

Prop up the Farming Community with E-Services: Web Based Services for Agriculture

K.Kiruthika¹, R.Parimala²

¹Assistant Professor, Karpagam university, Coimbatore- 21, Tamil nadu.

²Assistant Professor, Karpagam university, Coimbatore- 21, Tamil nadu.

¹k88k.06@gmail.com

²parimalarangasamy@gmail.com

Abstract

Agriculture is the backbone of many developing country economies. Agricultural development becomes same with worldwide development. Information of adequate quality is an essential stipulation for progress of all areas of agriculture and its allied areas with the quick development of Information and Communication Technologies (ICT), data and information could efficiently created, stored, analyzed and disseminated to support farming communities for improvement of agricultural productivity and sustainability. e-services is one of the best and foremost methodologies in ICT which can be achieved via the internet to share the information and knowledge from the bureaucrat community to farming community and it is also reaches the end-user in easy and simple way being it is a mobile based era.

Keywords: Agricultural website, Agricultural web portal, web based services, agriculture, farming community and internet

1 Introduction

Agriculture plays an important role to the economies of India. Agriculture-led development is fundamental to cutting hunger and reducing poverty of people. The agricultural sector is deal with major challenges related to production and marketing in order to harness its growing and increasingly wealthy population and availability of natural resources. In this concern agricultural production system has been evolving into a business system which requiring the growth and incorporation of knowledge and information from many diverse sources. Agriculture specialists or extension officials and their experiences are the common sources to provide information that the different stakeholders require for decision making to improve agricultural production. But Expert's assistance is not always available when the need arises for their help.

Being, the current era is of cloud based, web technology is found to be the solution for this problem. In the past decade, many information and communication technology (ICT) projects in Indian agriculture have emerged, either substituting or supporting extension services by providing farmers with access to agricultural information.

In these projects web technology plays a vital role and most of the projects were developed as a web based services in the form of websites and portals.

We will try to focus attention only on actual impacts of the web technology in agriculture. Based on the study made we would like to discuss about the various web based services provided to the farmers which mainly focuses on the production, marketing and knowledge on

information of the agricultural materials. To promote the integration of technology with multimedia, with the aim of improving communication and learning processes between various players in agriculture locally, regionally and national a aid for farming through web in the form of websites and portal is the ideal solution.

2 Website and portal

The term website refers to the collection of related web pages ie., electronic page with desire format and scripting, including multimedia content, typically identified with a common domain name and published on at least one web server. A web portal is most often one specially designed website that brings information together from diverse sources in a uniform way.

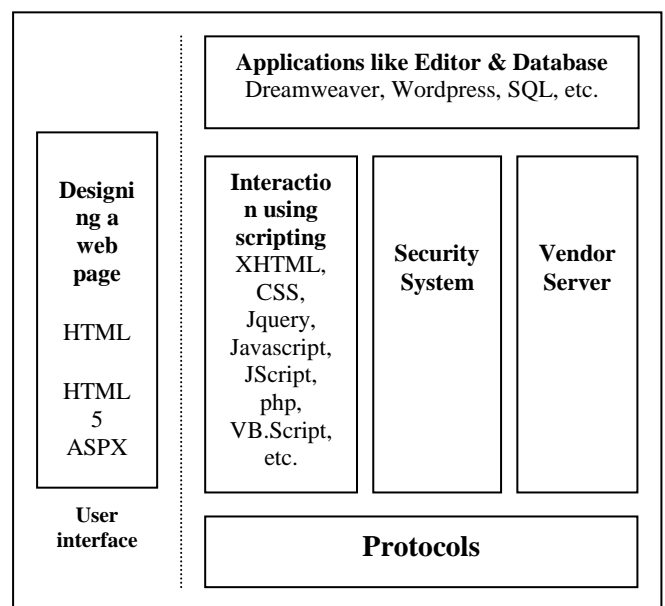


Figure 1: Web Portal internal architecture

3 Approaches

It is necessary to compare different technologies that are used for creating a web site or web portal. The concept or a methodology behind the internet services is the client/server computer architecture.

The end user's system must have a web browser to view the web site to make use of the web service, which makes it possible to navigate within the internet, and to display information requested from servers. Protocols, programming language used for designing, scripting language and address system are the stake support for this web technology.

Protocols specify the interactions between the communicating entities e.g. http, https, ftp. Programming language used for designing specify the appearance of your web page e.g. HTML, HTML5,....

3 Process involved in developing agricultural portals

Agricultural portals and websites are digital platforms that provide organized gateways to information of knowledge from various stakeholders. Some of the points to be taken in concern for successful development are:

3.1 User-friendly:

It should be user-friendly and also the non- IT users can also to be able to access the information. The content needed to be decided on jointly by selected users, subject experts, and web developers.

3.2 Compatibility:

The design and architecture should be flexible so that the new features can be adopted easily for sustainability.

Content outfit:

This includes content search, gathering, updating with existing content, content assessment, storing retrieving and delivering techniques. And it must be easily understandable, navigable, and searchable, in addition to being visually appealing.

3.2.1 Constant update: The information should be always in update to maintain the quality and dynamicity being it is a cloud service.

3.3 Adopt the recent trends:

This included the themes and user interface (UI) designing. It is also very important to retain users when upgrading to a recent technology.

4 E-Services for agricultural development for India

There have been some initiatives in India, using e-Services for agricultural development. Among these we focus on three major and most successful project which involved in sharing information and supporting the farming community in various aspects of agriculture such as production, protection, marketing, farm machineries,

and updated special technologies that has to be followed in the farming practices.

4.1 AgriTech Portal (agritech.tnau.ac.in)

Tamil Nadu Agricultural University (TNAU) AgriTech Portal has been develop to the needs of farmers, extension people, and other stakeholders in agriculture and allied sectors since 2009 with a funding support from Rashtriya Krishi Vikas Yojana (NADP). AgriTech Portal is a web portal which wrapped with lager number of agriculture related information grouping under several disciplines.



Figure 2: TNAU Agritech Portal (agritech.tnau.ac.in)

It offers a diverse range of information from crop-related or weather information, recent special technology, organic forming, farm machineries, schemes, services and training programmes for farmers, daily news, events, publications supported by multimedia, expert systems, and allied sector such as animal husbandry, fisheries and much more. The portal can be accessed in Tamil and English.

4.1.1 Special features

- Information related to the crop cultivation technology.
- More than 900 farmer's success stories.
- Daily agriculture related information from daily's were scouted and provided in the form of daily newspaper information.
- Crop pest and disease details and forecast information uploaded monthly.
- Detailed information on special technologies like sustainable sugarcane initiatives, system of rice intensification, ultra high density planting, red gram cultivation through drip irrigation and fertigation, etc,
- Soil sampling and testing information.
- Schemes and subsidy information.
- Training, conference and seminars for the farmers.

- Content are in Bi-lingual language (Tamil & English)

4.1.2 Disciplines covered in AgriTech portal

Larger number of agriculture and allied sector information are grouped under several disciplines. Among these some of the disciplines were given below:

4.1.2.1 Agriculture

Information about various crop cultivation practices, season suitable for Tamil Nadu crop varieties, fertilizer calculator, Soil types, testing methods, testing centers in Tamil Nadu, integrated farming system and much more are given in very detail manner

4.1.2.2 Horticulture

In the horticulture web page information about the vegetables, fruits, flowers and plantation crops, post harvest technologies were collected and scouted under this discipline

4.1.2.3 Agricultural marketing

National and state level marketing channels, regulated markets, cold storage and daily market price status for agriculture products and similar information are grouped under this section

4.1.2.4 Agricultural Engineering

For the benefit of agricultural extension people and farmer community this section is organized with four subparts called farm machinery, processing equipment, Energy machinery, and soil, water conservation technology

4.1.2.5 Organic Farming

It includes green manure, vermin-composite, organic agriculture and horticulture crop cultivation practices, weed management, pest and disease management related information

4.1.2.6 Fisheries

In this section contains the information like fish farming, machinery, management, photo, video gallery, etc.,

4.1.2.7 Animal Husbandry

Information about cattle, poultry, artificial insemination, pest and disease management, insurance, farm machineries and fodder production are collected displayed under this section

4.1.3 Technical Support to AgriTech Portal

The portal contains nearly more than 6 lakhs web pages. HTML programming is used to design web pages and CSS

script is used for formatting the pages and javaScripts used for dynamic actions. All these are developed using the web page editor Dreamweaver

Content collection, scouting are done by subject matter specialists and the designing are carried out by the developers these final developed static web pages are upload on to the TNAU's own server.

4.1.4 Further Enhancement

A Memorandum of Understanding (MoU) was signed between TNAU and Centre for Development of Advanced Computing (C-DAC), Hyderabad on 7-6-2016 to convert Agritech Portal into a user friendly web based mobile application.

4.2 AGMARKNET (agmarknet.gov.in)

Agricultural Marketing Information Network (AGMARKNET) is a sponsored project of the Directorate of Marketing and Inspection (DMI) a part of Ministry of Agriculture and the Government of India and implemented by National Informatics Centre (NIC) to establish a nationwide information network for speedy collection and dissemination of agricultural produce wholesale prices and arrival information. Which was launched in March 2000 and aims to link all important agricultural produce markets spread across the subcontinent with the State Agricultural Marketing Boards and Directorates for effective information exchange.

Market information is an important aspect of agricultural marketing. The importance of sound agricultural marketing policies for ensuring fair returns to the farmers cannot be lay it on with a trowel.

Therefore, it has become necessary on the part of the regulatory activity to ensure pay prices to farmers for the sale of their produce, to boost up their efforts for increasing and sustaining the agricultural production.

AGMARKNET portal has been developed nearly 600 markets price-related data reports being disseminated through the portal. The portal also serves as a single window for accessing various similar Web sites. It also provides weekly trend analysis, linkage to online commodity exchange of India, Food and Agriculture Organization (FAO), Indian Farmers Fertilizer Cooperative Limited (IFFCO) Web site, and so forth.

The portal contributes access to commodity-wise, variety-wise daily prices and arrivals information of various wholesale markets. Also future prices from national multi-commodity exchanges are reflected online.



Figure 3: AGMARKNET (agmarknet.gov.in)

A commodity base, comprising of more than 300 commodities and about 2,000 varieties has been evolved. The commodities are being categorized into various groups: cereals, pulses, oil seeds, fruits, vegetables, spices, fiber crops, beverages, forest products, drugs and narcotics, dry fruits, flowers, forest products, livestock/poultry, and so forth to facilitate easy retrieval of market information.

4.2.1 Technical Support to AGMARKNET

NIC needed to build a database that would collect data from the various field offices in a quick and timely way. It decided to use Microsoft® SQL Server™ 2000, part of Microsoft Windows Server System™ integrated server software, as the storage database, utilizing its superior querying and Web-integration capabilities. The data is collected from field application that is built on Lotus SmartSuite. The data collected is aggregated in the central server. The data is imported into the SQL Server database using a Microsoft Visual Basic® development system.

4.3 mKisan (mkisan.gov.in)

Mobile communication is the most effective and universal tool of agricultural extension. The project was designed and developed by the Department of Agriculture and Cooperation. SMS Portal was inaugurated by the Hon'ble President of India on July 16, 2013. Initially 50 crore messages or more than 152 crore SMSs have been sent to farmers throughout the country. It amplify the outreach of scientists, experts and Government officers posted down to the block level to disseminate information, give advisories and to provide farm based advisories to farmers through their mobile phones.

Experts can register with the portal anywhere in the world. After registration they can upload their own farming community database to portal database or can make use of the master farmer's database which already has been uploaded using filter state wise and district wise with simple click and go option. Now the expert can start sending advisory as SMS to the selected farmers. The filters used in by portal will retrieve the relevant farmers from the database based on the sector which experts

decided to send advisories. This enables, instead of sending generic advisories and information, area and crop specific information and technical inputs are reach farmers on time. In addition the number of government services has been integrated with the portal viz. e-Payment, Licensing of Dealers (Seeds, Fertilizers and Pesticides), Soil Testing and Soil Health Cards, Commodity Price Alerts etc.



Figure 4: mKisan (mkisan.gov.in)

4.3.1 Special features

- Provides mobile based services as a tool of 2 way agricultural extension that is officials can send the information to farmers and farmers can send their queries to officials
- Integrates farmers database from various states
- Integrates with other farmer-centric services such as Kisan call centers, common service centers, web portals for extracting related information
- Enables to send SMS by sector based to state based
- Nearly 3000 officers and experts of different state down to block level can use 12 different languages by using phonetic typing to disseminate advisory

4.3.2 Technical Support to mKisan Portal

.NET Framework with C# is used to create user interfaces and SQL Server 2012 has been used as backend to maintain farmer's database and to disseminate information to the farmers. The SMS portal enables to send information to farmers in their language for the language keyboard support Google, Microsoft and CDAC APIs were used. Java also used as scripting support to avoid duplication of effort and extend delivery of service through this portal on time.

5. Conclusion

The proper advisory and on time decision making is a primary fact to boost a production based agriculture which

leads for financially viable hike. For that ICT is one of the powerful tool to disseminating information to the farming community as a web service. The above discussed project is the ideal model of the ICT initiates in agriculture and its allied sector. This paper projects current information service system for the development of agriculture in India and role of agriculture for developing countries economic and how to prop up it with latest technology.

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