

A Web Based Information & Advisory System for Agriculture

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Abstract: The business of farming has entered a new era – an age where key to success is perfect, timely information and careful decision- making. Now when the production is stagnating it has become essential that the farmers collect important and updated information about any of the crop and to get the proper advice regarding the farming.

This paper introduces the IT initiatives in India for Agriculture like AGMARKNET, DACNET and also discusses a web based information and advisory system for agriculture which is implemented using HTML and JavaScript. The paper focus on the development methodology used and system functions, constraints and obstacles for the system

Keywords: Agriculture, AGMARKNET, DACNET, Advisory service, farmers guide, software engineering

I INTRODUCTION

Agriculture is one of the most important sector for human beings all over the world. In India near about 70% of population depend on agriculture. The credit of the increased production of the agriculture products in the past could be given to the efforts of farmers. Now when the production is stagnating it has become essential that the farmers collect important and updated information about any of the crop and to get the proper advice regarding the farming [1]. Keeping this in view, there is a need of farmer advisory system for farm entrepreneur which could help them in farming.

The business of farming has entered a new era, i.e. an age where key to success is perfect, timely information and careful decision- making. International competition has resulted in a continued pressure on profit margins. Moreover, the farmer has to decide about various production options utilizing the results of latest developments of research and technology. Informed and

quick decision making is therefore required to ensure profitable performance of the farmers [1,2].

II IT INITIATIVES IN INDIA FOR AGRICULTURE

In the era of IT and globalization, Different Government bodies , NGOs and leading business territories have come forward for IT initiative that support the agricultural business and related activities. Some of these introduced below.

1) *Agricultural Marketing Information System – AGMARKNET:* (<http://www.agmarknet.nic.in>)

This initiative was taken by Department of Agriculture &Cooperation, Ministry of Agriculture Govt. of India. As a step towards globalization of agriculture, the Directorate of Marketing & Inspection (OMI) has embarked upon an IT project: "NICNET based Agricultural Marketing Information System Network (AGMARKNET)" in the country, during the Ninth Plan, for linking all important APMCS (Agricultural Produce Market Committees), State Agricultural marketing Boards / Directorates and OMI regional offices located throughout the country, for effective information exchange on market prices. The advantages of AGMARKNET database accrue to the farmers, as they have choices to sell their produce in the nearest market at remunerative prices[3].

2) *DACNET:* (<http://www.dacnet.nic.in>)

The department of Agriculture and Cooperation (DAC), Ministry of Agriculture and National Information Centre (NIC) has implemented this project. The aim of this project is to strengthen the infrastructure of ICT in all the Directorates, Regional Directorates and its field units

DACNET is an e-governance project to facilitate Indian 'Agriculture-on-line' It was built using the key criteria such as ease of use, speed of delivery, simplicity of procedure, single window access etc[4].

3) *iKisan Project* : (<http://www.ikisan.com/default.asp>)

iKisan is the ICT initiative of the Nagarjuna group of companies, the largest private entity supplying farmers' agricultural needs. iKisan was set up with two components, the iKisan.com website, to provide agricultural information online, and technical centers at village level. The project operates in Andhra Pradesh and Tamil Nadu[5].

4) *Warana Wired Village project*:

The Warana cooperative complex in Maharashtra has become famous as a fore-runner of successful integrated rural development emerging from the cooperative movement. The Warana cooperative sugar factory, registered in 1956, has led this movement, resulting in the formation of over 25 successful cooperative societies in the region. The total turnover of these societies exceeds Rs. 60 million. Warana Nagar has an electronic telephone exchange, connecting nearly 50 villages, which has permitted dial-up connections from village kiosks to the servers, located at Warana Nagar. There are many infrastructure facilities in and around Warana Nagar. About 80% of the population is agriculture-based and an independent agricultural development department has been established by the cooperative society. The region is considered to be one of the most agriculturally prosperous in India[6].

III OBJECTIVE OF THE STUDY

India possesses a valuable agricultural knowledge and expertise. However, a wide information gap exists between the research level and practice. Indian farmers need timely expert information to make them more productive and competitive.

Concerning widespread nature of India in terms of whether & culture, it will be a better practice to establish farmer advisory systems in region wise manner. Such system will be beneficial for a particular region as it contains the local information rather than

global one[7]. There are several objective of this study as :

- To make an effort to present a solution to bridge the information gap by exploiting advances in Information Technology.
- To propose a framework of a cost-effective agricultural information system to disseminate expert agriculture knowledge to the farming community to improve the crop productivity.
- To develop a web based farmer advisory system for farmers in Nanded, Marathwada region for Maharashtra state.
(<http://www.farmersguide.info>)

IV THE METHODOLOGY

Software engineering's classic life cycle method is used for developing proposed farmer advisory system. Classic life cycle is also called as linear sequential model and it is widely used paradigm for such system development [8].

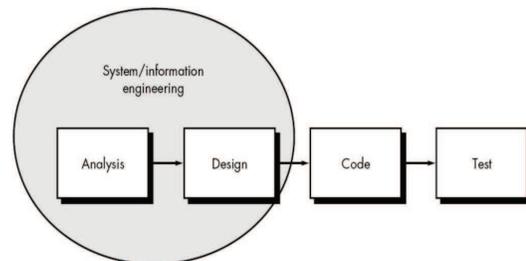


Figure -1 : Linear Sequential Model

As shown in figure-1, the linear sequential model encompasses the following activities:

System/information engineering and modelling: System engineering and analysis encompass requirements gathering at the system level with a small amount of top level design and analysis

Software requirements analysis: The requirements gathering process is intensified and focused specifically on software. To understand the nature of the program(s) to be built, the software engineer ("analyst") must

understand the information domain for the software, as well as required function, behavior, performance, and interface. Requirements for both the system and the software are documented and reviewed.

Design: Software design is actually a multistep process that focuses on four distinct attributes of a program: data structure, software architecture, interface representations, and procedural (algorithmic) detail.

Code generation: The design must be translated into a machine-readable form. The code generation step performs this task.

Testing: Once code has been generated, program testing begins. The testing process focuses on the logical internals of the software, ensuring that all statements have been tested, and on the functional externals; that is, conducting tests to uncover errors and ensure that defined input will produce actual results that agree with required results.

Support: Software will undoubtedly undergo change after it is delivered to the customer. Support is the phase required to perform the changes required. Software support/maintenance reapplies each of the preceding phases to an existing program rather than a new one.

V THE SYSTEM DEVELOPMENT

1 The Information Gathering Phase:

The information gathering phase is an important in any system development as it establishes the foundation for the new system development. For our system development we have gathered the information from the different sources which include

- Information Gathering through different Web Resources
- By visiting local APMC Nanded
- By interacting with the farmers in the region
- By collecting Historical data from Tahasil Office Nanded.

2 The Analysis Phase:

The analysis phase bridges the gap between the system engineering and the system design phase. In this phase we have defined the scope of work by

specifying functions, and constraints of the proposed system.

a) System Functions:

- The System should provide the fundamental geographical information of the region
- The system should provide the information about agricultural products for the region
- The information should contain basic product information, suitable conditions for the product and crop management and protection
- The system should be able to provide the information to queries asked by end user.
- The system should provide the other supporting information and links to the useful resources.

b) System Constraints:

There are several constraints found with the system. The performance of the system depends on the advisor. It is necessary for the advisor to always check the user queries and provide the timely response. This will make the information useful for the end user, regular update of information like rainfall, climate changes and market prices etc. is essential for system administrator. If these constraints are followed system will be very useful for the farmers in the region.

3 The Design Phase:

The design phase focuses on the development of framework and establishing the architecture of the system. The proposed system is integrated system of human and technology. So it becomes essential to understand the role and place of these components in the system. Figufe-2 shows the Schematic Outline of Structure of System.

The proposed system has the following components

- **Farmer** should have easy access to information, Convenient facilities to post queries.
- **System Administrator** Should Continuously update the system and act as interface between farmer and Agricultural Experts
- **Agricultural Experts:** Continuously get feed backs, Be able to update information from his
- source and provide the response to the administrator

4 The Source Code Development:

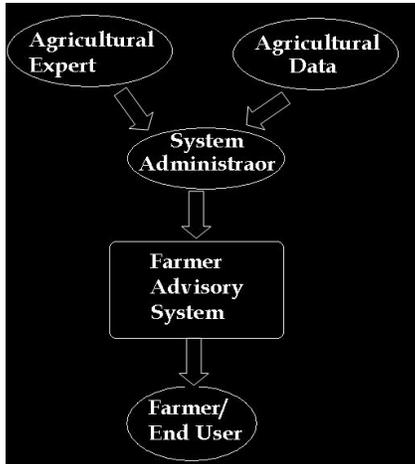


Figure -2 :- Schematic Outline of Structure of System



Figure 4: Snap shot of Home page

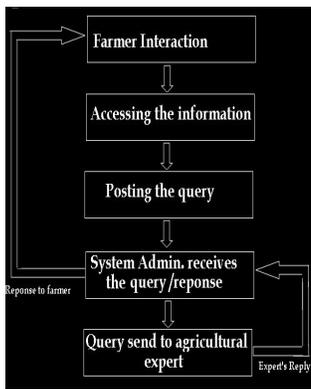


Figure -3 :- Schematic working of System

Above Figure 3 show schematic working model of System. The farmer (user) will interact with the system by using the url of the system. The home page of the system will provide the various options for the user and it interns contains the different types of farming information. The system interface is expected user friendly.

The user can download the useful information if required. User can also use query interface to post query and ask for the advise. The query posted by user will be received in administrators mail box. The administrator then forward the query from user to agricultural expert . Agricultural expert will provide the suggestion to query and sent it back to the administrator and finally administrator will forward this reply to the user.



Figure 5: Snap shot of page where user can select the crop

The system is developed using HTML and JavaScript. The main interface is 'index.html' file which is the home page for the system. From this home page the links are given to various functions like accessing information, posting query etc. Figure-4, figure-5 & figure-6 shows the few snap shot of the proposed system.

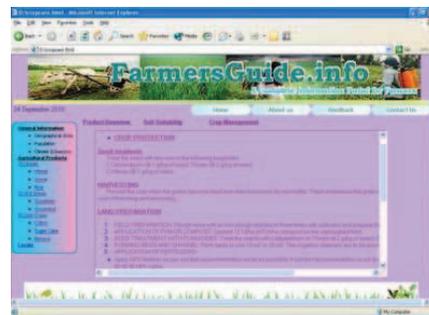


Figure 6 : Snap shot of page providing crop protection information

VI SYSTEM EVALUATION

India is to be expected as "Knowledge Society" in coming few years by which any farmer in a remote village can access the information using IT resources[9]. To achieve "knowledge society" in agricultural sector, it is necessary that there should be an agricultural information center in each village. but there are certain barriers in the achievement of this expectation [10].

Significant Obstacles are as follows.

- Poor literacy rate.
- Language barriers.
- Unawareness of technology.
- Unavailability of technical resources.
- Unavailability skilled human resources.
- Electricity problems.

All above problems are foundational problems. There is a need that government organizations, NGOs, researchers and educational institutions should come forward, which decides the uniform policies and apply the efforts to solve these problems[7]. As long as such problems remain exist, then it is very difficult to make efficient use of IT for agricultural development

1. Efforts should be made to increase the literacy rate.
2. It has been seen that skilled people are not interested to work in rural areas, such people should be encouraged and promoted to work in the area.
3. Necessary Funds for Resources should be availed.
4. Efforts should be made to incorporate IT in all endeavors related to agricultural development.
5. The organizations and departments concerned with agricultural development need to realize the potential of IT for the speedy dissemination of information to farmers.

VII CONCLUSION

The business of farming has entered a new era – an age where key to success is perfect, timely information and careful decision- making. In this era, now when the production is stagnating it has become essential that the farmers collect important and updated information about any of the crop and to get the proper advice regarding the farming.

From Indian farming perspective, farming community is facing a multitude of problems to maximize crop productivity. In spite of successful research on new agricultural practices concerning various areas in farming, the majority of farmers are not getting upper-bound yield due to several reasons.

One of the reasons is that expert/scientific information is not reaching farming community. Indian farmers need timely expert information to make them more productive and competitive.

Here an attempt is made by developing 'farmersguide.info' – a web based farmer advisory system for farmers in Nanded, Marathwada region for Maharashtra state. Concerning widespread nature of India in terms of whether & culture, it will be a better practice to establish farmer advisory systems in region wise manner. Such system will be beneficial for a particular region as it contains the local information rather than global one. It will also be useful for removing the information gap that exists between the research level and actual business practice

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