

UNDERSTANDING THE IMPORTANCE OF NEW TECHNOLOGY AND ARTIFICIAL INTELLIGENCE IN THE FARMING SECTOR IN INDIA: A CONCEPTUAL FRAMEWORK

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ABSTRACT

Artificial intelligence (AI) and the Internet of Things (IoT) are new technologies in the farming sector. Degradation of agricultural land is a serious problem of the whole world today; and climate effect and crop disease, due to which the importance of artificial intelligence increases. With this new technology, the farmer's crop production will increase and his time will be saved. There will be huge positive changes in agriculture with the help of artificial intelligence, the Internet of Things and robots, and network sensors. And due to the change in the old technology of the farmer to the new technology, crop production will increase, which will also increase the income of the farmer. In today's modern era, the agricultural sector must connect with technology, only then it will be able to solve the food problem of today's increased population.

Keywords: Artificial intelligence, Internet of things, farming sector, crop.

1. INTRODUCTION

Artificial intelligence is a branch of computer science, also known as machine intelligence and it is the intelligence demonstrated by machines. It works very fast as compared to human beings. It has multiple uses in the world like the education sector, agriculture sector, manufacturing sector, and health sector, and can make decisions (Devesh Rai, 2022) be created, dialogue recognition, graphic perception, and linguistic translation. But artificial intelligence has a different use in the agriculture sector (primary sector). AI techniques are used in agriculture like soil moisture, measuring the soil quality, weather forecasting, cutting edge farm implementation, crop disease detection and minimizing crop damage, and reducing the risk of crop failure. For allowing AI techniques in the agriculture sector, we have used multiple tools in agriculture like IOT (internet of things) - Smart sensors, Robotics, Data analytics tools, Connectivity modules, Connectivity hardware, Satellites, Drones Cloud computing etc. By use of all the above tools, we have enhanced and developed for better crop production and farmer increase income and cost minimize. Agriculture is a major sector in economic growth for any country. Since ancient times, agriculture has been an important sector of any country, it does not need the food of any country, but the industrial sector also provides maximum wealth. According to the Indian economy, agriculture plays an important role in GDP (Gross Domestic product). According to the estimates, released by the Ministry of Statistics & Programme Implementation (MoSPI), the GVA of agriculture and allied sectors in 2020-21 was 20.1%, it was 19% in 2021-22 and it again came down to 18.3% in 2022-23. Farming is the base of the Indian economy. India's people largely depend on agriculture for their living and agriculture contributes 40 per cent of the total Gross domestic product (GDP) of the nation. It is the main pillar of the Indian economy because the Employment contribution of agriculture is approx. 46% of total employment as per ILO estimate of India in the year 2023. "AI and big data are going to be a game-changer in the agriculture sector and the government is aiming to collate about 80% of such data by 2020." Artificial intelligence will work to connect the agriculture and industry sector, which will open the way for the development of any country. Artificial intelligence perspective technology, IoT, and satellite broadcasting machinery to operate the farming area of the country. AI decision platform will afford a farm-level solution for growing the agronomy sector. Farmers are told about the moisture and weather of the land and the best methods of sowing the seeds which give high yield. It will get accurate information about the market by which he will be able to know which crop is more in demand in the market.

What is the reason that increases the importance of artificial intelligence in Indian agricultural science?

Farming is the most influential segment of the Indian economy. Around 18% of India's gross domestic product and foodstuff safety daily is 1.3 billion people. Agriculture different zones were chosen for businesses such as dairy, poultry farms, nutrition grain, etc. India also distributes many items to other countries, out of which rice is the most exported. but due to dependence on resources in India and the use of old technology-intensive farming practices major problems arise like land degradation, increased dependence on inorganic fertilizers, groundwater depletion, and pest resistance

for India which shows that in India unsustainable farming practices followed. Similarly, even today we use a lot of water to irrigate crops, and due to this, a terrible problem has arisen due to the depletion of the earth's water, in a country like India, this problem is seen in a formidable form. Some states of India are Maharashtra, Rajasthan, Haryana, and Punjab. Because of all these reasons, we should understand the importance of artificial intelligence in farming. With the support of artificial intelligent technology and the internet of things, GPS, and cloud camping, we can improve soil quality and what temperature is needed for crops, how much moisture is needed for a crop, how much pesticide is needed for a crop, what climate is needed for a crop, how long will it rain, due to all these information, it will help a farmer in many ways, which will increase his crop production and increase the production of crops to meet the increasing demands of food grains. Will be able to deal with the food problem and he will earn more income by selling the grown crops in the market

2. LITERATURE REVIEW

Rahul Kumar et. al, (2020) examined the new technology in the agriculture sector in the case of India. Artificial intelligence and new technology can play a crucial role in the change of modernizing and chemicals less productivity in rural agriculture in India. The authors do not mention specific methods in this research. This paper's analysis is based on a descriptive study in a particular sector in India. The authors found that the impact of artificial intelligence provided correct and appropriate information about various yields and types of land, climates, etc. In addition, AI improves the crop output and reduced hazard founding the enhanced revenue of the farmers.

C.P. Suresh et.al, (2019) explore the new technology in the agriculture sector in India .this paper inf. that IOT (Internet of Things) and cloud computing technologies still need to be implemented enhanced, and developed for better crop production. It is used by promoting satellites and drones to address various agriculture issues like quality of soil, crop disease, pest weather forecasting, etc. AI improving agriculture useful is in precision forming, cutting edge farm implementation and increasing farmer income, measuring soil moisture content. This paper is analytical on a descriptive-analytical study in the case of agriculture in India.

Rohan R. Naikwade et. al, (2022) investigate a new technology used in the agriculture sector named Agriculture 5.0(future of smart farming). This technic redoing the food burden of agriculture fastly growing population. AI is used to solve problems, IOT and AI improve the agriculture sector and IOT, AI work in agriculture to bridge the gap between agriculture and industry smart farming technology use increasing agriculture production and decrease production cost as well as saves time. The investigator is not defined to specific methods in this research, it is a descriptive study in the agriculture sector.

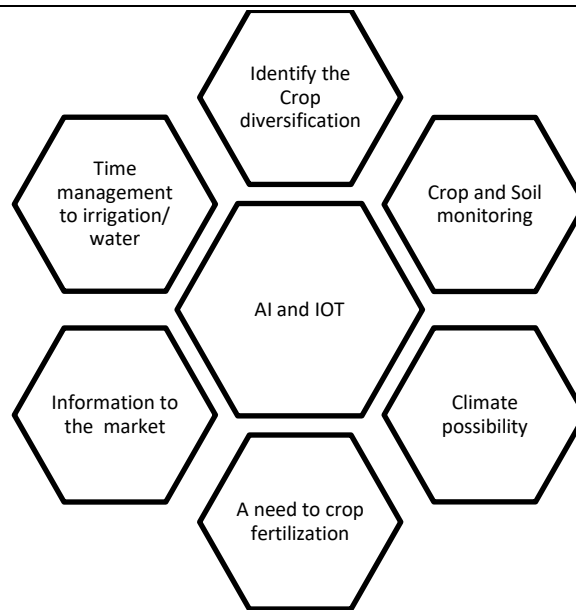
Shilpa Kaushal et. al, (2022) according to these paper researchers define technology in agriculture as the Internet, blockchain technology, computer science, etc. It provides correct and timely information about agriculture in rural India. The Indian government has set a target for farmers' income to double in the financial year 2022. AI or digital technology's main role-playing in agriculture sector transformation in modernization or future demand for agricultural goods fulfilling, it is the most important role in increasing crop yield and export to agricultural goods. This paper is a descriptive analysis of the agriculture sector

Devesh Rai et. al, (2022)The insects about the increasing food problem in the United Nations, how the population there is increasing rapidly, which will reach 2 billion by 2050 and the population of the whole world will reach 9 billion. The problem of growing food can be overcome through artificial intelligence, it gives us all the necessary information about crop harvesting, sowing, soil, weather, climate, irrigation, and what kind of pesticide to use, which will increase the production of crops and also solve food problems. This paper descriptive analysis of the agriculture sector in the United Kingdom

3. METHODOLOGY AND DESCRIPTIVE ANALYSIS

The study is based on the descriptive analysis of the farming sector in India. In this study, the author explores the various benefits and importance of AI in the farming sector. The paper indicates the use of artificial intelligence in the farming sector. In this research, the author investigate various papers that reviewed an innovative change in the farming sector. The paper shows graphically visualized benefits of AI and the Internet of Things in the agriculture sector.

Graphically visualized the Benefits of Artificial Intelligence (AI) and the Internet of Things (IoT) in the Farming Sector



4. DISCUSSION

We have discussed the key benefits of artificial intelligence and new technology applicable to the farming sector. The authors discussed briefly below to the point.

Identify the crop diversification

AI and IoT techniques a smart technology with the help of crop diversification and mention the crop bad and good quality, using this technology increasing to crop good quality production, agriculture crop production very difficult task determining good and bad quality, A good quality crop production is easy to export in another country, with the increase in the export of crops, the balance of payments of the country will be fine and at the same time, an income of the farmers will be increase.

Help to the monitoring of crops and soil quality

This technique employs mechanical learning to help farmers understand the advantages and disadvantages of their land, with a focus on preventing poor crops and enhancing the capacity to grow healthy crops. How much soil is needed to plant a crop, how much soil is needed, how much water is needed to apply it, artificial intelligence is also needed.

Information about Climate possibility

It is very important to know what kind of temperature is suitable for a crop in agriculture, the development of any crop also depends a lot on its climate. All this information is available to the farmer through the AI application in just one click, which crop is grown in which season by the farmer or the output of the crop is increased by the park. AI technology can help farmers by telling them about the climate

Knowledge of the need to crop fertilization

All the decisions take away many minerals from the soil which are very important for the growth of any crop like Nitrogen, Phosphorus, Calcium, and Potassium But sometimes nutrients are deficient With the help of artificial intelligence and sources, which crop needs nutrition and in what quantity, all these works can be done very easily by AI Through Artificial Intelligence and Robots mobile application, how much fertilization a crop needs can be accurately told and proper development of crops

Information of the Market

Artificial Intelligence informs the farmers about the price of their crop in the market or which crop is in high demand, Such a farmer knows which crop he should grow, which he can sell in the market and earn more income, With the introduction of artificial intelligence in agriculture, the link between the farmer and the market will be better, Due to which the farmer will get the best information about the price of his crop, due to which the farmer will grow the same crop from which he will get more benefits. Farmer one-click mobile application information to the market price to the same market to another market.

Time management of Irrigation/water system

Artificial intelligence or IOT is a piece of good information to deliver farmer crop irrigation/water. The farmer does not even know how much water to require for crops and what time, many times his crop gets destroyed, artificial intelligence tells the farmer a smart method or strategy for a crop that can save water.

5. CONCLUSION

The study concludes that new technology and AI are very beneficial to the farming sector. After using the technology farming is very easy and more informative related to farming activities. Artificial intelligence and bright play an important role and it will give a new look to the old agricultural, artificial intelligence technology can improve performance and productivity capability And through this, the farmer gets the correct information about water, weather, plant life, soil, environment, climate, etc. With its help, the production of crops by the farmer will increase and the increased food problem can also be dealt with Artificial Intelligence and the Internet of Things will bring transformation in crops, production of crops will increase and revenue of farmers will increase.

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