Agriculture Data Analytics In Crop Yield Estimation Using IBM Cognos

1. INTRODUCTION

1.1 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 analysing some important visualization, creating a dashboard and by going through these we will get most of the insights of Crop production in India

1.2 Purpose

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

2. LITERATURE SURVEY

2.1 Existing problem

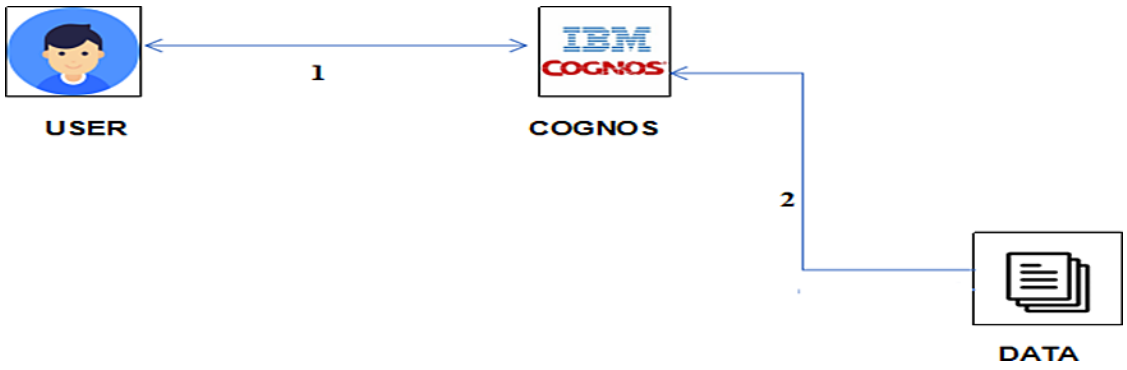
In the existing method, Using Excel, Visualization is possible by modifying the data in the template provided. Pie Charts, Line graphs, Histograms, Bar graphs, Scatter plot are the different types of data visualizations in Excel.

2.2 Proposed solution

IBM Cognos Business Intelligence is a web-based integrated business intelligence suite by IBM. It provides a toolset for reporting, analytics, score carding, and monitoring of events and metrics. The software consists of several components designed to meet the different information requirements in a company

3. THEORITICAL ANALYSIS

3.1 Block diagram Diagrammatic overview of the project.



3.2 Hardware / Software designing Hardware and software requirements of the project

Hardware Requirements:

Hardware requirements

Requirement	Specification
Operating System	MS Windows, Unix, Linux
Processing	Minimum 4 CPU Cores for one user
RAM	Minimum 10 GB
Disk Space	A minimum of 7 GB of free space is required to install the software and 5GB of free space on the drive that contains temporary directory used by IBM Cognos components
Printer	All reports, regardless of the print format are sent as temporary PDF files to Adobe Reader for printing

Email server	To email reports, the system requires the ability to use and access an email server.

Software requirements:

Requirement	Specification
Java Runtime Environment (JRE)	An IBM JRE is provided as part of the install with IBM Cognos Analytics on all operating systems.
Database	must have one of the following databases available to store IBM Cognos data: • Oracle • IBM Db2 • Microsoft SQL Server • Informix®
Web browser	For all Web browsers, the following must be enabled: • cookies • JavaScript

4.EXPERIMENTAL INVESTIGATIONS

Analysis or the investigation made while working on the solution.

Seasons With Average Productions

As production of crops depends on different seasons, so plotted the graphs to visualize the average production based on different seasons.

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.

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.

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.

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

5. FLOW CHART

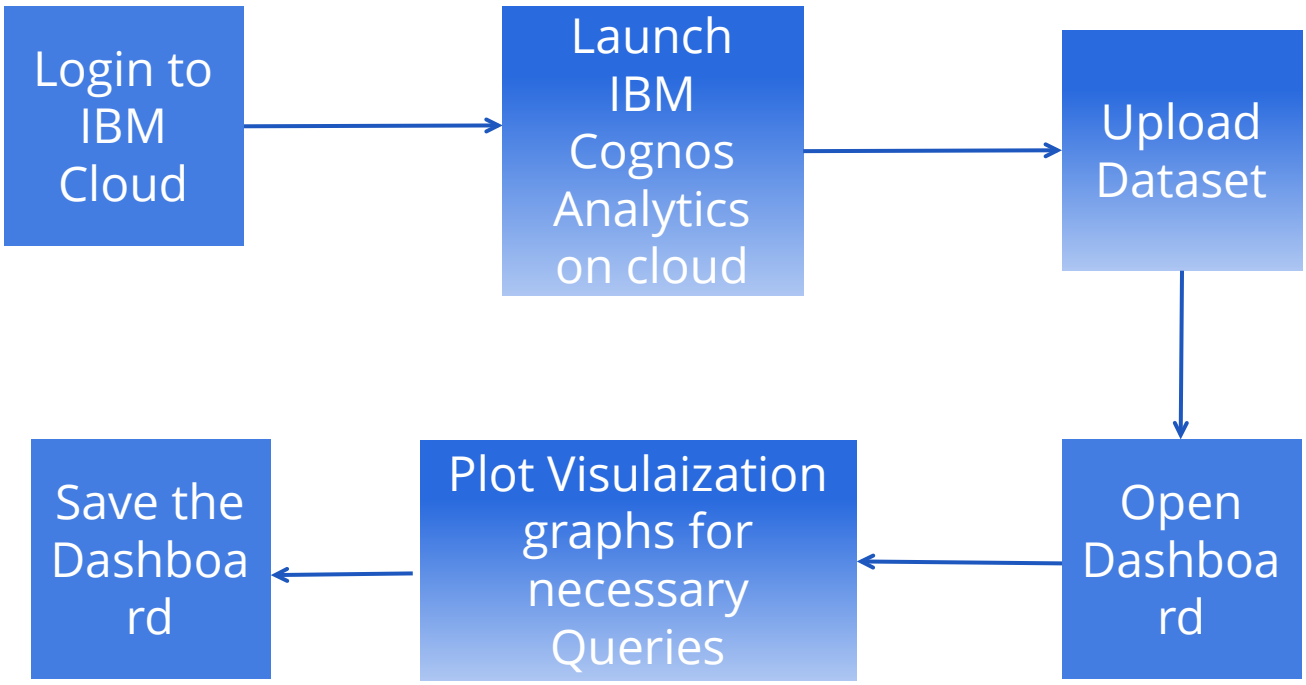
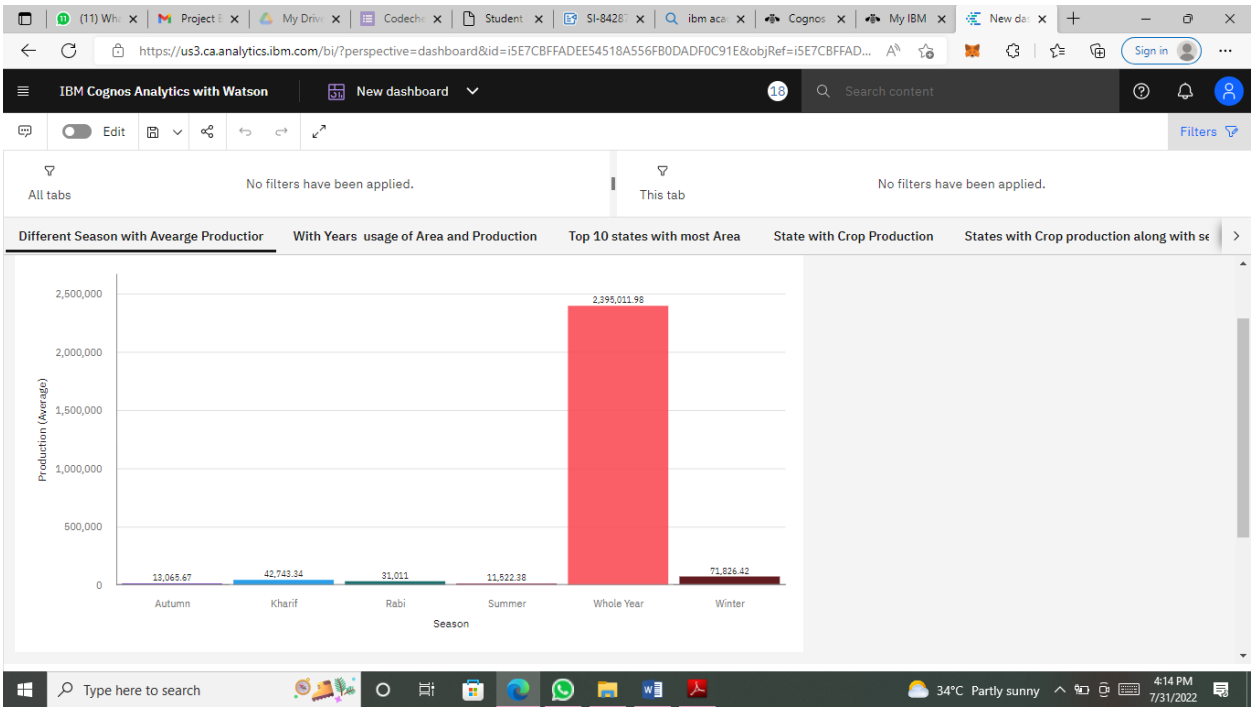


Diagram showing the control flow of the solution

6. RESULT


IBM Cognos Analytics with Watson
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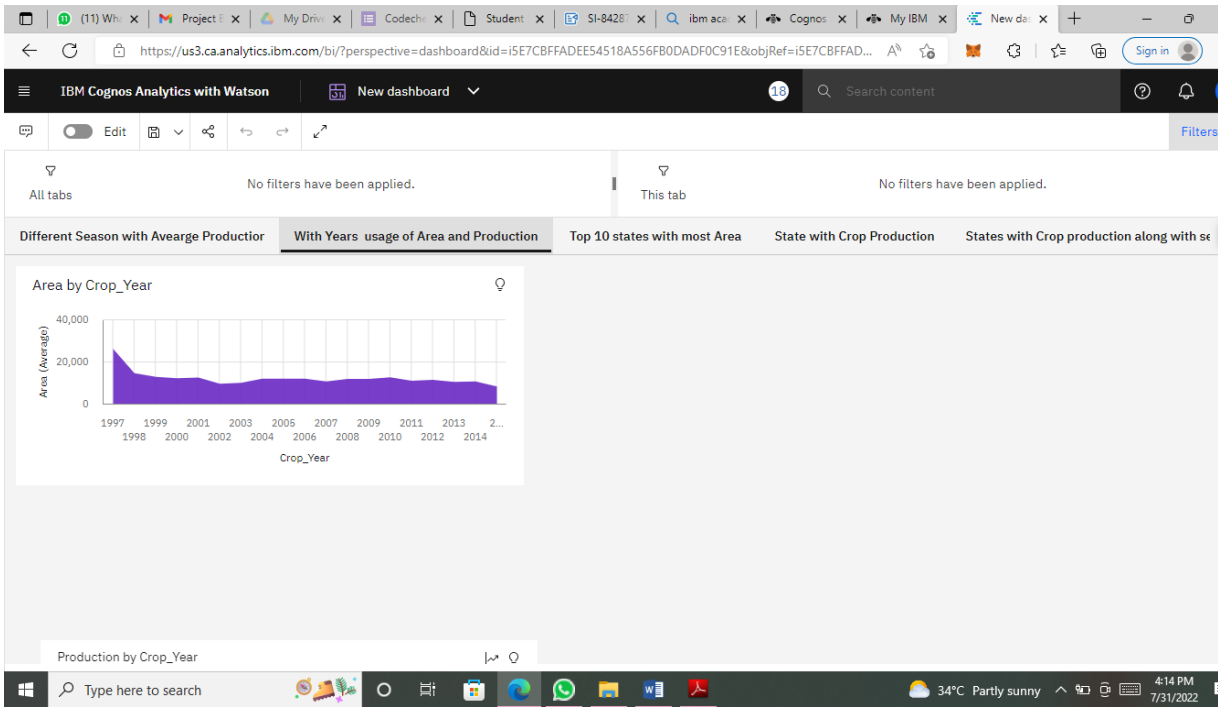
Different Season with Avearge Productior
With Years usage of Area and Production
Top 10 states with most Area
State with Crop Production
States with Crop production along with se
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Production (Average)
13,065.67
42,743.34
31,011
11,522.38
2,395,011.98
71,826.42
Autumn
Kharif
Rabi
Summer
Whole Year
Winter
Season
Type here to search
34°C Partly sunny
4:14 PM
7/31/2022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Top 10 states with most Area
State with Crop Production
States with Crop production along with se
Area by Crop_Year
Area (Average)
40,000
20,000
0
1997 1999 2001 2003 2005 2007 2009 2011 2013 2...
1998 2000 2002 2004 2006 2008 2010 2012 2014
Crop_Year
Production by Crop_Year
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7/31/2022

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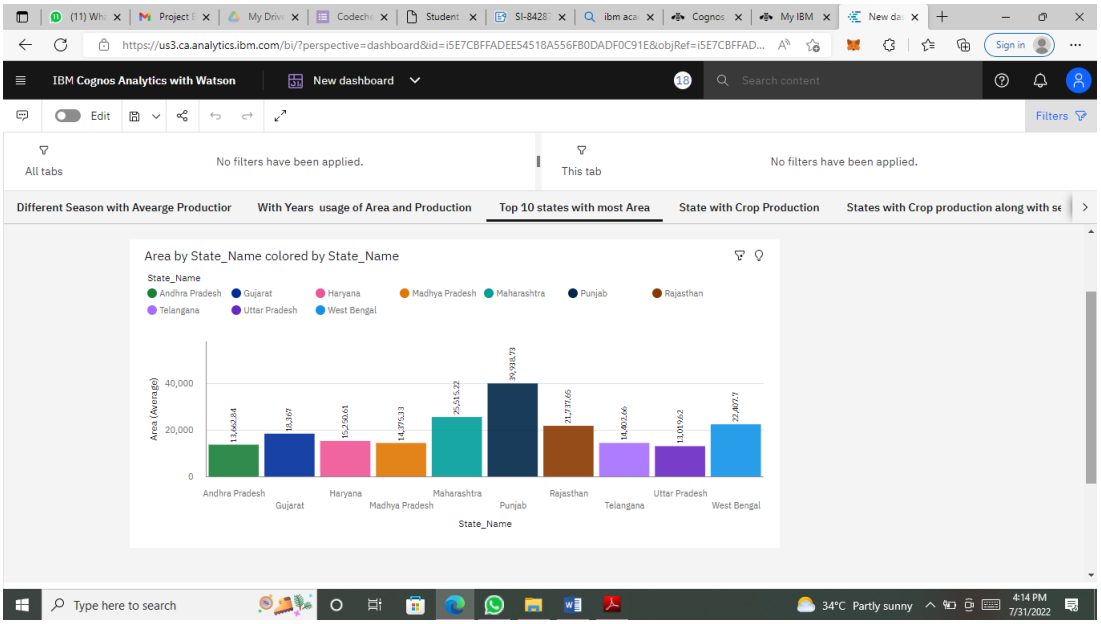
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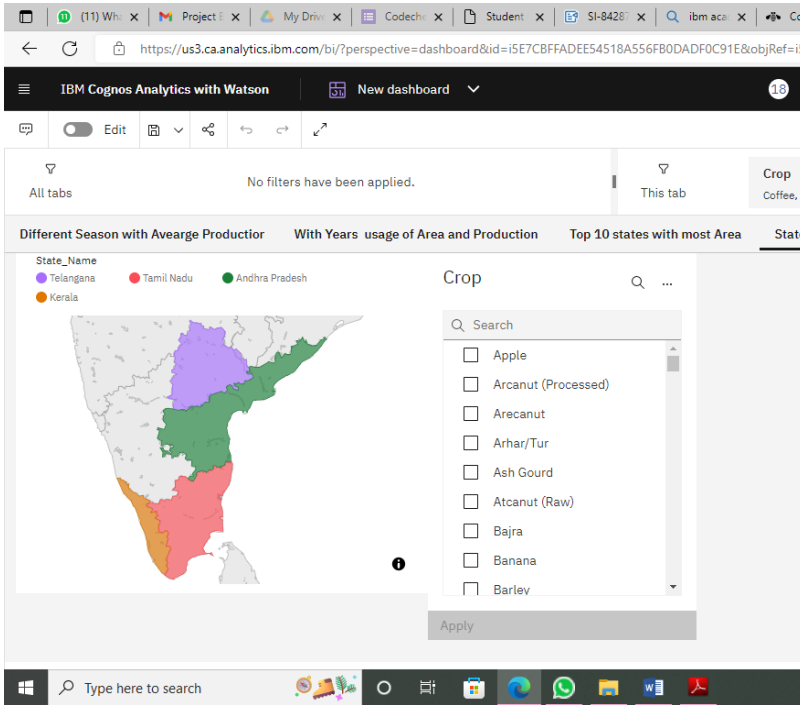
Top 10 states with most Area
State with Crop Production
States with Crop production along with se
Area by State_Name colored by State_Name
State_Name
Andhra Pradesh
Gujarat
Haryana
Madhya Pradesh
Maharashtra
Punjab
Rajasthan
Telangana
Uttar Pradesh
West Bengal
Area (Average)
40,000
20,000
0
13,662.84
18,367
15,290.61
14,475.33
26,515.22
39,918.73
21,777.65
14,402.66
11,019.62
22,807.7
Andhra Pradesh
Gujarat
Haryana
Madhya Pradesh
Maharashtra
Punjab
Rajasthan
Telangana
Uttar Pradesh
West Bengal
State_Name
Type here to search
34°C Partly sunny
4:14 PM
7/31/2022

Stale Name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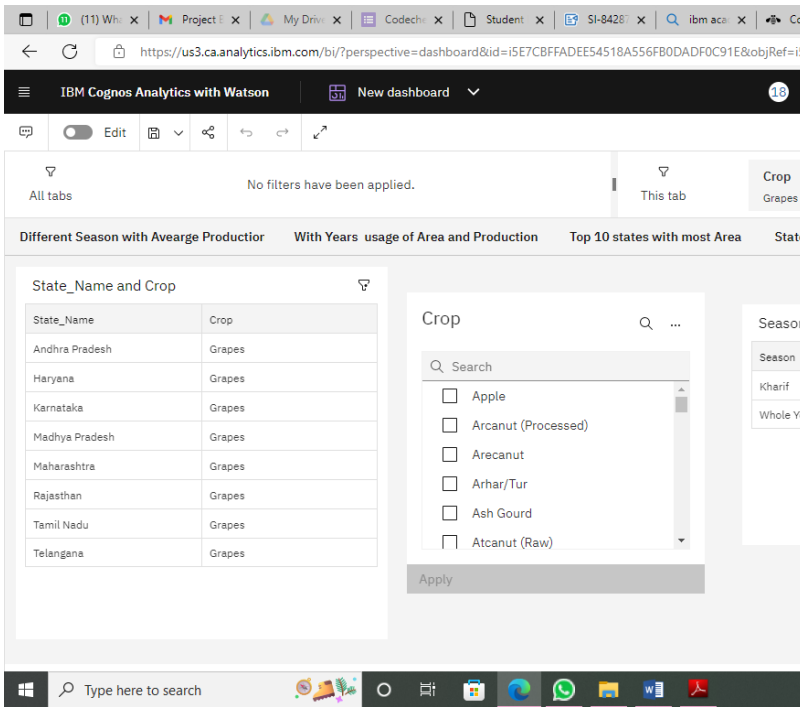
Crop
Coffee,
Different Season with Avearge Productior
With Years usage of Area and Production
Top 10 states with most Area
State_Name
Telangana
Tamil Nadu
Andhra Pradesh
Kerala
Crop
Search
Apple
Arcanut (Processed)
Arecanut
Arhar/Tur
Ash Gourd
Atcanut (Raw)
Bajra
Banana
Barley
Apply
Type here to search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Crop
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Different Season with Avearge Productior
With Years usage of Area and Production
Top 10 states with most Area
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
Crop
Search
Apple
Arcanut (Processed)
Arecanut
Arhar/Tur
Ash Gourd
Atcanut (Raw)
Apply
Season
Kharif
Whole Y
Type here to search

7. ADVANTAGES & DISADVANTAGES

Advantages of the proposed solution:

- Cognos Active Reports can be emailed, stored on drives, saved to shared areas of file system
- Cognos Active Reports are great for offline consumption like can be accessed without Internet Connection, can work in remote locations such as Airplanes, can execute them while away from office.
- Cognos Active Reports work with iPad
- Cognos Active Reports can be

  flashy

Disadvantages:

- Cognos Active Report files can become very large and such files will blog email servers

8. APPLICATIONS

- Ministry of Agriculture for States
- Ministry of Agriculture for Centre
- Department of Economics and Statistics
- Analysing related Machine Learning Projects

9. CONCLUSION

This project is based on a understanding the crop production of India. Downloading the dataset having 2,46,092 data points (rows) and 6 features (columns) describing each crop production related details. The following are the findings of the Project:

- plot the graphs to visualize the average production based on different seasons
- plot a line and area graphs to see the change in these both data with respect to increase in years
- plotting some graphs to visualize the top 10 Indian states with the most area
- There are so many different crops produced in India and most of us don't know which crop is belongs to which state so plotting and highlight the states in map according to different crops
- Taking forward the previous plot and fetching the state name and showing it in a text table whenever different crops are chosen

10. FUTURE SCOPE

More Enhancements that can be made in the future by taking updated dataset. Like,

- plotting the Price of Yield of the Crop across the different states in the country.
- Plotting the type of Crop for different types of lands in the country
- Plotting the Crops under the irrigation of different dams across the country
- Plotting the Agricultural and non-Agricultural Lands in the country

11. BIBILOGRAHY

1. https://www.geeksforgeeks.org/data-visualization-in-excel/
2. https://www.youtube.com/watch?v=2gWcJy7wF9E

3. https://www.youtube.com/watch?v=Mqw9YfLtQIk
4. https://www.youtube.com/watch?v=q36JRl4E6oY
5. https://www.youtube.com/watch?v=3H-3DmRKQP8

APPENDIX

A. Attach the dashboard for the solution built.