INVENTORY MANAGEMENT USING IBM COGNOSANALYTICS

PROJECT REPORT

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Introduction

Overview

This dataset contains a lot of historical sales data of a Brazilian top retailer. Basic questions of every retailer like how much inventory should they carry?

As too much inventory means higher working capital costs,operational costs and a complex operation,lack of inventory leads to lost sales, unhappy customers and a damaged brand.

This is why short-term forecasting is so important in the retail and consumer goodsindustry.

Purpose

The aim of this project is to use one such sales data in order to understand the relation between sales, profit,and stock. We will observe the dependencies of these factors on one another and find out the ways to get maximum profit.

Hence we will use IBM Cognosto refine and analyze the data and answer to the problems of the retailers.

Literature Survey

Problems

i. **Data Collection**:

Data collection is one of major problem, as data is required for the analysis andcalculation of the desired results. We need genuine and accurate data in adequate amount for this purpose.

ii. **Refining the Data** :

The existing data needs to be refined first. We need to remove the duplicate entries and remove the sections not required. Data cleaning isessential as it saves time and confusion while data analysis.

iii. **Analyzing data**

After we get the required data it is necessary to analyze it properly so thatwe can derive the right conclusions from it. We need to find the relation between the various fields of the data using various analyzing tools.

iv. **Data representation and conclusion**:

The results that we find from the analysis needs to be presented in a manner that it is easily understandable by others and the conclusions can bederived from it. We also need to forecast the future values in the dataset.

Proposed Solutions

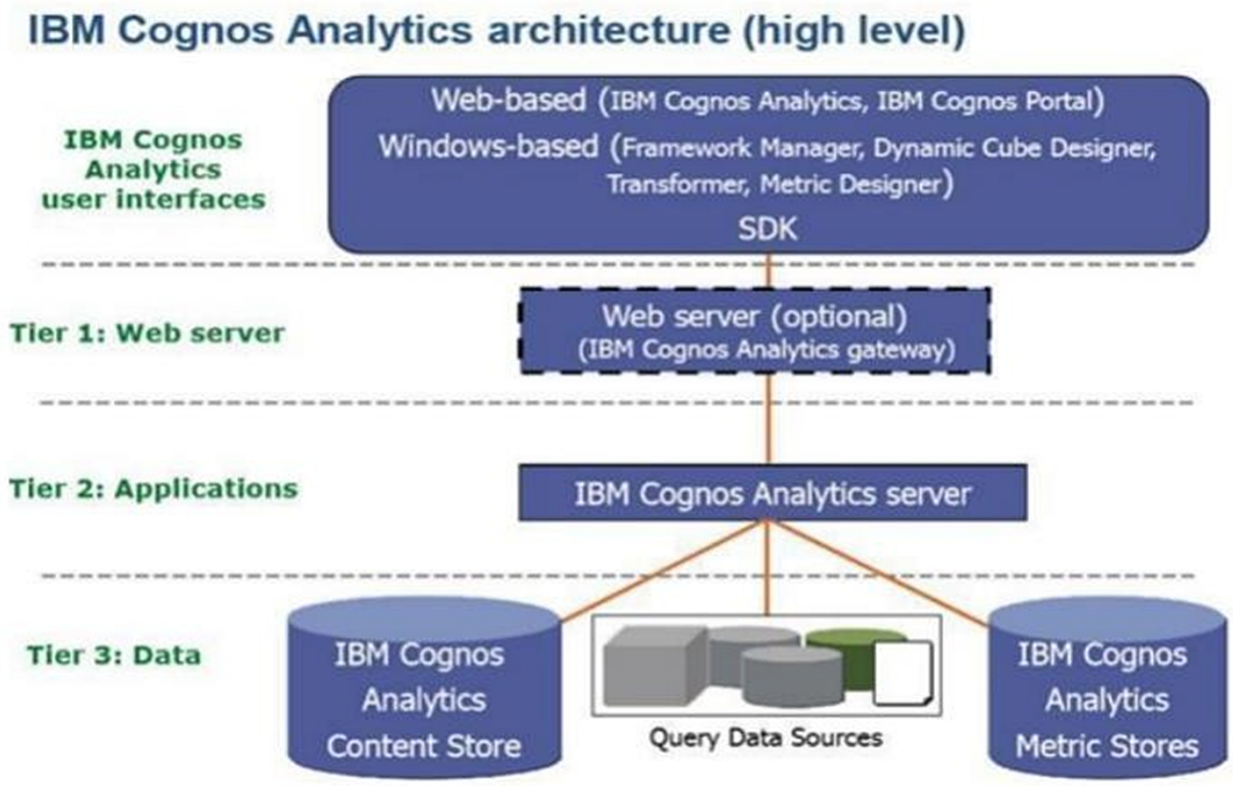
IBM Cognostool simplifies understanding a dataset and helps tackle this issue.

IBM Cog no data refining feature can clean our data for analyzing purpose.

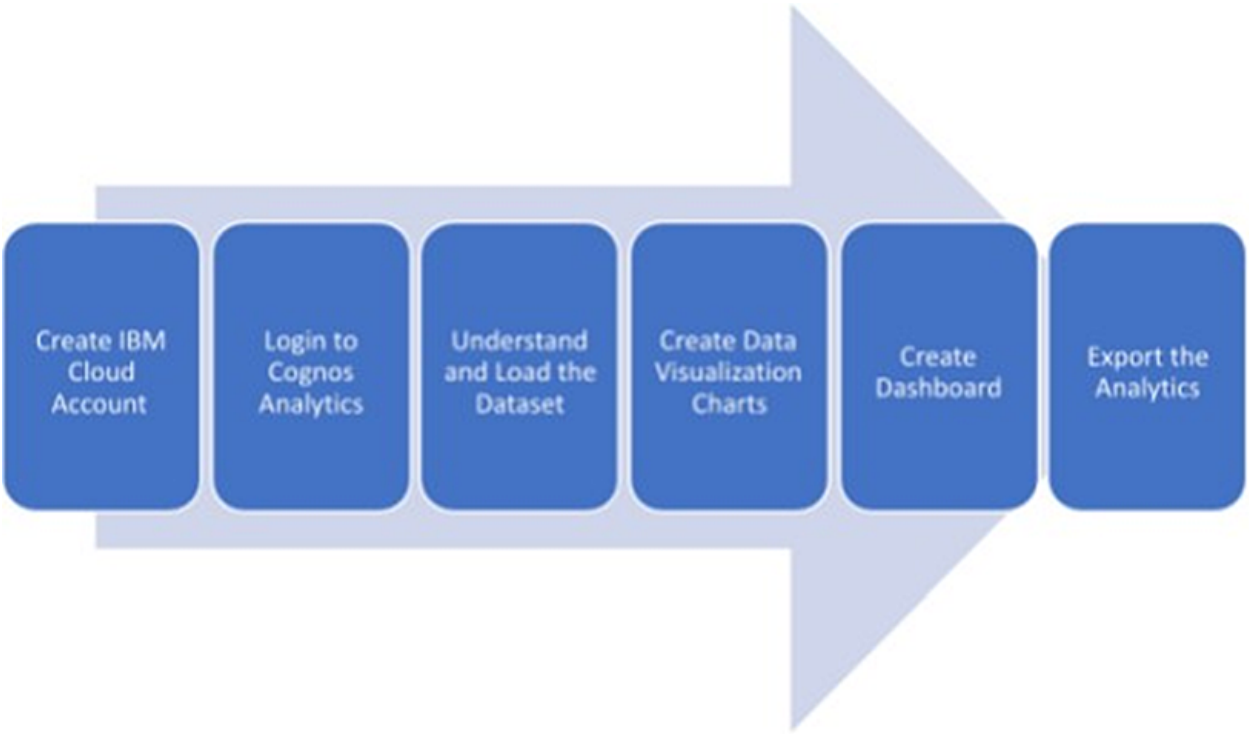
We can analyze the data properly by using the number of data analytic toolsavailable there and get a clear insight of the data.

The IBM Cognos tool will also help us to forecast the future from the present dataanalytics and derive accurate conclusions.

Theoretical Analysis



Flowchart

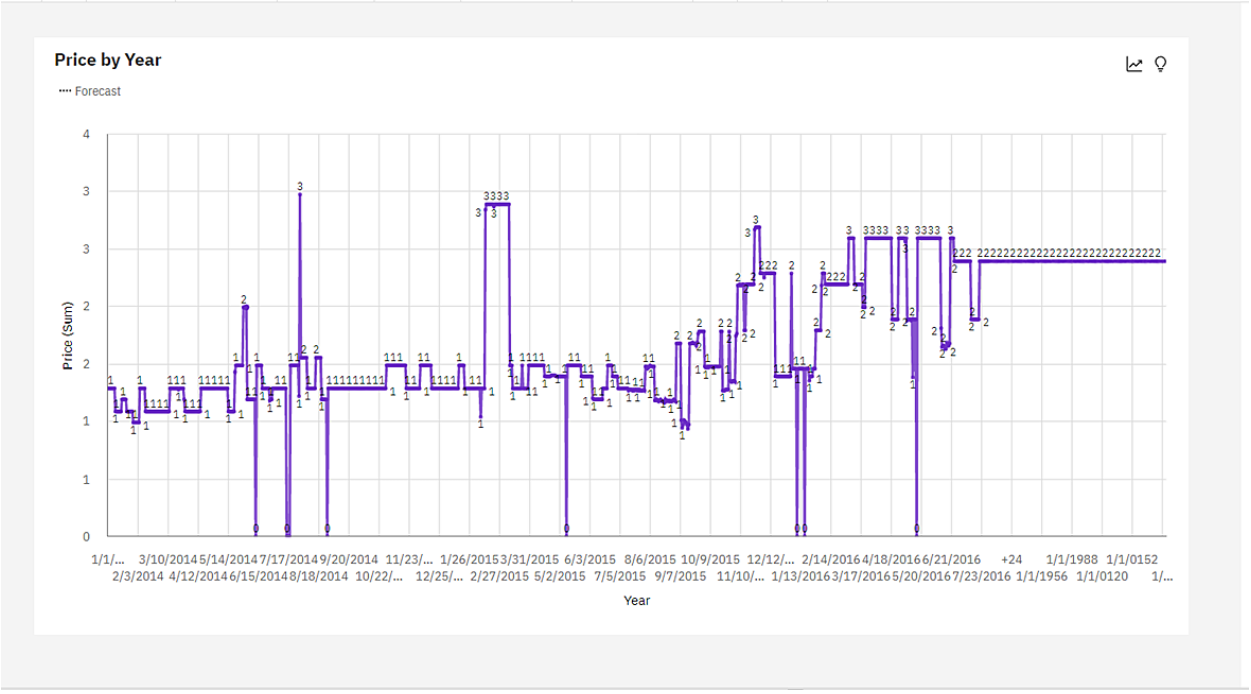


Result

- **Year Wise Price Using Line Graph**

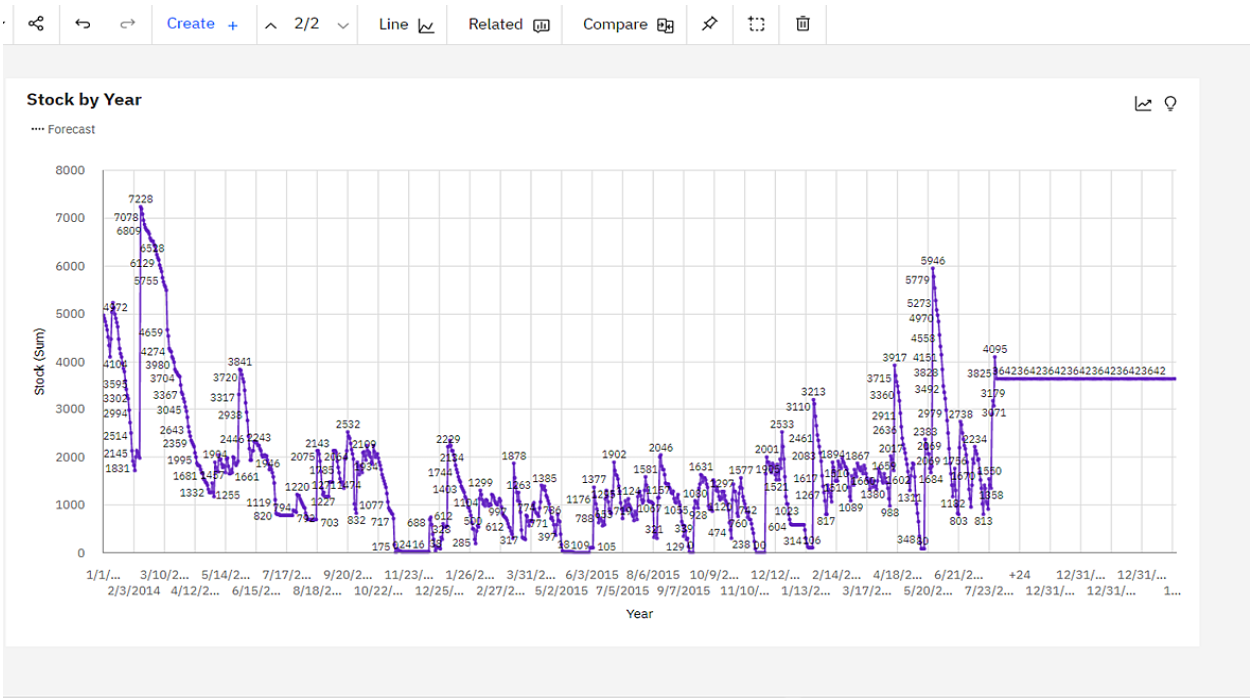
This plot between year on the x-axis and price on the y-axis shows thefluctuation in the price value with change in date.

We can see the maximum and the minimum values of price and also thedifferent values of price at different time of the year.



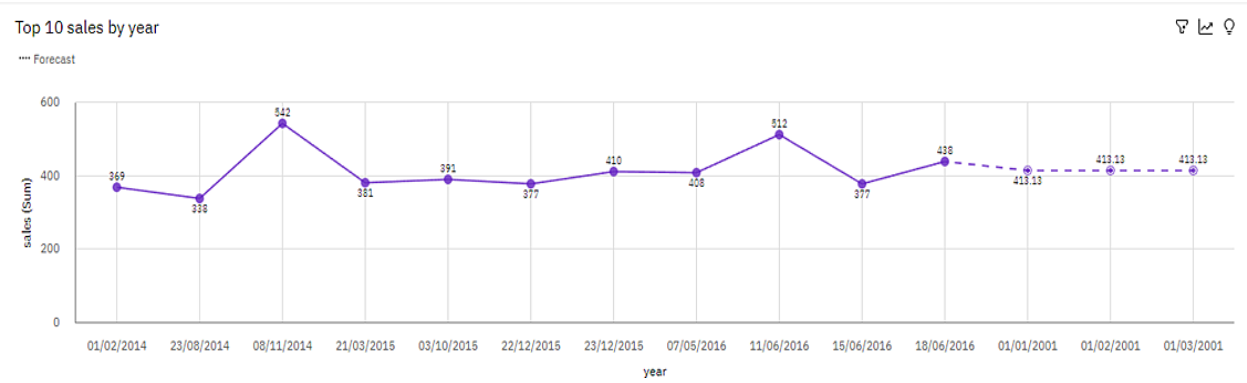
- **<u>Year Wise Stock Using Line Graph</u>**

Same as previous graph this graph shows the relation between stock and year.It shows the amount of stock kept during different time periods.



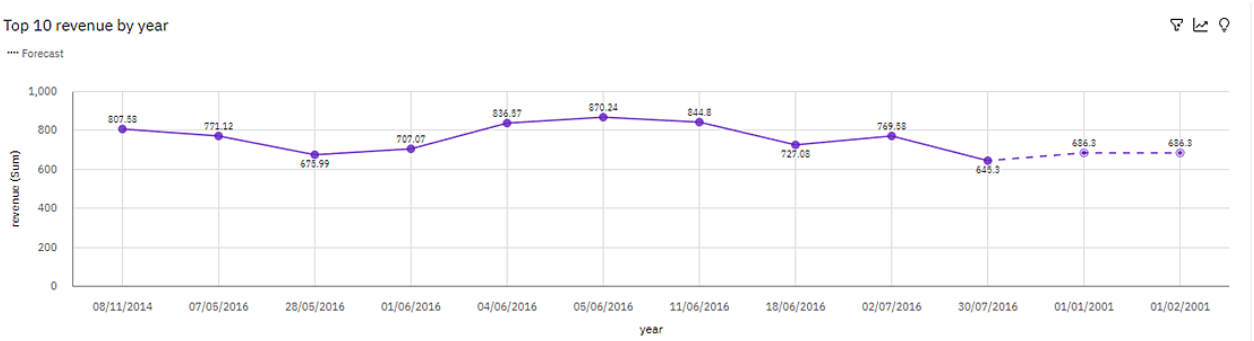
- **<u>Top10 Sales By Year Using Line Graph</u>**

  This graph plots the top 10 sales values with date and also predicts the further values.



- **<u>Top10 Revenue by Year Using Line Graph</u>**

  This graph plots the top 10revenue values with date and also predicts thefurther values.



- **<u>Monthly StockUsing Heat Map</u>**

  Here we have used a heat map to show the amount of stock with respect to themonths.

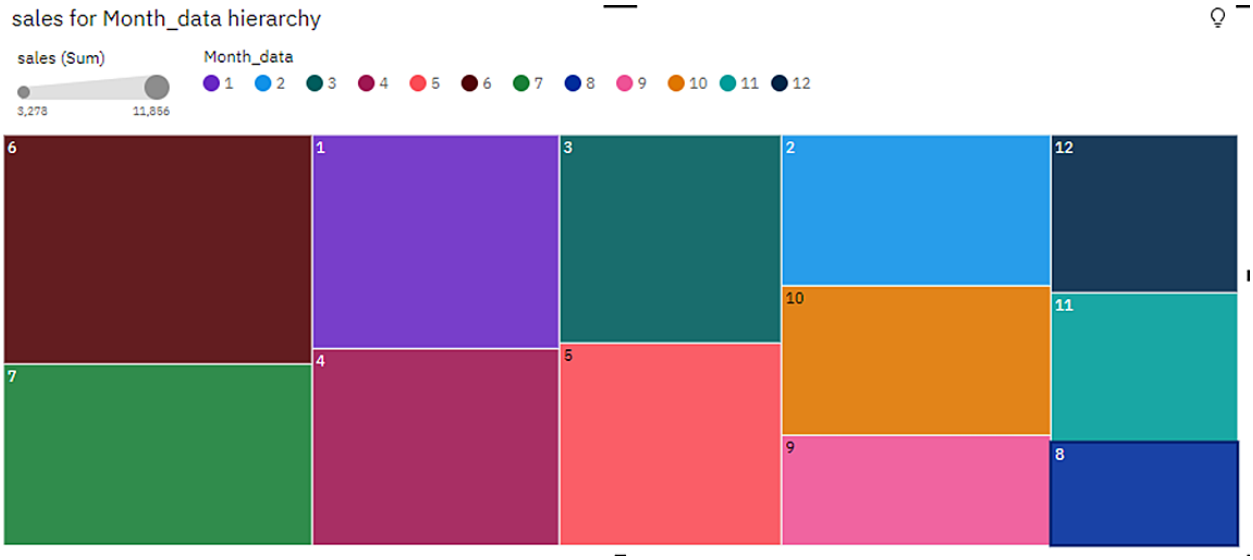
- **Monthly Sales Using Tree Map**

  Here the different boxes represent the different amount of sales in the differentmonths.

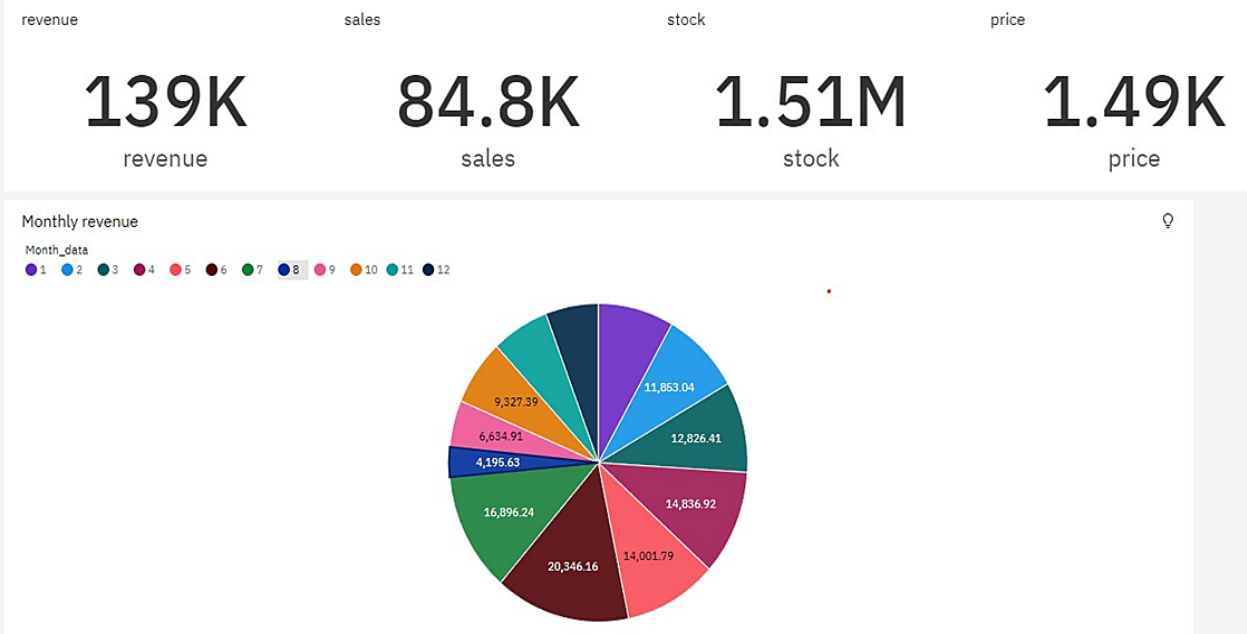
  The results that we obtained here were that

1.The average values of sales were 7069

2. The values of sales is most unusualin the 6 and 8 months



- **Monthly Revenue by Pie Chart and Summary Cards of TotalRevenue,Sales, Stock, Price**



Dashboard Creation

Here is the link to the dashboard created on the IBM Cognos

https://eu2.ca.analytics.ibm.com/bi/?perspective=explore&pathRef=.my_folders%2Finvmod_478

Advantages and Disadvantages

1. Data analytics helps an organization make better decisions

Analytics can help with transforming the data that is available into valuable information for executives so that better decisions can be made. This can be asource of competitive advantage if fewer poor decisions are made since poor

decisions can have a negative impact on a number of areas including company growth and profitability.

2. Increase the efficiency of the work

Analytics can help analyze large amounts of data quickly and display it in a formulated manner to help achieve specific organizational goals. It encourages a culture of efficiency and teamwork by allowing the managers toshare the insights from the analytics results to the employees. The gaps and improvement areas within a company become evident and actions can be taken to increase the overall efficiency of the workplace thereby increasing productivity.

3. Personalization of products and services

Analytics can help companies keep track of what kind of service, product, orcontent is preferred by the customer and then show the recommendations based on their preferences. For example, in social media, we usually see what we like to see, all of this is made possible due to the data collection and analytics that companies do. Data analytics can help provide targeted services to customers based on their individual requirements.

4. Improving quality of products and services

Data analytics can help with enhancing the user experience by detecting andcorrecting errors or avoiding non-value-added tasks.

For example,self learning systems can use data to understand the way customers areinteracting with the tools and make appropriate changes to improve user experience.

Limitations

1. **Lack of alignment within teams**

Data analytics may be done by a select set of team members and the analysis done may be shared with a limited set of executives. However, the insights generated by these teams are either of not much valueor are having limited impact on organizational metrics.

The analytics team should be focused on answering the right questions for the business and the results generatedby data analytics teams needs to be properly communicated to the right employees to drive the right set of actions and behaviors so that it can havean positive impact on the organization.

2. **Lack of commitment and patience**

Analytics solutions are not difficult to implement, however, they are costly, and the ROI is not immediate. Especially, if existing data is not available, it may take time to put processes and procedures in place to start collecting the data. By nature, the analytics models improve accuracy over time and require dedication to implement the solution. Since the business users

do not see results immediately, they sometimes lose interest which results in loss of trustand the models fail.

3. Privacy concerns

Certain data collected can also be used against a person, country, or community. Organizations need to be cautious of what sort of data they are collecting from customers and ensure the security and confidentiality of the data. Only the data required for the analysis needs to be captured and if there is sensitive data, it needs to be anonymized so that sensitive data is protected.

Applications

Transportation

Data analytics can be applied to help in improving Transportation Systems and intelligence around them. The predictive method of the analysis helps find transport problems like Traffic or network congestion s. It helps synchronize the vast amountof data and uses them to build and design plans and strategies to plan alternative routes, reduce congestion s and traffics, which in turn reduces the number of accidents and misshapen.

Logistics and Delivery

There are different logistic companies like DHL, FedEx, etc that uses data analytics to manage their overall operations. Using the applications of data analytics, they ca n figure out the best shipping routes, approximate delivery times, and also can track the real-time

status of goods that are dispatched using GPS trackers. Data Analyticshas made online shopping easier and more demand able.

Web Search or InternetWeb Results

The web search engines like Yahoo, Bing, Duckduckgo, Google uses a set of data give you when you search a data. Whenever you hit on the search button, the searchengines use algorithms of data analytics to deliver the best-searched results within alimited time frame. The set of data that appears whenever we search for any information is obtained through data analytics.

Security

Data analyst provides utmost security to the organization; Security Analytics dealswith online protection zeroed in on the examination of information to deliver proactive safety efforts. No business can foresee the future, particularly where security dangers are concerned, yet by sending security investigation apparatuses that can dissect security occasions it is conceivable to identify danger before it getsan opportunity to affect your framework and main concern.

Conclusion

This way, with the help of diagrams, graphs, and maps we can understand given data. This understanding of data allows us to ask the right questions to reach our desired goals by optimizing methods. With this project, we learned how to uploadand prepare data. We also statistical concepts which helped in calculations and

plotting of graphs and maps to make a dashboard

Amarender Katkam