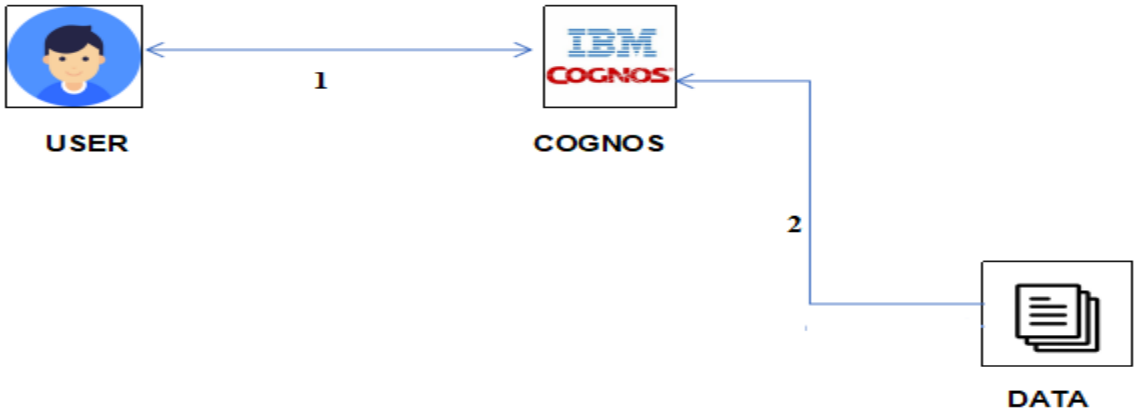
Project Report

Project Title: Agriculture Data Analytics in Crop Yield Estimation using IBM Cognos

1 Introduction: -

Crop production in India is one of the important sources of income and India is one of the top countries to produce crops. In this project some important visualization has been analyzed , creating a dashboard and thereby getting most of the insights of Crop production in India. For the required solution, IBM Cognos Analytics service have been used.

1.1 Architecture:



1.2 Solution Requirements

Service Used:IBM Cognos Analytics.

1.3 Project Objectives

By the end of this project, you will:

- Know fundamental concepts and can work on IBM Cognos Analytics.
- Gain a broad understanding of plotting different graphs.
- Able to create meaningful dashboards

2. Project Flow

- Users create multiple analysis graphs/charts.
- Using the analyzed chart creation of Dashboard is done.
- Saving and Visualizing the final dashboard in the IBM Cognos Analytics.

To accomplish this, we have to complete all the activities and tasks listed below

- IBM Cloud Account
- Login to Cognos Analytics
- Working with the Dataset
    - Understand the Dataset
    - Loading the Dataset
- Data visualization charts
    - Seasons with average productions
    - With years usage of Area and Production
    - Top 10 States with most area
    - State with crop production
    - States with the crop production along with season (Text Table)
- Dashboard Creation
- Export the Analytics

2.1 IBM Cloud Account

Create and login to IBM Account.

2.2 IBM Cognos Analytics

Create Cognos Analytics Account.

3 Working With The Dataset

3.1 Understand The Dataset

The main objective of the project is to understand plotting different graphs and creating meaningful dashboards. First create and log in to IBM Cloud Account followed by IBM Cognos Analytics. Download the crop production dataset from the link provided to understand the crop production of India. It has 2,46,092 data points (rows) and 6 features (columns) describing each crop production related details such as State Name, District Name, Crop Year, Season, Area, Production.

3.2 Loading The Dataset

First load the dataset to IBM Cognos before plotting the different graphs and charts in Cognos. Using the dataset loaded, create various graphs and charts highlighting the visualizations.

4 Data Visualization Charts

4.1 Seasons With Average Productions

As production of crops depends on different seasons, plot the graph to visualize the average production based on different seasons in Tab 1. Choose column visualization, drag and drop season and production using control button. Click on the three dots on production, a summarize option will pop up then click on Average. Choose colour, drag and drop season in colour. Go to properties, click chart, click show labels. Rename Tab 1 as Different season with average production.

4.2 With Years Usage Of Area And Production

In our dataset we also have a year's columns by which we will plot a line and area graphs to see the change in these both data with respect to increase in years in Tab 2 and rename it as Area and Production with years usage of Area and Production. Select Area Visualization, choose crop_year and area. Drag and drop them in graph using control button. Click on the three dots on area, a summarize option will pop up then click on Average. Similarly

choose a line graph for production. Select Year and Area, drag and drop in the graph using the control button. Click on the three dots on production, a summarize option will pop up then click on Average. Go to properties, click chart, click show labels. Choose colour as orange.

4.3 Top 10 States With Most Area

As we have an area data in our dataset, we will be plotting some graphs to visualize the top 10 Indian states with the most area in Tab 3 and rename it as Top 10 States with Most Area. Select Visualization, choose state and area. Drag and drop them in graph using control button. Click on the three dots on area, a summarize option will pop up then click on Average. Again click on Area having three dots. Click on top 10. Choose colour, drag state name into it. Go to properties, click chart, click show labels then select vertical.

4.4 State With Crop Production

There are so many different crops produced in Indian and most of us don't know which crop is belongs to which state so we will be plotting and highlight the states in map according to different crops in Tab 4 and rename it as State with Crop Production. Select Map Visualization, drag and drop state name. Select location colour and drag state name. Drag crop to filter. Select Banana filter, Add to canvas and apply. You can also select grapes and apply filter.

4.5 States With The Crop Production Along With Season (Text Table)

Taking forward the previous plot we will be fetching the state name and showing it in a text table whenever different crops are chosen in Tab 5 and rename it as States with the crop production along with season(Text Table). Select table visualization. Choose statename and crop. Drag and drop the same in text table visualization. Choose crop filters and choose your filter of choise and click ok. Select crop and statename to rearrange it. Drag and Drop Season and crop in text table.

5 Creating The Dashboard

Once you've created views on different tabs in Cognos analytics, you can pull them into a dashboard. Select new Tab, new template, copy paste all graphs from all tabs to this newly created tab and rename it.

6 Export The Analytics

Finally, it's to share your work either through email/link/pdf to showcase your works to others.

7 Conclusion

Agriculture Data Analytics in Crop Yield Estimation using IBM Cognos have been used for the required solution. In this project some important visualization has been analyzed , creating a dashboard and thereby getting most of the insights of Crop production in India.