An Interactive Dashboard for Farmer's Assistant

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Abstract

Fruits, vegetables, root and tuber crops, mushrooms, spices, and bamboo are all included by the Integrated Development of Horticulture scheme, which is funded by the government.

The main purpose is to support the holistic expansion of the horticulture sector, which includes bamboo and coconut, by implementing regionally specific area-based strategies that involve research, technological promotion, extension, post-harvest management, processing, and marketing.

Encourage farmers to form farmer organizations such as FIGs or FPOs and FPCs to take advantage of economies of scale and scope. Increase horticulture production, farmer income, and nutritional security to achieve this.

The "State Horticulture Mission" was successfully designed and quality-tested during this project. We achieved all of our objectives, and our project meets the organizational needs. For the request in question, the development would be used to seek, retrieve, and process the data. The machine has encouraged farm implementation, resulting in improved product quality and higher farming productivity.

While innovative technology is implemented, this system could be tweaked to meet the needs of the environment. Because it is based on an object-oriented design, any future changes will be simple to implement. Security could be enhanced by employing new technologies within the context of anticipated prospective challenges.

It is possible to include a built-in web browser. Emails can be given domain names. E-banking is an alternative worth considering.

Keywords— Farming Assistant, Horticulture development, Horticulture Sector, Farmer

1. INTRODUCTION

As we progress into the present era of technology, we may discover that many

engineering-related applications are quite valuable to society's advancement.

The State Horticulture Mission will have the authority to form an autonomous body that will be registered under the Societies Registration Act to carry out Mission programs at the state and district levels. They conduct baseline surveys and feasibility studies for specific areas/clusters (groups of districts) to assess the state of horticultural/bamboo output, potential, and demand, and customize support accordingly.

Receive monies for Mission activities from the National Mission Authority, the State Government, and other sources, keep accurate records, and provide a utilization certificate.

The State Horticulture Mission distributes funds to implementing organizations and oversees monitors, and reviews program implementation.

Farmers, societies, grower associations, self-help groups, governmental agencies, and other similar organizations are assisting and overseeing the execution of schematic operations in the states.

Farmers can better manage their crops and farms if they can share their positive and bad experiences with each other and with specialists. Digital agriculture, which makes use of internet communication technology (ICT), may make it easier for farmers to share their experiences with specialists and others interested in agriculture.
Many farmers, however, are still unable to afford ICT approaches in agriculture. Lack of connectivity, a lack of capacity building, and poor usability of ICT applications are the causes. We choose to address this issue with low-cost, simple-to-use ICT solutions based on infrastructure and services now available to small-scale producers in underdeveloped countries. We created and tested a unique technology using a participatory design approach.Farmers Assistant is a cost-effective. It has the potential to help farmers and agricultural practitioners better manage their crops and farms, minimize risk, boost productivity, and enhance their livelihoods.Farmers like to make decisions based on talks and their own experiences rather than accepting top-down generalized recommendations, therefore sharing experiences and knowledge is critical (Ingram, 2008, Wellard et al., 2013). Because farmers like to be involved in the decision-making process, extension agents' roles change: they become catalysts, facilitators, and promoters of knowledge development and exchange. The shift to Farmer-to-Farmer Extension is aided by these pluralistic extension systems (FFE). Their importance is growing, and they are now being used to supplement traditional extension services (Kiptot and Franzel, 2015, Rao, 2007).
The benefits of digital agriculture are obvious. However, we cannot simply throw ICT solutions at small farmers to deploy digital agriculture: we must create and build solutions in collaboration with farmers and facilitators in participatory projects.

2. LITERATURE REVIEW

In this domain, many pieces of literature on Farmer assistants have been published already and are accessible to the general public. A poll of farmers' leaders and unions was done to determine the challenges farmers confront in receiving funding and program benefits on

schedule.

The current application is a stand-alone application. It doesn't have a good user interface, and employees can only handle one request at a time on a single system.

If the farmers apply for a scheme in the system, they will not be able to accept another request. All of the processes are carried out by hand.

It was discovered that the majority of the farmers were dissatisfied with the fact that it was a lengthy, time-consuming process that was primarily done manually, resulting in extra downsides. So we talked to the leaders of the farming community and gathered data that helped us create a framework.

Sawant, Divya Jaiswal, Anchal "AgriBot - An intelligent interactive interface to assist farmers in agricultural chores," by Jyoti Singh Payal Shah. Agriculture is the primary source of income and employment in India. The most common problem faced by Indian farmers today is that they fail to select the right crop based on their region's characteristics and yield history. As a result, they are experiencing a significant drop in productivity.

Agricultural statistics and projections are valuable resources that the government has not fully used despite their importance. The study presents an intelligent portable system that uses data mining and analytics to help farmers with various farming practices and decide on the most suited crops based on current climate conditions, soil conditions, and geographical characteristics of the defined location.

To make this data analysis more accessible to farmers, a chatbot that leverages Natural Language Processing is proposed. It enables farmers to receive audio responses to their input concerns about the agricultural situation, making farmer interaction more user-friendly.

"Smart Sampark-An approach towards designing a responsive system for Kisan Call Center," by Pratijnya Jawan, Pooja Desai, and Veena Desai. The COVID-19 pandemic has hampered the country's economic development. The epidemic is having an impact on the farming industry. Kisan call centers (KCC) or agricultural helplines are set up across India to answer farmers' questions and guide them through times of uncertainty and suffering.

In India, there are 21 KCCs located in various states and union territories. Farmers' questions are answered by KCC operators or agricultural specialists based on their knowledge and data The previous approach has the drawback of requiring the operator or specialists to be available to answer calls

With KCC inquiries, the proposed system accesses the data set made accessible on data.gov.in. The cosine similarity method was used to provide the most similar response to the question, which was generated using the natural language processing (NLP) technology.

"Kisan Nestham - An Android Application for Farmers," by Shaik Naseera and S Abdul Jeevan. Agriculture is the main source of income for around 65-70 percent of the Indian people. Using smartphone technology for farmers has opened up new possibilities. A

mobile application is software designed to run on small wireless devices like smartphones and tablets. Android is an open-source development platform that any programmer with a working grasp of Java and the Android SDK can use.

This software allows farmers to have access to resources that were previously unavailable to them. Smartphone technology is now employed in a variety of applications, including health monitoring, weather forecasting, and so on. It is also employed in the agricultural area. Kisan Nestham is an android-based application that offers farmers information on various crops and agricultural products.

Parameters	Paper 1 Reference	Paper 2 Reference
1. Authors	Gan-Qiong, Shi-Wei, and Zhe-min	Divya Sawant Anchal Jaiswal; Jyoti Singh; Payal Shah
2. Publications	International Conference on Agriculture	International Journal of Farming
3. Usage of Algorithm	Artificial Neural Networks.	Back-propagation neural network, Artificial Neural Networks.
4. Accuracy	89%	87%
5. Advantages	The accuracy is higher when the time interval between data is shorter.	When a larger dataset is compared to a smaller dataset, this will yield more accurate results.
6. Disadvantages	It doesn't work well for larger data sets.	Hardware Requirements

3. SYSTEM REQUIREMENTS

Software Requirements	**Hardware Requirements**
Front End: HTML, CSS, HTML5 Middle Ware: JSP, Servlets, MVC	Pentium IV or higher processor 512 MB of RAM or more Hard disc: at least 20 GB HDD

Back End: MYSQL Connector: JDBC Coding purpose: Eclipse Indigo.	
Browser: Google Chrome/Mozilla Firefox.	
Server: Apache tomcat server 7.	

4. PROPOSED METHOD

This Software can be accessed through any web browser at any place. The interface will be User-friendly so that any farmer / Staff who doesn't know the software can also operate easily. The employee can get all the services like Enrolment, Scheme Filing, Intimation Details, Application Status, etc., Transaction speed will be high compared to the existing system.

Security rate is high by providing highly secured login pages to the different kinds of staff like BHM, DHM, and SHM. The services are immediately updated. The Website Designed has highly secured features and concepts so that hackers or software crashers cannot change the web page's features.

5. MODULES

SHM:-

Staff from the SHM can approve BHM and DHM personnel, as well as create new districts, land data, cost criteria, new schemes, and sanction information. Farmers from various districts who have enlisted can be tracked by SHM. The Yearly Report is also kept track of by SHM.

DHM:-

At the Talu DHM will have a list of accepted farmers. Staff from DHM provide counseling. DHM oversees the last stage of approval. DHM employees distribute subsidies to farmers after they have been approved. They distribute subsidies based on cost guidelines set by SHM personnel.

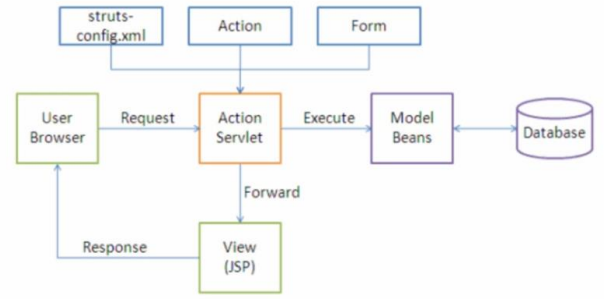
BHM:-

The list of farmers who have enlisted will be available at BHM. The BHM team performs the first stage of verification by the land applied by the farmers. The BHM team also prepares notification details for farmers.

FARMERS:-

Before a farmer may file a scheme, he must first enroll. Following enrollment, the farmer can apply for the crop that he grows. Before attending the counseling, the farmer might check for notification of the counseling. The farmer can check the status of his application.

6. ARCHITECTURE DESIGN



This architecture design incorporates the business logic for storing, retrieving, and manipulating data, as well as interactions with the persistent storage.

The user can see the results in the view. JSP is used to implement the view layer in Struts. After receiving the request, the ActionServlet bundles it into a JavaBean class that extends the Struts ActionForm class and verifies the information entered by the user. The Action class returns an ActionForward to the controller after completing the request processing. The details of the actions, ActionForms, ActionMappings, and ActionForwards, The struts-config.xml file contains everything. The controller will invoke the appropriate view based on the ActionForward.

The view component renders the HTTP response back to the user.

7. SYSTEM DESIGN

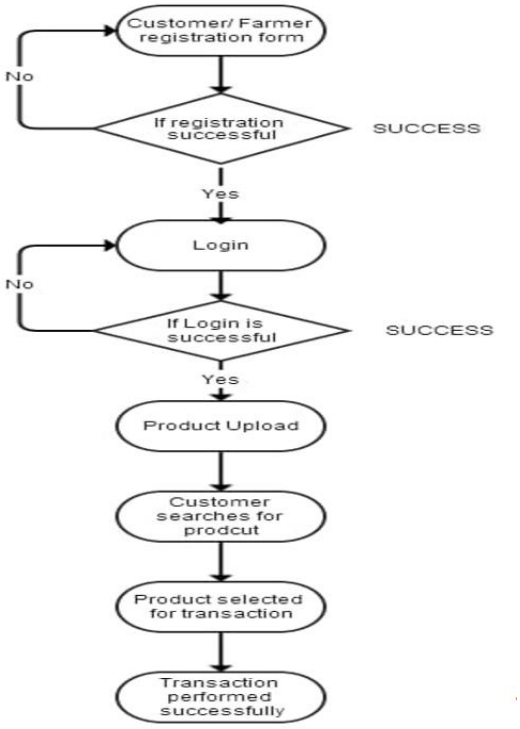


Figure 1 Limitations and Future Enhancement

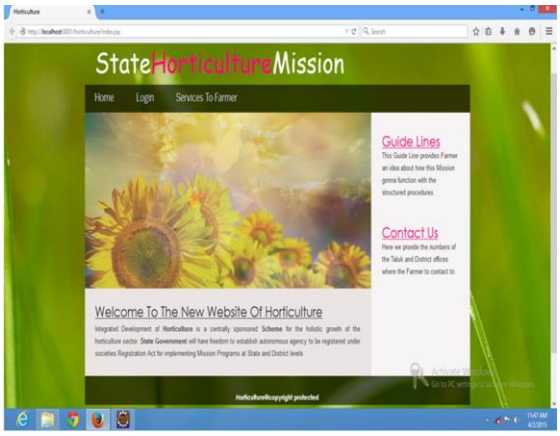
Providing awareness to farmers and encouraging them to use it. Availability of proper Internet for them to use. The Farmers need to be educated to use the Application.

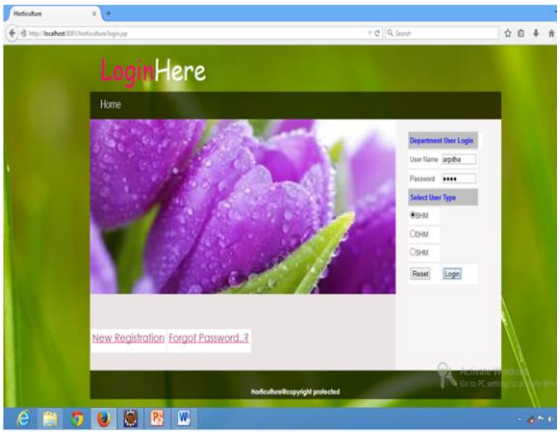
Ethical and social practices, as well as compliance with society's new technology, arises, and the system can be upgraded and adapted to the required environment. Because it is built on object-oriented design, any future modifications are simple to implement. Security can be improved utilizing developing technology based on future security challenges. It is possible to include a built-in web browser. Email addresses can be given domain names. and E-banking is possible.

8. RESULTS AND DISCUSSION

During this project, the "State Horticulture Mission" was successfully designed and quality-tested. We met all of our targets, and our project satisfies the organization's

requirements. The development will be utilized to search, retrieve, and generate data for the requests in question. The machine has increased the use of best practices on farms, resulting in a significant increase in the quality of products and farmland productivity.





9. CONCLUSION

Fruits, vegetables, root and tuber crops, mushrooms, spices, and bamboo are all included in the Integrated Development of Horticulture scheme, which is funded by the government. These programs can be viewed from anywhere using any web browser.

The interface will be user-friendly, allowing any farmer or staff member who is unfamiliar with the software to operate it with ease.

The employee can access all services such as enrollment, scheme filing, intimation details, application status, and so on.

Transaction speed will be faster than the current system. Security will be higher by providing highly secure login pages to various types of staff such as BHM, DHM, and SHM. Services will be updated immediately.

9.1 Future Enhancements

The system can be modified and tailored to the required environment as new technology develops. Any future modifications are straightforward to implement because it is built on an object-oriented design. Based on future security challenges, security can be enhanced by utilizing growing technology. It is feasible to integrate a web browser built-in. Domain names can be assigned to email addresses. E-banking is a viable option.

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