

Abstract

Analytics is the understanding of data patterns to support performance enhancement and decision-making. Agriculture In order to analyse certain key visualisations and create a dashboard, data analytics in agricultural yield is helpful. By looking at these, we may learn the majority of the insights about crop output in India. We can comprehend the data in our organisation and make wise decisions by integrating reporting, modelling, analysis, exploration, dashboards, stories, and event management with IBM Cognos Analytics. By presenting critical insights and analyses about our data on one or more pages or screens, a dashboard enables us to keep track of events or actions at a glance. In this project, we use a dashboard to view, analyse, and extract the majority of the findings.

Introduction

I. INTRODUCTION

The foundation of the Indian economy is agriculture. The majority of farmers in India are not receiving the anticipated crop output for a number of different reasons. The weather has a major impact on agricultural yield. The amount of rainfall has an impact on rice cultivation as well. The farmers in this situation unavoidably need prompt assistance to forecast future crop productivity, and an analysis must be done to assist the farmers in maximising crop production in their crops. A significant issue in agriculture is yield prediction. Every farmer wants to know how much of a yield to anticipate. In the past, farmer experience with a particular crop was taken into account when predicting production. The amount of data in Indian agriculture is huge. When

data is transformed into information, it can be used for a variety of purposes. A web-based comprehensive business intelligence package from IBM is called Cognos Business Intelligence. It offers a suite of tools for analytics, scorecarding, reporting, and keeping track of events and data. The software is made up of a number of parts that are made to satisfy the various information needs of a business. For example, IBM Cognos Framework Manager, IBM Cognos Cube Designer, and IBM Cognos Transformer are all parts of IBM Cognos. Cognos Analysis Studio enables business users to receive prompt responses to commercially relevant questions. You may design pixel-perfect reports for your company using reporting studio.

II. LITERATURE SURVEY

M. A. Jayaram and Netra Marad, "Fuzzy interference Systems for Crop Prediction", Journal of Intelligent Systems, 2012, 21(4), pp.363-372[1]. Prediction of crop yield is significant in order to accurately meet market requirements and proper administration of agricultural activities directed towards enhancement in yield. Several parameters such as weather, pests, biophysical and morphological features merit their consideration while determining the yield. However, these parameters are uncertain in their nature, thus making the determined amount of yield to be approximate. It is exactly here that the fuzzy logic comes into play. This paper elaborates an attempt to develop fuzzy inference systems for crop yield prediction. Physio morphological features of Sorghum were considered. A huge database (around 1000 records) of physio morphological features such as days of 50 percent? powering, dead heart percentage, plant height, panicle length, panicle weight and number of primaries and the corresponding yield were

considered for the development of the model. In order to find out the sensitivity of parameters, one-to-one, two-to-one and three-to-one combinations of input and output were considered. The results have clearly shown that panicle length contributes forth yield as the lone parameter with almost one-to-one matching between predicted yield and actual value while panicle length and panicle weight in combination seemed to play a decisive role in contributing for the yield with the prediction accuracy rejected by very low RMS value.

P. Vindya “Agricultural Analysis for Next Generation High Tech Farming in Data Mining”, Anna University, Trichy, Tamil Nādu, India, 5 May 2015. Recent developments in Information Technology for agriculture field have become an interesting research area to predict the crop yield.

III. SYSTEM DESIGN

System design is defined as the use of systems theory to the creation of a project. The architecture, data flow, use case, class, sequence, and activity diagrams of a project's development are defined by the system design.

IBM Cognos Analytics

A collection of business intelligence tools called IBM Cognos Analytics is offered both on-premises and in the cloud. The main emphasis is on descriptive analytics, which uses dashboards, expert reporting, and self-service data exploration to help users understand the information in your data. In this study, we analysed the crop yield data using IBM cognos data analytics.

Following are important features of IBM Cognos:

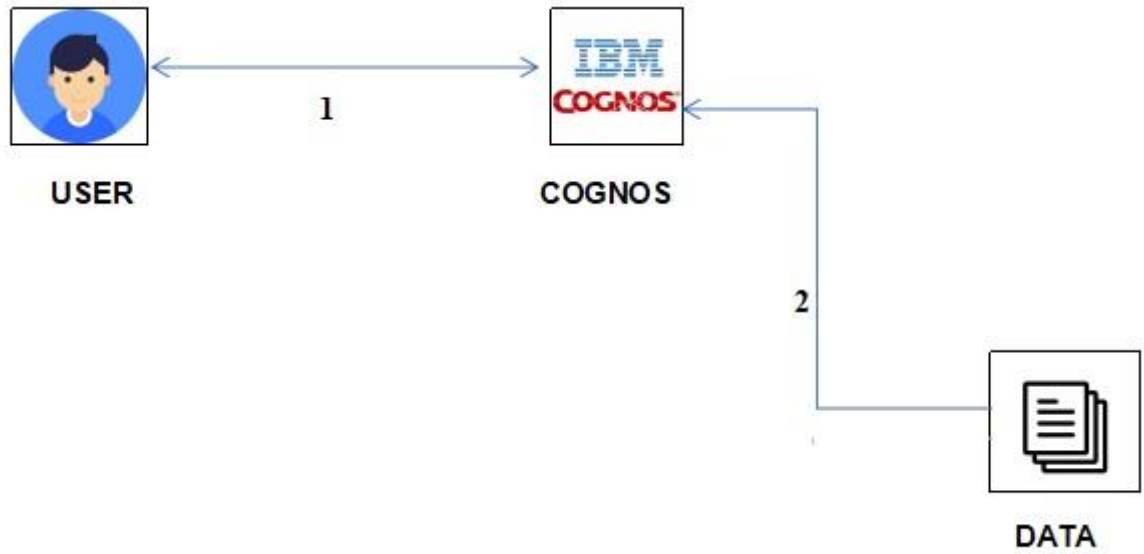
1. **Get Connected** - Connect your data effortlessly Import data from CSV files and spreadsheets. Connect to cloud or on-premises data sources, including SQL databases, Google BigQuery, Amazon, Redshift, and more.
2. **Prepare your data** – Prepare and connect data automatically Save time cleaning your 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.

B. System Architecture

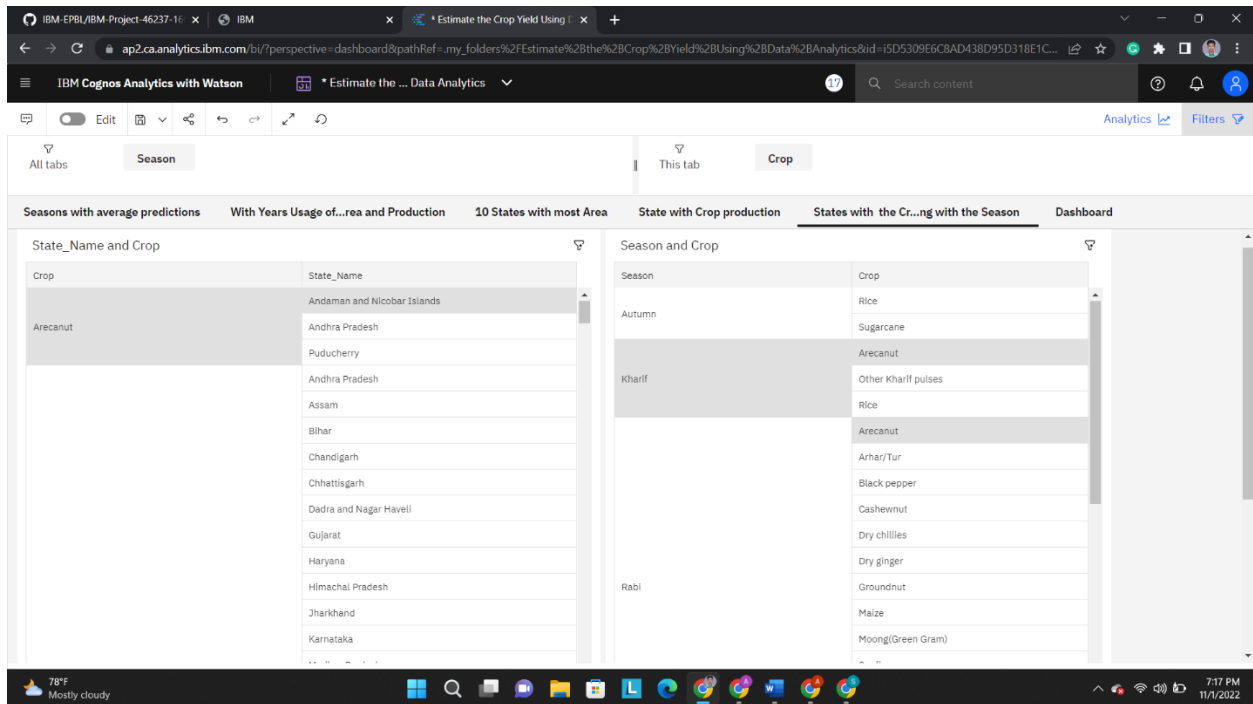
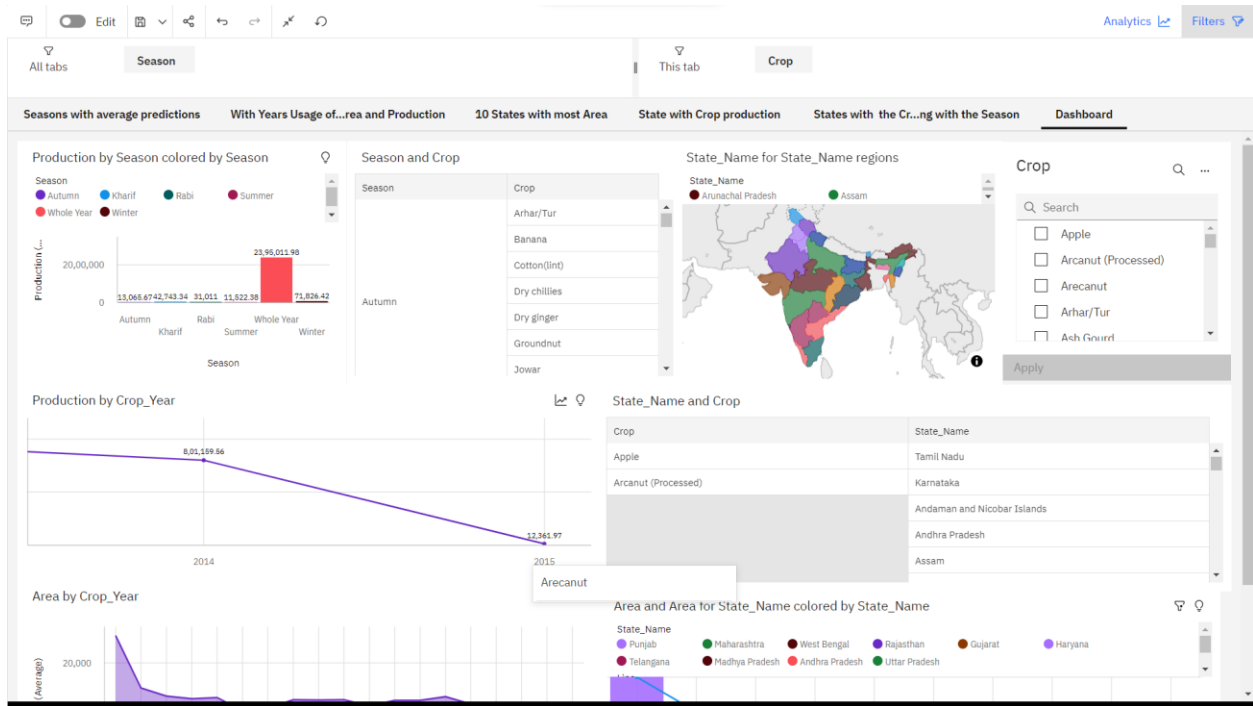
India is one of the top countries for agricultural production, making it one of the most significant sources of income. As part of this project, we will analyse some significant

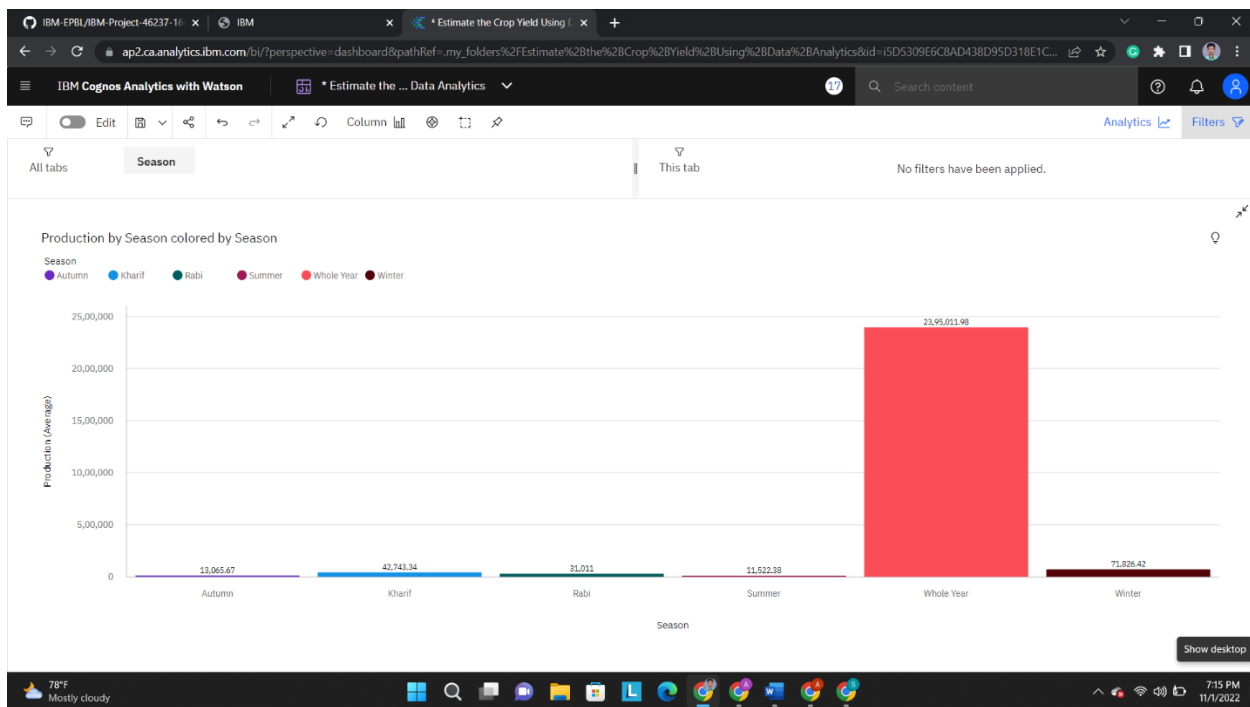
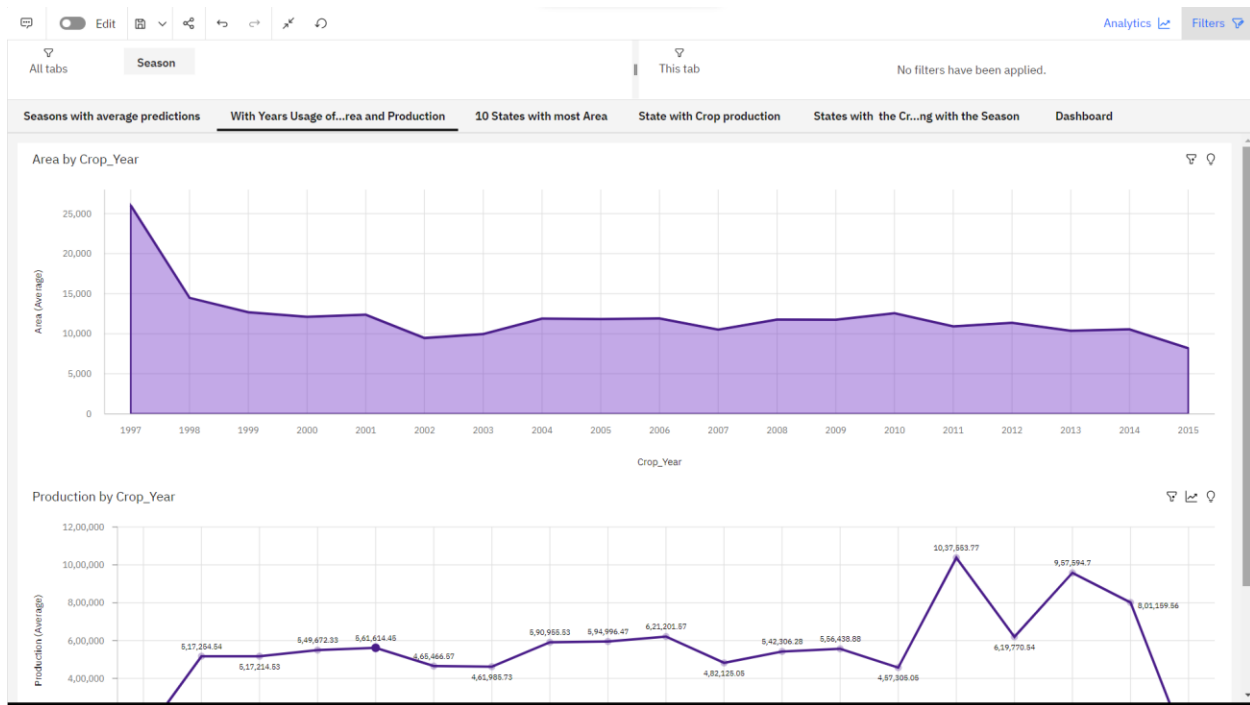
visualisations, build a dashboard, and then use this information to gain the majority of our understanding of crop output in India.

Technical Architecture:



IV. RESULTS





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. The analysis of agricultural productivity and the uncovering of hidden patterns utilising data sets related to seasons and crop yields have been noted in the literature. Using IBM Cognos, we have observed and conducted analysis regarding various crops grown, areas, and productions in various states and districts.