Online Farming Assistant

1. Introduction

A Web project to help farmers ensure greater profitability through direct farmer to supplier and farmer to farmer communication.

This application boosts business communication and brings transparency in the system. This innovative site allows for good farmer, retailer, and supplier communication. It allows farmers to login and communicate to respective dealers. When dealers publish an advertisement or offer, the respective farmers get notified through a text message. The farmers may also submit their grievances and complaints to respective dealers or authorities using their farmer login on a separate complaints page and authorities will get access to that page regularly using their login id and passwords.

On the other hand, if farmers need help on learning how to operate computers, the system will be able to schedule classes to teach them basics of computers and internet.

2. Overview of the project

Although most people can see the benefits of using a more precise approach to manage crops with additional information, the tool provided by precision farming and other information technologies have not yet moved into mainstream agricultural management.

The increased complexity of the systems inhibits easy adoption and makes calculations as to the financial benefits uncertain. These issues can be resolved by improving the decision making process though better Management Information Systems, improved data interchange standards and clear management methods. The starting point has been the identification of the current and future data, information and knowledge management needs on the farms, as well as on the way that these needs will evolve in the future and that will influence farm data, farm information and farm knowledge management systems.

Now, the utilization of scientific models together with the large amounts of data in different formats produced by modern Farm machinery, sensors located within the farm, remote sensing, etc. is still an open area of research and new methods are developed continuously. The seamless incorporation of new functionality and assisting features into an existing system is of paramount importance.

3. Objectives

This web project provides following features:

- separate login areas with appropriated functionality for farmers, administrators, and dealers/ retailers
- a separate page where only farmers can post complaints and only assigned administrators can read and edit this page
- pages where dealers and retailers may post their ads and notifications
- farmers are notified of these notifications via text whenever new ads are published
- an effective GUI so that rural people may easily use the service
- can be over for multiple villages to communicate and deal with each other
- provides facility of scheduling classes for farmers who enrolled for basic courses
- online sales and purchase details of both farmers and wholesales
- report generation features are provided using to generate different kind of reports which are helpful to knowing information of sales and purchases

4. Functional Requirements

There are 3 users of this application namely: (a) farmers, (b) suppliers/wholesalers, and (c) administrators. The web-based application is perceived to have the following modules:

a. Supplier/Wholesaler module
   - Register - the supplier first needs to be registered himself to login
   - Login - the supplier needs to login in to get access to the system
   - Post Advertisement - pages where dealers and retailers may post their Ads and Notifications; the post consists of crop id, crop name, crop image and quantity required; farmers are notified of these notifications through the Ads and Notifications page
   - Crop Payment – this page list all the farmers responses to the Ads and Notifications and allows payment closing the deal
   - Crop Received - it is result of post that notified that the crop is accepted or not to the farmers
   - View/Reports – shows the needed views for the above transactions

b. Farmer module
   - Register - the farmer first needs to be registered to login
   - Login - the farmer needs to login in to get access to the system
   - Complaint Page-The page where farmers can post their complaints and only assigned administrators can read and edit this page
   - View Complaint Status - in this page farmers can view the complaints details by viewing the status of complaints is read or unread
   - Crop Advertisement Details - this page consists of crop advertisement details post by the supplier and the status of the sell crop accepted by the supplier or not; clicking these ads will lead to Sell Product page
   - Sell Product - this page is for selling the crop to the supplier; this includes crop id, Supplier name, crop name, quantity, and prices
   - Sell product Details - this page consists of crop details sold by the farmer

- Payment Receipt – this page lists all the paid and approved deals from the supplier
- Training scheduling – this page will allow farmers to schedule training on various computer courses
- View/Reports – shows the needed views for the above transactions

c. Administrator module
- View Complaints - this page contains the complaints of the farmers
- Farming Tips - the admin gives the farming tips to the farmers; this is just a lone page that administrator can input about farming tips that can be viewed by the farmers

5. Database Design

Identifying the main entities, their attributes, relationships, and constraints, commences the design of a database application. The entities of an agricultural information system represent different information on crops. These include crops and intercrops, production and export, crop and inter-crop diseases, soil suitability, fertilizer, research institutes. These entities are inter-related by crop, product, or institute.

Below is an overview of what your application will have on its data-access layer. You can add columns or tables if needed but do not delete what are given below.

Entity	**Characteristics**
Crops Specialization (*Crops Specialization*)	Name of the crop (*Crop_Name*) Unique code of the crop (*Crop_No*)
Farmers details	Name of the farmer(Farmer_ *Name*) Unique code of the farmer (farmer_*id*)
Suppliers details	Name of the Supplier(Supplier _Name) Unique code of the Supplier(Supplier_*id*)

Post Advertisement	Name of the Crop(Crop_Name) Unique code of the advertisement (post_*id*)
Sell crop details	Name of the Crop(Crop_Name) Unique code of the sold crop (sell_*id*)
Farming Tips	Unique code of the Tips (*id*)
Complaints of Farmers	Unique code of the farmer (farmer_*id*) Unique code of the Complaint(complt_*id*)

Also included are the entities for payment and training scheduling part which uses the following schemas:

(Course)

Column Name	ID	Pk	Null?	Data Type	Default	Histogram
COURSEID	1	1	N	NUMBER		Yes
COURSENAME	2		Y	VARCHAR2 (40 Byte)		Yes

(Course_Enrolled)

Column Name	ID	Pk	Null?	Data Type	Default	Histogram
ENROLLID	1	1	N	NUMBER		Yes
USERID	2		Y	NUMBER		Yes
COURSEID	3		Y	NUMBER		Yes
ENROLL_DATE	4		Y	DATE		Yes

(Crop_Payment)

Column Name	ID	Pk	Null?	Data Type	Default	Histogram
PAYMENTID	1	1	N	NUMBER		Yes
USERID	2		Y	NUMBER		Yes
PAY_DATE	3		Y	DATE		Yes
PAYMENTMODE	4		Y	VARCHAR2 (30 Byte)		Yes
PAIDBY	5		Y	VARCHAR2 (50 Byte)		Yes
ORDERIDREF	6		Y	NUMBER		Yes

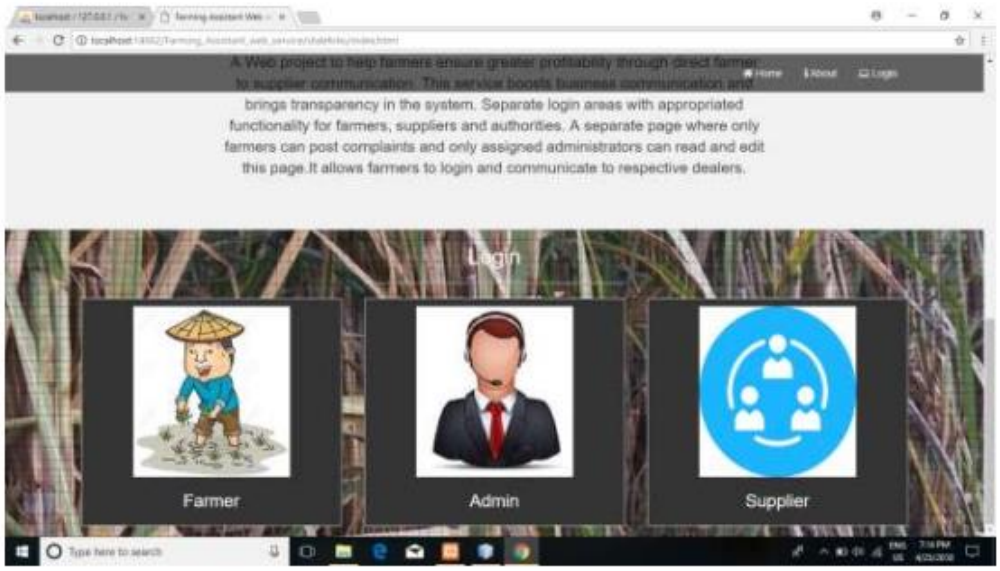
6. Process Flow Diagram

Below is the overall process flow that will serve as your guide on where to start the development.

7. Sample Screenshots

The screens below are just samples to guide you with the processes involved so do not implement them. Hopefully, you can create a better UI experience than these sample pages presented below.

(Login page)

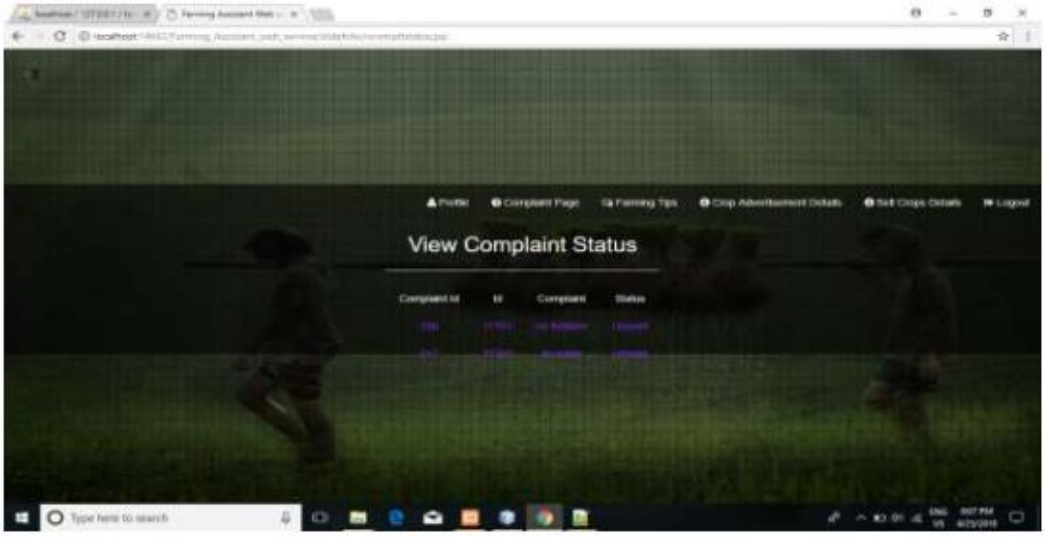


(Supplier/Wholesaler page)

(Post advertisement page)

(Complaint page)

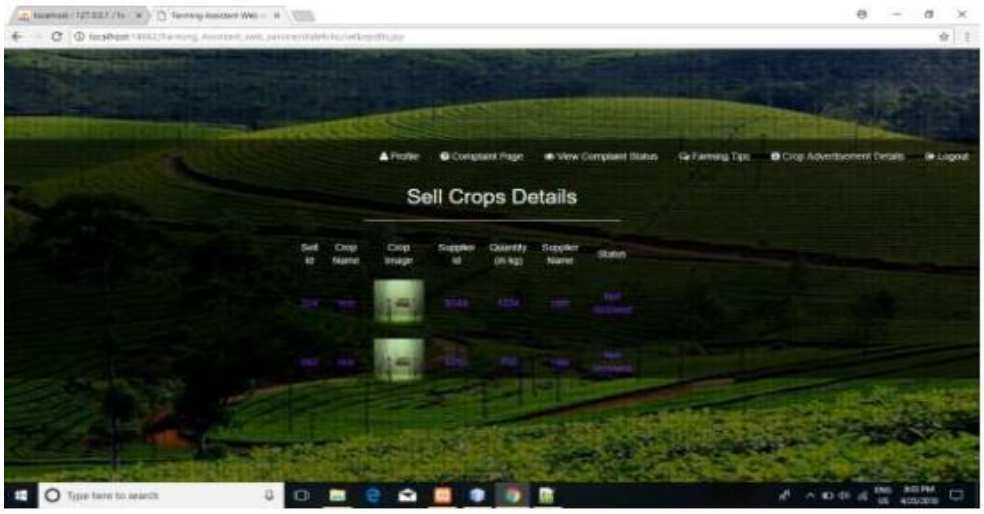
(View complaint page)



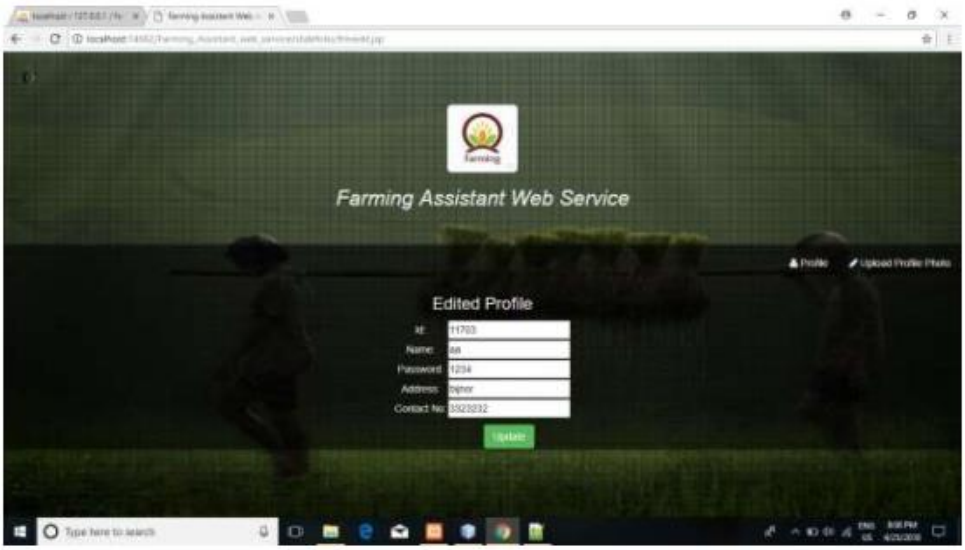
(Crop Ads and Notification page)

(Sell Crops page)

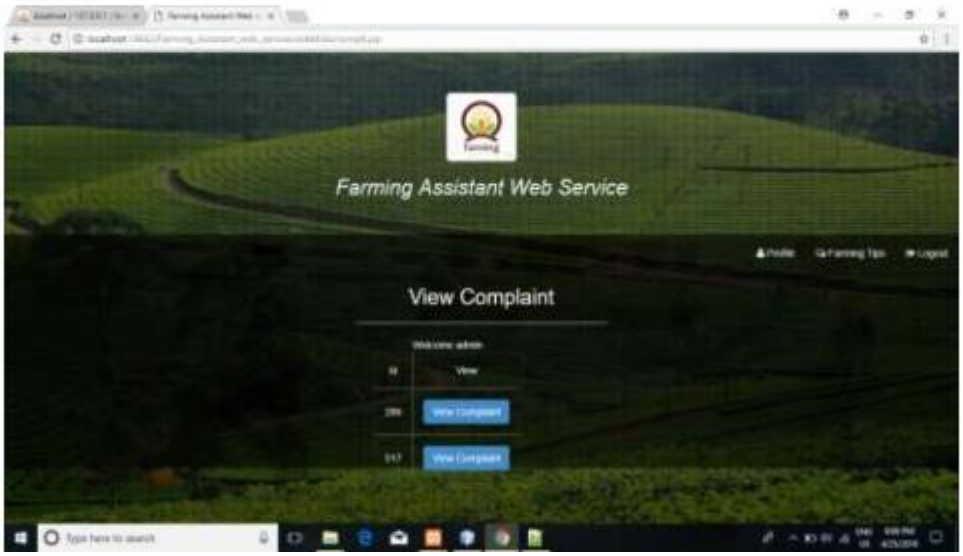
(Sell Crops Details page)



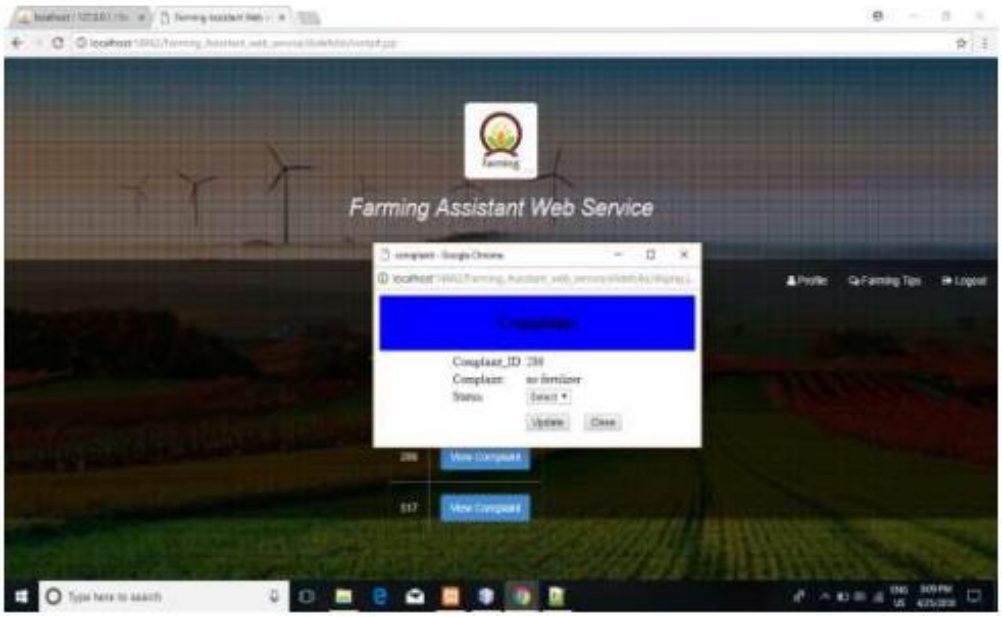
(Edit Profile page)



(View Complaints page)



(Update Complaint's Status page)



(Farming Tips page)

8. Closing statements

This system can be used in developing countries to enhance farmer, manufacturer, retailer communication thus eliminating unnecessary intermediaries. Thus, the finished product will be very helpful to the agricultural industry, especially this trying time.

This system must be implemented using Jakarta EE's JAX-RS, Front-end framework, and Hibernate 5 ORM. Create a listener to implement all the 3 steps and to instantiate your SessionFactory.