Project Report

INTRODUCTION

Project Overview

Agriculture is critical to human survival because it provides a basic need. It is a well-known fact that agriculture employs the majority of the Indian population (55%) There are bottlenecks for increasing crop production in India due to climatic variations. It has become a difficult task to meet desired crop yield targets in agriculture. Several factors must be considered, all of which have a direct impact on crop production and productivity. Crop yield prediction is an important factor in agricultural practises. Farmers need crop yield information before sowing seeds in their fields in order to maximise crop yield. The use of technology in agriculture has increased in recent years, and data analytics is one such trend that has permeated the industry.

Purpose

The yield of currently used farmlands can be increased as a means of achieving this. Granular information on rainfall patterns, water cycles, fertiliser needs, and other topics is made available to farmers through big data. They can use this information to make wise choices about when to harvest and what crops to grow for maximum profit.

LITERATURE SURVEY

Existing Problem

Anything ranging from customer names and addresses, to products available, to purchases made, to employees hired, etc. has become essential for day-to-day continuity. Data is the building block upon which any organization thrives. Now think of the extent of details and the surge of data and information provided nowadays through the advancements in technologies and the internet. With the in-crease in storage capabilities and methods of data collection, huge amounts of data have become easily available. Every second, more and more data is being created and needs to be stored and analyzed in order to extract value. Furthermore, data has become cheaper to store, so organizations need to get as much value as possible from the huge amounts of stored data. The size, variety, and rapid change of such data require a new type of big data ana-lytics, as well as different storage and analysis methods. Such sheer amounts of big data need to be properly analyzed, and pertaining information should be extracted.

A Literature Review :

The contribution of this paper is to provide an analysis of the available literature on big data analytics. Accordingly, some of the various big data tools, methods, and technologies can be applied are discussed, and their applications and opportunities provided in several decision domains are portrayed. The literature was selected based on its novelty and discussion of important topics related to big data, in order to serve the purpose of our research. The publication years range from 2008-2013, with most of the literature focusing on big data ranging

from 2011-2013. This is due to big data being a recently focused upon topic. Furthermore, our corpus mostly includes research from some of the top journals, conferences, and white papers by leading corporations in the industry. Due to long review process of journals, most of the papers discussing big data analytics, its tools and methods, and its applications were found to be conference papers, and white papers. While big data analytics is being researched in academia, several of the industrial advancements and new technologies provided were mostly discussed in industry papers.

2 Big Data Analytics

The term “Big Data” has recently been applied to datasets that grow so large that they become awkward to work with using traditional database management systems. They are data sets whose size is beyond the ability of commonly used software tools and storage systems to capture, store, manage, as well as process the data within a tolera-ble elapsed time [12]. Big data sizes are constantly increasing, currently ranging from a few dozen tera-bytes (TB) to many petabytes (PB) of data in a single data set. Consequently, some of the difficulties related to big data include capture, storage, search, sharing, analytics, and visualizing. Today, enterprises are exploring large volumes of highly detailed data so as to discover facts they didn’t know before [17]. Hence, big data analytics is where advanced analytic techniques are applied on big data sets. Therefore the successive section will elaborate the big data analytics tools and me-thods, in particular, starting with the big data storage and management, then moving on to the big data analytic processing. It then concludes with some of the various big data analyses which have grown in usage with big data.

2.1 Characteristics of Big Data

Big data is data whose scale, distribution, diversity, and/or timeliness require the use
of new technical architectures, analytics, and tools in order to enable insights that unlock new sources of business value. Three main features characterize big data: volume, variety, and velocity, or the three V’s. The volume of the data is its size, and 216 N. Elgendy and A. Elragal
how enormous it is. Velocity refers to the rate with which data is changing, or how often it is created. Finally, variety includes the different formats and types of data, as well as the different kinds of uses and ways of analyzing the data [9]. Data volume is the primary attribute of big data. Big data can be quantified by size in TBs or PBs, as well as even the number of records, transactions, tables, or files.

2.2 Big Data Analytics Tools and Methods

With the evolution of technology and the increased multitudes of data flowing in and out of organizations daily, there has become a need for faster and more efficient ways of analyzing such data. Having piles of data on hand is no longer enough to make efficient decisions at the right time. Big Data Storage and Management One of the first things organizations have to manage when dealing with big data, is where and how this data will be stored once it is acquired. The traditional methods of structured data storage and retrieval include relational databases, data marts, and data warehouses. The data is uploaded to the storage from operational data stores using Extract, Transform, Load (ETL), or Extract, Load, Transform (ELT), tools which extract the data from outside sources, transform the data to fit operational needs,

and finally load the data into the database or data warehouse. Thus, the data is cleaned, transformed, and catalogued before being made available for data mining and online analytical functions [3]. However, the big data environment calls for Magnetic, Agile, Deep (MAD) analysis skills, which differ from the aspects of a traditional Enterprise Data Warehouse (EDW) environment. First of all, traditional EDW approaches discourage the incorporation of new data sources until they are cleansed and integrated. Due to the ubiquity of data no-wadays, big data environments need to be magnetic, thus attracting all the data sources, regardless of the data quality [5]. Consequently, big data analytics can benefit organizations by enabling better targeted social influencer marketing, defining and predicting trends from market sentiments, as well as analyzing and understanding churn and other customer behaviors [17].

3.2 Supply Chain and Performance Management

As for supply chain management, big data analytics can be used to forecast demand changes, and accordingly match their supply. This can increasingly benefit the manufacturing, retail, as well as transport and logistics industries. By analyzing stock utili-zation and geospatial data on deliveries, organizations can automate replenishment decisions, which will reduce lead times and minimize costs and delays, as well as process interruptions. Additionally, decisions on changing suppliers, based on quality or price competitiveness, can be taken by analyzing supplier data to monitor perfor-mance. Furthermore, alternate pricing scenarios can be run instantly, which can ena-ble a reduction in inventories and an increase in profit margins [4]. Accordingly, big data can lead to the identification of the root causes of cost, and provide for better planning and forecasting [17]. Another area where big data analytics can be of value is performance management, where the governmental and healthcare industries can easily benefit. With the increas-ing need to improve productivity, staff performance information can be monitored and forecasted by using predictive analytics tools. This can allow departments to link their strategic objectives with the service or user outcomes, thus leading to increased efficiencies. Patients can also be monitored remotely to analyze their adherence to their prescriptions, and improve drug and treatment options [14]. Moreover, by analyzing information from distributed sensors on handheld devices, roads, and vehicles, which provide real-time traffic information, transportation can be transformed and improved. Traffic jams can be predicted and prevented, and drivers can operate more safely and with less disruption to the traffic flow. Such a new type of traffic ecosystem, with “intelligent” connected cars, can potentially renovate trans-portation and how roadways are used [22]. Accordingly, big data applications can provide smart routing, according to real-time traffic information based on personal location data. Furthermore, such applications can automatically call for help when trouble is detected by the sensors, and inform users about accidents, scheduled road-work, and congested areas in real-time [14]. Furthermore, big data can be used for better understanding changes in the location, frequency, and intensity of weather and climate. This can benefit citizens and busi-nesses that rely upon weather, such as farmers, as well as tourism and transportation companies. Also, with new sensors and analysis techniques for developing long term climate models and nearer weather forecasts, weather related natural disasters can be predicted, and preventive or adaptive measures can be taken beforehand [22].

3.4 Risk Management and Fraud Detection

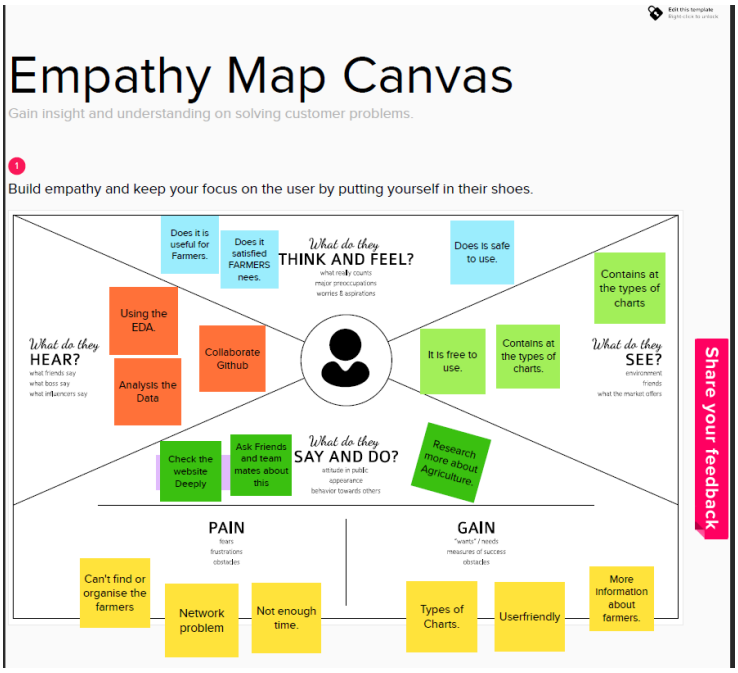
Industries such as investment or retail banking, as well as insurance, can benefit from big data analytics in the area of risk management. Since the evaluation and bearing of risk is a critical aspect for the financial services sector, big data analytics can help in selecting investments byanalyzing the likelihood of gains against the likelihood of losses. In addition, customer intelligence can be used to model normal customer behavior, and detect suspicious or divergent activities through the accurate flagging of outlier occurrences. Furthermore, providing systems with big data about prevailing fraud patterns can allow these systems to learn the new types of frauds and act accordingly, as the fraudsters adapt to the old systems designed to detect them. Also, SNAs can be used to identify the networks of collaborating fraudsters, as well as discover evidence of fraudulent insurance or benefits claims, which will lead to less fraudulent activity going undiscovered [4]. Thus, big data tools, techniques, and governance processes can increase the prevention and recovery of fraudulent transactions by dramatically increasing the speed of identification and detection of compliance patterns within all available data sets [22].

References

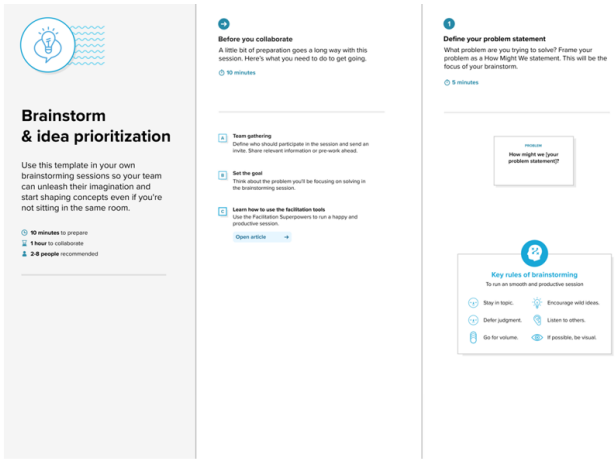
1. Adams, M.N.: Perspectives on Data Mining. International Journal of Market Research 52(1), 11–19 (2010)
2. Asur, S., Huberman, B.A.: Predicting the Future with Social Media. In: ACM International Conference on Web Intelligence and Intelligent Agent Technology, vol. 1, pp. 492–499 (2010)
3. Bakshi, K.: Considerations for Big Data: Architecture and Approaches. In: Proceedings of the IEEE Aerospace Conference, pp. 1–7 (2012)
4. Cebr: Data equity, Unlocking the value of big data. in: SAS Reports, pp. 1–44 (2012)
5. Cohen, J., Dolan, B., Dunlap, M., Hellerstein, J.M., Welton, C.: MAD Skills: New Analy-sis Practices for Big Data. Proceedings of the ACM VLDB Endowment 2(2), 1481–1492 (2009)
6. Cuzzocrea, A., Song, I., Davis, K.C.: Analytics over Large-Scale Multidimensional Data: The Big Data Revolution! In: Proceedings of the ACM International Workshop on Data Warehousing and OLAP, pp. 101–104 (2011)
7. Economist Intelligence Unit: The Deciding Factor: Big Data & Decision Making. In

IDEATION & PROPOSED SOLUTION

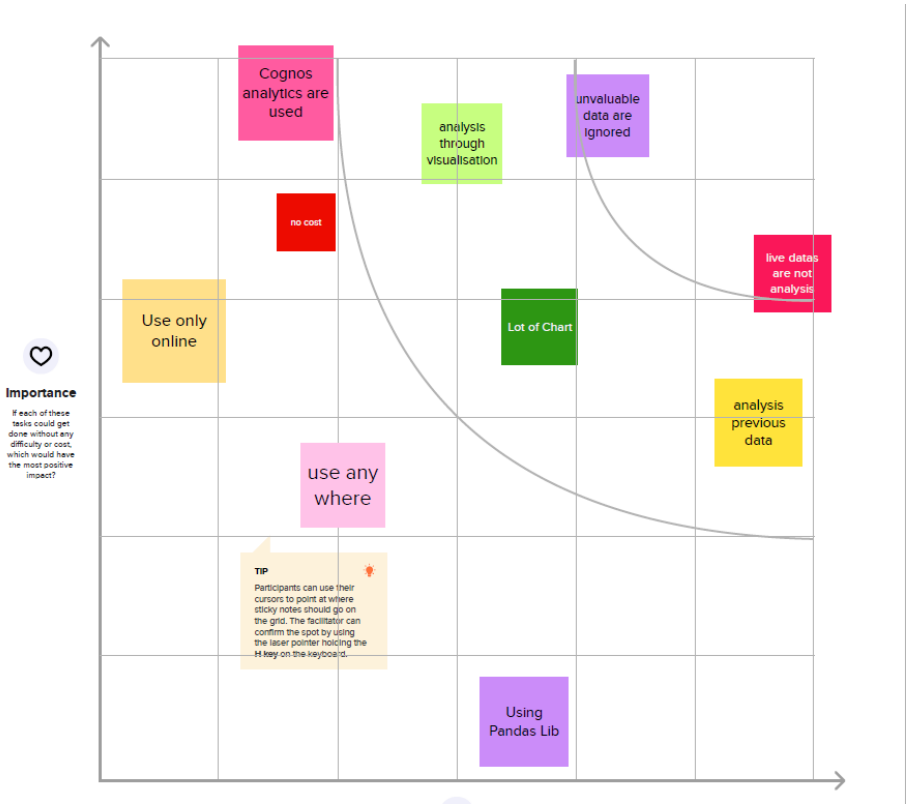
Empathy Map Canvas

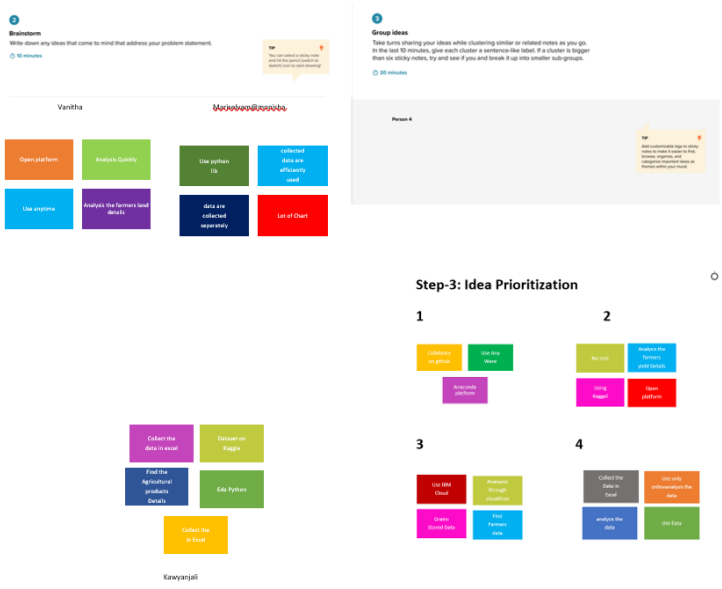


Team Gathering, Collaboration and Select the Problem Statement



Brainstorm, Idea Listing and Grouping





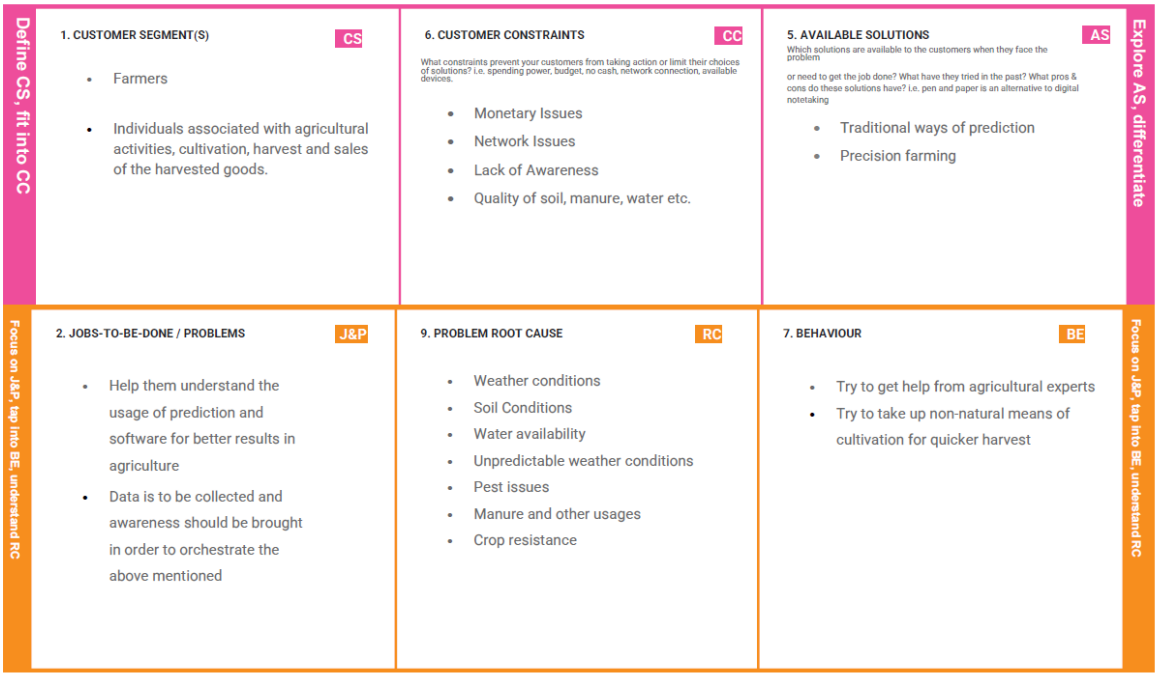
Proposed Solution

S.No.	Parameter	Description

1.	Problem Statement (Problem to be solved)	A farmer should predict climatic conditions, decide what to grow & when to grow, should know the overall crop yield turnover and must be able to be sure of the crop yield inspite of the environmental and other parameters
2.	Idea / Solution description	Analysis of important visualization using the previous years' data, creating a dashboard and by going the datasets to obtain most of the insights of Crop production in India
3.	Novelty / Uniqueness	A one-stop solution for understanding and to get an insight about the previous years' data related to the harvest and cultivation. There is no other setup that's required to
4.	Social Impact / Customer Satisfaction	Availability to all the farmers who need help and as this is a simple approach, understanding issues will not arise.
5.	Business Model (Revenue Model)	A profit can be made by promoting the solution as an easily available mobile application for anyone to access and benefit out of it. Venture joints with government can be made to pull out monetary benefits.

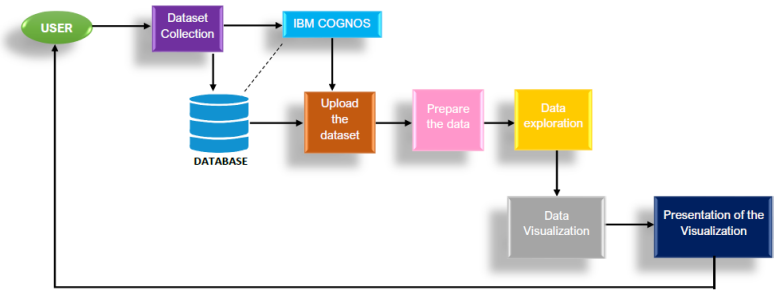
6.	Scalability of the Solution	There is no issue with regards to storage of datasets and collection of data. Hence, the solution can be easily scaled to handle data needs, traffic and increased number of users

Problem Solution Fit

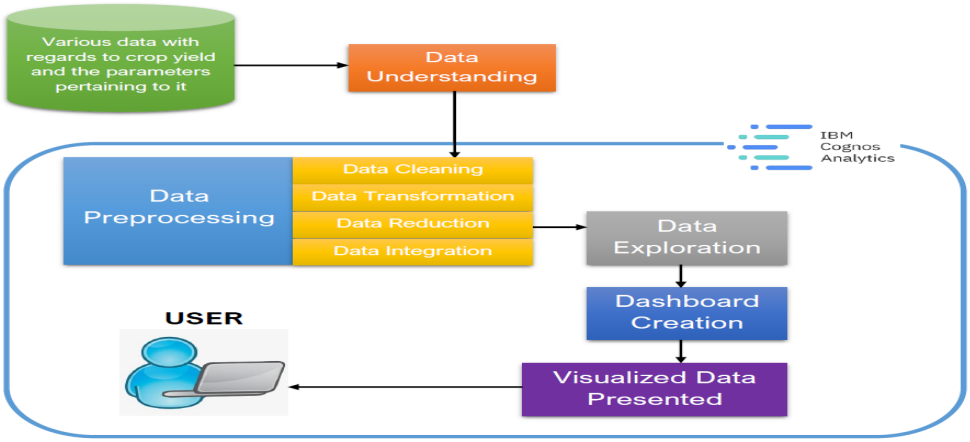


PROJECT DESIGN

Data Flow Diagram:



Solution Architecture



User Stories

User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	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	Sprint-1
		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	Sprint-1
		USN-3	As a user, I can register for the application through Google	I can register & access the dashboard with Google Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-6	As a user, I can freely use my dashboard and explore the features		High	Sprint-1
	Access of Resources	USN-7	As a user, I can use the credentials to access the resources of my application	I can securely access my resources	High	Sprint-2
Administrator	Control over the application	USN-8	I can control the users of the application		High	Sprint-2
Customer	Tools	USN-9	I can perform the required tasks on the application		High	Sprint-1

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Gmail Registration through IBM
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP

FR-3	Data Collection	
FR-4	Data Processing	Data cleaning, removal of noise and obsolete data
FR-5	Visualization Tool	Graphical visualization choices

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Ease of usage along with ease in-access of tools and features
NFR-2	**Security**	Access to resources through two factor authentication and credentials
NFR-3	**Reliability**	There should be no crashes or loss of data or processes
NFR-4	**Performance**	High speed rendering of visualization and other readily available features
NFR-5	**Availability**	Should be available on demand
NFR-6	**Scalability**	Should be able to incorporate as many visualizations and datasets as possible

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	IBM Cognes
2.	Application Logic-1	Logic for a process in the application	Java
3.	Application Logic-2	Logic for a process in the application	Cognos Assistant
4.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
5.	Cloud Database	Database Service on Cloud	COGNOSCS.
6.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
7.	External API-1	Purpose of External API used in the application	IBM Cognos Analytics REST API

8.	External API-2	Purpose of External API used in the application	-
9.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud :	IBM Cloud – IBM Cognos Analytics

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	IBM Cognos Framework Manager
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	Security architecture present
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Business Intelligent architecture
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Present on cloud and is present on demand
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Highly available and fast processing

Product Backlog, Sprint Schedule, and Estimation (4 Marks)
Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Kawyanjali Vanitha
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Vanitha Monisha

Sprint-2		USN-3	As a user, I can register for the application through Facebook	2	Low	Kawyanj ali Monisha
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Low	Kawyanj ali Vanitha
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Vanitha Monisha
Sprint-3	Dashboard	USN-6	As a user, I can freely use my dashboard and explore the features	2	High	Kawyanj ali Monisha
Sprint-2		USN-7	As a user, I can use the credentials to access the resources of my application	2	High	Kawyanj ali Vanitha
Sprint-3		USN-8	Performance of Data manipulations on the application	1	High	Vanitha Monisha
Sprint-3	Visualizatio ns	USN-9	I can create dashboards with particular datasets	2	High	Kawyanj ali Monisha
Sprint-4		USN-10	Predictive analysis can be done	1	High	Kawyanj ali Vanitha
Sprint-3		USN-11	I can create stories with particular datasets	2	High	Vanitha Monisha
Sprint-4		USN-12	I can deliver and export reports according to the dashboards and stories created	2	High	Kawyanj ali Monisha

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Durati on	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	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

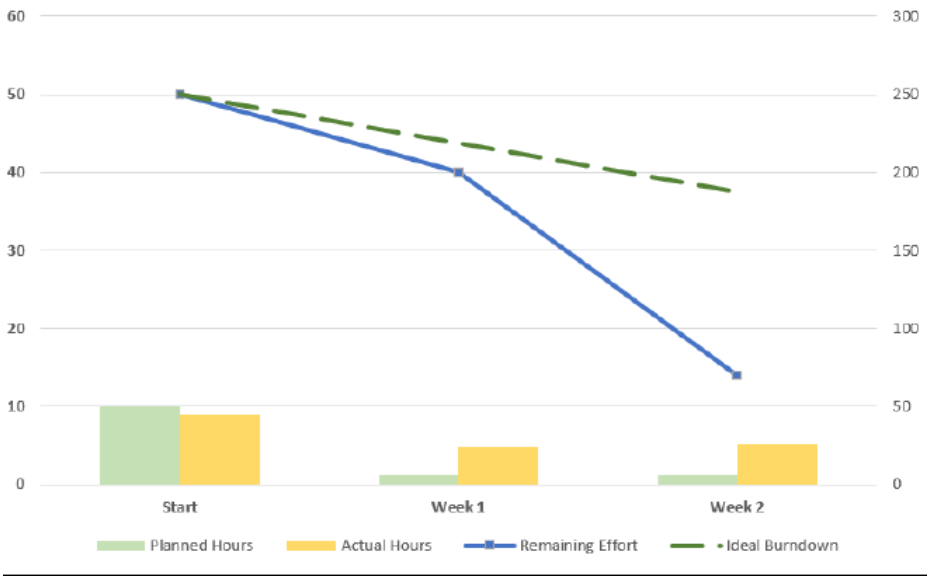
Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

AV = Sprint Duration/Velocity = 20/6 = 3

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.



Milestone and Activity List

Milestone Name	Milestone Number	Description	Milestone Type	Team Members
Registration and Login	MS-1	Registration for the application by entering my email, password, and confirming my password.	Mandatory	Kawyanjali Vanitha
		Confirmation email once I have registered for the application	Mandatory	Vanitha Monisha
		Registration for the application through Google	Mandatory	Kawyanjali Monisha
		Registration for the application through Gmail	Mandatory	Kawyanjali Vanitha
		Log into the application by entering email & password	Optional	Vanitha Monisha
		Usage of dashboard and exploration of the features	Optional	Kawyanjali Monisha
Dashboard Usage	MS-2	Usage of the credentials to access the resources of my application	Mandatory	Kawyanjali Vanitha
		Performance of Data manipulations on the application	Mandatory	Vanitha Monisha
Creation of Deliverables	MS-3	Creation of dashboards with particular datasets	Mandatory	Kawyanjali Monisha

	MS-4	Predictive analysis can be done	Mandatory	Kawyanjali Vanitha
	MS-5	Creation of stories with particular datasets	Mandatory	Vanitha Monisha
	MS-6	Deliver and export reports according to the dashboards and stories created	Mandatory	Kawyanjali Vanitha

SPRINT 1

Web page code

```
<!DOCTYPE
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='styl
                    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-aweso
                    <!-- jQuery library -->
                    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"

                    <!-- Latest compiled JavaScript -->
                    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.
                    <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{
            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:
                                    <input type="text" name="user_name" required p
                                        title="Enter a username between 5 to 10 le
                                </td>
                            </tr>
                            <tr>
                                <td>
                                    <label class="lb1">Full Name:-</label>
                                    <input type="text" name="user_full_name" requi
                                        title="Use only character & whitespace" au
                                </td>
                            </tr>
                            <tr>
                                <td>
                                    <label class="lb1">Email Id:-</label>
                                    <input type="email" name="user_email" required
                                        pattern="[A-Za-z0-9._%+-]+@[A-z0-9.-]+\.[a
                                        title="Email id is not Valid" autocomplete
                                </td>
                            </tr>
                            <tr>
                                <td>
                                    <label class="lb1">Password:-</label>
                                    <input type="password" name="password" require
                                        pattern="(?=.\d)(?=.[a-z])(?=.*[A-Z]).{6,}
                                        title="Must contain at least one number an
more characters"
                                        id="password" autocomplete="off">
                                </td>
                            </tr>
                            <tr>
                                <td>
                                    <label>Confirm Password:-</label>
```

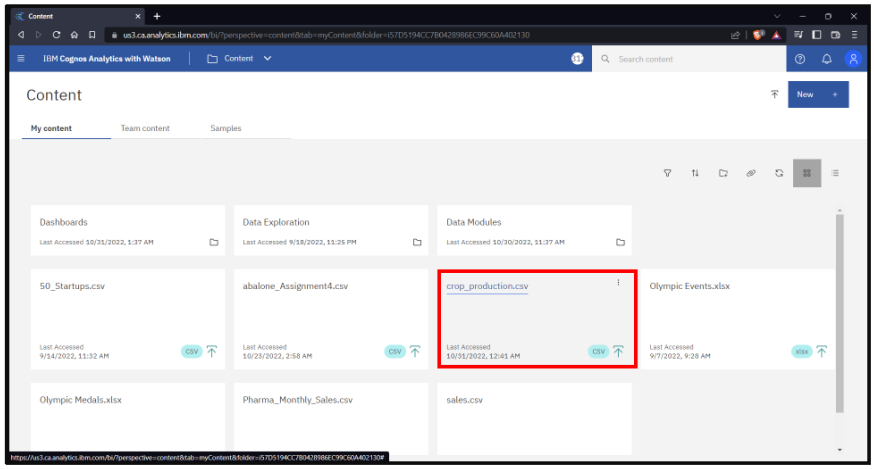
```
                                    <input type="text" name="confirm_password" req
                                        pattern="(?=.\d)(?=.[a-z])(?=.*[A-Z]).{6,}
                                        title="Must contain at least one number an
more characters"
                                        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" required
                                        title="Number is not valid" autocomplete="
                                </td>
                            </tr>
                            <tr>
                                <td>
                                    <label class="lb1">Pincode</label>
                                    <input type="text" name="pincode" required pat
                                        title="Pincode is not valid" autocomplete=
                                </td>
                            </tr>
                            <tr>
                                <td rowspan="1">
                                    <label class="lb1">Address:-</label>
                                    <textarea name="Address" placeholder="follow w
                                </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" requir
                                    </td>
                                </tr>
                                <tr>
                                    <td>
                                        <div class="radio">
                                            <label class="lb3">Gender:-</label>
                                            <input type="radio" name="gender" class="r
                                                class="radioname" required autocomplet
                                            <input type="radio" class="radio2" name="g
                                                class="radioname" required autocomplet
                                        </div>
                                    </td>
                                </tr>
                                <tr>
                                    <td>
                                        <label class="lb1">Blood Group</label>
                                        <input type="text" list="bloodgroup" name="blo
                                            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="pla
```

```
                                        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>
                                    <label class="lb1">Weight In Kg :-</label>
                                    <input type="number" name="weight" required au
                                </td>
                            </tr>
                        </table>
                    </div>


                    <p class="lb2"><input type="checkbox" name="terms" id="checkbo
                        <!-- I agree to have my contact details broadcasted to the
                        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.ht
            </div>
            </form>
        </div>

    </div>
    </div>

    <!-- Responsive table  -->
    <div class="rregisterdonor">
        <form action="process.php" method="POST" id="myform">


</html>
```

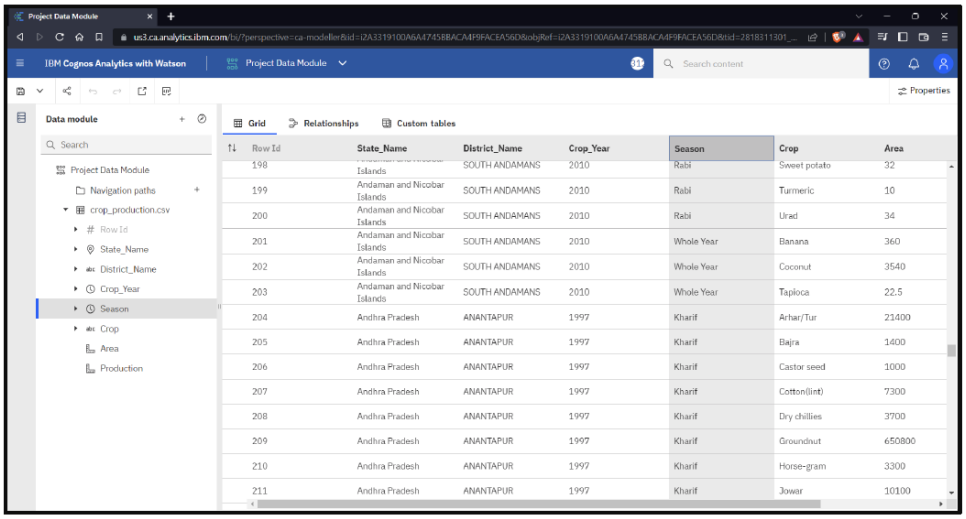
SPRINT 1 SUBMISSION

DATA COLLECTION | DATA UPLOADING | DATA MODULE CREATION | DATA EXPLORATION



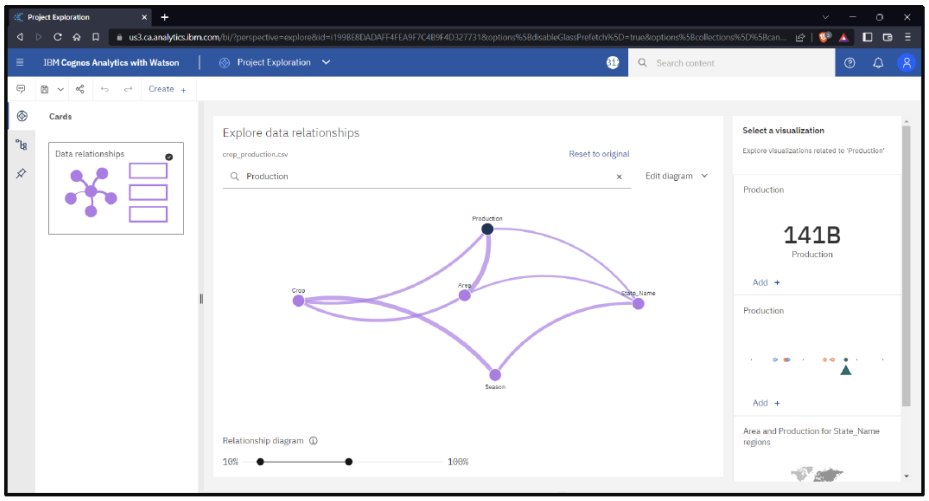
SPRINT 1

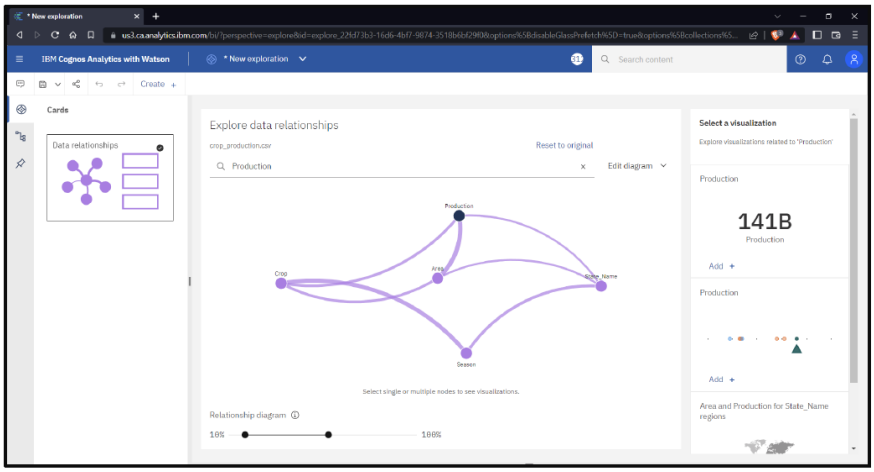
DATA MODULE CREATION

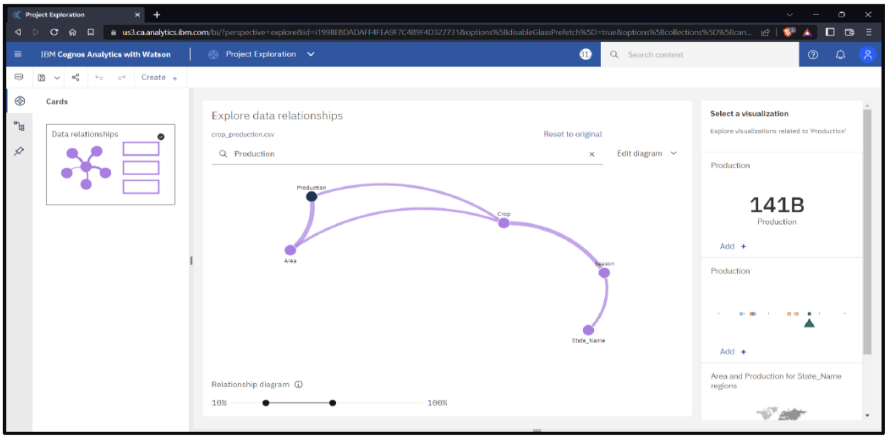


SPRINT 1

DATA EXPLORATION







SPRINT 2

DASHBOARD CREATION

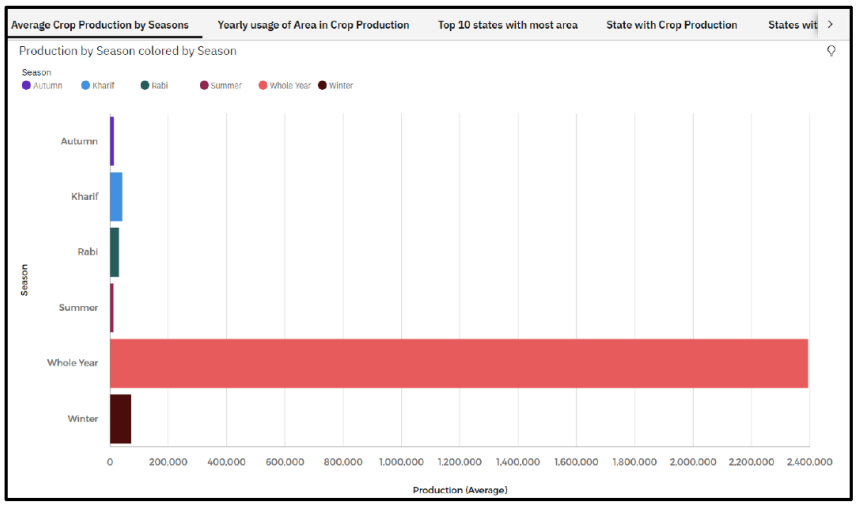
A Visualization Dashboard has been built to showcase,

- **Average Crop Production by Seasons**
- **Yearly usage of Area in Crop Production**
- **States in Crop Yield Production by Area**
- **Crop Production by State**
- **States with Seasonal Crop Production using a Text representation**

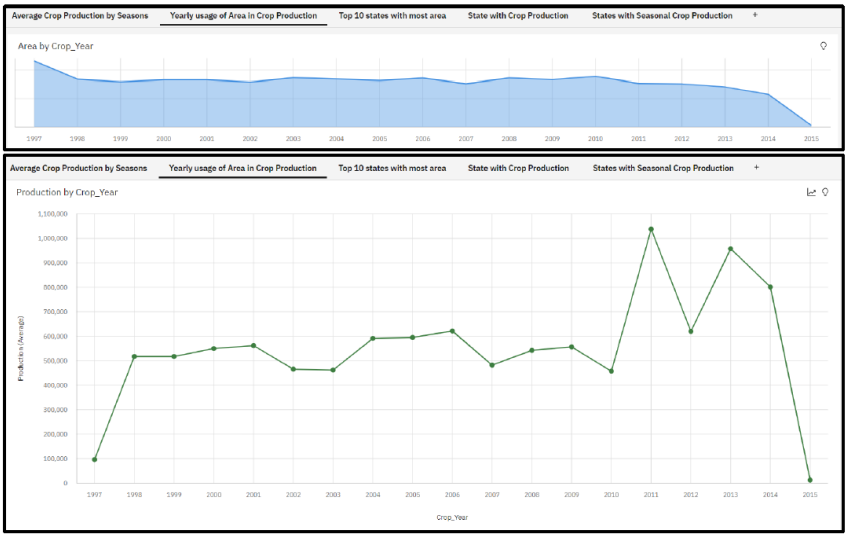
Web page code

```
<!DOCTYPE
html>
                <html>
                 <body>
                 <h1 style="text-align: center; color: black; background-color: green; border-radi
                70px;">EXPLORATION</h1>


                 <li><a href="index.html">HOME PAGE</a></li><br>

                 <p>
                 <style>
                 fieldset{
                 background-image: url(https://blog.ucsusa.org/wpcontent/uploads/2016/07/225596469
                 background: cover;

                 }
                 </style>
                 <fieldset style="background-color: grey; border-radius: 50px;">
                 <form style="text-align: center;">
                 <p><strong><i>
                 </i></strong></p>
                 <br><br><br><embed
                src="https://us1.ca.analytics.ibm.com/bi/?perspective=explore&pathRef=.my_folders%
                ration&subView=model000001846d325aeb_00000000" width="600" height="500"><br><br><b
                 <a href
                ="https://colab.research.google.com/drive/1ZHxYuFTYZErD3xOmbV0f_8oQmEyy85Gh">
                 <button style="background-color: olivedrab; border-radius: 30px; " type="google
                colab">google colab</button><p style=" color: white">CLICK HERE TO VIEW CODE</p></

                 <a
                href="https://us1.ca.analytics.ibm.com/bi/?perspective=explore&pathRef=.my_folders
                oration&subView=model000001846d325aeb_00000000">
```

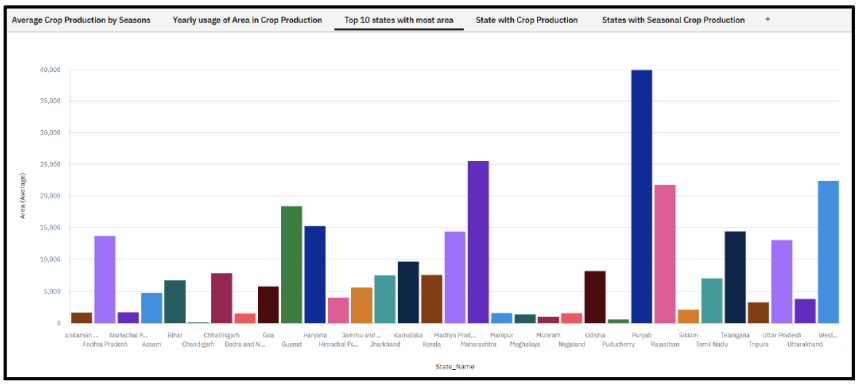
```
 <button style="background-color: olivedrab; border-radius: 30px;" type="ibm cogno
analytics with watson"> IBM cognos analytics with watson</button><p style=" color:
TO VIEW EXPLORATION IN COGNOS</p></a>


 </form>
 </fieldset>
 </p>

 </body>
</html>
```



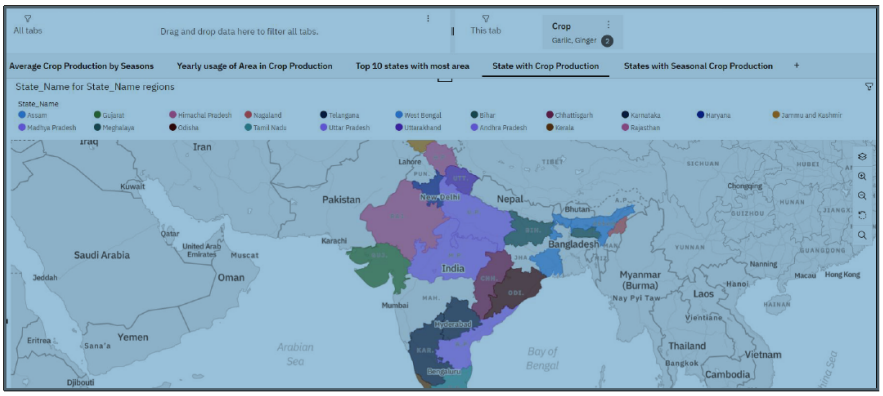
SPRINT 2

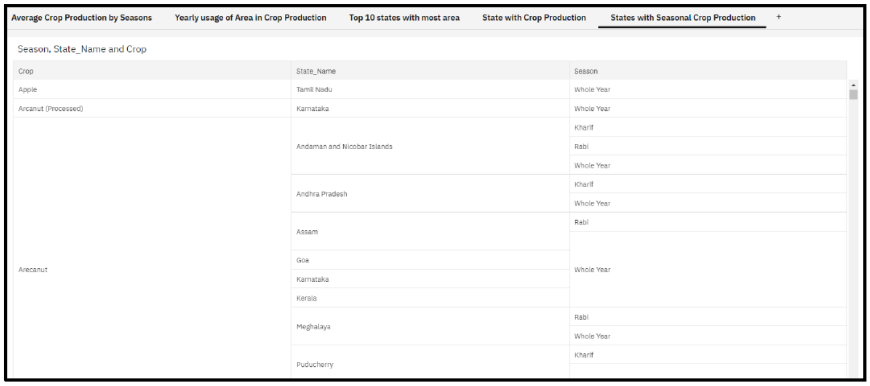


SPRINT 2


Average Crop Production by Seasons
Yearly usage of Area in Crop Production
Top 10 states with most area
State with Crop Production
States with Seasonal Crop Production
Area (Average)
State_Name

SPRINT 2


All tabs
Drag and drop data here to filter all tabs.
This tab
Crop
Garlic, Ginger
Average Crop Production by Seasons
Yearly usage of Area in Crop Production
Top 10 states with most area
State with Crop Production
States with Seasonal Crop Production
State_Name for State_Name regions
State_Name
Assam
Gujarat
Himachal Pradesh
Nagaland
Telangana
West Bengal
Bihar
Chhattisgarh
Karnataka
Haryana
Jammu and Kashmir
Madhya Pradesh
Meghalaya
Odisha
Tamil Nadu
Uttar Pradesh
Uttarakhand
Andhra Pradesh
Kerala
Rajasthan
Iraq
Iran
Kuwait
Qatar
United Arab Emirates
Muscat
Saudi Arabia
Jeddah
Oman
Yemen
Eritrea
Sana'a
Djibouti
Arabian Sea
Lahore
Pakistan
Karachi
India
Mumbai
Hyderabad
Bengaluru
Bay of Bengal
Nepal
Bhutan
Bangladesh
Myanmar (Burma)
Nay Pyi Taw
Laos
Vientiane
Thailand
Bangkok
Vietnam
Cambodia
Hanoi
Nanning
Macau
Hong Kong
Chongqing
TIBET
SICHUAN
HUBEI
HUNAN
GUIZHOU
JIANGXI
YUNNAN
GUANGDONG
HAINAN



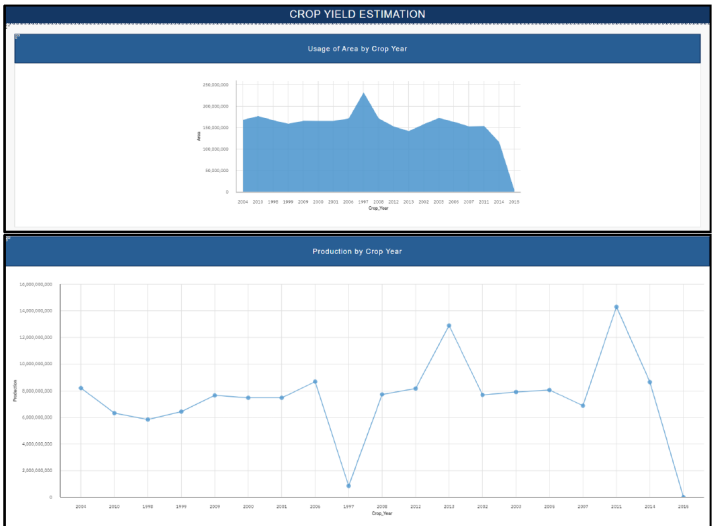
SPRINT 2

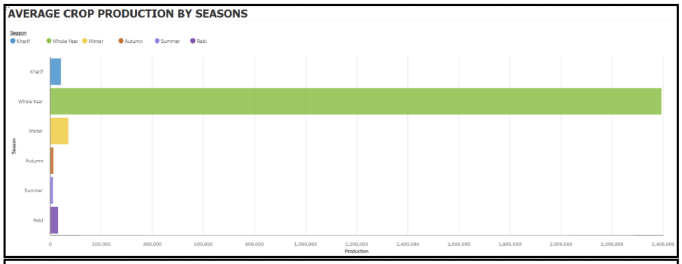
SPRINT 3

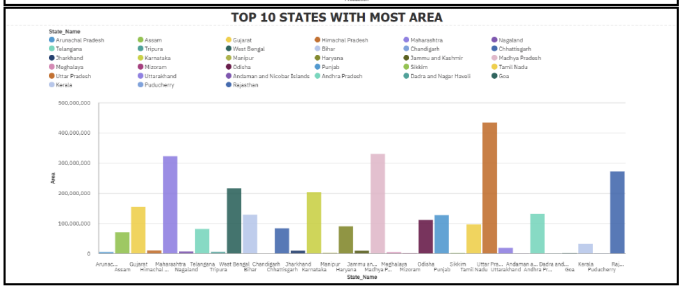
Web page code

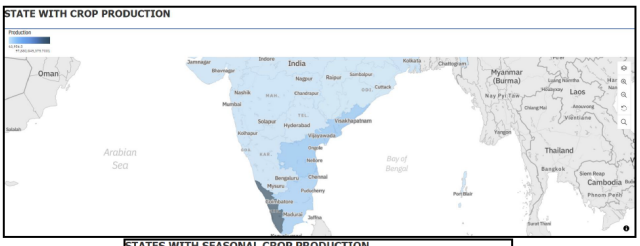
```
<!DOCTYPE
html>
                <html>
                 <body>
                 <h1 style="text-align: center; color: green; background-color: yellowgreen; borde
                border-radius: 70px;">DASHBOARD</h1>


                 <li><a href="index.html">HOME PAGE</a></li><br>

                 <p>
                 <style>
                 fieldset{
                 background-image:
                url(https://blog.ucsusa.org/wpcontent/uploads/2016/07/22559646902_07fd41ab0c_z.jpg
                 background: cover;

                 }
                 </style>
                 <fieldset style="background-color: grey; border-radius: 50px;">
                 <form style="text-align: center;">
                 <p><strong><i>
                 </i></strong></p>
                 <br><br><br><embed
                src="https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folder
```

```
Dashboard%2Bcreation.crop_production.xlsx&action=view&mode=dashboard&subView=model
844653eabd_00000001" width="600" height="500"><br><br><br><br>
 <a href
="https://colab.research.google.com/drive/17uwPAeCBP51rXo_F6rTLgiI0VUuLKlj#scrollT
 <button style="background-color: olivedrab; border-radius: 30px; " type="google
colab">google colab</button><p style="color: white">CLICK HERE TO VIEW CODE</p></a

 <a
href="https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folde
Dashboard%2Bcreation.crop_production.xlsx&action=view&mode=dashboard&subView=model
844653eabd_00000001">
 <button style="background-color: olivedrab; border-radius: 30px;" type="ibm cogno
analytics with watson"> IBM cognos analytics with watson</button><p style = "color
HERE TO VIEW DASHBOARD IN COGNOS</p></a>


 </form>
 </fieldset>
 </p>

 </body>
</html>
```









STATES WITH SEASONAL CROP PRODUCTION

Crop	State_Name	Season
Other Kharif pulses	Andaman and Nicobar Islands	Kharif
Rice	Andaman and Nicobar Islands	Kharif
Cashewnut	Andaman and Nicobar Islands	Whole Year
Horse-gram	Andhra Pradesh	Kharif
Tobacco	Andhra Pradesh	Kharif
Ragi	Andhra Pradesh	Rabi
Onion	Andhra Pradesh	Whole Year
other misc. pulses	Andhra Pradesh	Kharif
Sweet potato	Andhra Pradesh	Whole Year
Turmeric	Andhra Pradesh	Whole Year
Soybean	Andhra Pradesh	Kharif
Beans & Mutter(Vegetable)	Andhra Pradesh	Whole Year
Bhindi	Andhra Pradesh	Whole Year
Grapes	Andhra Pradesh	Whole Year
Cowpea(Lobia)	Andhra Pradesh	Kharif
Arecanut	Andhra Pradesh	Kharif
Coriander	Andhra Pradesh	Kharif
Linseed	Andhra Pradesh	Kharif
Sapota	Andhra Pradesh	Kharif
Tomato	Andhra Pradesh	Kharif

SPRINT 4

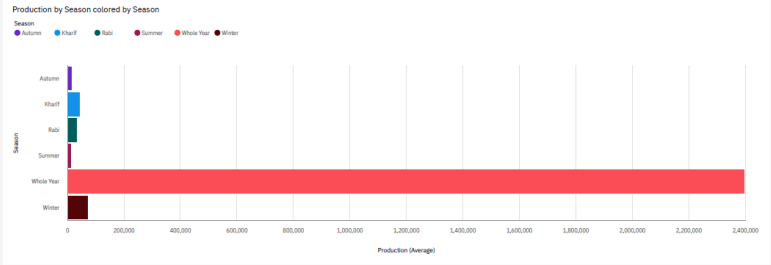
Web Page Code

```
<!DOCTYPE
html>
                <html>
                 <body>
                 <h1 style="text-align: center; color: black; background-color: green; border-radi
                70px;">REPORT</h1>


                 <li><a href="index.html">HOME PAGE</a></li><br>

                 <p>
                 <style>
```

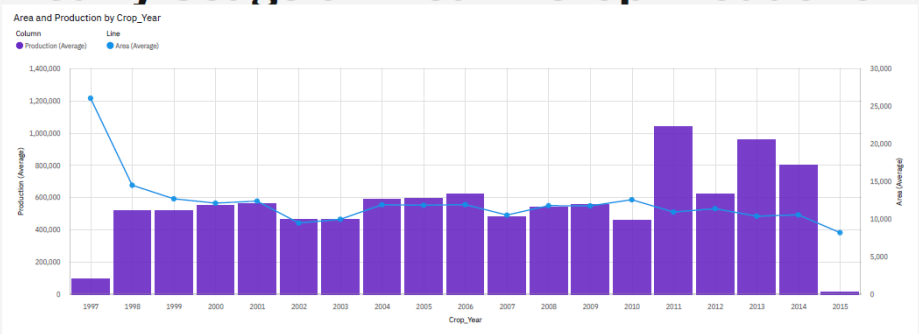
```
 fieldset{
 background-image: url(https://blog.ucsusa.org/wpcontent/uploads/2016/07/225596469
 background: cover;

 }
 </style>
 <fieldset style="background-color: grey; border-radius: 50px;">
 <form style="text-align: center;">
 <p><strong><i>
 </i></strong></p>
 <br><br><br><embed
src="https://us1.ca.analytics.ibm.com/bi/?perspective=explore&pathRef=.my_folders%
ration&subView=model000001846d325aeb_00000000" width="600" height="500"><br><br><b



 <a
href="https://us1.ca.analytics.ibm.com/bi/?perspective=explore&pathRef=.my_folders
oration&subView=model000001846d325aeb_00000000">
 <button style="background-color: olivedrab; border-radius: 30px;" type="ibm cogno
analytics with watson"> IBM cognos analytics with watson</button><p style=" color:
TO VIEW REPORT IN COGNOS</p></a>


 </form>
 </fieldset>
 </p>

 </body>
</html>">
Story.html:
<!DOCTYPE html>
<html>
 <body>
 <h1 style="text-align: center; color: black; background-color: green; border-radi
70px;">STORY</h1>


 <li><a href="index.html">HOME PAGE</a></li><br>

 <p>
 <style>
 fieldset{
```

```
 background-image: url(https://blog.ucsusa.org/wpcontent/uploads/2016/07/225596469
 background: cover;

 }
 </style>
 <fieldset style="background-color: grey; border-radius: 50px;">
 <form style="text-align: center;">
 <p><strong><i>
 </i></strong></p>
 <br><br><br><embed
src="https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2F
ction=view&sceneId=model000001846eaf8e42_00000001&sceneTime=5000" width="600"
height="500"><br><br><br><br>


 <a
href="https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2
action=view&sceneId=model000001846eaf8e42_00000001&sceneTime=5000">
 <button style="background-color: olivedrab; border-radius: 30px;" type="ibm cogno
analytics with watson"> IBM cognos analytics with watson</button><p style=" color:
TO VIEW STORY IN COGNOS</p></a>


 </form>
 </fieldset>
 </p>

 </body>
</html>
```

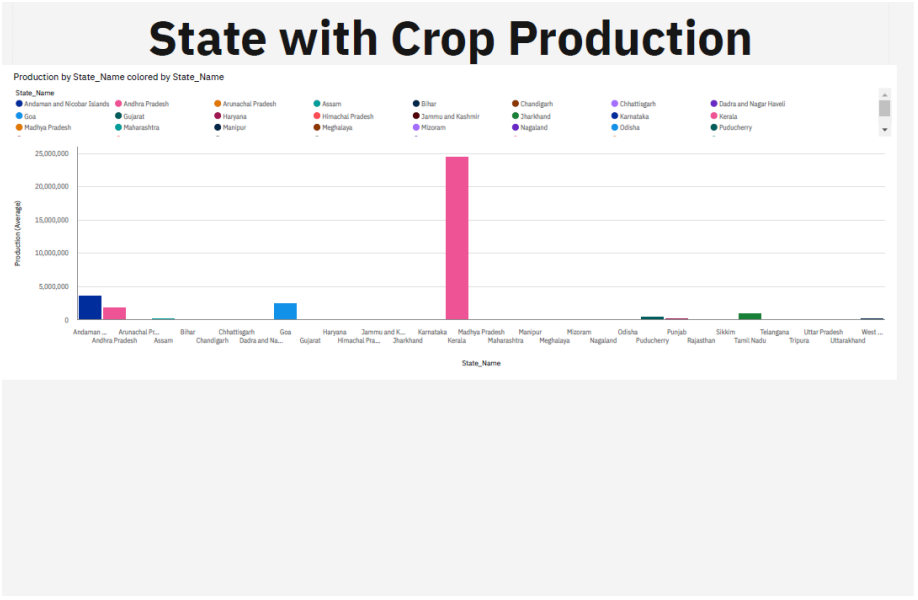
Average Crop Production By Seasons

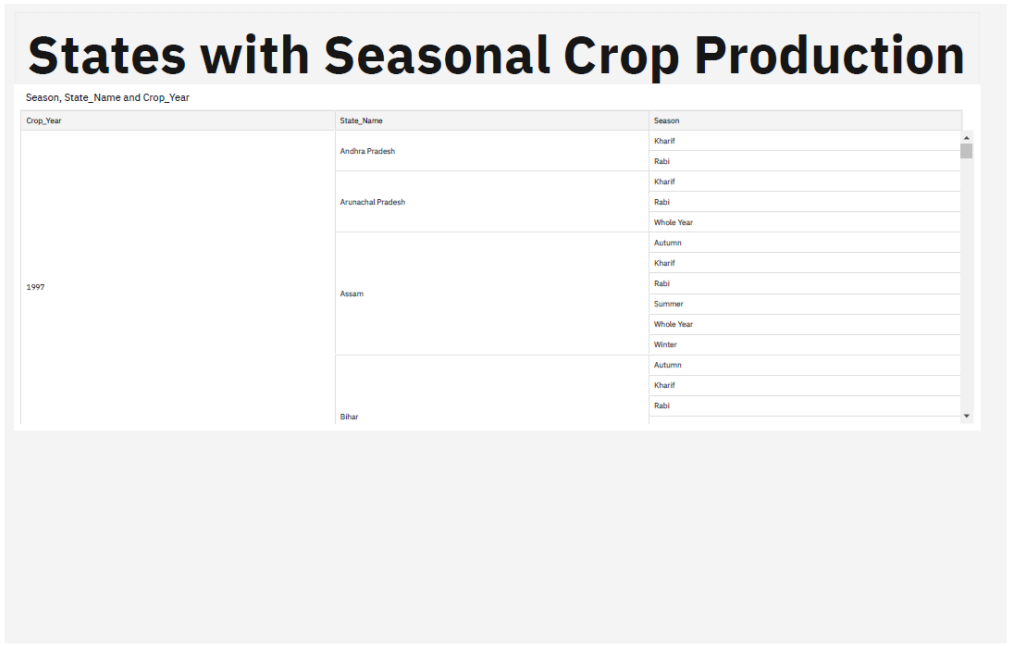


Yearly Usage of Area in Crop Production



Top 10 states with most Area





ADVANTAGE

One way to achieve this is to increase the yield from existing farmlands. Big data provides farmers granular data on rainfall patterns, water cycles, fertilizer requirements, and more. This enables them to make smart decisions, such as what crops to plant for better profitability and when to harvest.

CONCLUTION

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, precisionagriculture etc. In the literature, it has been observed that analysis has been done on agriculture soils,hidden patterns discovery using data set related to climatic conditions and crop yields data. The activities ofagriculture field are numerous like weather forecasting, soil quality assessment, seeds selection, crop yield prediction etc. In this survey, the specific activity, crop yield prediction has been surveyed and the majortrends have been identified.

FUTURE SCOPE

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.

DEMO VIDEO LINK:

https://drive.google.com/file/d/1Eb8ACkMqc2dhz873kNp0nD8AuKPgy_wX/view?usp=drivesdk

PROJECT NAME: Estimate the Crop Yield using Data Analytics

TEAM ID: PNT2022TMID50469