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Grow Kisan: E-Agriculture App

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Abstract: ***Web apps and services facilitate information, communication, entertainment, and leisure. Web apps have ushered in a new era. In India, information and communication technology (ICT) in agriculture is a relatively new subject aimed at increasing agricultural and rural output.***
It entails the development of novel ICT-based rural applications. Farmers can benefit from ICT innovation by receiving timely and accurate information and services, resulting in a more productive agricultural climate.This study offers a web-based tool for farmers that will help them with their agricultural tasks while also keeping them informed about new government programmes.
"Grow Kisan" is a service that gives agriculture-related information to Indian farmers in rural areas who face financial and connectivity challenges. The concept makes use of existing government services and mobile services to deliver a solution to the current situation with the least amount of cost to the farmer.
The application system provides customers with all of the information that is relevant for their own land, searches, on-line crop management, statistic profit summaries, a statistical summary of their land by cultivating a specific crop, and the FAO recommendation not to use water, but to use fertilisation to increase productivity; "Fertilization" With GPS and Web methods, the system allows effective land management, monitoring, and data supply. The device's interface is more "image-based" than "word based," whereby even analphabets will comprehend and utilise it.
The initiative focuses largely on small landowners, who truly may do miracles if specific instructions are supplied for effective land management and knowledge on the crops most appropriate for their territory.
Not only will the initiative offer the smallholder with a free callback service, but also some films and soundtracks to show how things are to be accomplished in the country. The most essential component is video conferencing since farmers may ask through video and demonstrate whether they have a problem with crops and soil. For example, how to apply a certain herbicide and how to seed the soil for improved production, etc.
A mobile cloud service for responding to Tomato Diseases is a voice-based response technique (VBAT) that is designed for farmers to receive voice queries in their natural language utilising the keyboard for the use of mic or text inquiries. Via speech and text the user will get the appropriate responses. India's cellular subscribers are 900 million.
Keywords: E-Agriculture, Crop information, E-commerce, weather prediction, Agro - assistant.

I. INTRODUCTION

Agriculture is an important aspect of India's economy, and it is currently one of the top two agricultural producers in the world. This industry employs over 52% of India's labour and accounts for about 18.1 percent of the country's GDP. Agriculture is the only source of income for roughly two-thirds of India's employed population. According to economic data from the 2006-07 fiscal year, agriculture accounts for 18% of India's GDP. The agriculture sector in India occupies roughly 43% of the country's total land area.
In terms of farm output, India currently stands second in the world. It is the leading producer of tea, mangoes, sugarcane, banana, turmeric, milk, coconut, pulses, ginger, cashew nuts, and black pepper, as well as wheat, rice, sugar, vegetables, fruits, groundnuts, and cotton. It produces 10% of all fruit on the planet. India has the potential to become the world's food supplier since it has a cultivable area, 20 agro-climatic regions, 46 soil types, a well-developed agribusiness system, and all four seasons for crop production. Agricultural growth is crucial in our country since it employs a large portion of the people and contributes significantly to the Indian economy. Following the WTO agreements, the Indian government has taken a number of steps to close the knowledge gap and promote quicker and more inclusive growth through implementing ICT in agriculture.

II. LITERATURE REVIEW

According to an IFFCO white paper, boosting the quality of information used by farmers in decision-making can increase both the quality of life in rural areas and farm output. As a result, ICT can be used as an indirect instrument to improve the existing situation of Indian agriculture. The study also highlights the reality that fragmented efforts would fail to fulfil the objectives; instead, industries with significant stakes in the agriculture sector should band together to give information.

Food costs had fallen for several years following the Green Revolution, but are currently rising again. In 2006-07, developing nations invested 11% of their GDP in agriculture; they now have cut it to 7%.

The total consequence is that productivity is declining, and today more and more people are genuinely hungry than perhaps 30 or 40 years ago. Companies of agricultural technology are saying that more needs to be invested in research.

We need to enhance agricultural productivity by using less water and fertilisers more efficiently. In these countries, they produce 80 percent of the food. Small farmers provide slightly more than half of the world's food, yet they have been disregarded by their own government and corporate sectors. These industries have concentrated on bigger farmers. The only way forward is to integrate the fields of politics, technology, and capital in key regions.

III. CONTRIBUTION FROM AUTHORS

A. Developed a basic e-farming architecture so that farmers can quickly find answers to the majority of their concerns.

B. An automated system is proposed that finds the farmer's (device user's) location and provides the best possible suggestions for choosing crops to grow based on soil and weather conditions at that location, as well as the current needs of that crop..

C. The Prediction System forecasts the weather conditions of the place from which the application was accessed (through GPS) in order to give better and more precise recommendations to farmers.

D. With a few clicks, farmers may quickly view the current market situation, i.e. the market price of various crops and the demands.

E. Farmers will get closer to the technology and will remain updated on farming related news.

IV. INDIAN AGRICULTURE MODERNIZATION

The global agricultural landscape is quickly changing, particularly since the establishment of WTO accords.

IT's promise in agriculture may be realised as follows:

Precision farming, which directly adds to production using IT techniques, remote sensing techniques employing satellite technology, and geographical information systems, are examples of IT's direct contribution to agriculture.

IT may also be utilised to enable farmers to make educated and quality decisions that will have a good overall impact.

Innovative farming practises are being used in India, and simple access to financing, internet connectivity, and mobile phones are being made available in rural regions.

Though its beneficial influence can be observed, since rural living in India is undergoing transition, one cannot ignore the reality that poverty still persists.

The majority of farmers in India are now unable to implement precision farming techniques due to financial constraints.

On the other hand, the indirect benefits of IT in empowering Indian farmers are substantial and must be capitalised on, since there is an urgent demand for credible sources of information among them.

During the Green Revolution, increased use of chemicals and pesticides was strongly pushed to fulfil the increasing demand for food necessary to feed the burgeoning population.

The rising population, increased food demand and limitless exploitation of natural resources have posed a serious danger both to the environment and the agricultural industry.

The rising use of biological technology for agricultural operations has been stressed and greater focus has been made to developing new biological technologies in order to safeguard the environment as well as the agricultural sector from any additional damage.

V. EXISTING MODELS

Although agriculture is essential to the Indian economy, its importance declines due to the many difficulties facing the industry. A lack of prompt information is one of the main difficulties Indian farmers face.

A. E-Agriculture

The E-Agriculture initiative assisted 6,000 farmers in little over a year to boost their revenues by up to 300 percent and provided employment possibilities for local entrepreneurs.

This initiative illustrates how technology may be utilised to enhance farmers' livelihoods. During the analyses, few difficulties obstruct its wide-ranging application were found:

1) *Availability:* There may be times when an entrepreneur is unavailable or unable to dedicate the necessary time to a client farmer.
2) *Travelling Expense:* The connectivity problem leads directly to a strain on the farmer's budget since he must visit a certain area to obtain help.
3) *Work Load:* There are numerous dependencies if we talk about a farmer to an entrepreneur. Many farmers will rely on one contractor to help, increasing their workload. Finally, this would lead to the problem of accessibility.
4) *Connectivity Issue:* As we are well aware, while modernity has affected rural regions, the problem is still Internet access. The contractor's office or kiosk is therefore constructed in regions with internet access, which in many instances implies that these offices are located at a distance from poor farming communities.
5) *No Central Database:* Another drawback is the lack of a centralised database.

VI. RELATED WORK

Several initiatives are taking place worldwide. Approximately $6 million was spent on initiatives aiming at improving the system of some illnesses to retain some variation.

Different technologies only satisfy the demands of big farmers, yet small farmers who are the true food producers we consume are disregarded.

When we discuss India, we are talking about many initiatives in the sphere of agricultural management, pesticide use, land management and so on. There are practical initiatives and use of mobile technology. But is it truly inexpensive or more accurate to give the best possible?

Do the farmers have the finest technological facilities and the best assistance they need from their government? Several initiatives done using mobile technology are under way and many farmers also use it. There are projects such as mKrishi, IFFCO Kisan Sanchar(IKSL) etc.

The objective of the project should not only be to offer the requisite information, but to educate people on numerous technologies, rather than simply to provide them with enough knowledge to meet their demands.

Our work focuses mostly on these smallholder farmers and the Government's obligation towards them and provides knowledge to the smallholder farmers. The government has to invest some money to provide these small farmers awareness of the different available resources and services.

The farmers who are illiterate cannot acquire the genuine concept from the available or operating call or toll free centres, since the idea is the right and most accurate one can't execute until a person has information about anything.

A prototype for economic e-learning to increase farm knowledge in Thailand's rural districts. The prototype suggested is based on low mobility and resources ideas.

Agriculture gives a livelihood to more than half the population of India, yet only contributes 14% of the country's GDP. One reason for this might be the farmers' lack of proper agricultural planning. There is no system currently in place for farmers to be advised of plants.

Language description logic of web ontology (OWL DL) is an OWL sub-language that offers logic for idea formalisation and descriptions of functions. These logics are anticipated by predicate logics and make appropriate decisions for creating information systems based on knowledge. OWL ontologies are being used to improve information retrieval on the web semantically in any web-based information system. In an information system of e-agriculture, OWL ontologies may be utilised to provide users with semantic information.

E-Agriculture is an emerging sector that focuses on better information and communications systems to boost agricultural and rural development. E-commerce & e-agriculture integration is one of the finest alternatives to ensure that many e-commerce solutions are implemented successfully from now on.

Voice-based responding technology allows farmers to answer questions about the illnesses affecting tomatoes via interactive voice conversations. The voice-based response approach is commonly referred to as the chatbot dialogue.

There are farmers living in remote areas of the country. There is no information related to new technology trends and agricultural practices, and sufficient information about crops, soil characteristics, seeds, latest tools, used fertilizers, etc. cannot be obtained. The inability to obtain agricultural knowledge and information about the latest

Agricultural practices result in low productivity of crops and livestock. In order to overcome these shortcomings, the chatbot was proposed using the pattern matching technology, which provides an interface where users (farmers in this case) can effectively communicate with the chatbot.

VII.CONCLUSION

The agriculture industry is not new to the planet. Development economies like China are making direct use of their agricultural productivity with the latest technology such as cloud computing and the Internet of Things. This would be more suitable for agriculture, as it calls for investment in capital.

Conversely, farmers living in rural India are unable to use these all-embracing technologies to improve the Indian farming industry in their financial situations. This study offers a cloud-deployment approach that assists farmers to take effective decisions that not only enhance agricultural output but also enable farmers to flourish.

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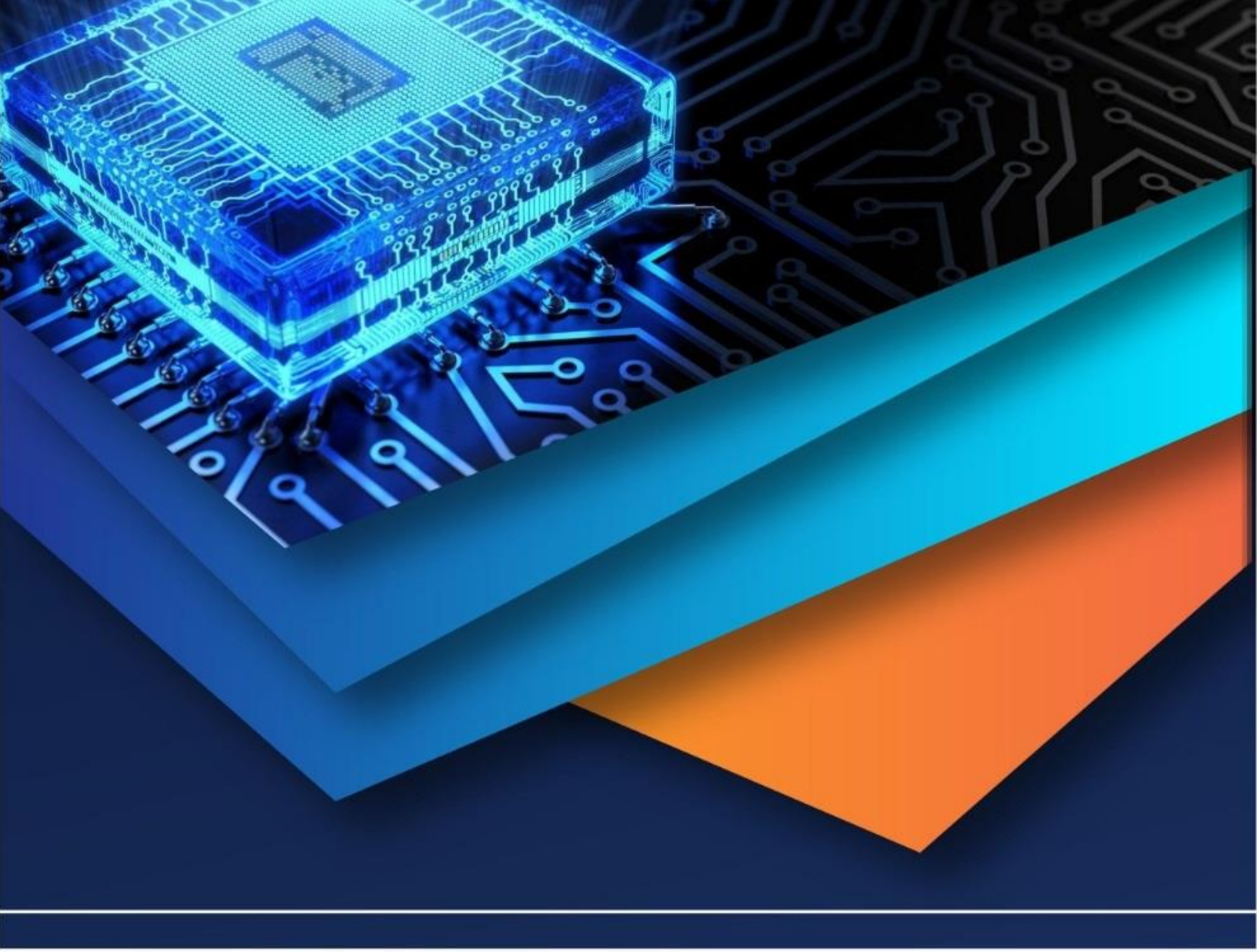

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