Agriculture Data Analytics In Crop Yield Estimation Using Ibm Cognos

1.INTRODUCTION

1.1 Overview A brief description about your project

Agriculture is important for human survival because it serves the basic need. A well-known fact that the majority of population (≥55%) in India is into agriculture. Due to variations in climatic conditions, there exist bottlenecks for increasing the crop production in India. It has become challenging task to achieve desired targets in Agri based crop yield. Factors like climate, geographical conditions, economic and political conditions are to be considered which have direct impact on the production, productivity of the crops. Crop yield prediction is one of the important factors in agriculture practices. Farmers need information regarding crop yield before sowing seeds in their fields to achieve enhanced crop yield. The use of technology in agriculture has increased in recent year and data analytics is one such trend that has penetrated into the agriculture field being used for management of crop yield and monitoring crop health. The recent trends in the domain of agriculture have made the people to understand the significance ofBig data. The main challenge using big data in agriculture is identification of impact and effectiveness of big data analytics. Efforts are going on to understand how big data analytics can be used to improve the productivity in agricultural practices. The analysis of data related to agriculture helps in crop yield prediction, crop health monitoring and other such related activities. In literature, there exist several studies related to the use of data analytics in the agriculture domain. The present study gives insights on various data analytics methods applied to crop yield prediction.

1.2 Purpose The use of this project. What can be achieved using this

- 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

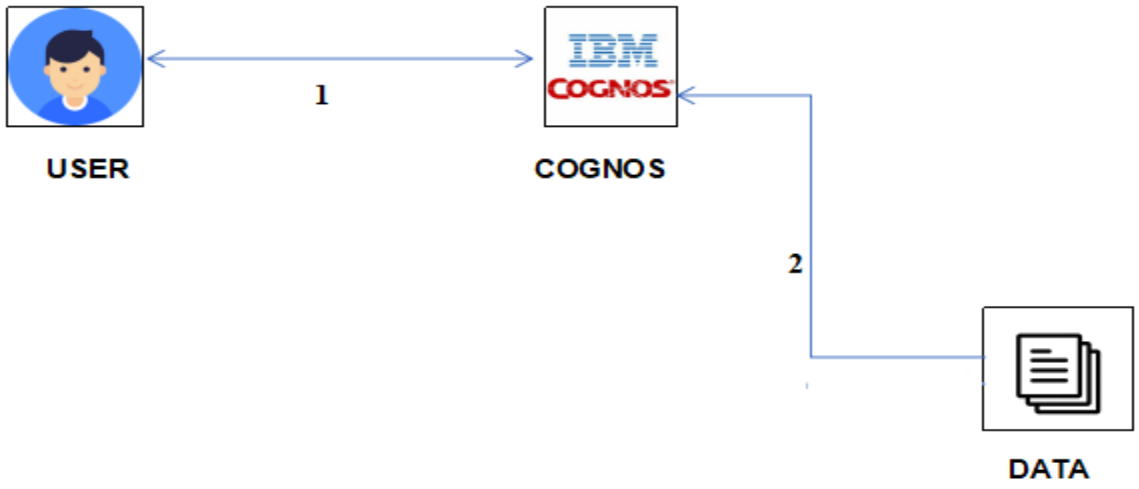
2.1 Existing problem Existing approaches or method to solve this problem In the existing method, Using Excel, Visualization is possible by modifying the data in the template provided. Pie Charts, Line graphs, Histograms, Bar graphs, Scatter plot are the different types of data visualizations in Excel.

2.2 Proposed solution What is the method or solution suggested by you?

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

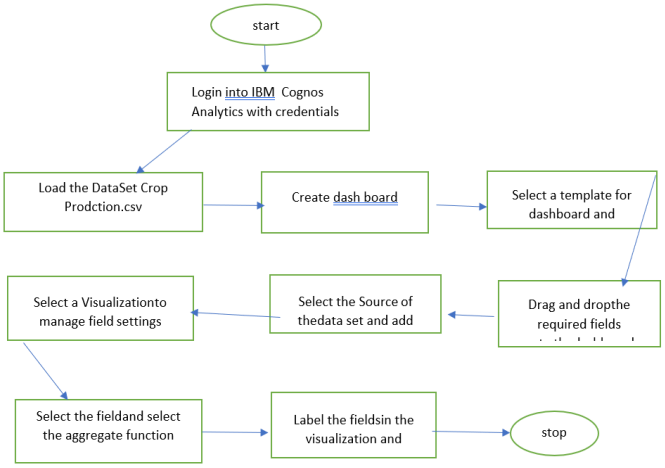
3.1 Block diagram Diagrammatic overview of the project.



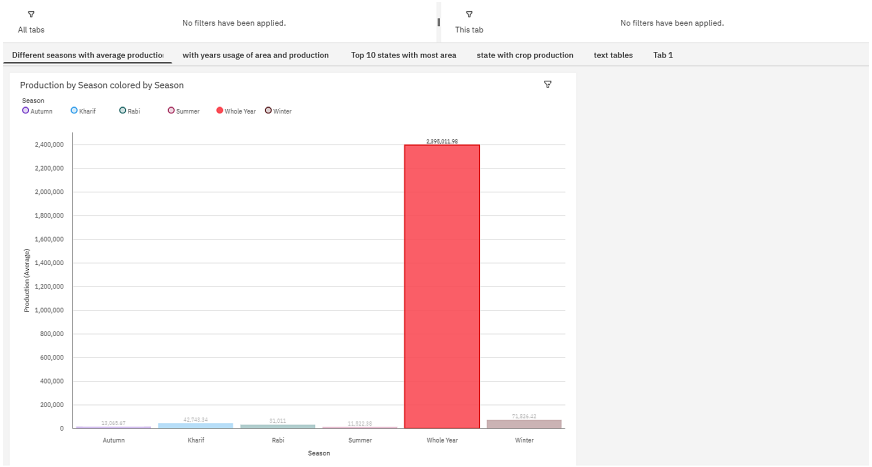
3.2 Hardware / Software designing Hardware and software requirements of the project
Hardware Requirements:

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:
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



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



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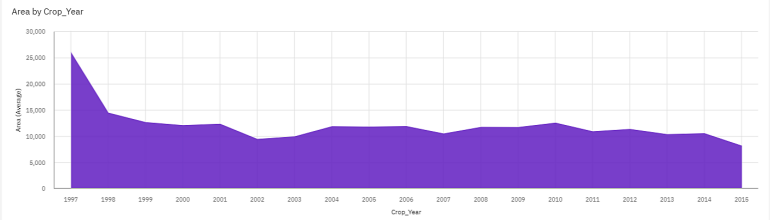
Different seasons with average productio | with years usage of area and production | Top 10 states with most area | state with crop production | text tables | Tab 1



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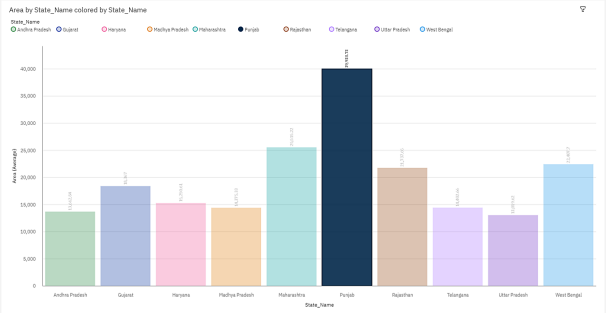
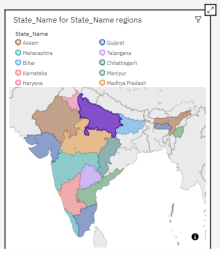
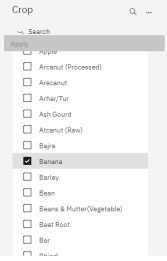
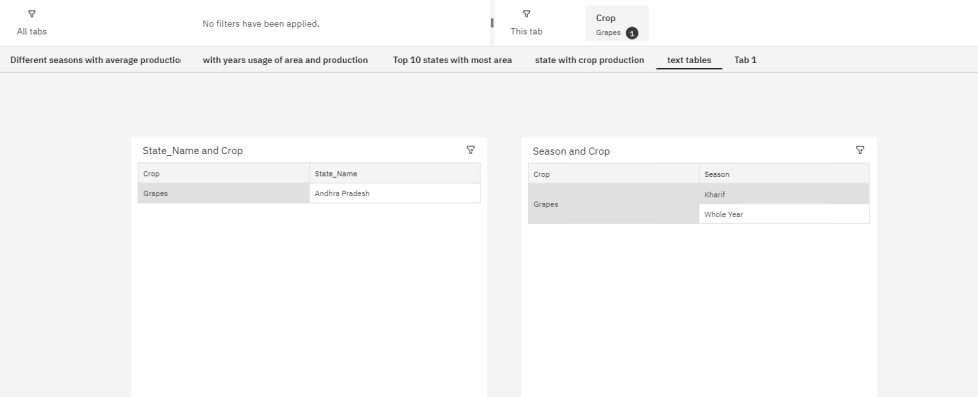


All tabs — No filters have been applied. | This tab — Crop: Banana, Grapes

Different seasons with average productio | with years usage of area and production | Top 10 states with most area | state with crop production | text tables | Tab 1







7.ADVANTAGES & DISADVANTAGES

List of advantages and disadvantages of the proposedsolutionAdvantages:

- Cognos Active Reports can be emailed, stored on drives, saved to sharedareas of file system
- Cognos Active Reports are great for offline consumption like can be accessed withoutInternet Connection, can work in remote locationssuchas Airplanes,can execute them while away from office.
- Cognos Active Reportswork with iPad
- Cognos Active Reports can be

  flashyDisadvantages:

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

8.APPLICATIONS

The areaswhere this solutioncan be applied

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

9.CONCLUSION

Conclusion summarizing the entire work and findings

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 thefindings of the Project:

- plot the graphs to visualize the average production based on different seasons
- plot a line and area graphs to see the changein these both data with respectto increase in years
- plotting some graphs to visualize the top 10 Indian states with themost 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 previousplot and fetching the state name and showingit 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 thecountry.
- Plotting the type of Crop for differenttypes of lands in the country
- Plotting the Crops under the irrigation of different dams across thecountry
- Plotting the Agricultural and non-Agricultural Lands in the country

11.BIBILOGRAHY

References of previous works or websitesvisited/books referred for analysis aboutthe project, solutionprevious findings etc are as follows:

1. https://www.ibm.com/products/cognos-analytics/demos/use-cases
2. https://us1.ca.analytics.ibm.com/bi/?perspective=home
3. https://www.youtube.com/playlist?list=PL_4RxtDBL5sCbLma4TPNg5rW4jl 5YcPj
4. https://www.tutorialspoint.com/excel_data_analysis/excel_data_analysis_visu alization.htm
5. https://www.geeksforgeeks.org/data-visualization-in-excel/
6. https://www.youtube.com/watch?v=2gWcJy7wF9E
7. https://www.youtube.com/watch?v=Mqw9YfLtQIk
8. https://www.youtube.com/watch?v=q36JRl4E6oY
9. https://www.youtube.com/watch?v=3H-3DmRKQP8 10. https://youtu.be/blgUU-yZo6A

APPENDIX

A. Attach the dashboard for the solutionbuilt.

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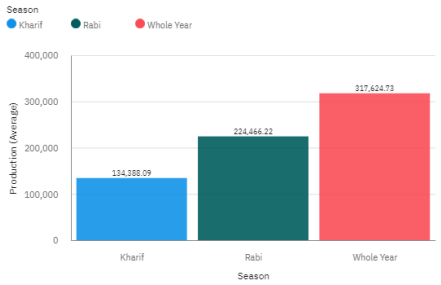
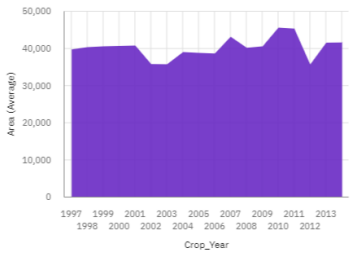
Different seasons with average productio | with years usage of area and production | Top 10 states with most area | state with crop production | text tables | Tab 1

Production by Season colored by Season

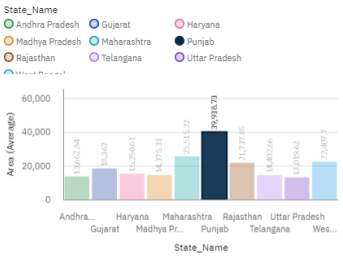


Area by Crop_Year

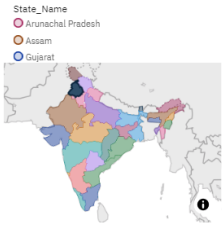


Production by Crop_Year

Area by State_Name colored by State_Name



State_Name for State_Name regions



Season and Crop

Crop	Season
Arhar/Tur	Kharif
Bajra	Kharif
Barley	Rabi
Cotton(lint)	Kharif
	Whole Year

ate_Name and Crop

op	State_Name
ple	Tamil Nadu
canut (Processed)	Karnataka
	Andaman and Nicobar Isl
	Andhra Pradesh
	Assam
ecanut	