Internship Project

report on

Agriculture Data Analytics in Crop Yield Estimation using IBM Cognos

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CHAPTER 1

INTRODUCTION

1.1 OVERVIEW

Analytics is the interpretation of data pattern that assist decision- making and performance improvement. Agriculture Data analytics in crop yield helps in analyzing some important visualization, creating a dashboard and by going through these we will get most of the insights of Crop production in India.IBM Cognos Analytics integrates reporting, modeling, analysis, exploration, dashboards, stories, and event management so you can understand your organization's data, and make effective decisions. A dashboard helps you to monitor events or activities at a glance by providing key insights and analysis about your data on one or more pages or screens. In this project, we 1515 visualize, analyze and gain most of the insights by creating a dashboard.

1.2 PURPOSE

The purpose or the use of this project is to estimate the crop yield/production in India. In which states or in which districts the particular crop is cultivated in which seasons and to what extent the yield/production will be.? The answers to all these questions can be achieved by this project with IBM Cognos analytics.

CHAPTER 2

LITERATURE SURVEY

2.1 EXISTING SYSTEM

Agriculture sector is struggling to increase the productivity of crop in India. Smart agriculture driven by Information Technology is the emerging trend in the research in this area in recent days. One of the areas being explored is the problem of yield prediction which is a major concern.

2.2 PROPOSED SYSTEM

Crop Yield Estimation using IBM Cognos.

With this we can come to know in how area the crops can be cultivated so that the required productivity will be acquired using visualizations in IBM Cognos Analyticsacross India. Crop yield/production estimation helps the farmers in various ways by providing the record of previous crop yield/production.

CHAPTER 3

THEORETICAL ANALYSIS

HARDWARE AND SOFTWARE DESIGNING

HARDWARE DESIGNING:

The hardware required for the development of this projectis:

i. Processor : Intel® CoreTM i5-9300H

ii. Processor speed : 2.4GHz

iii. RAM Size : 8 GB DDR

iv. System Type :X64-based processor

SOFTWARE DESIGNING:

The software required for the development of this projectis:

i. Operating System : Windows 10(and other higherversion)

ii. Cloud Computing Service : IBMCloud Services

CHAPTER 4

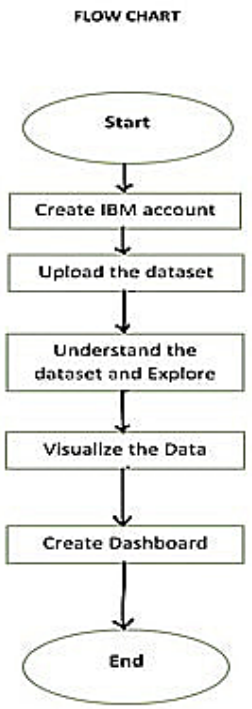
EXPERIMENTAL ANALYSIS

ANALYSIS OR INVESTIGATION MADE WHILE WORKING

With Cognos Analytics you are able access raw data as easy to understand insights and trends, taking your organization's knowledge levels and decision-making abilities to another level. You can even create and easily share system-recommended visualizations, reduce the time needed for data preparation through automation and built-in intelligence, as well as pose questions about your data and receive intelligent responses, with the natural language-powered assistant

ARCHITECTURE

While analyzing the datasets we have observed that there is a noisy data and mostly null values are present, by using IBM Cognos tool we have overcome the problems faced in the dataset (Null values, noisy data). On further proceeding we have seen various visualization tools out of those we have selected few best of them and the visuals are presented in the results slide.



CHAPTER 5

WORKFLOW

If you're new to dashboards and stories, review the following steps to understand the general workflow to create a view.

1. Click , and click Dashboard.
2. Select a template. Cognos Analytics provides templates that contain predefined layouts and grid lines for easy arrangement and alignment of the visualizations in a view.
3. Add visualizations to your view in one or more of the following ways:
    - If you know the type of visualization you want to use, select the visualization type and then add columns to it.
    - If you know the data that you want to see, but are not sure about how to present it, click and add a source to the Selected sources pane. Then, drag columns onto the canvas. Cognos Analytics displays them in the appropriate visualization.
    - Drag your collected visualizations from the My pins panel to quickly build a story.
4. Limit the data that is displayed by filtering in one or more of the following ways:
    - You can filter individual visualizations or on all visualizations in the view.
    - You can even filter on a column that is not displayed in the visualization by using a context filter.
    - You can select a specific value or a range of values.
5. Enhance your view and draw attention to visualizations by adding media, web pages, images, shapes, and text.
6. Personalize your view by changing the theme. You can choose from default, light, or dark themes. You can also customize specific visualization properties such as fill and border color, and opacity.
7. Create more meaningful or complex visualizations by adding columns to an existing

visualization. Drag another column onto a visualization and it changes to match the new data added.

8.You can undo and redo your last actions in succession. The ability to undo and redo previous actions is available until you close the view.

9. Test the view.

CHAPTER 6

RESULT

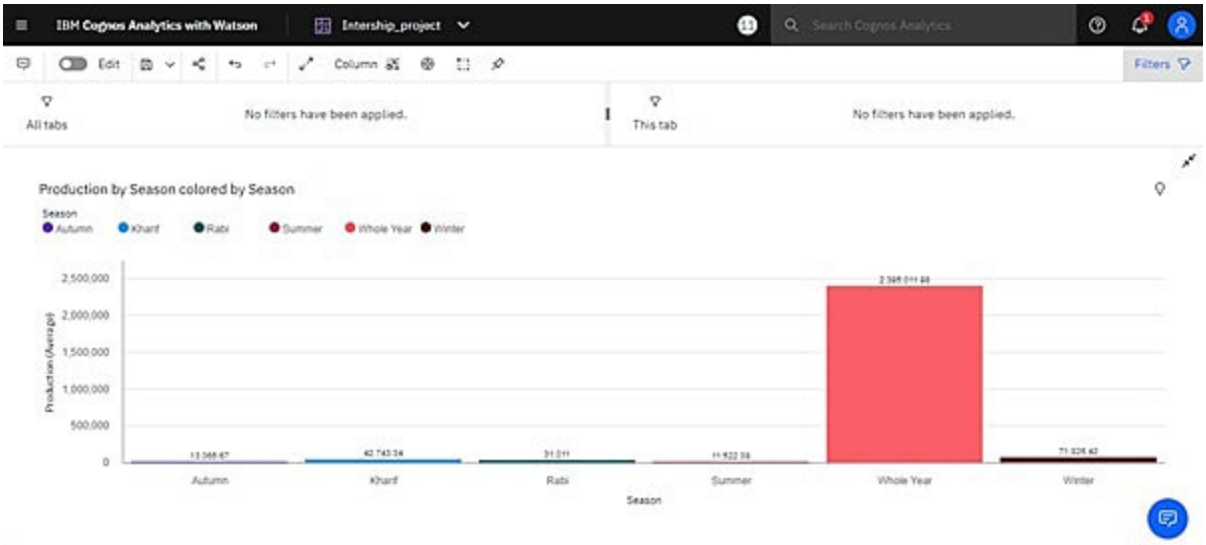
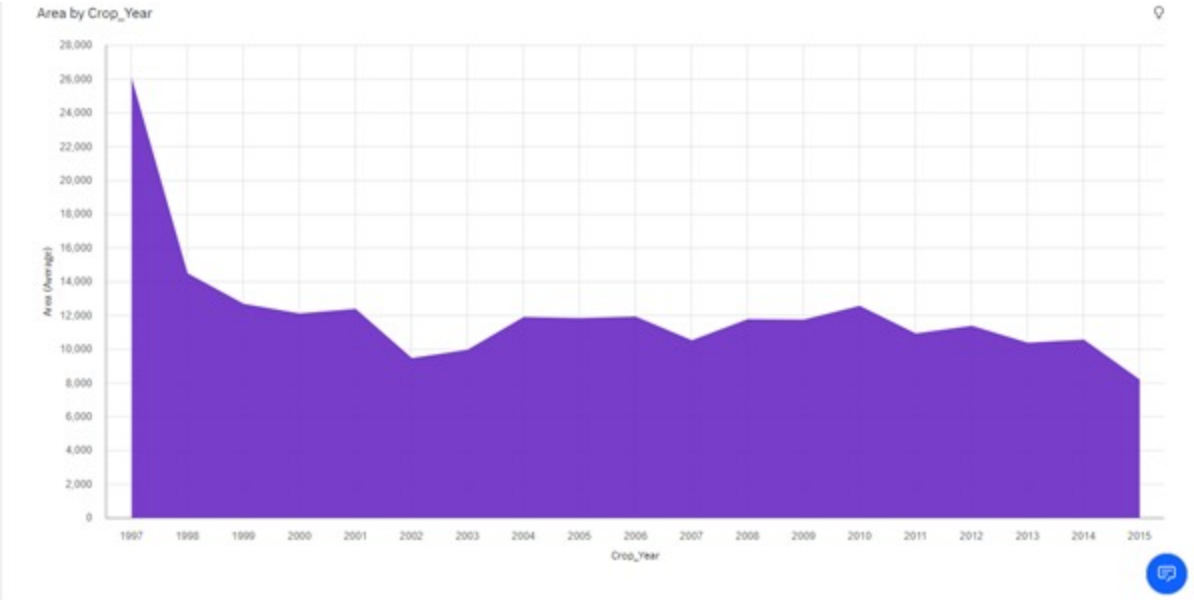


Figure 6.1:This figure shows the Seasons With Average Productions



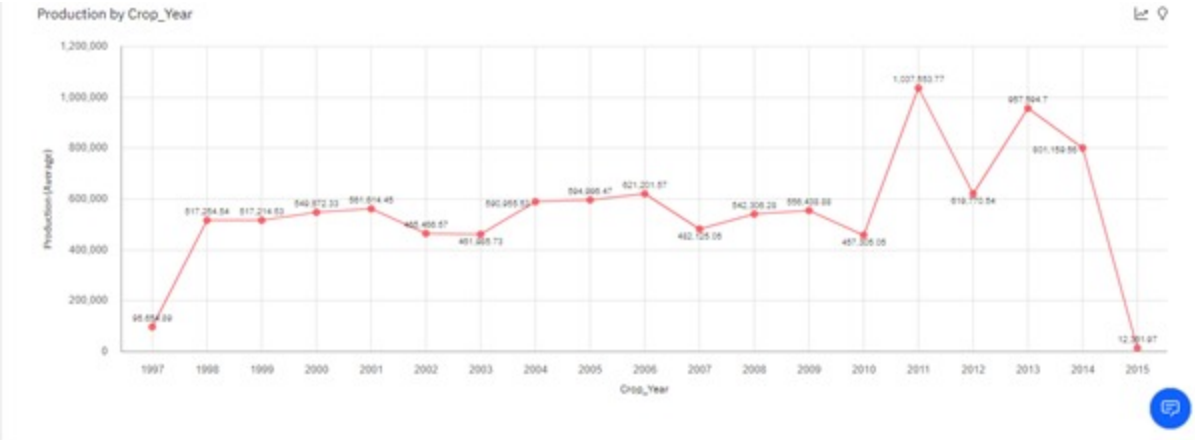


Figure 6.2: These figures shows the visualize with Years Usage Of Area And Production

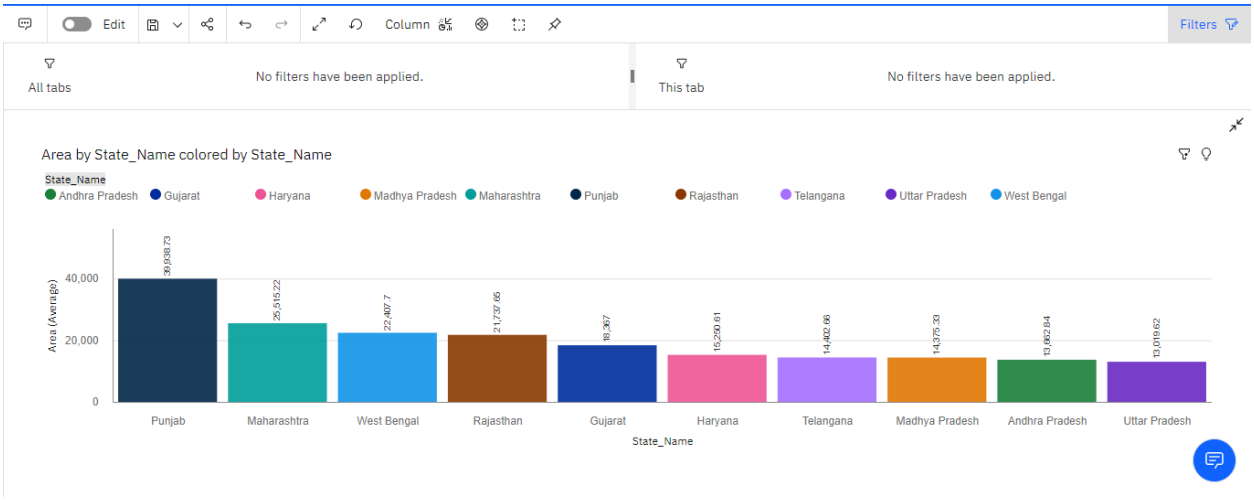


Figure 6.3: This visualization contains top 10 States with most area

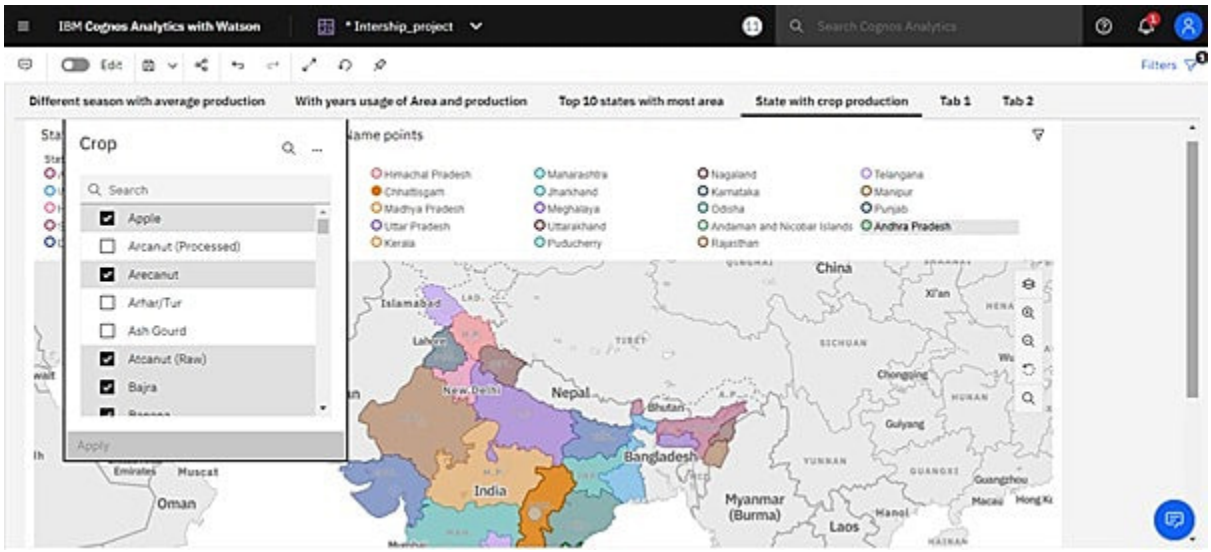


Figure 6.4: This visualization contains State With Crop Production

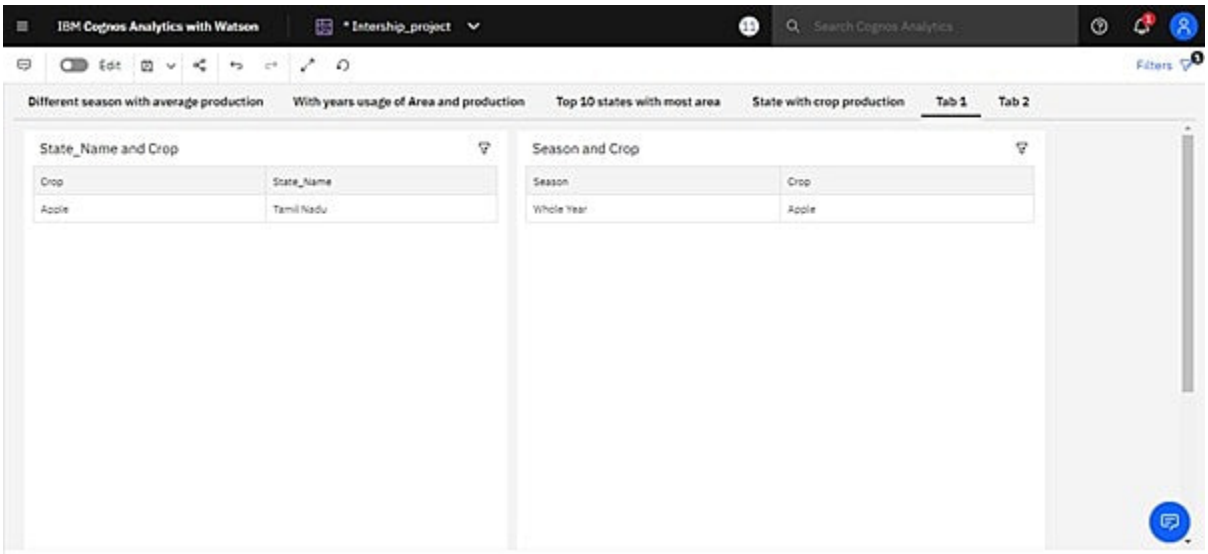


Figure 6.5: This table shows the States with The Crop Production Along With Season (Text Table)

Figure 6.6: Agriculture Data Analytics In Crop Yield Estimation Dashboard

CHAPTER 7

ADVANTAGES AND DISADVANTAGES

Advantages

- Automates reporting
- Enables precise reporting from database
- Enables users to share reports easily
- Creating Dashboards.
- Drill Throughout from one report or Dashboard to a Detailed report.
- Add Extension to new reporting possibilities to the product.
- Lower costs—reduces maintenance due to complete report coverage and a zero-footprint environment.
- Faster results—shortens reporting time due to seamless integration and adaptive authoring.
- Improved decision making—reports and dashboards present data in easily-understood formats.
- Adaptive authoring automatically adjusts report layout when objects are added, moved, or removed.
- Ability to work with data using familiar business terms.
- Ability to use a variety of charts—crosstabs, bar or 3D bar, pie or doughnut, line, gauge, funnel, scatter, dot density, waterfall, and so forth.
- Ability to create complex, multi-page layouts using different data sources.
- High performance data access across all sources.
- Complete connectivity regardless of environment.

- Open architecture that leverages XML, SOAP, and WSDL.
- Multiple export formats—Excel, Portable Document Format (PDF), Extensible Markup Language (XML), Hypertext Markup Language (HTML), and Comma Separated Value (CSV).
- Multilingual capabilities automatically deliver reports in the users' working language.
- Ability to integrate seamlessly with the Selling and Fulfillment Foundation, without the user having to log in to the application again.

Disadvantages

- Advanced reporting need experienced user.
- Dashboards are difficult to be correctly sized into a page.
- Can’t replace a data table in a visualization.
- String values in a column in your source CSV file can be only 128 characters long. If your CSV file has string columns with values that are longer, an error message is displayed.

The following functionality from IBM Cognos Analytics is not supported in dashboards:

- Data grouping
- Custom color palettes
- Custom visualizations
- Assistant
- Forecasting
- Insights in visualization
- Jupyter notebook visualization
- Advanced data analytics

CHAPTER 8

APPLICATIONS

- IBM Cognos provides quick relationships among pairs of fields that focuses on a single field of interest.
- IBM Cognos Analytics is a set of business intelligence tools available on cloud or on-premise.
- The primary focus is in the area of Descriptive Analytics, to help users see the information in your data through dashboards, professional reporting and self-service data exploration.
- Create and deliver personalized reports
- Data exploration and prediction.

CHAPTER 9

CONCLUSION

As a result of penetration of technology into agriculture field, there is a marginal improvement in the productivity. The innovations have led to new concepts like digital agriculture, smart farming, precision agriculture etc. In the literature, it has been observed that analysis has been done on agriculture productivity, hidden patterns discovery using data set related to seasons and crop yields data. We have noticed and made analysis about different crops cultivated, area and productions in different states and districts using IBM Cognos some of them are 1) Seasons with average productions. In this analytics we come to know in which seasons the average production is more and in which seasons the production is less. 2)Production by crop year. In this analysis we come to know in which years the production is high and low. 3) Production by District. With this analytics we can aware of the districts with the selected crops cultivated and states too.4)

Production by Area. From this we can know how much area should be cultivated and the production will be getting will be estimated. Finally created the dashboard and made analysis that in which state and in which year with crop area and to what extent the production will be are analyzed.

It can be concluded that as the food is the basic need of humans, the requirement of getting the maximum yields using optimal resource will become the necessity in near future as a result of growing population. The survey outcomes indicate the need for improved techniques in crop yield analytics. There exists a lot of research scope in this research area.

CHAPTER 10

FUTURESCOPE

Cognos may be a leading Business software and performance management tool. It permits Organisation to become top performing and analytics-driven entities. it’s designed to assist everybody in your Organisation create the selections that win higher business outcomes, versatile preparation choices, and to enable you to simply scale your analytics to fulfil dynamic business desires.

CHAPTER 11

BIBILOGRAPHY

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