Report

Agriculture Data Analytics In Crop Yield Estimation

Using IBM Cognos

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Introduction

1.1 Overview

Crop production in India is one of the 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.

1.2 Purpose

- To know fundamental concepts and can work on IBM Cognos Analytics.

- To gain a broad understanding of plotting different graphs.

- To able to create meaningful dashboards

2.Literature Survey

2.1 Existing problem

Agriculture is important for human survival because it serves the basic need. A well-known fact is that the majority of population (≥55%) in India is into agriculture. Due to variations in climatic conditions, there exist bottlenecks for increasing the crop production in India. It has become a challenging task to achieve desired targets in Agri based crop yield. Factors like climate, geographical conditions, economic and political conditions are to be considered which have direct impact on the production, productivity of the crops. Crop yield prediction is one of the important factors in agriculture practices. Farmers need information regarding crop yield before sowing seeds in their fields to achieve enhanced crop yield. The use of technology in agriculture has increased in recent years and data analytics is one such trend that has penetrated into the agriculture field being used for management of crop yield and monitoring crop health. The recent trends in the domain of agriculture

have made people understand the significance of   Big data. The main challenge using big data in agriculture is identification of impact and effectiveness of big data analytics. Efforts are going on to understand how big data analytics can be used to improve productivity in agricultural practices. The analysis of data related to agriculture helps in crop yield prediction, crop health monitoring and other such related activities.
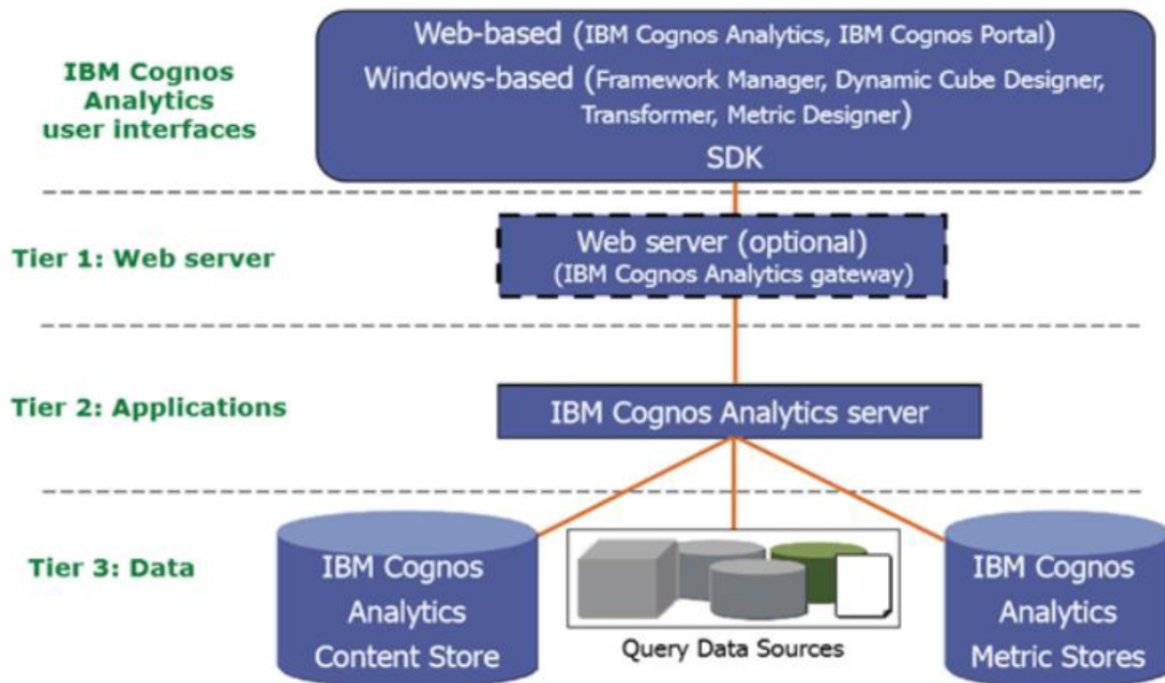
2.2 Proposed solution

By working on IBM cognos analytics we will gain knowledge about the analysis of various crop yield estimation and various agricultures across India through the fundamental concepts of IBM Cognos Analytics.

We will also try to gain a broad understanding of plotting different graphs and to create meaningful dashboards.
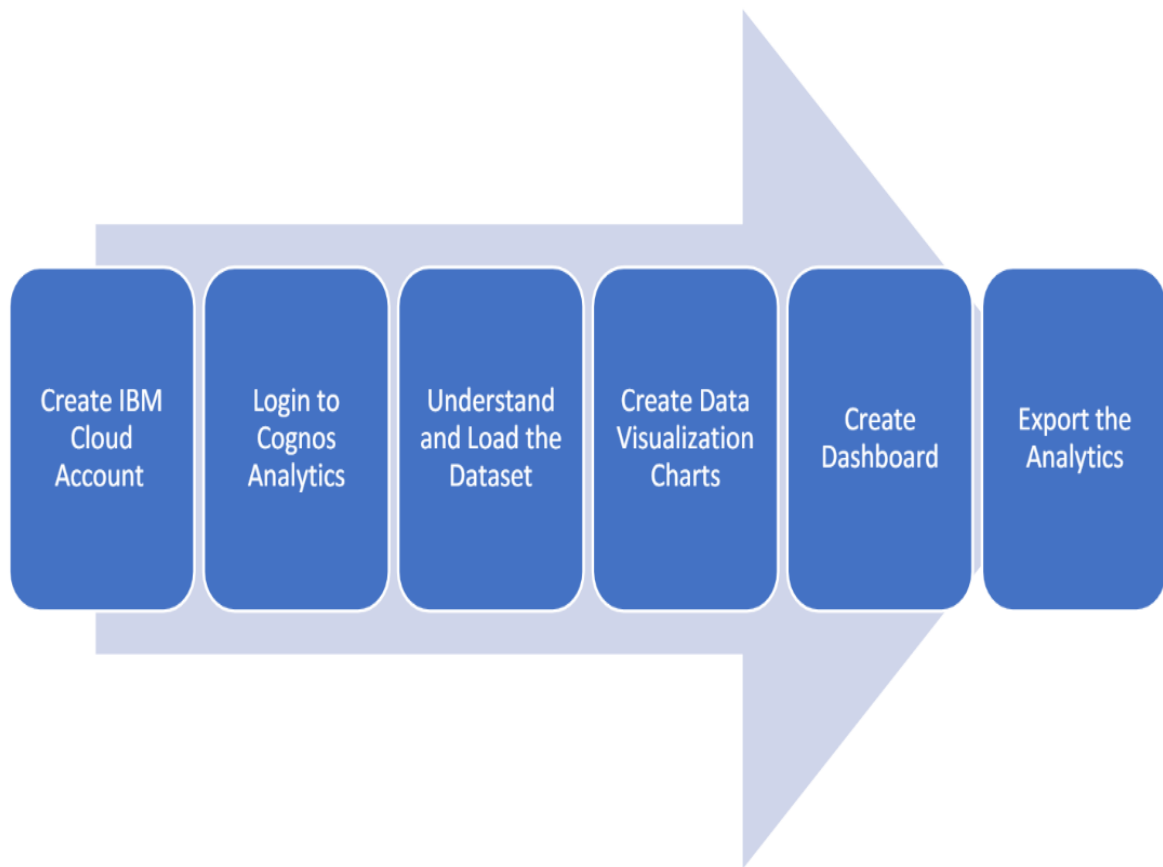
Theoretical Analysis

3.1 Block Diagram

IBM Cognos Analytics architecture (high level)

4.Flowchart

Create IBM Cloud Account → Login to Cognos Analytics → Understand and Load the Dataset → Create Data Visualization Charts → Create Dashboard → Export the Analytics

5. Result

As a result, by working on IBM cognos analytics we gained knowledge about the fundamental concepts of IBM Cognos Analytics , Gain a broad understanding of plotting different graphs And Able to create meaningful dashboards

6. Advantages and Disadvantages

Advantages

Better agreement
In business numerous periods it happens that we need to look at the exhibitions of two components or two situations. A conventional methodology is to experience the massive information of both the circumstances and afterward examine it. This clearly will kill a great deal of time.

A superior method
It can tackle the difficulty of placing the information of both perspectives into the pictorial structure. This will unquestionably give a superior comprehension of the circumstances. For instance, Google patterns assist us with understanding information identified with top ventures or inquiries in pictorial or graphical structures.

Simple sharing of data
With the representation of the information, organizations present another arrangement of the correspondence. Rather than sharing the cumbersome information, sharing the visual data will draw in and pass on across the data which is more absorbable.

Precise investigation
With the assistance of information perception, it gets more obvious the patterns and hence draws a superior surmising of the information. Accordingly, giving associations an edge over the adversaries.

Deals investigation
With the assistance of information representation, a salesman can without much of a stretch comprehend the business chart of items. With information perception instruments like warmth maps, he will have the option to comprehend the causes that are pushing the business numbers up just as the reasons that are debasing the business numbers. Information representation helps in understanding the patterns and

furthermore different variables like sorts of clients keen on purchasing, rehash clients, the impact of topography, and so forth.

Discovering relations between occasions
A business is influenced by a lot of elements. Finding a relationship between's these elements or occasions encourages chiefs to comprehend the issues identified with their business. For instance, the Online business market is anything but another thing today. Each time during certain happy seasons like Christmas or Thanksgiving the diagrams of online organizations go up. Along these lines, state if an online organization is doing a normal of a $1 million business in a specific quarter and the business ascends in straightaway, at that point they can rapidly discover the occasions comparing to it.

Adjustment of information
The solid purpose of information perception is that the information based on which the data is introduced in a visual configuration can be changed or altered along these lines giving a possibility for the business personals to build up a better correspondence with the crowd.

Investigating openings and patterns
With the huge loads of information present, the business chiefs can discover the profundity of information in regard to the patterns and openings around them. Utilizing information representation, the specialists can discover the examples in the conduct of their clients, subsequently preparing for them to investigate patterns and open doors for the business.

Geological perception
One of the solid purposes of information perception is geological representation. In this, specialists have the upside of area data giving information to day by day investigation.

Disadvantages of Data Visualization :

It gives assessment not exactness

While the information is exact in foreseeing the circumstances, the

perception of similar just gives the assessment. It without a doubt is

anything but difficult to change over the robust and protracted information

into simple pictorial configuration yet such a portrayal of data may prompt

theoretical ends now and then.

One-sided

The essential arrangement of information representation occurs with the human interface, which means the information that turns out to be the base of perception can be one-sided. The individual bringing the information for the equivalent may just think about the significant part of the information or the information that requirements center and may reject the remainder of the information which may prompt one-sided results.

Absence of help

One of the downsides of information perception is that it can't help, which means an alternate gathering of the crowd may decipher it in an unexpected way.

Inappropriate plan issue

On the off chance that information perception is viewed as such a correspondence. At that point, it must be certifiable in clarifying the reason. In the event that the plan isn't legitimate, at that point, this can prompt disarray in correspondence.

Wrong engaged individuals can skip center messages

One of the issues with information perception is however it could be logical its clearness in clarification is totally subject to the focal point of its crowd.

7. Applications

Healthcare Industries

A dashboard that visualizes a patient's history might aid a current or new doctor in comprehending a patient's health. It might give faster care facilities based on illness in the event of an emergency. Instead than sifting through hundreds of pages of information, data visualization may assist in finding trends.

Health care is a time-consuming procedure, and the majority of it is spent evaluating prior reports. By boosting response time, data visualization provides a superior selling point. It gives matrices that make analysis easier, resulting in a faster reaction time.(From)

Business intelligence

When compared to local options, cloud connection can provide the cost-effective "heavy lifting" of processor-intensive analytics, allowing users to see bigger volumes of data from numerous sources to help speed up decision-making.

Because such systems can be diverse, comprised of multiple components, and may use their own data storage and interfaces for access to stored data, additional integrated tools, such as those geared toward business intelligence (BI), help provide a cohesive view of an organization's entire data system (e.g., web services, databases, historians, etc.).

Multiple datasets can be correlated using analytics/BI tools, which allow for searches using a common set of filters and/or parameters. The acquired data may then be displayed in a standardised manner using these technologies, giving logical "shaping" and better comparison grounds for end users.

Military

It's a matter of life and death for the military; having clarity of actionable data is critical, and taking the appropriate action requires having clarity of data to pull out actionable insights.The adversary is present in the field today, as well as posing a danger through digital warfare and cybersecurity. It is critical to collect data from a

variety of sources, both organized and unstructured. The volume of data is enormous, and data visualization technologies are essential for rapid delivery of accurate information in the most condensed form feasible. A greater grasp of past data allows for more accurate forecasting.Dynamic Data Visualization aids in a better knowledge of geography and climate, resulting in a more effective approach. The cost of military equipment and tools is extremely significant; with bar and pie charts, analyzing current inventories and making purchases as needed is simple.

Finance Industries

For exploring/explaining data of linked customers, understanding consumer behavior, having a clear flow of information, the efficiency of decision making, and so on, data visualization tools are becoming a requirement for financial sectors. For associated organizations and businesses, data visualization aids in the creation of patterns, which aids in better investment strategy. For improved business prospects, data visualization emphasizes the most recent trends.

Data science

Data scientists generally create visualizations for their personal use or to communicate information to a small group of people. Visualization libraries for the specified programming languages and tools are used to create the visual representations.Open source programming languages, such as Python, and proprietary tools built for complicated data analysis are commonly used by data scientists and academics. These data scientists and researchers use data visualization to better comprehend data sets and spot patterns and trends that might otherwise go undiscovered.

Marketing

Data visualization is a boon. We may use visuals and reports to analyse various patterns and trends analysis, such as sales analysis, market research analysis, customer analysis, defect analysis, cost analysis, and forecasting. These studies serve as a foundation for marketing and sales.

Visual aids can assist your audience grasp your main message by visually engaging them and visually engaging them. The major advantage of visualising data is that it can communicate a point faster than a boring spreadsheet.

In b2b firms, data-driven yearly reports and presentations don't fulfil the needs of people who are seeing the information. They are unable to grasp the art of engaging with their audience in a meaningful or memorable manner. Your audience will be more interested in your facts if you present them as visual statistics, and you will be more inclined to act on your discoveries.

Food delivery apps

When you place an order for food on your phone, it is given to the nearest delivery person. There is a lot of math involved here, such as the distance between the delivery executive's present position and the restaurant, as well as the time it takes to get to the customer's location.Customer orders, delivery location, GPS service, tweets, social media messages, verbal comments, pictures, videos, reviews, comparative analyses, blogs, and updates have all become common ways of data transmission.

Users may obtain data on average wait times, delivery experiences, other records, customer service, meal taste, menu options, loyalty and reward point programmes, and product stock and inventory data with the help of the data.

Real estate business - Brokers and agents seldom have the time to undertake in-depth research and analysis on their own. Showing a buyer or seller comparable home prices in their neighborhood on a map, illustrating average time on the market, creating a sense of urgency among prospective buyers and managing sellers' expectations, and attracting viewers to your social media sites are all examples of common data visualization applications. If a chart is difficult to understand, it is likely to be misinterpreted or disregarded. It is also seen to be critical to offer data that is as current as feasible. The market may not alter overnight, but if the data is too old, seasonal swings and other trends may be overlooked.Clients will be pulled to the graphics and to you as a broker or agent if they perceive that you know the market. If you display data in a compelling and straightforward fashion, they will be drawn to the graphics and to you as a broker or agent.

Education - Users may visually engage with data, answer questions quickly, make more accurate, data-informed decisions, and share their results with others using intuitive, interactive dashboards.The ability to monitor students' progress throughout the semester, allowing advisers to act quickly with outreach to failing students. When they provide end users access to interactive, self-service analytic visualizations as well as ad hoc visual data discovery and exploration, they make quick insights accessible to everyone – even those with little prior experience with analytics.

E-commerce - In e-commerce, any chance to improve the customer experience should be taken. The key to running a successful internet business is getting rapid insights. This is feasible with data visualization because crossing data shows features that would otherwise be hidden.Your marketing team may use data visualization to produce excellent content for your audience that is rich in unique information. Data may be utilized to produce attractive narrative through the use of infographics, which can easily and quickly communicate findings.Patterns may be seen all throughout the data. You can immediately and readily detect them if you make them visible. These behaviours indicate a variety of consumer trends, providing you with knowledge to help you attract new clients and close sales.

Conclusion

We made a project on data visualization of agricultural crops of different types in different regions of India at different times of the year. Which made things easy to understand and gave us a detailed picture of the cropping pattern of different crops in india. At last we even made a summary by looking at which alone we can get to know each and everything - season,month,region and various other factors which can tell about the cropping and agricultural pattern of india.

Future Scope

Various other charts can be prepared like :
- Season with maximum production
- Production by state name
- Total production per area

As these are important data which could be used in the future.

Bibliography Appendix

- Smart internz project tutorial guide