SRI LANKA INSTITUTE OF INFORMATION TECHNOLOGY

AGRICULTURAL MANAGEMENT SYSTEM

PROJECT PROPOSAL
INFORMATION TECHNOLOGY PROJECT (IT2080)
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Contents

Introduction

Client and Company Background

AgroTech LLC is a company that provides all the relatable agricultural facilities & products by operating with farmers and alternative shoppers.

The system is designed to find new opportunities for farmers to succeed in their products to high level markets by using the products management and store. Store is filled with new products, animal accessories, agricultural instrumentation, animal foods etc.

The company also provides laboratory services who are willing to get services. To provide new job opportunities and gives career guidance through career management. There are so many other functions in this system to support farmers and educate them with the newest technologies about agriculture.

The system also advertises cultivated land properties. Therefore, this system will be useful specifically for farmers and any party who are interesting in the agriculture field and for the customers who are looking for fresh and good quality products for the lowest price
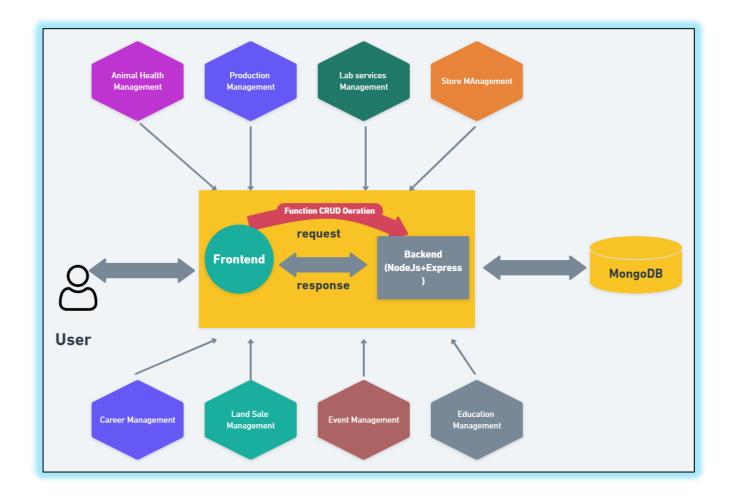
Problems and Solutions

- The number of intermediaries between farmers and the customers - In these days there's a huge gap between farmers and customers, because of the high number of intermediaries. Due to that farmers' revenue will decrease and the customers must pay more to buy the goods. As a solution, we are developing an eCommerce application and a product management system and through those, we are addressing this problem. As an agricultural company, we only keep a small margin, and we directly sell products to customers and the only intermediary will be our company. As a customer he will be able to buy products at a low cost and the farmer will get competitive prices since we are buying products from farmers directly.

- One place to full fill many agricultural-related activities - In the present, agricultural-related persons cannot find one place to full their all agricultural-related needs. But from this agricultural management system, we have the following subsystems and through that, they can full fill most of their agricultural-related things in one place.

- The minimum amount of agricultural-related educational resources - The number of agricultural-related resources is minimum and due to that, the people who are trying to enter the farming field will be discouraged. As a solution inside our system, we have a subsystem to provide knowledge using webinars, tutorials, courses, etc. So, the interested parties can attend and get the knowledge through this.

- Give opportunities to candidates who are searching for jobs in the agricultural field - In the separate subsystem we manage a career management system to give opportunities to professionals in the agricultural field.

- Address financial issues - In these days, the people who are trying to start agricultural-related startups have some problems regarding funds raising. So, we are trying to interconnect people who are looking for funds and financial-related things with financial institutions to full fill their needs. We are separately managing this inside the farmer support portal.

- Reduce the costs and time spent by businesses, customers, and all other parties interested in our system: Because interested parties can meet all their agricultural needs in one location, and because we have multiple subsystems, they will save money and time.

- Lack of agriculturally based events- On these days farmers need to deal with many problems, including how to adapt& learn modern technologies, crop protection techniques, how to adapt to climate changes, soil erosion and loss of biodiversity, how to stay resilient against global economic factors and give inspiration to young people to become future farmers. To face those problems our system has a sub-section called "farmer support portal'' under this section we focus on events based on agriculture like webinars, meetings, and other types of events covering current trends & technology in agriculture.so if someone is willing to join with those events, they can learn lot about new agricultural-related things. They can easily join with the upcoming events using our registration process in our system.

Benefits of the System

- Increased Value of Output
- Greater physical production.
- Cost Reduction
- Some projects act as cost reducing
- Other kinds of direct benefits
- As an example, farmers can work with this website as client also.
- Provide career opportunities.
- Provide lab services.

System Overview Diagram

This is a Web-Based system, all the tasks are done through a web server and a database. Master Admin, main users of the system. Master Admin has the authority to access overall system. They use the system to achieve different tasks

System Functions

Land Sale Management

- This function manages the advertising part of the system. First, there are three parties to get involved with this system, they are

    - Customer
    - Land sale management administrator
    - Advertiser

- The Advertiser can contact the Land sale management system administrator of the system to place their ad through post Ads Link.

- Post Ad link redirect to new page and it contains form, it contains, Type, Town/City, Street, Agent's Ref #, Heading, Description, Size of land area, Is the land for sale or lease? Distance to nearest train station, Distance to the nearest bus stop, Price/Rate, Availability, are you the owner, agent, or developer of this property?, Contact name, Your Contact Email, Your Contact Telephone Number, Link to extra pics, YouTube Link, Map & Street View.

- Before advertiser post his/her Ad, he/she must be login or register as an advertiser in this system.

- The customer uses the advertiser contact form here to contact the advertiser for more information about the cultivated land.

- Customers can search estates by going through the categories (Example: Coconut land, Bare Land, Cinnamon Land, etc.) and Location (Matara, Rathnapura, etc.).

- Implement CRUD operations relevant to the Cultivated Land sale administrator,
    - Add advertisements
    - Update property details
    - Remove Property
    - Display all lands

- After land was added, auto-generated Id will be assigned for each land item and land details saved in the database The admin can Add or Update. land details.
- If the admin wants to remove land details from the system Delete function will lead to that.
- The following components specifies under the cultivated land property.
    - Land type (e.g.: Bare, coconut, cinnamon)
    - Offered for (e.g.: Sale)
    - Area of land (e.g.: 50 acres)
    - Availability (e.g.: Available now)
    - Property details (Further description of the land)
- The Advertiser contact forum includes,
    - Agent logo
    - Agent
    - Contact name

- As input fields,
  - Customer name
  - Email address
  - Phone
  - Message

- The customer clicks on the ad they want and then the page with all the details related to the ad will load.

- The system also facilities generate report to get number of ads and list of customers who had contacted advisement in month. It sorted all the dates and relevant customer. Here the customer gets the date of contact with the relevant advertisement and his name separately. System will automatically generate a unique ID to the relevant report.

Store Management

Inside this function I manage an online Ecommerce store to sell products online for customers.

- Inside this initially, there is a section for selecting categories of the products. So that the users will be able to find the products from the categories easily. After that, there is a page to view products for the selected category. Only the products related to that category will be displayed. Users will be able to click on each product and when they click on the product, they will be redirected to the product details page which is used to dynamically fetch the product's details. So that the clicked product's product details will be fetched and displayed on that page.

❖ Shopping Cart

- Inside the eCommerce system, there will be a separate section for a shopping cart. So, the users will be able to add that product. The main goal of this is to give users a better experience when they do shop inside our system. Through this one will be able to buy all the products they are interested in one go without worrying about buying one by one. If one is interested in a particular product, one will be able to add that to the shopping cart. And one can remove the products that are not interested from the shopping cart. This shopping cart will be temporarily saved in the current user's session so when the user visits the site again or when the browser gets refreshed, the user can retrieve his shopping cart.

❖ Purchasing Products

- When a user finish adding items to the shopping cart, he can make the payment to those items directly. We are planning to process the transaction through a third-party payment gateway and store the details of the transaction inside the database and a new order will be created. Before a user pays the money, the system will store the user's address to create the order. After a successful purchase, the quantity of the stock of that product will be reduced.

❖ Admin Functionalities

- There will be some operations that are only can be performed by an admin related to products. Following are those functions.

  - Add new products to the website.
  - Edit Product Details.
  - Delete products from the system.
  - Modify the products stock.
  - View Orders

- Before a product is stored in the database the system asks for some information regarding products. Below are those details.

  - Product Name
  - Category
  - Product Description
  - Brand

- Price
- Stock Available
- Created Date

❖ Generating Reports

- In the end, for the report generating we generate reports for that month. In the report, there will be the following details.
  - Total Sales.
  - Number of products that were sold.
  - Top sold items.
  - Current stock available.
  - Quantity of each product that are sold.

- Crud Operations

  - Add, Remove, Update, Delete, Search products
  - Add, View Orders.
  - Store

Education Management

- This function is to manage the distribution and allocation of educational resources regarding to agriculture. Anyone who use this function will be the user of this system it can be the farmer, student, or anyone. After the users get registered. users are available to select these two types of course programs by their needs
  - Payment programs
  - Non-payment programs
- All these course programs should be registered to the system. The course manager has to get contents and details of courses from the institutes and insert these contents and register them in the system.
- When registering courses, the course manager should be able to add particular course details to the system are
  - Course category
  - Course name
  - Search keyword
  - Institute name
  - Description
  - Course contents
- After course programs were added successfully into the system each course contents saved in the course database.
- The course manager can add new contents and update these course programs by their needed.
- If the course manager wants to remove previous course contents form the system delete function will lead to that.
- Also, this function provides library facilities for users, it contains e-books, articles, journals related to agriculture. Course manager should be able to insert new library items, update, delete and manager can do other library functionalities necessarily
- This function provides generating summary reports for courses, enrollments and other sub functionalities, the course enrollments report helps to course manager to identify what courses are most popular in community and course manager can insert these types of courses into the system.

Lab Service Management

- This function is about Checking if Lands are suitable for Farming or not and providing lab reports to other parties such as Hotels. This Lab Management System has Two side views, those are our data entry operators view and the Laboratory technician view.
- **The first side** view is our data entry operators view, he is the one who is entering data in the data entry operators view, the data entry operator should be able to provide details such as
    - Data entry operators ID,
    - Farm Soil's Acidity,
    - Soil's Nutrients,
    - Soil's PH range,
    - Climate
- When the data entry operator enters those data into the system, the system should be able to generate a unique ID to the relevant lab report and the system should automatically check if the entered data matches our conditions. As an example,
    - Farm Soil's Acidity should be in the range of 5.5 to 6.5 pH,
    - Soil's Nutrients should be in the range of 6.5 to 7 pH,
    - Soil's PH range should be in 5 to 5.5 pH,

- If the entered data are matched with our conditions System should generate a Lab report and show that Lab report to the data entry operator.
- That lab report should be able to
    - reviewed,
    - updated,
    - deleted, and the data entry operator also should be able to download that lab report.
- If those entered data do not match with our conditions System should show a Lab report rejection message.

- The **second side** view in our Lab management system is the Laboratory technician view, In this, we should be able to provide lab reports to the hotels, As an example, hotels can send us water samples that they want to get checked and After that checking procedure, our Laboratory technician should be able to upload that lab report to the web application and he also should be able to edit and delete that report, As a result of that our clients should be able to get their lab reports online and download them.

- This function provides a monthly generating summary report to Show
    - how many Lab reports were applied,
    - how many were passed
    - how many were rejected, this will help Lab management to get an idea about their function usage.

Career Management

- ❖ Vacancies Management
  - This function comes under the main function "Career Management". The main objective of this function is to make a straightforward way to manage job vacancies.
    - Create, Update, Delete and View Vacancies – Admin can create new vacancies according to the company needs and he can post them to the system and update newest details about those vacancies, delete overdue vacancies and view all the details of posted vacancies.
    - Register as a Candidate – Any user of our system can register as a candidate for jobs by filling an application form. When the application form is filled, he become a registered candidate. Registered user can maintain a user profile. Also, he can update his personal details and delete his details or delete his profile. The application form includes
      - Name
      - NIC
      - Address
      - Email
      - Mobile Number
      - Educational Qualifications
      - Etc.
    - Apply for Vacancies – Users of the system can search for jobs and apply for vacancies by click on the "Apply Now" button. When he clicks on the button he needs to fill and submit an application to apply for a job. This application also includes above mentioned areas, etc.
    - Pick Candidates – This is an Admin Role. Admin of the system can invite to registered candidates for interview sessions by click on "Invite Now" button who are the best qualified candidates for relevant job roles.

- ❖ Career Guidance Management
  - This sub function also comes under the "Career Management" main function. The main objective of this sub function is to make easier way to manage career guidance programs.
    - Create, Update, Delete and View Guidance Programs – Admin can create new career guiding programs according to the needs of the industry and he can post them to the system, update newest details about those programs, delete overdue programs from the system and view all the details of career guidance programs.
    - Register for Guiding Programs – Users can register for career guidance programs by submit a form who are looking for career guidance programs in agricultural field. All users must register for the system before register for guidance programs. The registration form includes
      - Name
      - NIC
      - Address
      - Email
      - Mobile Number

❖ Report Generation
  • The main objective of this sub function is to generate monthly reports of selected candidates for relevant jobs and what are the most requested jobs and Number of application submissions for career guidance programs.

Farmer Support Portal Management

- This function is to manage farmer support portal based on agriculture.
- The main sections of this function are events management, loans and insurance.
- Under events management, upcoming events, meetings, crop protection exhibitions, webinars, other types of events covering current trends and new findings in agriculture.
- The admin can create events, update view events and delete old events.
- All events included with venue, about event, date & time.
- Each event listed on the page links to the events page. Customer can visit event website and click "Register Now" button for registration process.
- The customer must fill in a form to registration for the upcoming events.
- Following details should be filled,
  - Customer Name
  - Contact No
  - Email
  - Address
  - Date & time

- Generate a report for each events including number of participants, number of sessions & etc.
- Customer must fill the application form for loans & insurance
- Following details should be filled,
  - Name in Full:
  - Age:
  - Permanent Address:
  - Telephone No:
  - Identity card No:
  - Profession:
  - Loan type:
  - Payable years:

- After applying for loans/insurance check for eligibility of applicants under some conditions.
- Age should be between 23-55 years and either professional or employee not less than 3 years' service in private sector organization / government institute.
- The loan amount will be decided based on your requirement and repayment capacity.
- We will calculate and display how much interest you could pay & your estimated principal balances.
- Display eligibility list of applicants for loans & insurance.

Animal Health Management

- Our ambition is to serve farm owners sold their animals health care problems and we have made a process
- Customer must fill a form to make an appointment. This form includes following details.
- Customer Id

  - Customer Name
  - Contact No
  - Address
  - Animal Type
  - Appointment Date
  - Appointment Time

- There is an option to change the appointment date and time, it means the customer can request to update date and time.
- Invoice is issued with a reference number to the customer.
- Invoice is auto generated.
- Veterinarian can,
  - Acts as an admin.
  - View all the appointments.
  - Discard irrelevant appointments.
  - Do relevant appointments.
- Health care manager is the main actor.
- Health care manager view all the appointments, update at customers request, all appointment can be deleted.
- Generate a monthly report after going through all the appointment the report can be viewed by admins.

Production Management

This function includes product management functionalities.

- ❖ Getting product requirements from company

Companies must request their products through the system by filling in a form. This form includes the following details.
- Company Name
- Company ID
- Mobile Number
- Product Name
- Quantity
- Select Date

- ❖ Buying products from supplier

Product Manager must insert the details of supplies to the system by inserting some details through the system. This process also has a fill a form. This from include following details.
- Product ID
- Product Name
- Supplier Name
- Supplier Email
- Supplier Phone Number
- Address
- Quantity
- Date and Time

Supplier can view a document containing details about their supplies

- ❖ Manage the stock.

This function is also done by the Product Manager. According to the company requirement and supplier supplies stocks details are deleted and updated by the product manager.
The system also generates a report which given information of supplier and generate a report of stock summary in a week.

Tools and Technologies

Programming Language	MERN Stack
Front End Development	React JS
Server-Side Web Application Framework and Application Programming Interface (back end)	Express, Node JS
Database Management System	No SQL
Administration Tools for The Database	Mongo DB
Version Control System	GitHub
Project Management Tool	Trello

Project Management Plan

		Task Name	Weeks											
			1	2	3	4	5	6	7	8	9	10	11	12
Design	1	Client Meeting	■											
	2	Charter creation	■											
	3	Proposal Presentation		■										
	4	UI Design			■									
	5	Database Diagram Creation			■									
Build	6	Land Sale Management				■	■	■	■	■				
	7	Store Management						■	■	■				
	8	Education Management				■	■	■						
	9	Lab Service Management					■	■	■	■	■	■		
	10	Career Management				■	■	■	■	■	■	■		
	11	Farmer Support Portal					■	■	■	■	■			
	12	Animal Health Management					■	■	■	■	■	■		
	13	Production Management						■	■	■	■	■		
Test	14	Testing											■	
	15	Evolution												■

Work Breakdown Structure

	Student ID & Name with Initials	Brief Description of the Function
1	IT20605902 Samarasinghe S. D	Implement functionalities of the Cultivated Land sale properties for customers such as add advertisements, update property details, add contact forum to the buyers and after purchase estate, remove it from the list of estates. In this case user can search estates from going through the categories (e.g.: Bare Land, Coconut land, Cinnamon Land etc.), and location (e.g.: Matara, Rathnapura etc.). The system also facilitates generate report to get number of ads and list of customers who had contacted advertisement in month.
2	IT20610166 Kumarapeli K.A.P. P	Implement an online eCommerce site to sell agriculture-related products. Add agricultural items/products to the website. Remove products from the website. Update products. Implementing a shopping cart and adding/removing items to the shopping cart. Managing a stock for products. Implementing checkout functionality and managing payments. Save transactions on the database. Generating reports and statistics to get decisions for managers. Such as total sale etc.
3	IT20604844 Thilakarathna W.G.T. D	Education programs offered by the institute manage the distribution and allocation of educational resources. Registering courses, tracking, and reporting. Allow users to select reserve and purchase a course through course cart. Also, this function provides library facilities. (Library management). Generate reports to check the number of enrollments for courses and how many courses are available etc.
4	IT20612696 Senanayake D. B	Implementing an Online eCommerce site to collect farm details. Provide functionalities such as Agriculture testing, Agriculture Analysis, scientific research, Feed Testing, Soil Testing, and development for farmers. Provide some Lab reports for other parties such as Hotels. Generate report for specific time-period including how many reports were generated including how many reports were approved and how many were rejected etc.
5	IT20299552 Rubasinghe L. M	Implementing career management functionalities such as job vacancies creating, update, delete and view them. Career guiding program details creating, delete, update, and view them. Register as candidates for instant jobs by providing personal details from a forum update and delete provided details. Direct apply for job vacancies. invite to candidates for interview sessions from registered candidates. Generate monthly reports of selected job candidates list, what are the most requested vacancies.

6	IT20607678 W.S.M.S.D Senevirathne	The Farmers' Portal of the Department of Agriculture, Co-operation and Farmers' Welfare is a platform for farmers to seek any information related to agriculture. Detailed information on farmers' insurance, agricultural storage, crops, seeds, farm machineries, loans. is provided and create cooperative events. The system also facilitates generate report to determine details of past events how many appointments were created in month etc.
7	IT20607128 Shalinda R.M.M	Do things to relevant to animal's health. Examine farm animals and outside of farms. Give instructions, guide for treatment, and give treatment. After that store relevant information, animals are registered in this system and maintain profile. From this information identify new diseases and forward information for relevant authorities. The system also facilitates generate report of appointment summary in month.
8	IT20617028 Wanni Arachchige P. N	Implement product management functionalities such as buying products from famers, getting products requirement from companies, and managing stock. Register customer can request product from the companies and register supplier can provide product for wholesales price. if their required quantity is available or not available company can take suitable actions. Generation a report which given information of supplier and generate a report of stock summary in week.