Project Report on

Agriculture Data Analytics In Crop Yield Estimation Using IBM Cognos

by

Dr. Shilpa Mujumdar

Symbiosis Institute of Computer Studies & Research, Pune

1 Introduction:

Overview - Crop production in India is one of the important sources of income and India is one of the top countries to produce crops. As per this project we will be analyzing some important visualization, creating a dashboard and by going through these we will get most of the insights of Crop production in India.
Purpose –

- To know fundamental concepts and can work on IBM Cognos Analytics.
- To gain a broad understanding of plotting different graphs.
- To be able to create meaningful dashboards

2 Literature Survey

2.1 Existing Problem-

The objective is to present the crop production in India in an interesting manner. Which is vital for so many things.

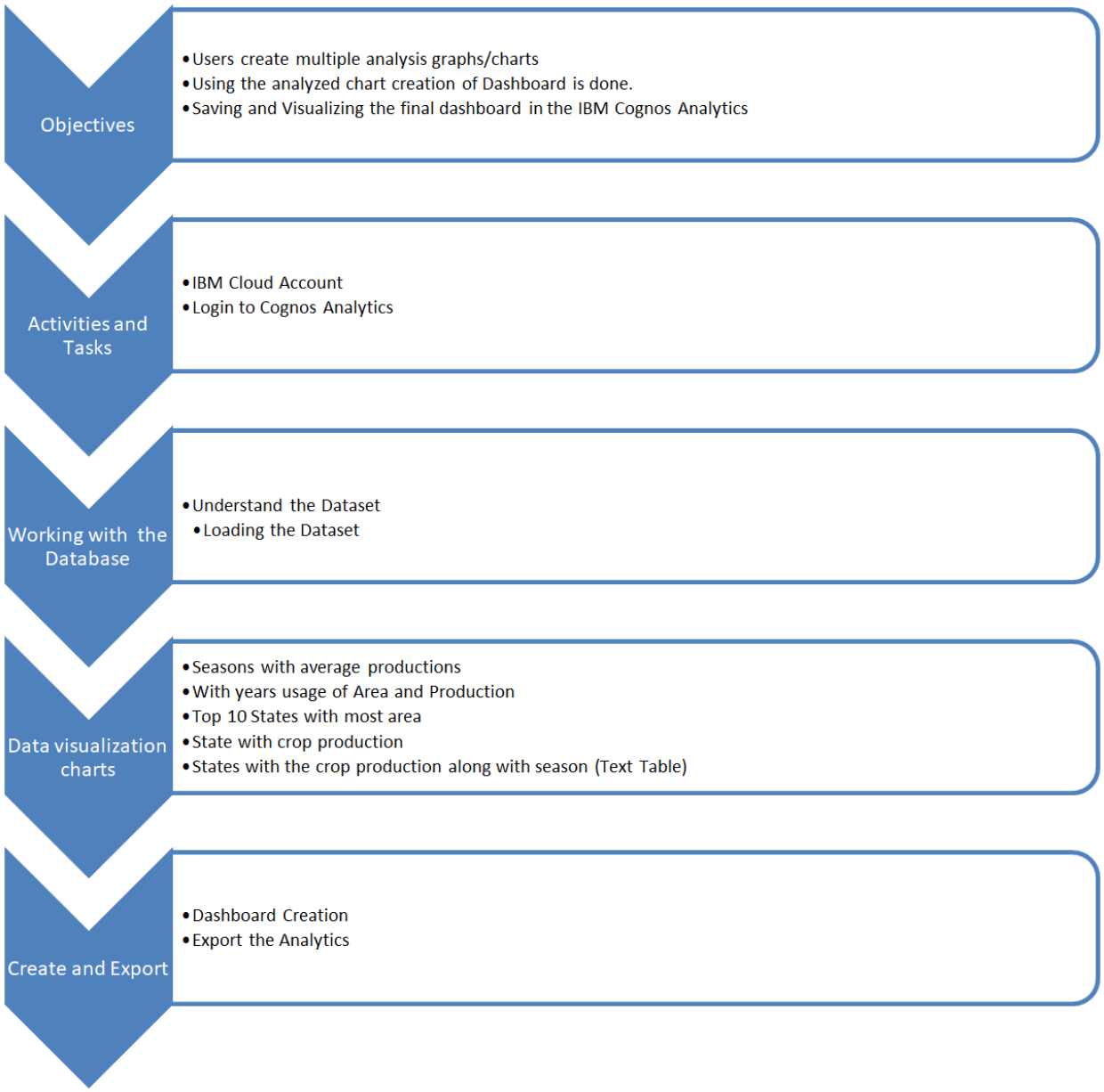
2.2 Proposed solution-

IBM Cognos can be used for effective communication of data. The data can be communicated by visualizing it in interesting way using column charts, graphs, map and text tables. The changes in diagrams and graphs can be seen by filtering the field of interest. The type of chart or graph is to be used as per requirement. For representing attribute data we use column charts. To represent trend or two quantitative variables we can use graphs. To visualise data geographically, one can use map diagram and to represent data in table form we can use text table option.

3 Theoretical Analytics

3.1 Block Diagram-Diagrammatic overview of the project

- Agriculture Data Analytics In Crop Yield Estimation Using IBM Cognos
  - Solution Requirements
  - Project Objectives
  - Project Flow
  - IBM Cloud Account
  - IBM Cognos Analytics
    - Working With The Dataset
    - Data Visualization Charts
  - Creating The Dashboard
  - Export The Analytics


Objectives
• 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
Activities and Tasks
• IBM Cloud Account
• Login to Cognos Analytics
Working with the Database
• 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)
Create and Export
• Dashboard Creation
• Export the Analytics

3.2 Hardware/Software designing-

Hardware and software requirements of the project

IBM Cognos Analytics on Cloud is required for the present project.

4 EXPERIMENTAL INVESTIGATIONS

This project is based on a understanding the crop production of India .Download the dataset from the below link. It has 2,46,092 data points (rows) and 6 features (columns) describing each crop production related details. The data set on "Crop production in India" was down loaded from the link (**Dataset Link** :Dataset) provided. The videos provided by SMARTINTERNZ and IBM were used to create charts, graphs and tables using "IBM Cognose on Cloud". The videos helped to complete all the tasks.

The features of data are

1. State Name - All the Indian State names.
2. District Name -Different District names.
3. Crop Year- contains the crop years.
4. Season – Different seasons for crop production.
5. Area- Total number of areas covered.
6. Production- production of crops.

The data was in csv file. First the data from csv file was uploaded in IBM Cognos.

The links Connection of Dataset and Cognos Analytics Basics were used to understand the connection of dataset in Cognos and basics of Cognose analytics.

This dataset provides a huge amount of information on crop production in India ranging from several years.

Based on the Information the ultimate goal would be to predict crop production using powerful machine learning techniques.

5 RESULT

The final findings (Output) of the project along with screenshots are given below:

- Data visualization charts
  - Seasons with average productions
  -

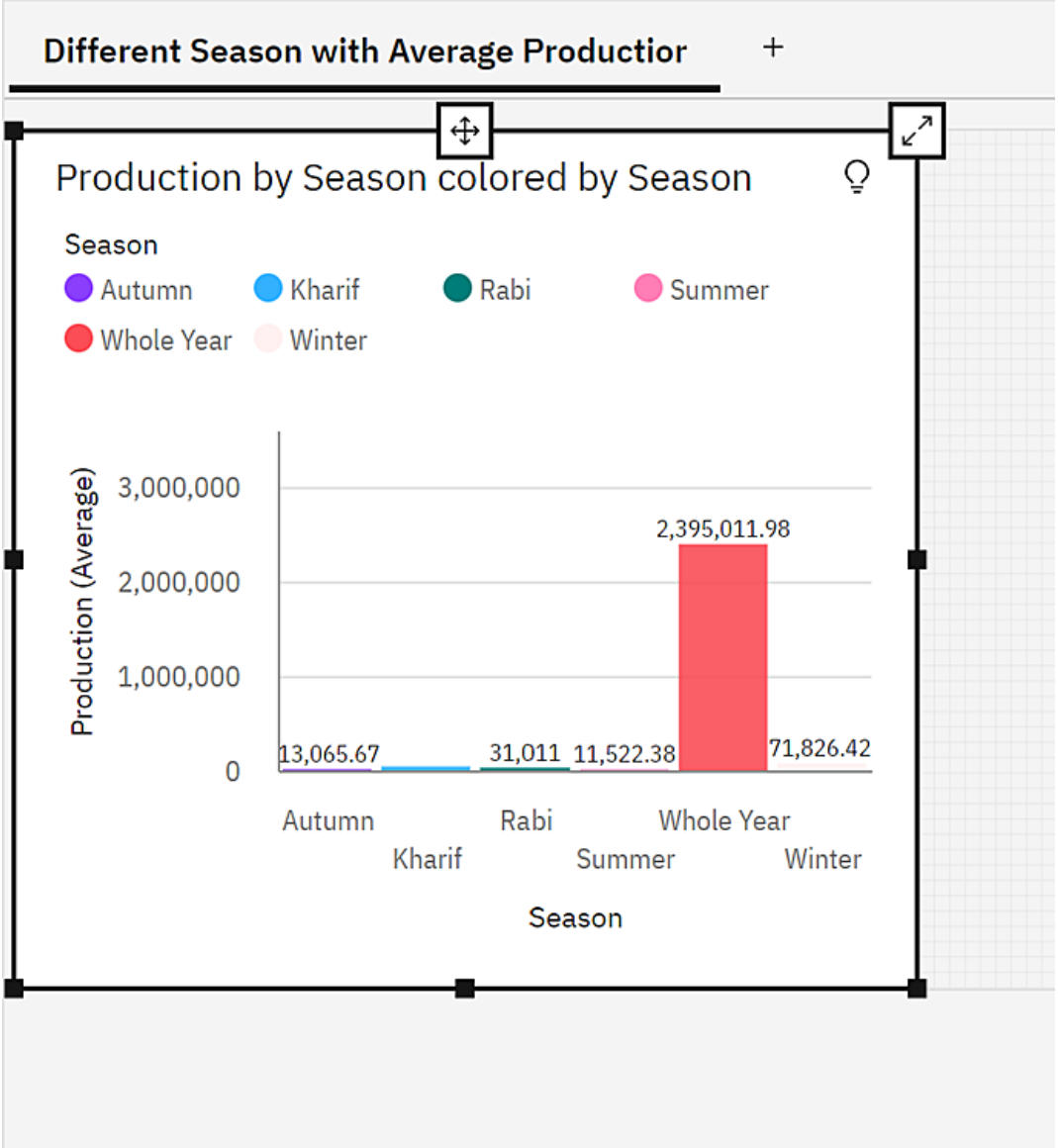


Figure 1:Final Chart for Different Seasons with Average Production of Crop

- With years usage of Area and Production

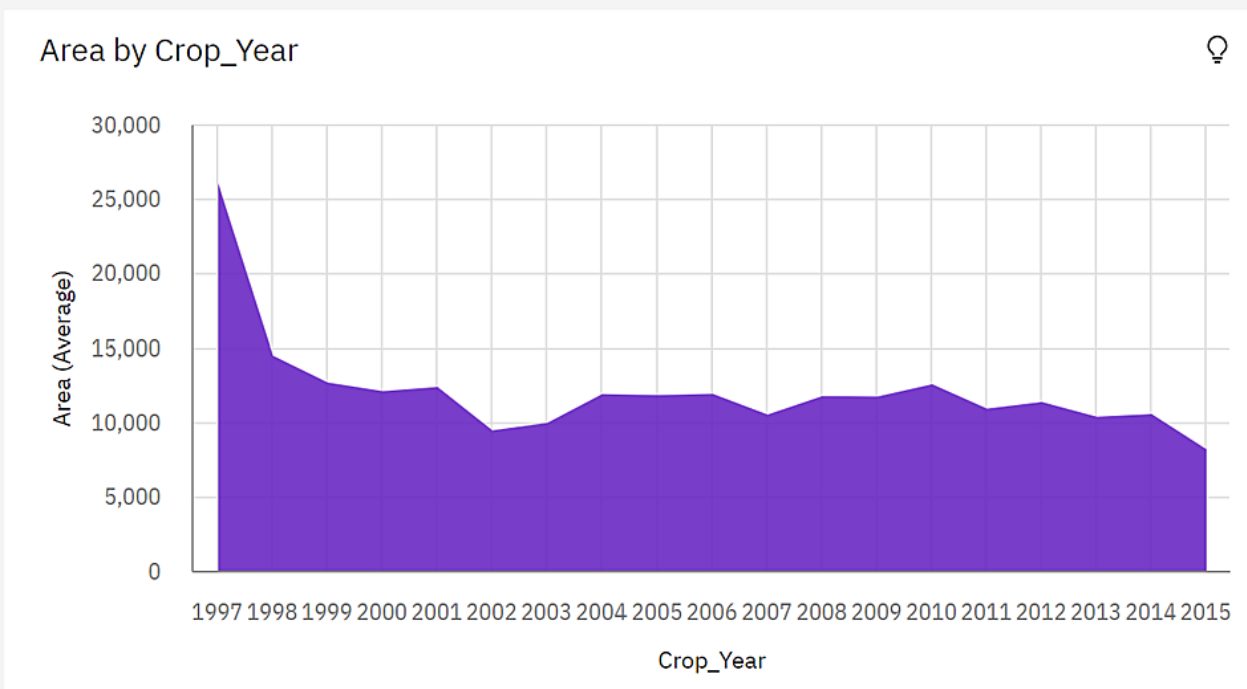


Figure 2:Final Graph With Years and Usage of Area for Crop

Year wise production of Crop

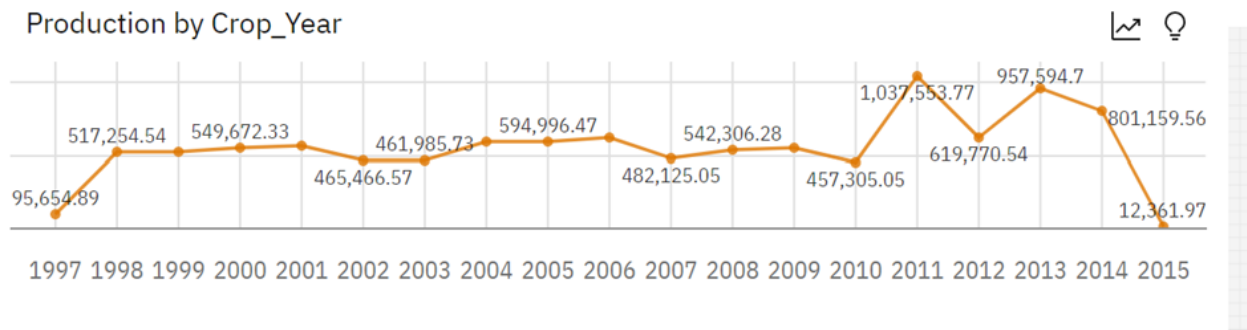


Figure 3:Final Line Graph for Yearly Average Production of Crop

- Top 10 States with most area

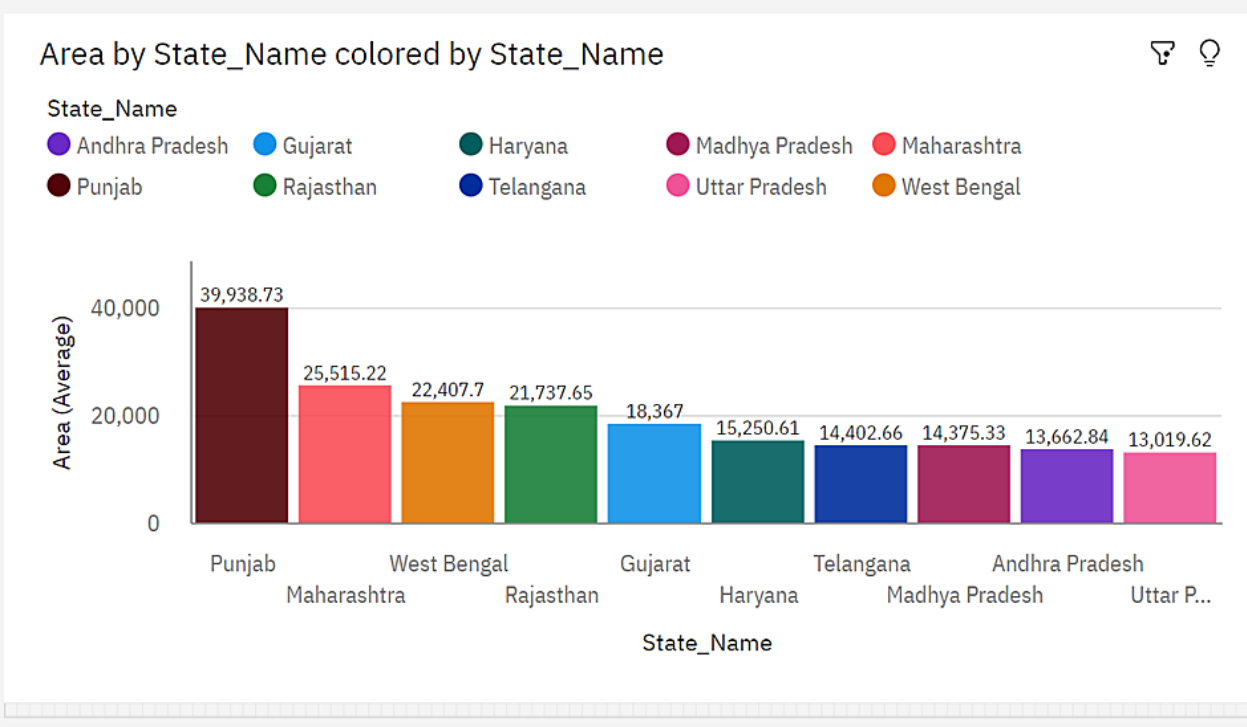


Figure 4:Final Column Chart for Top 10 States with Most Area

- State with crop production

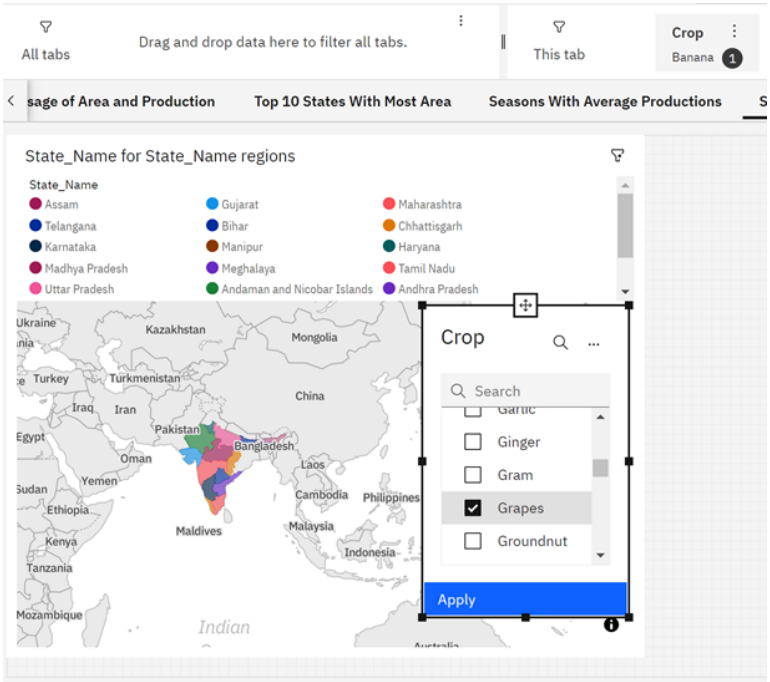


Figure 5:States With Crop Production for Grapes

- States with the crop production along with season (Text Table)

Table1 :States With The Crop Production

State_Name and Crop

State_Name	Crop
Andhra Pradesh	Grapes
Haryana	Grapes
Karnataka	Grapes
Madhya Pradesh	Grapes
Maharashtra	Grapes
Rajasthan	Grapes
Tamil Nadu	Grapes
Telangana	Grapes

Table 2:Table for Crop Grape with Season

Season and Crop

Crop	Season
Grapes	Kharif
	Whole Year

- Dashboard

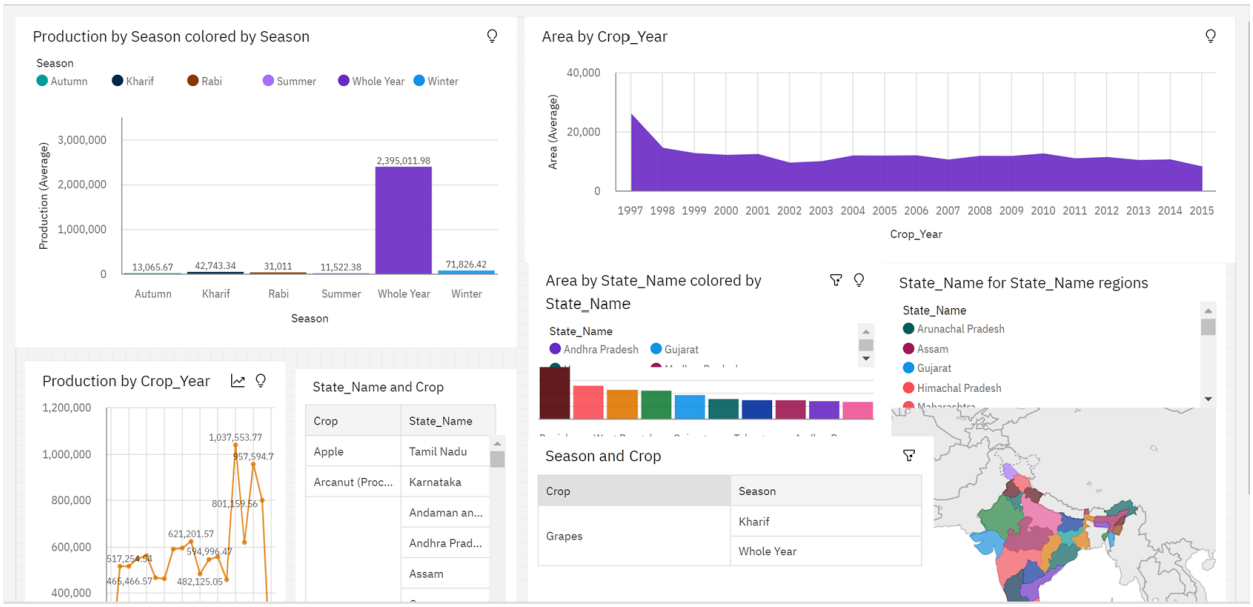


Figure 8:Dashboard

6 ADVANTAGES & DISADVANTAGES

-Advantages of the proposed solution

Visualisation of data using diagrams and graphs help to understand features of data in quick and interesting manner.

-Disadvantages of the proposed solution

Graphs can help us in approximate prediction but fitting statistical models will help in better predictions.

7 APPLICATIONS

The analytics using Cognos can be applied in all business domains where data is generated and needs to be analysed. For example heath care, education etc.

8 CONCLUSION

The Dashboard shows all Column charts, graphs, map chart and text tables together in IBM Cognos Analytics. It visulaizes all the properties of the data. The changes corresponding to selection of attribute/variable can be seen immediately in active Dash board.

Conclusion summarizing the entire work and findings.

Column chart for Seasons with average productions helps to

- 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

9 FUTURE SCOPE

IBM Cognose can be used for Business Analytics, Data Analytics in all business domains where data is generated and needs to be analysed. For example heath care, education etc.

10 Bibliography

1 content source data.world website-https://data.world/thatzprem/agriculture-india

2 Link to upload data-https://www.youtube.com/watch?v=W6BSefEoD9E

3 link to see the data and create dash board -https://www.youtube.com/watch?v=TLCPgRTgp6U

4 link to plot Column chart Average Production season wise-
https://www.youtube.com/watch?v=2gWcJy7wF9E

5 link for line and area charts-https://www.youtube.com/watch?v=Mqw9YfLtQIk

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.

6 link for Top 10 States With Most Area-https://www.youtube.com/watch?v=q36JRl4E6oY

7 link for State With Crop Production-https://www.youtube.com/watch?v=3H-3DmRKQP8

8 link for creating States With The Crop Production Along With Season (Text Table)-
https://youtu.be/blgUU-yZo6A

9 link to create Dash board-https://www.youtube.com/watch?v=SetaNqDvsV8&feature=youtu.be