ESTIMATE THE CROP YIELD USING DATA ANALYTICS

NALAIYA THIRAN PROJECT BASED LEARNING

on

PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND

ENTERPRENEURSHIP

A PROJECT REPORT

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ABSTRACT

   Estimate the crop yield using data analytics is an technique of approaching the futuristic yield and the results are processed and extracted from the previous year's yield with the same due of climatic changes, water, seasonal approach, the area of yield etc,

   .The impact of climate change in India, most of the agricultural crops are being badly affected in terms of their performance over a period of the last two decades. Predicting the crop yield in advance of its harvest would help the policy makers and farmers for taking appropriate measures for marketing and storage. This project will help the farmers to know the yield of their crop before cultivating onto the agricultural field and thus help them to make the appropriate decisions. Preparing for the event of business an farmer can literally estimate the quantity of yield he/she can get from tha area of crop investing and thus can calculate the sum of banknotes he can earn.

1. INTRODUCTION

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1. INTRODUCTION:

Agriculture is the backbone of Indian Economy. In India, majority of the farmers are not getting the expected crop yield due to several reasons. The agricultural yield is primarily depends on weather conditions. Rainfall conditions also influences the rice cultivation. In this context, the farmers necessarily requires a timely advice to predict the future crop productivity and an analysis is to be made in order to help the farmers to maximize the crop production in their crops. Yield prediction is an important agricultural problem. Every farmer is interested in knowing, how much yield he is about expect. In the past, yield prediction was performed by considering farmer's previous experience on a particular crop.

The volume of data is enormous in Indian agriculture. The data when become information is highly useful for many purposes. 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. IBM Cognos has components such as IBM Cognos Framework Manager, IBM Cognos Cube Designer, IBM Cognos Transformer. Cognos Analysis Studio helps business users get fast answers to business-related queries. Reporting studio allows you to create pixel-perfect reports for your organization. Cognos event studio allows you to assign a specific event that sends a notification to the stakeholder in your organization. Cognos Metric Studio allows you to monitor and analyze business metrics of your organization by building a scorecard environment.

1.1 Project overview

Agriculture is one of the main sectors of social concern since it provides a signification amount of food.

Crop production in India is one of the most 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.

Agriculture forms the basis for food security and hence it is important.In India, majority of the population i.e, above 55% is dependent on agriculture as per the recent information.

A. IBM Cognos Analytics

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. In this work, we used the IBM cognos data analytics for analysing the crop yield data.

Following are important features of IBM Cognos:

1. *Get Connected* - Connect your data effortlessly Import data from CSV files and spreadsheets. Connect to cloud or on-premises data sources, including SQL databases, Google BigQuery, Amazon, Redshift, and more.

2. *Prepare your data* – Prepare and connect data automatically Save time cleaning your data with AI-assisted data preparation. Clean and prep data from multiple sources, add calculated fields, join data, and create new tables.

3. *Build visualizations* - Create dynamic dashboards easily Quickly create compelling, interactive dashboards. Drag and drop data to create auto- generated visualizations, drill down for more detail, and share using email or Slack.

4. *Identify Patterns* – Uncover hidden patterns Ask the AI assistant a question in plain language, and see the answer in visualization. Use time series modelling to predict seasonal trends.

5. *Generate Personalised Reports* – Create and deliver personalized reports Keep your stakeholders up-to-date, automatically. Create and share dynamic personalized, multi-page reports in the formats your stakeholders want.

6. *Gain Insights* - Make confident data decisions Get deeper insights without a data science background. Validate what you know, identify what you don't with statistically accurate time-series forecasting and pinpoint patterns to consider.

7. *Stay Connected* – Go Mobile Stay connected on the go with the new mobile app. Access data and get alerts right from your phone.

Important Components of Cognos Software:

a. Cognos Connection: Cognos connection is a web portal that allows users to access Cognos 10 and studios. Based on your assigned role, you can use this component to retrieve, view, publish, manage, and organize companies' reports, scoreboards, and agents. The Administrator also using Cognos Connection to establish roles and user permissions and manage the Cognos Connection content.

b. Cognos Business Insight: Cognos Business Insight allows users to create their dashboard using any object. All content which the user is permitted to view will be presented as an object. This can be used in your workspace to create a fully personalized dashboard.

c. Cognos Query Studio: Cognos Query Studio helps business users to get fast answers to business related queries. It helps organizations to better understand the product, customer, and organizational needs. It also helps them to react quickly and stay ahead of the competition.

d.* Cognos Analysis Studio: Cognos Analysis Studio helps businesses to find and focus on things which are important to the business. It also helps to understand the latest trends, compare data, and assess business performance for multidimensional analysis.

e.* Cognos Business Insight Advanced: Cognos business insight Advanced is a new module included in Cognos 10. It combines Cognos query studio and Cognos Analysis Studio. It offers robust authoring environment for business peoples.

f.* Cognos Report Studio: Using the Cognos reporting tool, you can create pixel-perfect reports for your organization. It allows you to create charts, maps, lists, or any other available report type using relational or multidimensional data sources.

g.* Cognos Event Studio: This tool allows you to assign a specific event that sends a notification to the stakeholder in your organization. You can create agents which enables you to your events and thresholds. Therefore, the event occurs or threshold is reached the agent sends the notification.

h.* Cognos Metric Studio: Cognos Metric Studio allows you to monitor and analyse business metrics of your organization by building a scorecard environment. It also helps you to establish criteria and then monitor your organization to see how it is responding as the changes made in the criteria.

B. System Architecture

IBM Cognos Analytics provides dashboards and stories to communicate your insights and analysis. You can assemble a view that contains visualizations such as a graph, chart, plot, table, map, or any other visual representation of data. Explore powerful visualizations of your data in IBM Cognos Analytics and discover patterns and relationships that impact your business. 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.

The following are the modules in our work:

1. Uploading data.(dataset)
2. Cleaning data (prepare data).
3. Analysing and interpreting (exploration).
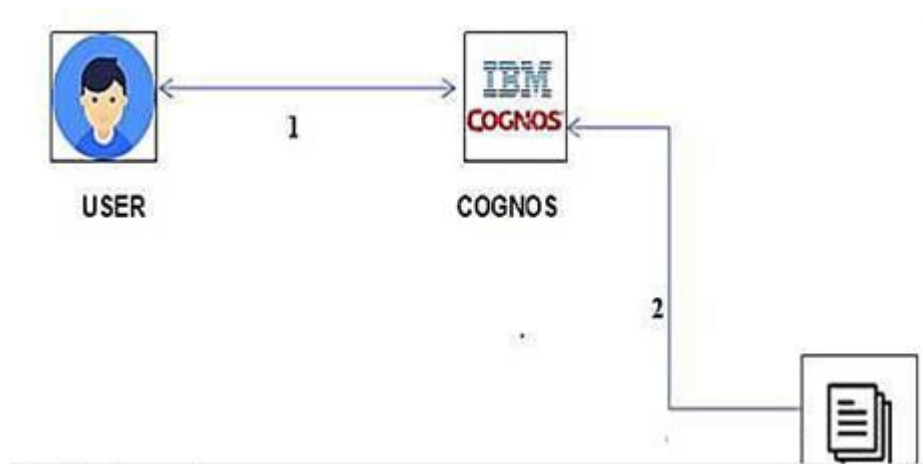4. Visualizing data (dashboard creation).

Fig. 1 Architecture Diagram

If we have not already signed up for IBM cognos Analytics then you can sign up here. By signing up for IBM cognos Analytics, two services will be created - Spark and Object Store in your IBM Cloud account.

a. Create the workbook: To create a new workbook, click on Cognos Analytics under Provisioned instance. The Cognos Analytics welcome screen will open automatically.

b. Data Upload: In this project we have uploaded crop_production dataset.

c. Data Pre-processing: The dataset consists of attributes Moisture, rainfall, Average, Humidity, Mean Temp, max Temp, Min temp, alkaline, sandy, chalky, clay, millet, yield, Outcomes. We will be using the .csv to perform the pre-processing.

d. Database Connection: Connecting to Db2 DB, which is part of the IBM Cloud Pak for Data cluster for building dashboards. Now add tables to the data module that you want to use for building your dashboard. In the same window, under the Schemas tab, select the schema name where your data is actually loaded. Next, click on Load metadata. In this case, we loaded the data in DB schema. All the database tables under that schema, the Meta data of the tables will be loaded to Cognos Analytics content store. We can click the New icon and then click Upload files. Go to where you saved crop_DataSet.csv and select it. After successful upload of the file, you should same screen below. You'll see predefined templates for easy arrangement and alignment of visualizations and other elements in a dashboard. Select the blank template and then click OK. Now add a data asset to this dashboard so that we can build some insights through visualizations.

e. Combine Worksheets into a Dashboard: A dashboard is a consolidated display of many worksheets and related information in a single place. It is used to compare and monitor a variety of data simultaneously. The different data views are displayed all at once. Steps to create the Dashboard:

- At the bottom of the workbook, click the "New Dashboard" icon.

- From the sheets list at left, drag views to the dashboard at right onto the Dashboard Workspace in the indicated location

- Change the target size of the dashboard by making a selection from the size drop- down list in the Dashboard section of the navigation menu on the left and adjust the object sizes accordingly.

- Remove unnecessary filters from the dashboard and make the essential filters as floating type and arrange them accordingly.

- Click on the first object on the Dashboard and click on "Use as Filter".

  f. *Create a Story:* A story is a sequence of visualizations that work together to convey information. User can create stories to tell a data narrative, provide context, demonstrate how decisions relate to outcomes, or to simply make a compelling case. Steps to create the Storyboard:

- Click the "New Story" tab. IBM Cognos opens a new story as the starting point.

- In the lower-left corner of the screen, choose a size for the story.

- By default, the story gets its title from the sheet name. To edit it, right-click the sheet tab or double click and choose "Rename Sheet".

- To start building the story, drag sheets into the story point or double-click a sheet on the left to add it to a story point.

- Click "Add a caption" to summarize the story point.

- To add another story point, click "Blank" to use a fresh sheet for the next story point.

- Repeat the above steps until all story points are added.

  g. *Publishing Workbooks and Dashboards:* We can share the work with the rest of the team by publishing it to Tableau Server or Tableau Online. After it's published, the team can access it through web browser or the Tableau mobile app. publishing data sources can also help to centralize data management. Steps to Publish a Workbook to IBM Cognos Online:

- Make sure a worksheet or dashboard tab is active.

- Select Server > Publish Workbook.

- Sign in to Tableau Online using the IBM Cognos Online Credentials.

- In the Publish Workbook dialog box, select the project, enter a name for the workbook along with the description

1.2 Purpose

At present we are at the immense need of another Green revolution to supply the food demand growing population.

At the user analysis the crop prediction for the india (or) other states.to understand the graphical formate.

2.LITERTURE SURVEY

2.1 Existing Problem:

Crop Yield Prediction Using Machine Learning : A research group investigated the utilization of various information mining methods which will foresee rice crop yield for the data collected from the state of Maharashtra, India. A total of 27 regions of Maharashtra were selected for the assessment and the data was collected related to the principle rice crop yield influencing parameters such as different atmospheric conditions and various harvest parameters i.e Precipitation rate, minimum, average, maximum and most extreme temperature, reference trim cultivable area, evapotranspiration, and yield for the season between June to November referred as Kharif, for the years 1998 to 2002 from the open source, Indian Administration records. WEKA a Java based dialect programming for less challenging assistance with information data sets, assigning design outcomes tool was applied for dataset processing andthe overall methodology of the study includes,

(1) pre-processing of dataset

(2) Building the prediction model utilizing WEKA and

 (3) Analyzing the outcomes.

Cross validation study is carried out to scrutinize how a predictable information mining method will execute on an ambiguous dataset. Study applied 10-fold higher cross validation study design to assess the data subsets for screening and testing. Identified and collected information was randomly distributed into 10 sections where in one data section was used for testing while all other data sections were utilized for the preparation information. Study reported that themethod applied was supportive in the precise estimation of rice crop yield for the state.

[1] In the year (2018) has proposed a random Forest Algorithm for predicting the crop yield of particular area considering various parameters such as rainfall, seasonal crop (Rabi and Kharif) district-wise, temperature (max.), crop production in terms of Kgs/tonnes. Area for doing research was Tamil Nadu. Dataset record were collected from Indian Government over 15years for rice production. They proved in experimental results that prediction analysis done using Random Forest Algorithm – a supervised machine learning algorithm will help farmer to 7 predict the yield of the crop before cultivating onto the agricultural field. This algorithm run efficiently on large databases with high classification accuracy.

[2] Crop Yield Prediction Using Data Mining Techniques : Raor ane A.A. and Kul karn i R.V., discussed few data mining techniques in their paper. They concluded that efficient technique can be developed and analyzed using the appropriate data, to solve complex agricultural problems using data mining techniques. Also recommend some of the algorithms and statistical methods that give [8]good results in agriculture growth.

[3] Crop yield prediction using Big Data Analytics: In India crop yield is season dependent and majorly influenced by the biological and economic causes of an individual crop. Reporting of progressive agricultural yield in all the seasons is an ample task and an advantageous task for every nation with

respect to assesses the overall crop yield prediction and estimation. At present a common issue worldwide is, farmers are stressed in producing higher crop yield dueto the influence of unpredictable climatic changes and significant reduction of water resource worldwide. A study was carried out to collect the data on world climatic changes and the available water resources which can be used to encourage advanced and novel approaches suchas big data analytics to retrieve the information of the previous results to the crop yield prediction and estimation. Study imported that the selection and usage of the most desirable crop according to the existing conditions, support to achieve the higher and enhanced crop yield S. Athmaja, M. Hanumanthappa, and V. Kavitha,a survey of machine learning algorithms has presented effective strategies by for big data analytics. All over the world the agriculturalpeoples gained some advantages through the comparative knowledge from big data analysis, with machine learning algorithm by using huge data the agricultural peoples get some comparative knowledge and changes in regular agriculture

2.2 Reference:

[1] S. Li, S. Peng, W. Chen, and X. Lu, ''INCOME: Practical land monitoring in precision agriculture with sensor networks,'' Comput. Commun., vol. 36, no. 4, pp. 459–467, Feb. 2013.

[2] X. E. Pantazi, D. Moshou, T. Alexandridis, R. L. Whetton, and A. M. Mouazen, ''Wheat yield prediction using machine learning and advanced sensing techniques,'' Comput. Electron. Agricult., vol. 121, pp. 57–65, Feb. 2016.

[3] M. E. Holzman, F. Carmona, R. Rivas, and R. Niclòs, ''Early assessment of crop yield from remotely sensed water stress and solar radiation data,'' ISPRS J. Photogramm. Remote Sens., vol. 145, pp. 297–308, Nov. 2018.

[4] Y. Dash, S. K. Mishra, and B. K. Panigrahi, ''Rainfall prediction for the Kerala state of India using artificial intelligence approaches,'' Comput. Electr. Eng., vol. 70, pp. 66–73, Aug. 2018.

2.3 Problem statement Definition:

In the agriculture sector the farmers are facing difficulties in analysing the demand in market and soil quality analysis to achieve high crop yield through technology. The main objective of this project is to predict crop yield that will be extremely useful to farmers to plan for the harvest and sales of harvested grain.
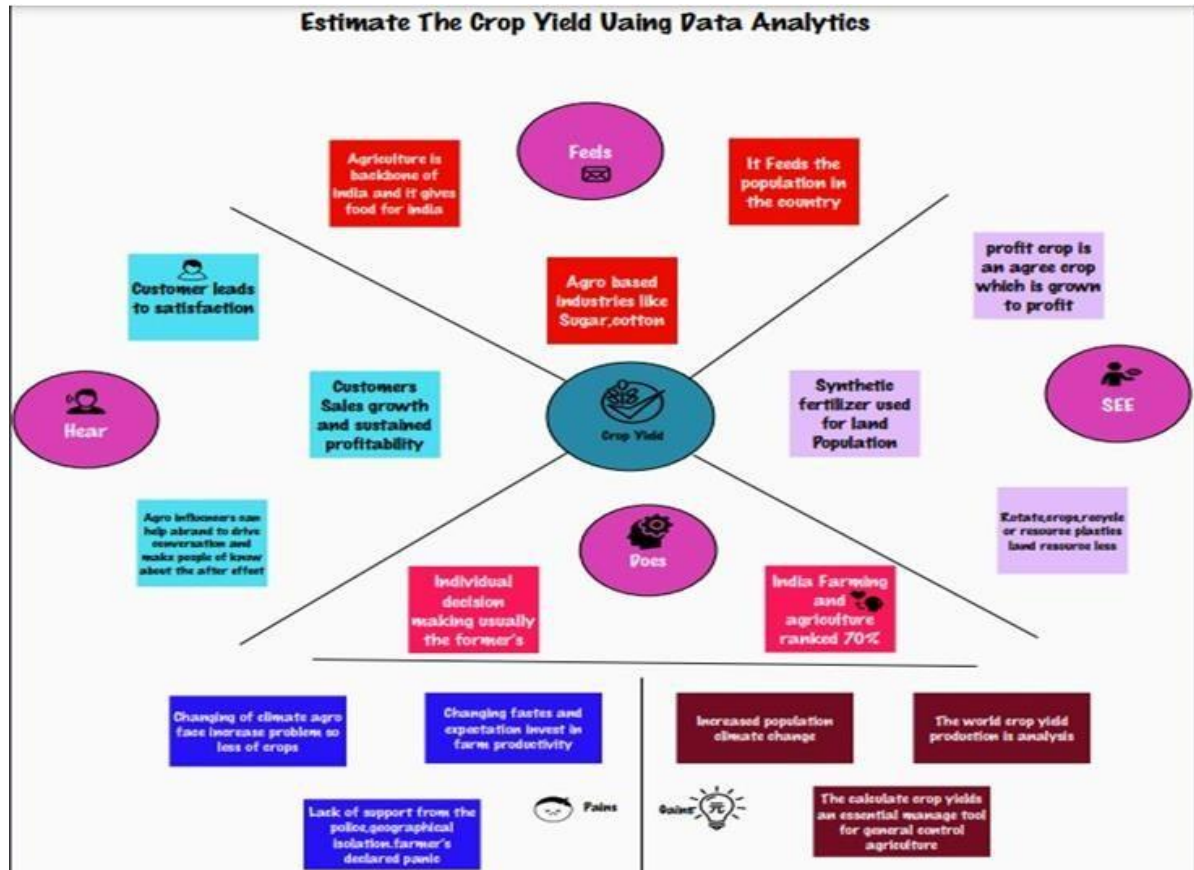
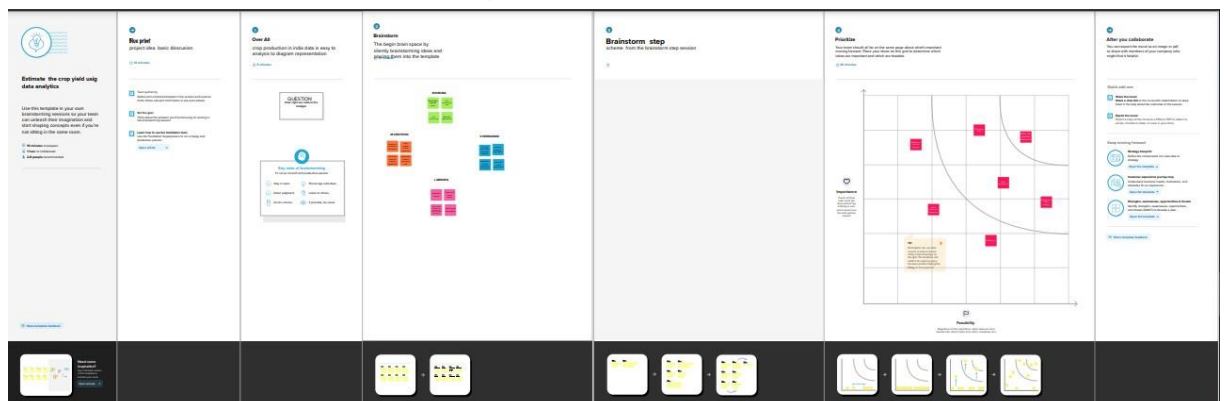## 3.IDEATION & PROPOSED SOLUTION

3.1 Empathy Map:

The empathy Map is simple and easy to understand the visual knowledge about of customer behaviours .

The useful to user ,easily understand creation of empathy map used to tool for very help.

It makes an effective solution requires understand the true problem and the person who is experiencing it.

Estimate The Crop Yield Uaing Data Analytics

3.2 Ideation Brainstroming:

3.3 Proposed solution:

S.No.	Parameter	Description

1.	Problem Statement (Problem to be solved)	• The project mainly deals with the crop yield production and we predict it using the data set and data analytics. • Agriculture is the backbone of Indian Economy. • India is provide food 70 %. • The India, majority of the farmers are not getting the expected crop yield due to several reasons. • Is accurate crop yield prediction model can help farmers to decide on yield crop.
2.	Idea / Solution description	• The proposed solution is to predict the crop yield using weather conditions. • Crop yield is the measure most often used for cereal, grain, or legumes; and typically is measured in bushels, tons, or pounds per acre in the U.S. • The use of Business Analytics' technologies allows the agricultural entrepreneur to make easier and better decisions based on information
3.	Novelty / Uniqueness	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
4.	Social Impact / Customer Satisfaction	It provides farmers with information on changes in weather, rainfall, soil moisture and other factors that affect crop yield. With

3.4 Problem Solution Fit:

4 REQUIREMENT ANALYSIS

4.1 Functional requirement:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)

FR-1	Uploading the dataset	In this project we have uploaded crop_productiondataset. Display the Manage Uploads page for the Data Set thatwill receive the data
FR-2	Preparation of dataset	Data collection. Relevant data is gathered from operational systems, data warehouses, data lakes and other data sources. • Uploading data.(dataset) • Cleaning data (prepare data). • Analysing and interpreting (exploration). • Visualizing data (dashboard creation).
FR-3	Exploratory Data Analysis	Exploratory Data Analysis (EDA) is an approach to analyze the data using visual techniques. It is used to discover trends, patterns, or to check assumptions with the help of statistical summary and graphical representations.
FR-4	Building a ML model	• Contextualize machine learning in your organization. • Explore the data and choose the type of algorithm. • Prepare and clean the dataset. • Split the prepared dataset and perform crossvalidation. • Perform machine learning optimization. • Deploy the model.
FR-5	Model Evaluation	Model evaluation is the process of using different evaluation metrics to understand a machine learning model'sperformance, as well as its strengths and weaknesses. Modelevaluation is important to assess the efficacy of a model during initial research phases, and it also plays a role in model monitoring

| FR-6	Data Pre-Processing	Data preprocessing, a component of data preparation, describes any type of processing performed on raw data to prepare it for another data processing procedure. It has traditionally been an important preliminary step for the datamining process. The dataset consists of attributes Moisture, rainfall, Average, Humidity, Mean Temp, max Temp, Min temp, alkaline, sandy, chalky, clay, millet, yield, Outcomes. Wewill be using the .csv to perform the pre-processing.
FR-7	Prediction Output	Predictive analytics is the process of using data analytics to make predictions based on data. This process uses data along with analysis, statistics, and machine learning techniques to create a predictive model forforecasting future events.

4.2 Non Functional Requirement:

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Its easy to understand the yields crop production dats. It helps the farmers to monitor the health of the crops in real time, create predictive analysis related to future yield.
NFR-2	**Security**	Data security functions to prevent data breaches, reducerisk of data exposure and ensure the ongoing safe and secure use of private data by minimizing exposure risk.
NFR-3	**Reliability**	The reliability of the data determines whether or not businesses can make good decisions with it. If the data is unreliable, It cannot be trusted, which makes it useless tothe organizations
NFR-4	**Performance**	Regularly evaluating the performance of our organization can help us understand how much progress we're making toward our goals. A performance analysis is a tool you can use to check important metrics of crop yield for very month or year and make plans for adjustment and improvement.
NFR-5	**Availability**	Data availability in crop yield prediction is a term used by computer storage, manufacturers and storage service providers to describe how data should be available at the required level of performance in situations of predicting data used for crop yield ranching from normal through disastrous.

| NFR-6	Scalability	The use of technology in agriculture has increased in recent year and data analytics is one such trend that haspenetrated into the agriculture field being used for management of crop yield and monitoring crop health.

5.PROJECT DESIGN

5.1 Data Flow Diagrams
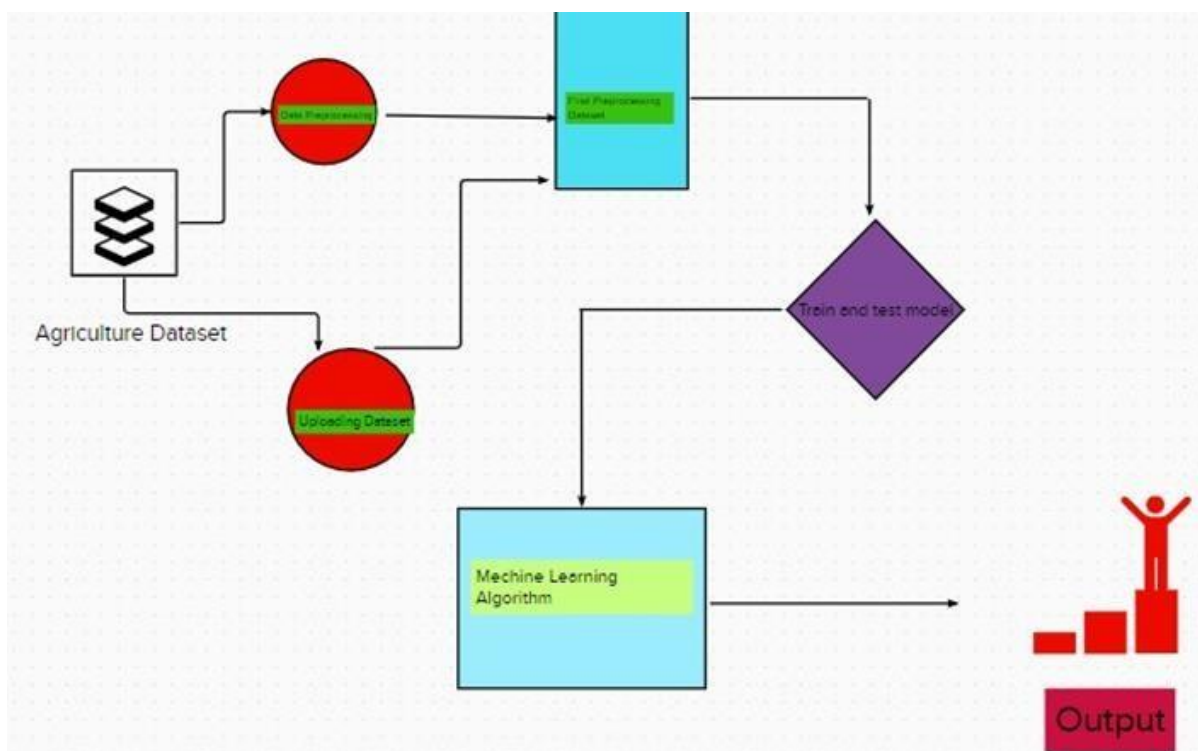
5.2 Solution & Technical Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

• Find the best tech solution to solve existing business problems.

• Describe the structure, characteristics, behaviour, and other aspects of the software to project stakeholders.

- Define features, development phases, and solution requirements.

- Provide specifications according to which the solution is defined, managed, and delivered
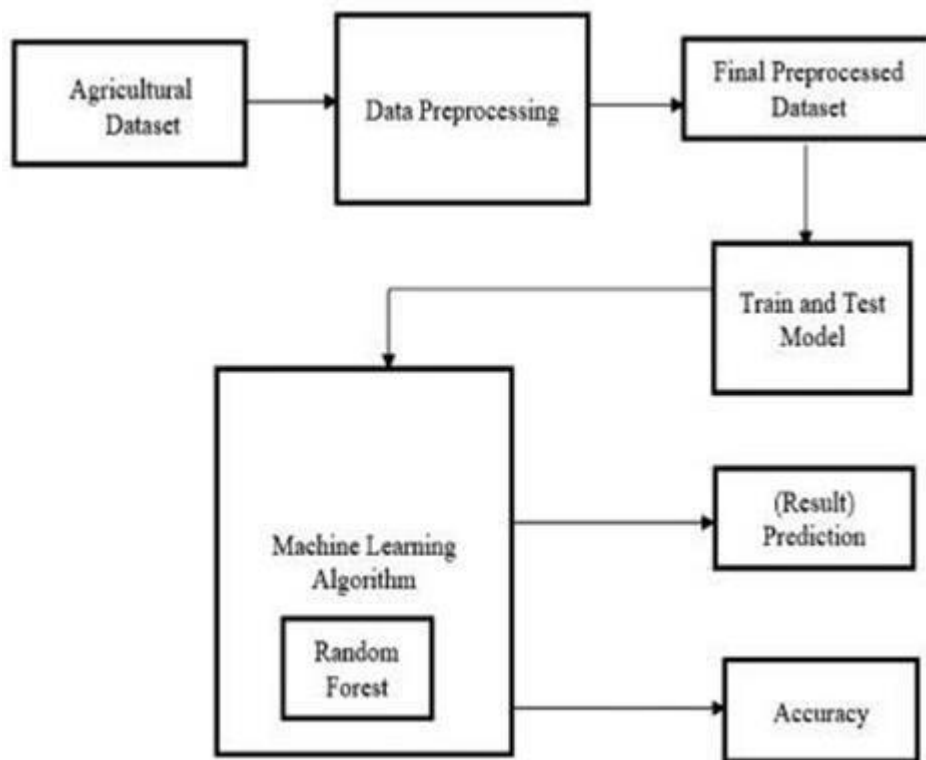
5.3 USER STORIES

ser Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority
ustomer obile er)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High
		USN-3	As a user, I can register for the application through gmail or facebook	I can register & access the dashboard with Facebook Login	Medium
	Login	USN-4	As a user, I can log into the application by entering email & password	I can login to the application	High
	Dashboard	USN-5	Go to dashboard and refer the content about our project	I can read instructions also and the home page is user-	Low

ser Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	
				friendly.		
	Upload Dataset	USN-6	As a user, I can able to input the agricultural datasets to the application	As a user, I can able to input the agricultural datasets to the application	High	
	Exploratory Data Analysis	USN-7	As a user I can able to get the recognised datasets as output from the agricultural datasets.	I can access the Exploratory Data Analysis-(Exploratory Data Analysis, or EDA, is the machine learning) Understanding the patterns and trends in the data is the goal of data exploration. All of the useful insights are drawn at this point, and the relationships between the variables are recognized.	High	
	Build a ML model	USN-8	As a user, I will train and test the datasets obtained from the agricultural datasets as input to get the maximum accuracy of output.	The Machine Learning Model is built using all of the insights and patterns discovered during Data Exploration. The data set is always separated into two parts, training data and testing data, at this stage. The model will be built and analyzed using the training data. The model's logic is based on the Machine Learning Algorithm that is currently in use.	Low	
	Predict	USN-9	As a user I can able to predict the model and then it is used to make predictions after it has been validated and modified.	I can able to predict the. Crop yield production based on user inputs and it is used to produce	High	

ser Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	
				the accurate output		
ustomer eb user)	Login	USN-10	As a user, I can use the application by entering my email, password.	I can access my account	Medium	
ustomer are ecutive	Dashboard	USN-11	upload the image	Recognize and get the output	High	
ministrat	Security	USN-12	updated the features	checking the security	Medium	

6.PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation:

Sprint	Function Requirement(Epic)	User story Number	User story/Task	Story points	priority	Team member
Sprint-1	Registration	1	As a user ,I can register for by entering my cropyeild –id card and request.	2	High	Abinaya
		2	As a user,I can register for the application through G mail	2	Low	veeramani
	Log in	3	A a user ,I can call and request or approach for dataset	2	High	Vinothini
	Working with the dataset	4	To work on the given dataset.Understand the dataset	2	High	ManiKiruba
		5	Load the dataset to cloud platform then build the requirements Visualizations.	10	High	Abinaya

Sprint-2	Data Visualization Chart	6	Using the crop production in indian dataset ,create various graphs and charts to highlight the insights and visualizations. Builds visualization to showcase	4	High	Abinaya

6.2 Sprint Delivery Schedule:

Sprint	Total story pointer	Duration	Sprint start date	Sprint end date(planned)	Story points completed (as on planned end date)	Sprint Release date (Actual)
Sprint-1	20	6 Days	24 oct 2022	29 oct 2022	20	29 oct 2022
Sprint-2	20	6 Days	31 oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6Days	7 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

6.3 Reports from JIRA:

7.Coding & Solutioning:

Login.html:

```html
<!--TEAM ID : PNT2022TMID46328-->

<!--TEAM MEMBERS : KIRUBA M, VEERAMANI V , VINOTHINI M , ABINAYA J -->


<!DOCTYPE html>

<html lang="en">

<head>

    <title>login Form</title>


    <link rel="preconnect" href="https://fonts.gstatic.com">

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.4/css/all.min.css">

    <link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;500;600&display=swap" rel="stylesheet">

    <!--Stylesheet-->

    <style media="screen">

     *,

*:before,

*:after{

    padding: 0;

    margin: 0;
```

```css
    box-sizing: border-box;

}

body{

    background-color:

    #229e3d;width: 200px;

    height: 200px;

    background-image:

    url("IMAGES/crop.jpg");background-

    repeat: no-repeat;
```

```css
  background-size: cover;
}
form{
  height:
  520px;width:
  400px;
  background-color:
  rgba(255,255,255,0.13);position:
  absolute;
  transform: translate(-50%,-
  50%);top: 50%;
  left: 50%;
  border-radius: 10px;
  backdrop-filter:
  blur(10px);
  border: 2px solid
  rgba(255,255,255,0.1);box-shadow:
  0 0 40px rgba(8,7,16,0.6); padding:
  50px 35px;
}
form *{
  font-family: 'Poppins',sans-
  serif;color: #2c2c2c;
  letter-spacing:
  0.5px;outline:
  none; border:
  none;
}
```

```css
form h3{

    font-size: 32px;

    font-weight:

    500;line-height:

    42px;
```

```css
    text-align: center;
}

label{
    display: block;
    margin-top:
    30px;font-size:
    16px; font-
    weight: 500;
}
input{
    display:
    block;height:
    50px; width:
    100%;
    background-color: rgba(0, 0, 0,
    0.07);font-weight: bolder;
    border-radius:
    3px;padding: 0
    10px; margin-
    top: 8px; font-
    size: 14px; font-
    weight: 300;
}
::placeholder{
    color:
    #303030;
}
```

```
button{

    margin-top:

    50px;width:

    100%;
```

```
      background-color: #ffffff;

      color: #080710;

      padding: 15px 0;

      font-size: 18px;

      font-weight: 600;

      border-radius:

      5px;cursor:

      pointer;

}

    </style>

</head>

<body>


  <form>

    <h3>Login Here</h3>


    <label for="username">Username</label>

    <input type="text" placeholder="Email or Phone" id="username">


    <label for="password">Password</label>

    <input type="password" placeholder="Password" id="password">


    <button>Log In</button>

  </form>


</body>

</html>

<!-- partial -->
```

</body>

        </html>

Regsitration.html:

```html
<!DOCTYP>
< html>
                <html>
                <head>
                    <title></title>
                    <meta name="viewport" content="width=device-width, initial-scale=1.0">
                    <link rel="stylesheet" type="text/css"
href="{{url_for('static',filename='style.css')}}">
                    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-
awesome/4.7.0/css/font-awesome.min.css">
                    <!-- jQuery library -->
                    <script
src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>

                    <!-- Latest compiled JavaScript -->
                    <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>

                    <script src="https://www.google.com/recaptcha/api.js" async
defer></script>
                    <style type="text/css">
                        body{
                            margin: 10px 10px 10px 100px;
                            background-color: aliceblue;

                        }
                        .error {
                            color: red;
                        }
                        .fm1 {
                            text-align: center;
                        }
                        .lb1 {
                            text-align: center;
                            padding: 25px;
                        }
                        .lb2 {
                            margin-left: 20px;
                        }
                        .lb3 {
                            margin-right: 35px;
                        }
                        .container {
```

```
        display: block;
}
.k{
```

```html
                    border-radius: 15px;
            }
        </style>
</head>
<body>


        <?php
include 'header.php';
?>


        <div class="heading fix">
                <label class="lb1">REGISTRATION</label>
        </div>
        <div class="outerbox">
            <div class="fixedbox">
                <span class="content">
                        <h4>Hello, Friend!</h4>
                        <p>Enter your personal details and start journey with us</p>
                </span>
            </div>
            <div class="scrollbox">
                <div class="registerdonor">
                        <form action="process.php" method="POST" id="myform">
                            <div class="login">
                                <h3>Login Details</h3>
                                <table class="fm1">
                                    <tr>
                                        <td colspan="2">
                                            <label class="lb1" class="username">User
Name:-</label>
                                            <input type="text" name="user_name"
required pattern="^[A-Za-z0-9._%+-@]{5,10}$"
                                                title="Enter a username between 5 to
10 letter" autocomplete="off">
                                        </td>
                                    </tr>
                                    <tr>
                                        <td>
                                            <label class="lb1">Full Name:-</label>
                                            <input type="text" name="user_full_name"
required pattern="[A-z ]+$"
                                                title="Use only character &
whitespace" autocomplete="off">
                                        </td>
                                    </tr>
                                    <tr>
```

```html
                                            <td>
                                                <label class="lb1">Email Id:-</label>
                                    <input type="email" name="user_email"
required
                                            pattern="[A-Za-z0-9._%+-]+@[A-z0-9.-
]+\.[a-z]{2,}$"
                                            title="Email id is not Valid"
autocomplete="off">
                                    </td>
                                </tr>
                                <tr>
                                    <td>
                                            <label class="lb1">Password:-</label>
                                    <input type="password" name="password"
required
                                            pattern="(?=.\d)(?=.[a-z])(?=.*[A-
Z]).{6,}"
                                            title="Must contain at least one
number and one uppercase and lowercase letter, and at least 6 or morecharacters"

                                            id="password" autocomplete="off">
                                    </td>
                                </tr>
                                <tr>
                                    <td>
                                        <label>Confirm Password:-</label>
                                        <input type="text" name="confirm_password"
required
                                            pattern="(?=.\d)(?=.[a-z])(?=.*[A-
Z]).{6,}"
                                             title="Must contain at least onenumber
and one uppercase and lowercase letter, and at least 6 or more
characters"
                                            id="confirm_password"
autocomplete="off">
                                    </td>
                                </tr>
                            </table>
                        </div>
                        <div class="container">
                            <h3>Contact Details</h3>
                            <table class="fm1">
                                <tr>
                                    <td>
                                        <label>Mobile Number:-</label>
                                            <input type="text" name="user_number"
```

```html
                    required pattern="^[1-9]{1}[0-9]{9}$"
                                                            title="Number is not valid"
autocomplete="off">
                                            </td>
                                        </tr>
                                        <tr>
                                            <td>
                                                <label class="lb1">Pincode</label>
                                                <input type="text" name="pincode" required
pattern="^[0-9]{6}$"
                                                        title="Pincode is not valid"
autocomplete="off">
                                            </td>
                                        </tr>
                                        <tr>
                                            <td rowspan="1">
                                                <label class="lb1">Address:-</label>
                                                <textarea name="Address"
placeholder="follow with pincode" required></textarea>
                                            </td>
                                        </tr>
                                        <!-- <tr>
                                            <td>
                                                <label class="lb1">City:-</label >
                                                <input type="text" name="city">
                                            </td>
                                        </tr> -->
                                        <tr>
                                            <td>
                                                <label class="lb1">State:-</label>
                                                <input type="text" name="state">
                                            </td>
                                        </tr>
                                    </table>
                                </div>
                                <div class="personal">
                                    <h3>Personal Details</h3>
                                    <table class="fm1">
                                        <tr>
                                            <td>
                                                <label>Date Of Birth:-</label>
                                                <input type="date" name="date_of_birth"
required autocomplete="off">
                                            </td>
                                        </tr>
                                        <tr>
```

```html
<td>
    <div class="radio">
        <label class="lb3">Gender:-</label>
        <input type="radio" name="gender"
class="radio1" value="Male"><span

            class="radioname" required

autocomplete="off">Male</span>
        <input type="radio" class="radio2"
name="gender" value="Female"><span

            class="radioname" required

autocomplete="off">Female</span>
    </div>
</td>
</tr>
<tr>
    <td>
        <label class="lb1">Blood Group</label>
        <input type="text" list="bloodgroup"
name="blood_group" placeholder="----Select----------------"
            required autocomplete="off">
        <datalist id="bloodgroup">
            <option value="A+"></option>
            <option value="A-"></option>
            <option value="AB+"></option>
            <option value="B+"></option>
            <option value="B-"></option>
            <option value="O+"></option>
            <option value="O-"></option>
        </datalist>
    </td>
    <!-- <tr>
    <td>
        <label class="lb1">Plasma Type</label >
        <input type="text" list="plasmatype"
name="plasma_type" placeholder="----Select----------------"
            required autocomplete="off">
        <datalist id="plasmatype">
            <option value="Hot"></option>
            <option value="Warm"></option>
            <option value="Cold"></option>
            <option value="Ultra Cold"></option>
        </datalist>
    </td>
</tr> -->
<tr>
    <td>
```

```html
                                                <label class="lb1">Weight In Kg :-</label>
                                                <input type="number" name="weight"
        required autocomplete="off">
                                                        </td>
                                                </tr>
                                        </table>
                                </div>
                                <p class="lb2"><input type="checkbox" name="terms"
        id="checkbox" required autocomplete="off">
                                        <!-- I agree to have my contact details broadcasted to
        the registered donors of PGHS.net -->
                                        I agree that the above details are true </p>
                                <input type="reset" class="lb2 k" name="submit"
        value="Reset">
                                <a href="login.html">
                                        <input type="button" class="lb2 k"
        onclick="href='login.html';" value="Submit"></a>
                        </div>
                        </form>
                </div>
        </div>
        </div>
        <!-- Responsive table   -->
        <div class="rregisterdonor">
                <form action="process.php" method="POST" id="myform">
</html>
```
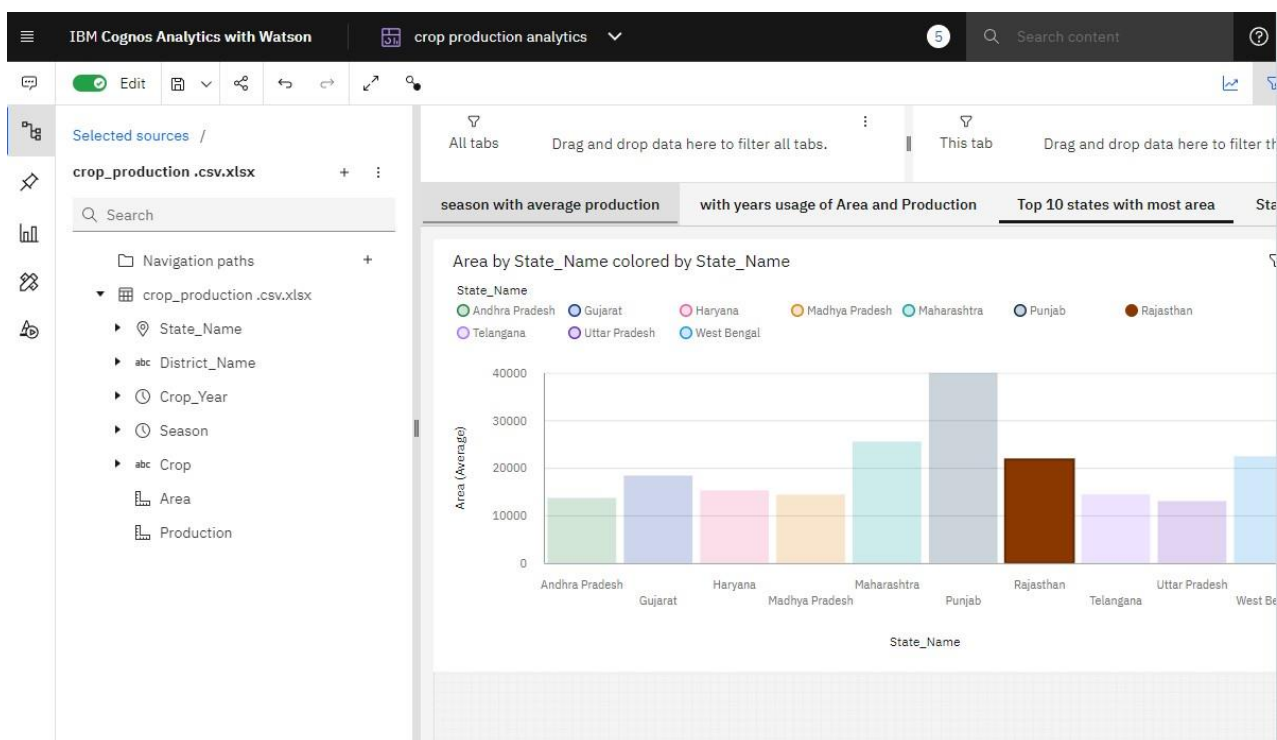
7.1 Working with dataset and data visualization

7.1 .1 Understanding the dataset:

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 understand the data we're working with and give a brief overview of what each feature represents or should represent

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.

7.2 Loading the dataset:

crop_production (3).csv

sales.csv.xlsx

7.3 Visualization Charts:
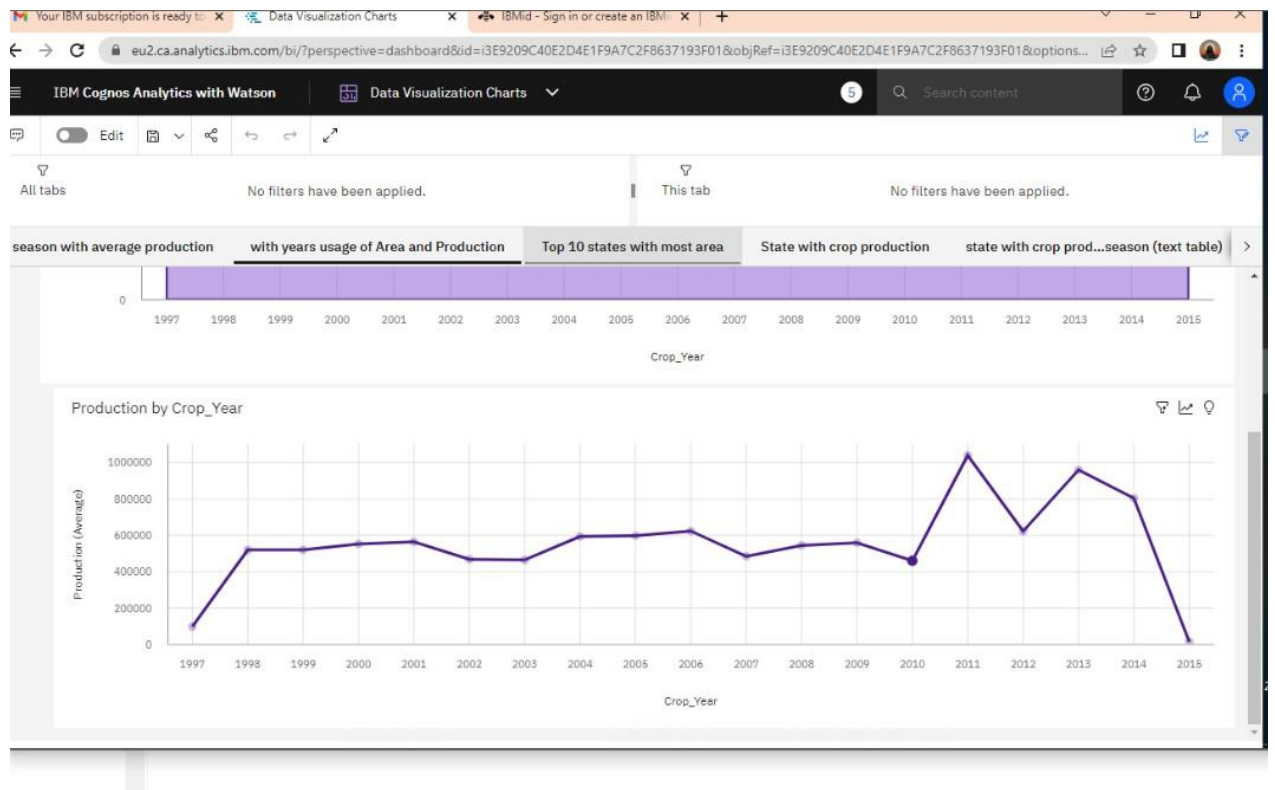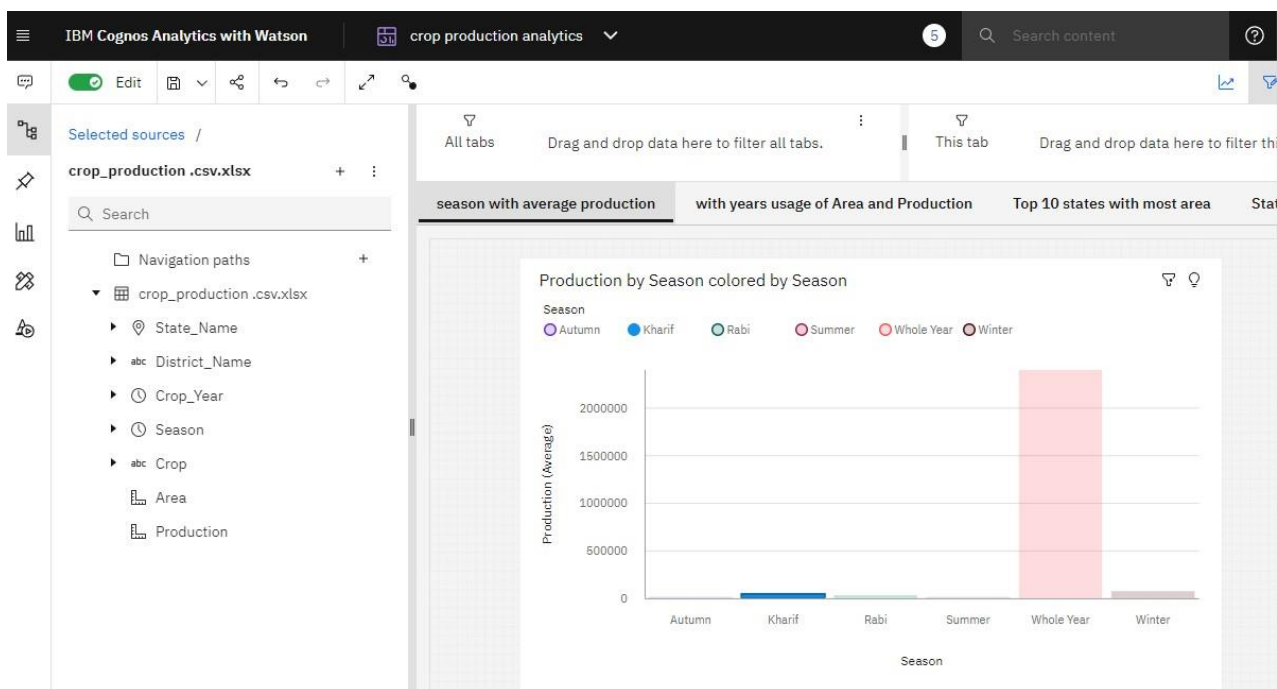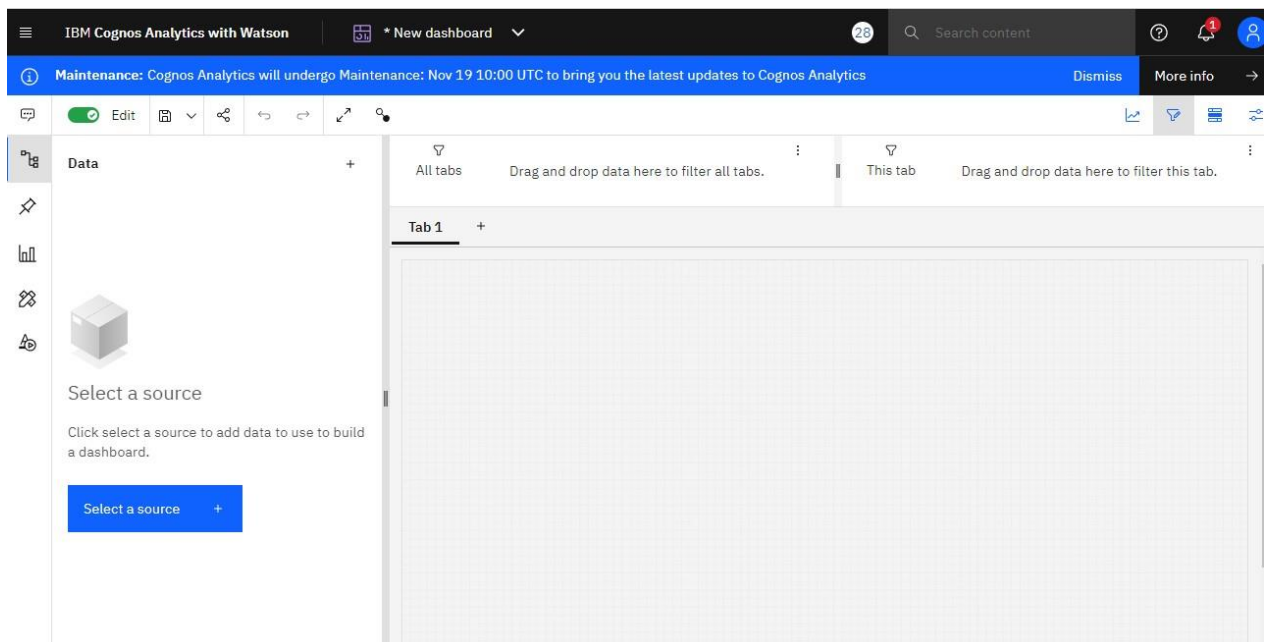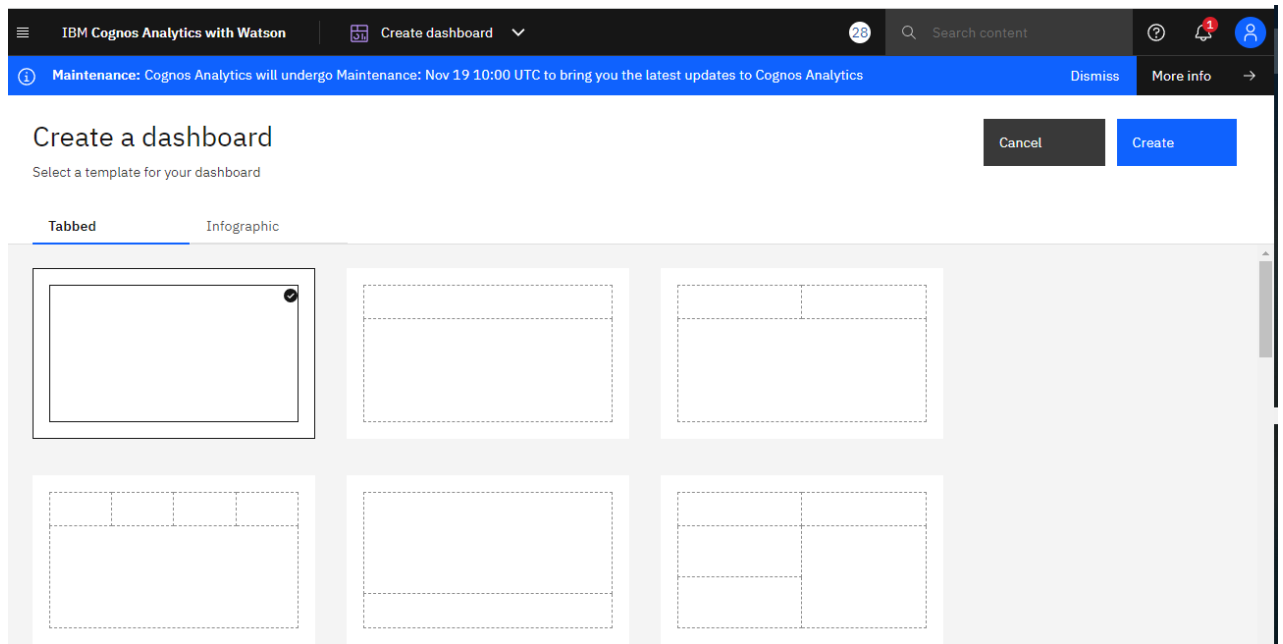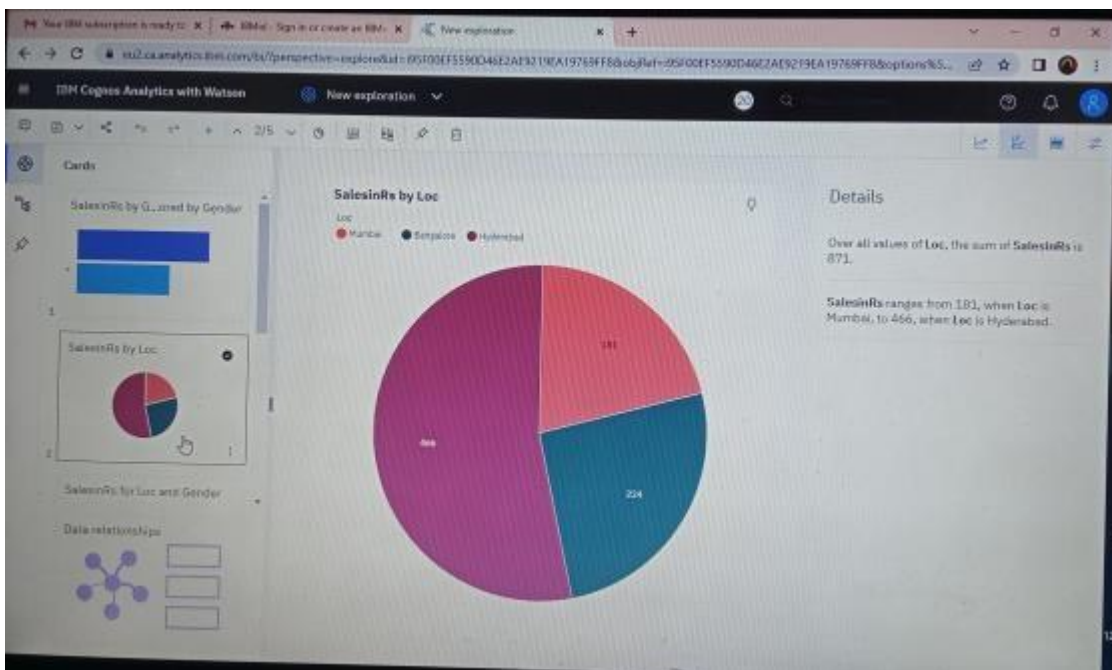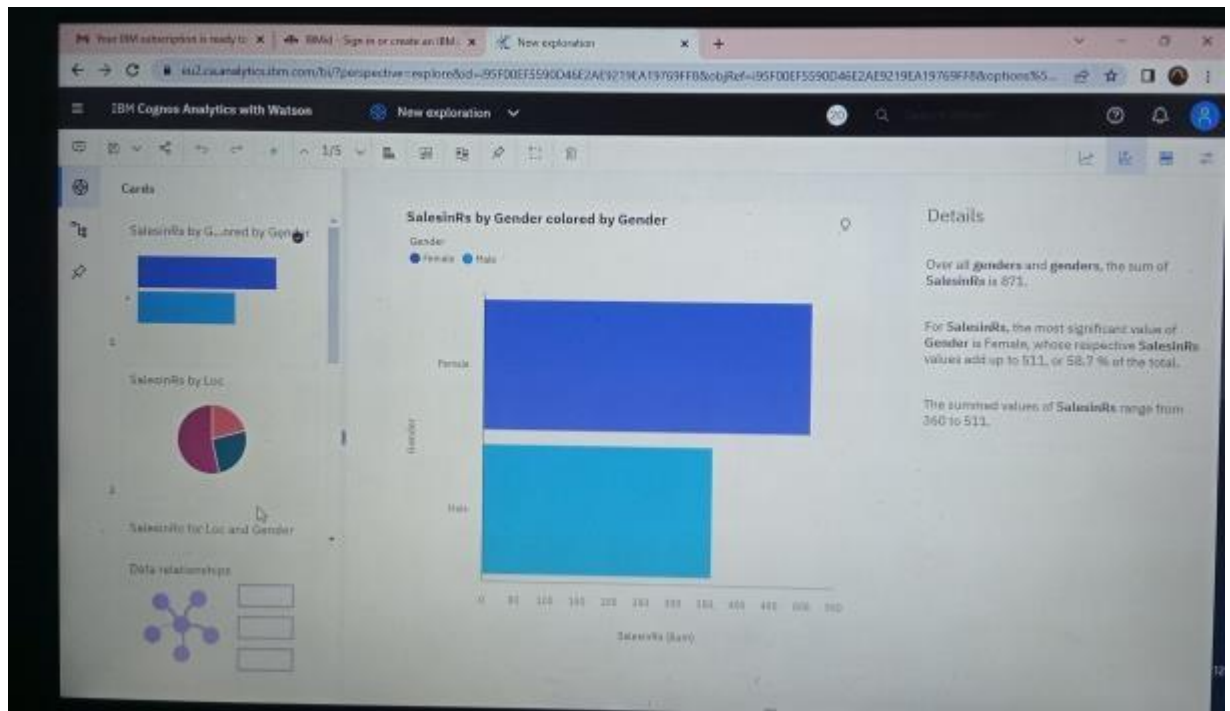
8. CREATING THE DASHBOARD AND EXPORT THE ANALYTICS
8.1 Creating the dashboard

8.2 Exploration:

9. Advantage:

One can easily analyse and understand trends in croppping pattern, seasonal behaviour of land in various areas with the created dashboard. With no prior skills and knowledge about the tools that we use for analysis,anyone (literate or illiterate)can easily infer the knowlegde that we represent in various charts or graphs or maps. So that it would be helpful to farmers to make appropriate decisions in the future.

10. Disadvantage:

Not all factors influencing the crop yield are being considered for the analyis as we have only taken visible factors into account for the analysis

10 - CONCLUSION

The productivity of agriculture has slightly increased as a result of technology's introduction. New ideas like digital agriculture, smart farming, precision agriculture, etc. have been made possible by the innovations. From the analysis dashboard, it has been noted that analyses of agricultural productivity and the detection of hidden patterns utilising data sets related to seasons and crop yields have been conducted.Using IBM Cognos, we have observed and conducted analysis on various crops grown, area, and productions in various states and districts, including

1) Seasons with average productions. We learn from these analytics which seasons have higher average production and which have lower production.

 2)Production split up per crop year. We learn from this study which years have high and low production.

3) District-based production. With the help of these analytics, we may identify the states and districts that farm the chosen crops.

 4) Production by area.This will allow us to estimate the yield and determine how much land needs to be planted. After creating the dashboard, study was done to determine which state, which year, and how much crop area will be produced.

11 - FUTURE SCOPE

   Farming is the means of survival as humans require food that is obtained only through farming directly or indirectly.With the growing human population, it is critcal to analyse the production in farming every year. So, that we can know the right time,right place and right crop to be cultivated considering all the factors that influence the crop production. It can be concluded that the research in the field of agriculture with reference to using IT trends like data analytics is in its infancy. 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.

12 - APPENDIX

12.1 Source code

12.2 GitHub & project DEMO LINK

https://github.com/IBM-EPBL/IBM-Project-1679-1658409409

			average crop production by			
			Build a visualization to showcase top 10 states in crop yields production by area	4	low	vinothini
			Build the required visualization to showcase the crop production by state	4	Medium	Manikiruba
			Build visualization analytics to represent the states with seasonal crop production using a Text representation	4	Low	Manikiruba
Sprint-3	Creating the dashboard	7	Create the dashboard by using the created visualizations.	20	High	Manikiruba
Sprint-4	Export the analytics	8	Export the created dashboard	20	High	Veeramani