An Intensive Analtics for farmer using Big Data

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***Abstract*— this study aimed to analysis the demand and supply of the population in next upcoming year due to increasing population and less land availability of the farmers, the basic aim of this study is to fill the major gap between farmers and Technology.**

Keywords—Agriculture, Big data, Farmers, Technology

I. INTRODUCTION

In 2050 the Indian population is 1.7 billion, which means that India will have an additional 430 million mouths to feed. And in increasing population the land availability to the farmer is less. On an average 1.08 hector land available per farmer in India, so in next up coming days (30 Year Later) it is difficult to feeding that much number of peoples, so to balance the demand and supply of the population we have implement good sustainable solutions to sustain our resources and increasing our efficiency, data accessibility, and match the population growth with increased food production in our country India there is a major gap between our farmers and Technology. Here we are identify the factor which covers the big gap in agriculture with big data and try to integrate the next generation of farmers to get sustainable agriculture development.

II. RATIONALE BACKGROUND:

The basic need for this study is:

- To fill the major gap between farmers and Technology.
- To balance the demand and supply of the population.
- On increasing population and decreasing land availability of the farmers in next up coming years (30 Year Later) it is difficult to feeding that much number of peoples

III. OBJECTIVES

Primary objective: By using Big Data Technology we use algorithm is such a way which can track the farmer's daily operations, store last 30 years of agriculture data like rainfall pattern, soil diagnosis, weather forecast, market information and etc., to trained the model so in the next upcoming year it will predict the correct output — like optimizing delivery truck routes etc.

Secondary Objectives: On the basis of trusted quality data and Collection of multiple data from multiple sources in real-time, will guide the farmer to optimize their production based on market demand and how to maximize the profitability. This enables farmer to make smart decisions, such as what crops to plant for better profitability and when to harvest. The right decisions ultimately improve farm yields

IV. REVIEW OF LITERATURE

BHARATH G, ANALA M R (JUNE 2017) has explored in this study to bring out the significance of the role played by big data analytics in precision agriculture which has radically changed the field of agriculture. The paper discuss the development and use of M2M remote telemetry as an entailment of Big Data processing on Cloud infrastructure which could be a promising solution for numerous problems, such as disease prevention and control as described, faced during crop production. This paper briefly describes the current state of research on big data applications in agriculture and the present scenario of agricultural sector in India.

ANDREAS KAMILARIS1, ANDREAS KARTAKOULLIS, AND FRANCESC X. PRENAFETA-BOLDÚ (2017) has explored in this study to the solution proposed, tools/techniques employed as well as data used. Based on these projects, the reader can be informed about which types of agricultural applications currently use big data analysis, which characteristics of big data are being used in these different scenarios, as well as which are the common sources of big data and the general methods and techniques being employed for big data analysis. Open problems have been identified, together with barriers for wider adoption of the big data practice. well described through common semantics and ontologies, together with adoption of open standards, have the potential to boost even more research and development towards smarter farming, addressing the big challenge of producing higher-quality food in a larger scale and in a more sustainable way, protecting the physical ecosystems and preserving the natural resources

ABHISHEK BERIYA ,(OCTOBER2020) has explored in this study to capture the evolution of digital agriculture based on the foundations of precision agriculture. A lot of data gathered in precision agriculture could not be put to good use due to limitations of the models of PA; the advancement of technology has made it possible to use such data for decision making and a rapid advancement to the digitization of the entire agricultural value chain. The key take-away from the literature reviewed are: Economic aspects and business models: Digital Agriculture solutions have to necessarily keep economic gains for farmers in mind so that the farmers invest in and adopt Digital Agriculture business models. This is absolutely important and if the technologies and business models do not substantiate effective and tangible economic gains, adoption of digital will lag far behind the potential. Design aspects: Technology is rapidly advancing and is poised to only grow further. The challenge and opportunity lies in the domain of design to harness the growing power of technology to design keeping, inter-alia, the ease of use, performance expectations and skill levels of the end-user in focus

Ch. Chandra Eschar, J. UdayKumar, B. Kishor Kumar and Ch. Sekhar (2018) has explored in this study that Right here people are by and large relying on cultivation in preference to jobs due to their illiteracy. Unluckily their lack of training displays on their methods of cultivation. Here our society needs a higher supervision through technology. Agriculture

demonstrator states that who do well do no longer achieve true effects. So, no boom is located in lives of cultivators. Within the destiny, this study might be scaled up in terms of data size and crop variations. Apart from ICT and all, Big Data Analytics is one of the best systems for crop planning to increase agriculture productiveness. Effective use of Big Data Analytics on crop planning may be very significance work to boom agricultural manufacturing and offer the advantages of ICT& different advanced technology to the common man

EHIZOGIE OMO-OJUGO (9, September 2018) has explored in this study that the adoption of big data analytics in farming practices such as precision agriculture and smart farming will enable farmers and agribusinesses to overcome the prevalent challenges of low yield and high input costs. The application of big data analytics solution will optimize farming and raring conditions and improve crop and livestock yield while reducing input cost. This will result in a cut in waste and a more efficient business process. Also, storage and logistical challenges can be assuaged with big data analytics tools as they can be incorporated in an integrated solution that optimizes storage and logistical schedule to reduce cost and increase efficiency

JHARNA MAJUMDAR, SNEHA NARASEEYAPPA & SHILPA ANKALAKI (05 July 2017) has explored in this study that various data mining techniques are implemented on the input data to assess the best performance yielding method. The present work used data mining techniques PAM, CLARA and DBSCAN to obtain the optimal climate requirement of wheat like optimal range of best temperature, worst temperature and rain fall to achieve higher production of wheat crop. Clustering methods are compared using quality metrics. According to the analyses of clustering quality metrics, DBSCAN gives the better clustering quality than PAM and CLARA, CLARA gives the better clustering quality than the PAM. The proposed work can also be extended to analyses the soil and other factors for the crop and to increase the crop production under the different climatic conditions.

HARISH KUMAR M, DR. T MENAKADEVI (4TH FEBRUARY 2017)) has explored in this study that the role of Big data analytics in the field of agriculture are explored .Agriculture will face affordable challenges to provide sufficient nutrients. We have reviewed latest tools and technology which will afford to increase the productivity of crops. In this paper we have discussed about Agriculture statistics of India and its traditional farming methods. In addition big data paves a major role by introducing Precision Agriculture techniques which is already initiated in many developing countries which makes the farmers to integrate traditional farming methods. Detailed architecture of Hadoop Ecosystem and its components has been listed along with their framework; these tools are used to predict future analysis by using the collected Datasets .In future direction of Agriculture will provide technical backup support to the farmers to implement innovative models which are replicated in large scale. We plan to work on precision agriculture techniques.

SJAAK WOLFERT, LAN GE A, COR VERDOUW, MARC-JEROEN BOGAARDT (31 JANUARY 2017) has explored in this study, to emphasizes the use of information and communication technology in the cyber-physical farm management cycle. The review shows that the scope of Big Data applications in Smart Farming goes beyond primary production; it is influencing the entire food supply chain. Big data are being used to provide predictive insights in farming operations, drive real-time operational decisions, and redesign business processes for game-changing business models. Several authors therefore suggest that Big Data will cause major shifts in roles and power relations among different players in current food supply chain networks. The future of Smart Farming may unravel in a continuum of two extreme scenarios: 1) closed, proprietary systems in which the farmer is part of a highly integrated food supply chain or 2) open, collaborative systems in which the farmer and every other stakeholder in the chain network is flexible in choosing business partners as well for the technology as for the food production side.

Summary of Review of Literature

We need more Need of Research and development in agriculture ,India spent 31% of its agricultural GDP on research and development in 2010, on the other hand China spent almost double that amount.

Indian total factor productivity growth remains below 2% per year, on the other hand China's total growth is about 6% per year even though China also has smallholding farmers.

In increasing population the land availability to the farmer is less. On an average if all farmers put together, the size of average land holding declined from 1.15 hectares in 2010-11 to 1.08 hectares in 2015-16.

And how to implement good sustainable solutions to sustain our resources and increasing our efficiency, data accessibility, and match the population growth with increased food production

V. PROPOSED METHODOLGY

In our Big Data Technology we use algorithm is such a way which can track the farmer's daily operations, store last 30 years of weather data history, satellite and drone images, and soil types, weather, irrigation practices, plant nutrient requirements, and several other farming techniques, Analysis the agriculture data for rainfall pattern, soil diagnosis, weather forecast, pests, diseases, market information and falling commodity prices etc., to trained the model so in the next upcoming year it will predict the correct output — like optimizing delivery truck routes, with this food delivery cycles from producer to the market and make informed decisions faster, and to solve the food Challenges in the future.

The farmer with the help of Collection of multiple data from multiple sources in real-time and helps farmer on the basis of trusted quality data and it will guide the farmer to optimize their production based on market demand and how to maximise the profitability. This enables farmer to make smart decisions, such as what crops to plant for better profitability and when to harvest. The right decisions ultimately improve farm yields

With this methodology the overall production increase by 4.2% a year, which is more than twice the current rate and it will reverse the food insecurity, increase the food production, Increase in productivity of crops , Increase in production of livestock , Increase in crop intensity, Diversification towards high-value crops, Improved price realization by farmers, Improvement in the efficiency of input use (cost saving), increase the overall strength and performance of the agricultural sector.

VI. FUTURE SCOPE OF THE STUDY

To identify more major factors which covers the big gap in agriculture with big data and make this as reference for someone who wants to find a better solution for the above problems what we have mentioned.

VII. CONCLUSION

To integrate the next generation of farmers to get sustainable agriculture development. And to reverse the food insecurity, increase the food production help to get supply chain efficient, motivate youth and bring into agriculture, increase the overall strength and performance of the agricultural sector.

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DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

REFERENCES

[1] A Kamilaris, A Kartakoullis, F Prenafeta-Boldú, .(2017).A review on the practice of big data analysis in agriculture. The ACM Digital Library is published by the Association for Computing Machinery. https://dl.acm.org/doi/abs/10.1016/j.compag.2017.09.037

[2] B.Liangliang, (2019).The fuzzy comprehensive evaluation of agriculture engineering teaching.IDEAS.https://ideas.repec.org/a/zib/zbnbda/v1y2019i1p15-20.html

[3] I Carbonell,(2016). The ethics of big data in big agriculture.Internet Policy review journal on internet Regulation. https://policyreview.info/articles/analysis/ethics-big-data-big-agriculture

[4] J Majumdar, S Naraseeyappa, S Ankalaki,. (2017) .Analysis of agriculture data using data mining techniques: application of bigdata.SpringerOpen. https://journalofbigdata.springeropen.com/articles/10.1186/s40537-017-0077-4

[5] P Ribarics, .(2016). Big Data and its impact on agriculture. Ecocycles scientific journal of the European Ecocycles society. https://www.ecocycles.net/ojs/index.php/ecocycles/article/view/54