	Region	Quantity ▼
1	West	12.3K
2	East	10.6K
3	Central	8.78K

Frequency distribution of sub-categories with quantity ordered
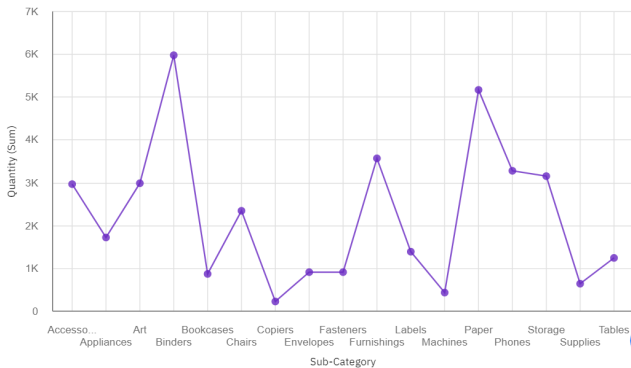
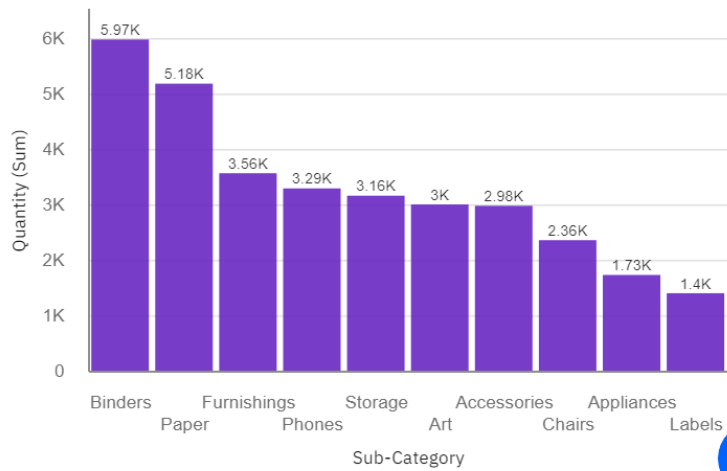## Top 3 Products that incurred losses

Product Name
- ● Cubify CubeX 3D Printer Dou...
- ● Cubify CubeX 3D Printer Tripl...
- ● Lexmark MX611dhe Monochro...

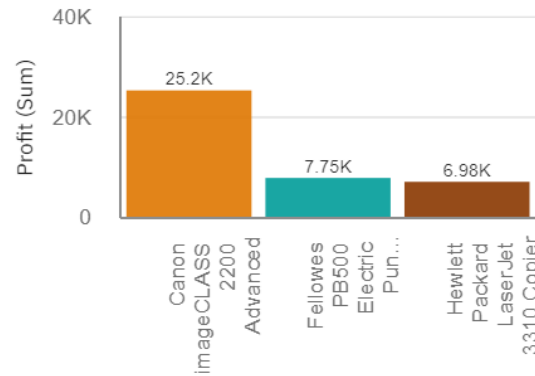## Top 10 Product types that was ordered greater times

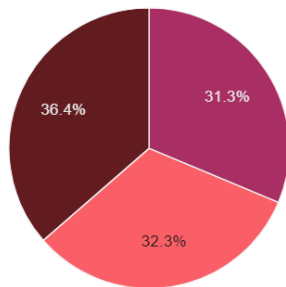## Top 3 Profitable products in last few years

Product Name
- Canon imageCLASS 2200 Ad...
- Fellowes PB500 Electric Punc...
- Hewlett Packard LaserJet 331...

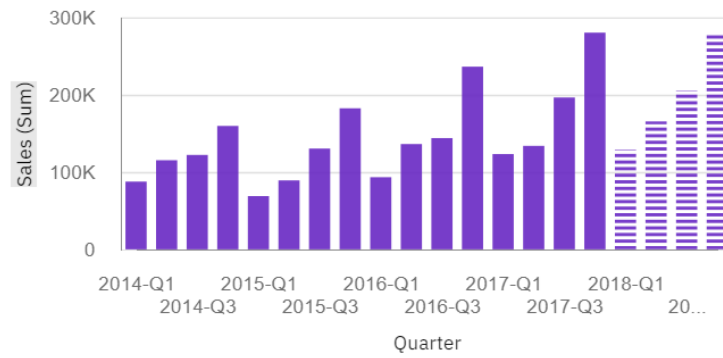## Percentage sales by different product categories

Category
- Office Supplies
- Furniture
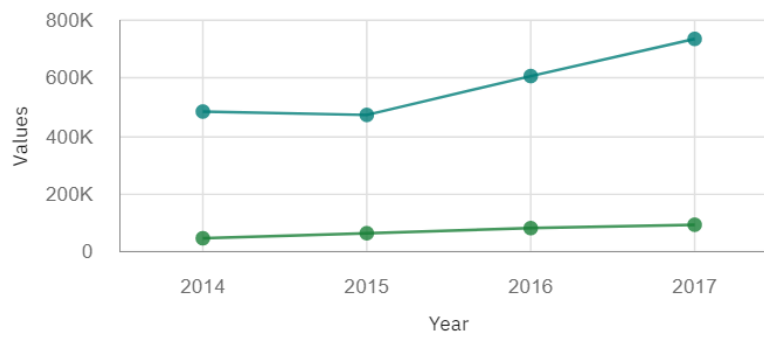- Technology

Forecasting future sales quaterly

☰ Forecast

Sales (Sum)

300K

200K

100K

0

2014-Q1　　2015-Q1　　2016-Q1　　2017-Q1　　2018-Q1　　20...
　　2014-Q3　　2015-Q3　　2016-Q3　　2017-Q3

Quarter

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

Measures
● Sales　● Profit

Values

800K

600K

400K

200K

0

2014　　2015　　2016　　2017

Year

Percentage Sales by Ship Mode

Sales (Sum)

1.5M

1M

500K

0

59.1%

15.3%

5.6%

20.0%

First Class　　　Second Class
　　Same Day　　　　Standard C...
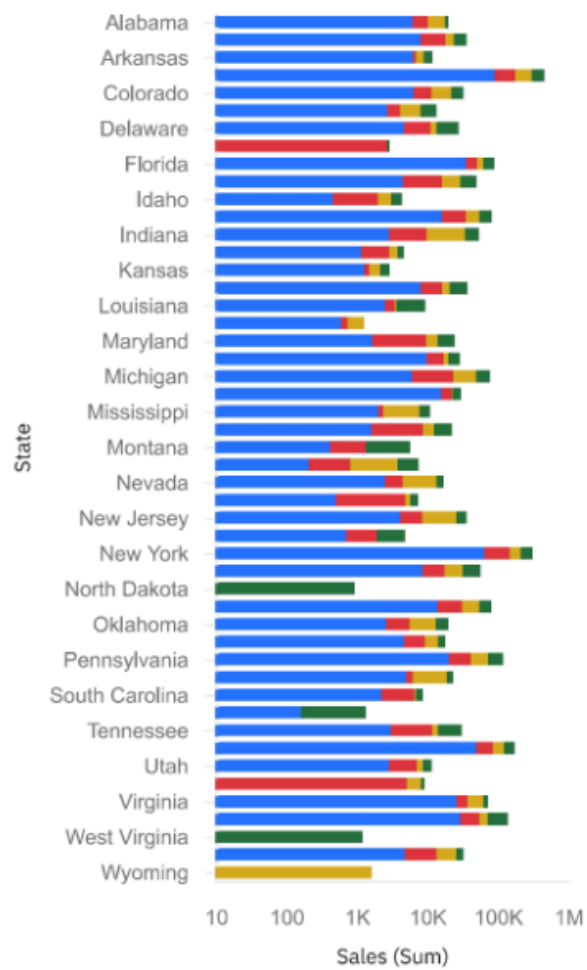
Ship Mode
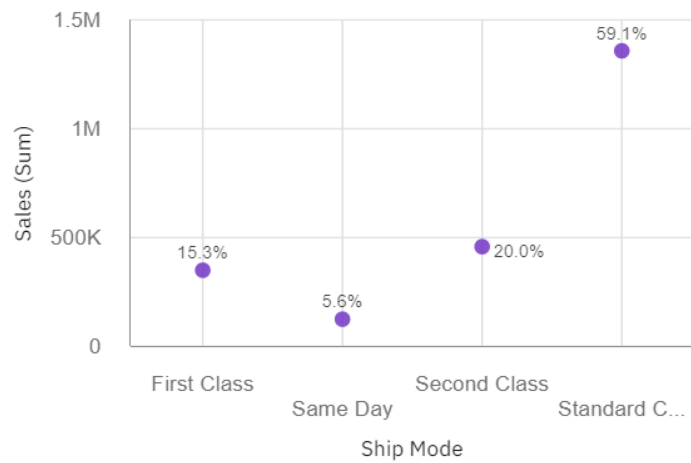
Percentage Sales by Segment
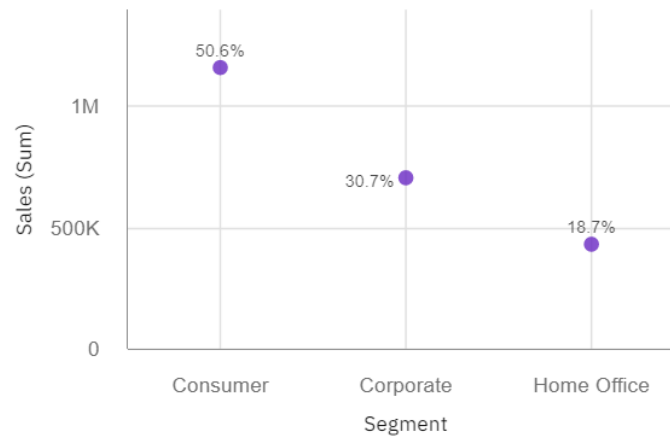
Yearly sales for various states

Year
● 2014　● 2015　● 2016　● 2017

7. ADVANTAGES & DISADVANTAGES

7.1 Advantages

- Track shopper's buying journey. Business is all about figuring out people, especially the customers.
- Personalized experience.
- Improved buyer sentiment analysis.
- Better customer service.
- Optimized pricing.
- Demand forecasting.

7.2 Disadvantages

- This may breach privacy of the customers as their information such as purchases, online transactions, subscriptions are visible to their parent companies. The companies may exchange these useful customer databases for their mutual benefits.
- The cost of data analytics tools vary based on applications and features supported. Moreover some of the data analytics tools are complex to use and require training. This increases cost to the company willing to adopt data analytics tools or softwares.
- The information obtained using data analytics can also be misused against group of people of certain country or community or caste.
- It is very difficult to select the right data analytics tools. This is due to the fact that it requires knowledge of the tools and their accuracy in analysing the relevant data as per applications. This increases time and cost to the company.

8. APPLICATIONS

The areas where this solution can be applied:

- Recommendation Systems.
- Customer Feedback Analysis.
- Price Optimization.

- Customer Lifetime Value Prediction.
- Fraud Detection.
- Inventory Management.
- Warranty Analytics. etc

9. CONCLUSION

It can also be used to respond quickly to emerging market trends and gain a competitive edge over rivals. The ultimate goal of data analytics, however, is boosting business performance.

10. FUTURE SCOPE

The impossible will become possible, and this may well lead to an autonomous decision-making process. Data analytics is expected to radically change the way we live and do business in the future. Already today we use the analytics in our technology devices, for many decisions in our lives.

11. BIBILOGRAPHY

https://www.youtube.com/watch?v=ASGjw8yHA2g&list=PLjlJJFiCdXMJjRW7Jdsvlp9xGcBXD_i

APPENDIX

Source Code:
https://github.com/smartinternz02/SBSPS-Challenge-5388-Analytics-Tool-For-Ecommerce-businesses

App Link: https://e-analytics.herokuapp.com/

Demonstration Video:

https://www.youtube.com/watch?v=5JnaMiw7aIc