

E-COMMERCE APPLICATION FOR AGRICULTURAL PRODUCTS

Major Project Report

Submitted in partial fulfillment of the requirements for the degree of

Bachelor of Engineering (Computer Engineering)

by:

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(2020-2021)

Internal Approval Sheet



TERNA ENGINEERING COLLEGE, NERUL

Department of Computer Engineering

Academic Year 2020-21

CERTIFICATE

This is to certify that the major project entitled **“E-COMMERCE APPLICATION FOR AGRICULTURAL PRODUCTS”** is a bonafide work of

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Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Abstract

E-commerce is clearly beginning to have a major impact in the agricultural sector. The way people go about purchasing agricultural products is of great concern. Most of the time customers have to travel far distances to get agricultural products and getting the right quality is not ensured. Our project aims to help farmers as well as customers for buying and selling agricultural products across the country using a digitalized approach. The application will guide the farmers to access new farming products, compare the current market rate of different products, the total sale and the earned profit for the sold products. The mobile application builds a platform for farmers to ensure greater profitability through end user communication. It will act as a unique and secure way to perform agro-marketing. Our android application 'E-Shetkari' will serve as a way for the farmers to buy products and raw materials which are required for their farming process. This project allows viewing various products available and enables users to purchase desired products instantly by online payment.

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CHAPTER - 1

Introduction

E-commerce is reasonable to say that the process of shopping on the smart phones are becoming common. It is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. The terms e-commerce and e-business are often used interchangeably. The primary motive of this project is to help farmers ensure greater profitability through direct end user communication. Our project deals with respect to the farmers benefit of getting their raw materials and farming technologies are delivered to them at their door-step with the extended benefit of getting these products at the best price online. Here, the main users of this application are admin and farmers.

Farmers will get unique interface where they get a wide selection of products which are systematically arranged in certain categories like Soil, Saplings, Seeds, Crop Nutrition products like Fertilizers and Manure, Crop Protection products like Insecticides and Pesticides, Tools required for cultivation process and also the necessary heavy Machinery items. Farmers as users can view these products, add them into the cart, order the desired products by adding their address and contact details. They get the payment gateway where they can confirm their address details and can further proceed through their transaction by paying online by entering their bank details. On the other end is the Admin which handles the management of products, customers, sales and transactions. The Admin also gets to view these databases to keep track of the complete system. This development of ecommerce app will help farmers minimize their time and labor spent on gathering requirements and maximize their revenue and income. The objective of this project is to make application for farmers so that they can buy the product and get details about the agriculture products which will help them to know that how this product is helpful in which part of farming. Farmer can buy the agriculture product from application by doing online payment. The management of products will be done by the admin through the website and maintain the product count and their availability.

1.1 Aim and Objectives of Project

The main objective of the application for farmer and consumer project is to help the farmers increase their sales through the help of the mobile application. Any user can purchase the available products required for cultivation located remotely in the country. This application helps farmers a lot by keeping them up-to-date with better and wider range of products and their availability which can surely simplify their agricultural process.

1.2 Scope

E-commerce can help boost the sale of agricultural products to larger masses. It holds the reach to a large audience as the number of netizens in India is increasing at a fast phase. Using e-commerce effectively in promoting agriculture related products, the gap between the farmer and the customer is greatly reduced. Supply chain of agriculture related products can be strengthened and one can also keep track of this. Expansion in agricultural product channels, reduction in transaction links and increase agricultural efficiency with the establishment of agricultural e-commerce apps along with the online trading platform, there will be a well-organized circulation of agricultural products and materials on a larger scale. This will be helpful in regaining information for both the parties by avoiding any loss in profits due to asymmetry in information. This in turn will help both supply and demand sides trade at a maximum profitability and at minimum risk and also greatly reducing transaction links.

1.3 Organization of the report

Chapter 1 gives a brief overview about the aim for developing this project. The problem definition tells us about the expected outcome of the project for the application.

Chapter 2 of the report includes the literature survey on the existing system.

Chapter 3 shows the software model used to design is described, along with this our proposed system is also described.

Chapter 4 shows the Architecture, Use Case and User Flow diagrams that give us an abstract view of the system. This chapter also gives the Hardware and software requirements and software component are described.

Chapter 5 shows the project module that are designed and used in our proposed system.

Chapter 6 shows the overall working of the system.

Chapter 7 shows the Gantt chart of the project.

Chapter 8 describes the tasks that are achieved through this project. It describes the applications of the project.

Chapter 9 is conclusion. This chapter gives a summary of the entire project. It also gives the future scope for research and development in this project.

CHAPTER - 2

Literature Survey

A considerable amount of research has been done on the working a performance of agricultural marketing in India, by the academicians & researchers. The history of e-commerce shopping carts began immediately after smart phones and mobile applications became a major medium to communicate information around the world. Ecommerce shopping-cart applications allow consumers to buy goods or services directly over the internet using a web browser. This online shopping evokes the business-to-consumer (B2C) process where a consumer buys directly from the business. Building a new successful shopping cart is simple because of high competition in the market, and the designer of a shopping-cart application must consider the information load, complexity, and novelty.

The situation of agriculture in less developed nations is generally characterized by fragile infrastructure, involvement of several mediators; lack the knowledge of Information Communication Technology (ICT) in farmers. Even though the country becomes self –sufficient and exports agricultural products, majority of the farmers remain in poverty. This shows that although there is increase in production of agricultural products, the farmers are not benefiting. Empowering farmers through ICT can prove really beneficial in aspects such as:

- Exchange in information will reach larger masses in spite of larger limitations literacy level and local languages.
- Promoting agricultural products to larger masses
- Improved farming techniques and best practices; that enhance the yield and reduce cost of inefficiency

AGMARKET was the first e-governance project, which was set up in the year 2000 to strengthen India's agricultural marketing system. It has emerged to be a key national portal. In order to reach micro levels of society it has embedded many regional languages. It maintains and publishes from its well-maintained database, information relating to daily minimum and maximum modal prices for about 300 commodities and their over 2,000 varieties. Compared to the number of agricultural

related applications in India, e-commerce implementation in these apps is scarce. Indian agriculture has not fully used the potential of ICT and it is restricted only to information side and not to the agricultural product side.

2.1 Existing System

The current system for purchasing raw materials and tools for farmers is to visit the shop manually. The farmers in rural areas have to choose what they want from the limited set of products in shops and have to travel to distant stores which are present in the nearest towns. This is really an unnecessary and time-consuming process that tends to delay the process of farming. Additionally, it is not necessary that they get all the various kinds of tools under one roof. They tend to travel to different stores for different products. Overall, the existing system has these following faults which tend to increase the amount of labor the farmers burden themselves with.

CHAPTER - 3

Software Analysis

SDLC is a process followed for a software project, within a software organization. It consists of a detailed plan describing how to develop, maintain, replace and alter or enhance specific software. The life cycle defines a methodology for improving the quality of software and the overall development process.

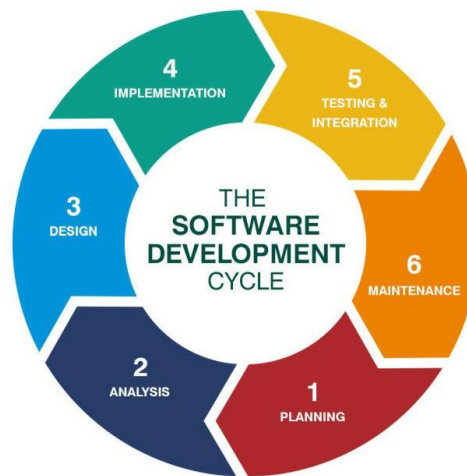


Fig. 1 SDLC Model

Stage 1: Planning and Requirement Analysis

Requirement analysis is the most important and fundamental stage in SDLC. It is performed by the senior members of the team with inputs from the customer, the sales department, market surveys and domain experts in the industry.

Stage 2: Defining Requirements

Once the requirement analysis is done the next step is to clearly define and document the product requirements and get them approved from the customer or the market analysts. This is done

through an SRS (Software Requirement Specification) document which consists of all the product requirements to be designed and developed during the project life cycle.

Stage 3: Designing the Product Architecture

SRS is the reference for product architects to come out with the best architecture for the product to be developed.

Stage 4: Building or Developing the Product

In this stage of SDLC the actual development starts and the product is built. The programming code is generated as per DDS during this stage.

Stage 5: Testing the Product

This stage is usually a subset of all the stages as in the modern SDLC models, the testing activities are mostly involved in all the stages of SDLC.

Stage 6: Deployment in the Market and Maintenance

Once the product is tested and ready to be deployed it is released formally in the appropriate market. Sometimes product deployment happens in stages as per the business strategy of that organization.

3.1 V Model

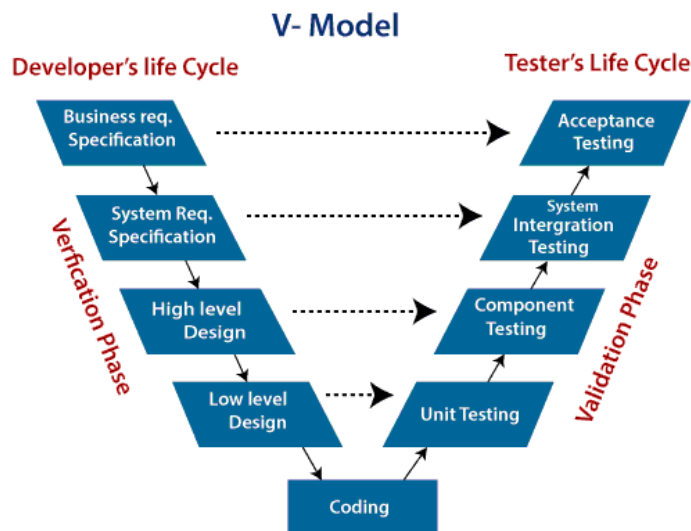


Fig. 2 Flow of V-Model

3.1.1 Phases of V Model

- **Verification Phase:** It involves a static analysis method (review) done without executing code. It is the process of evaluation of the product development process to find whether specified requirements meet. There are the various phases of Verification Phase of V-model:
 - **Business requirement analysis:** This is the first step where product requirements understood from the customer's side. This phase contains detailed communication to understand customer's expectations and exact requirements.
 - **System Design:** In this stage system engineers analyze and interpret the business of the proposed system by studying the user requirements document.
 - **Architecture Design:** The baseline in selecting the architecture is that it should understand all which typically consists of the list of modules, brief functionality of each module, their interface relationships, dependencies, database tables, architecture diagrams, technology detail, etc.
 - **Module Design:** In the module design phase, the system breaks down into small modules. The detailed design of the modules is specified, which is known as Low-Level Design
 - **Coding Phase:** After designing, the coding phase is started. Based on the requirements, a suitable programming language is decided. There are some guidelines and standards for coding.
- **Validation Phase:** It involves dynamic analysis method (functional, non-functional), testing is done by executing code. Validation is the process to classify the software after the completion of the development process to determine whether the software meets the customer's expectations and requirements. There are the various phases of Validation Phase of V-model:
 - **Unit Testing:** Unit testing verifies that the smallest entity can function correctly when isolated from the rest of the codes/ units.
 - **Integration Testing:** Integration Test Plans are developed during the Architectural Design Phase.

- **System Testing:** System Tests Plans are developed during System Design Phase. These are composed by the client's business team. System Test ensures that expectations from an application developer are met.
- **Acceptance Testing:** Acceptance testing is related to the business requirement analysis part. It includes testing the software product in user atmosphere.

3.2 Proposed System

E-commerce is the activity of buying or selling of product and services online or over the internet. Organizations can expand their market to national and international markets with minimum capital investment. The target of the proposed system is to reduce the cost to create process, distribute, retrieve and manage the paper-based information by digitizing the information. The proposed project also intends to provide better customer services by simplifying the business processes and make them faster and efficient. The mobile application will provide users with more options and quicker delivery of products.

The proposed system also provides users with more options to compare and select the cheaper and better options. It provides readily available information by helping in reducing the cost of products, so less affluent people can also afford the products. Enabled rural areas to access services and products, which are otherwise not available to them. There is a great scope for e-commerce in agriculture, especially in horticulture and processed products. E-commerce helps to minimize inventory costs many times by adopting just in time systems. Under E-commerce the customers place orders immediately on the net and goods are delivered under normal way.

CHAPTER - 4

Design and Implementation

4.1 Use Case Diagram

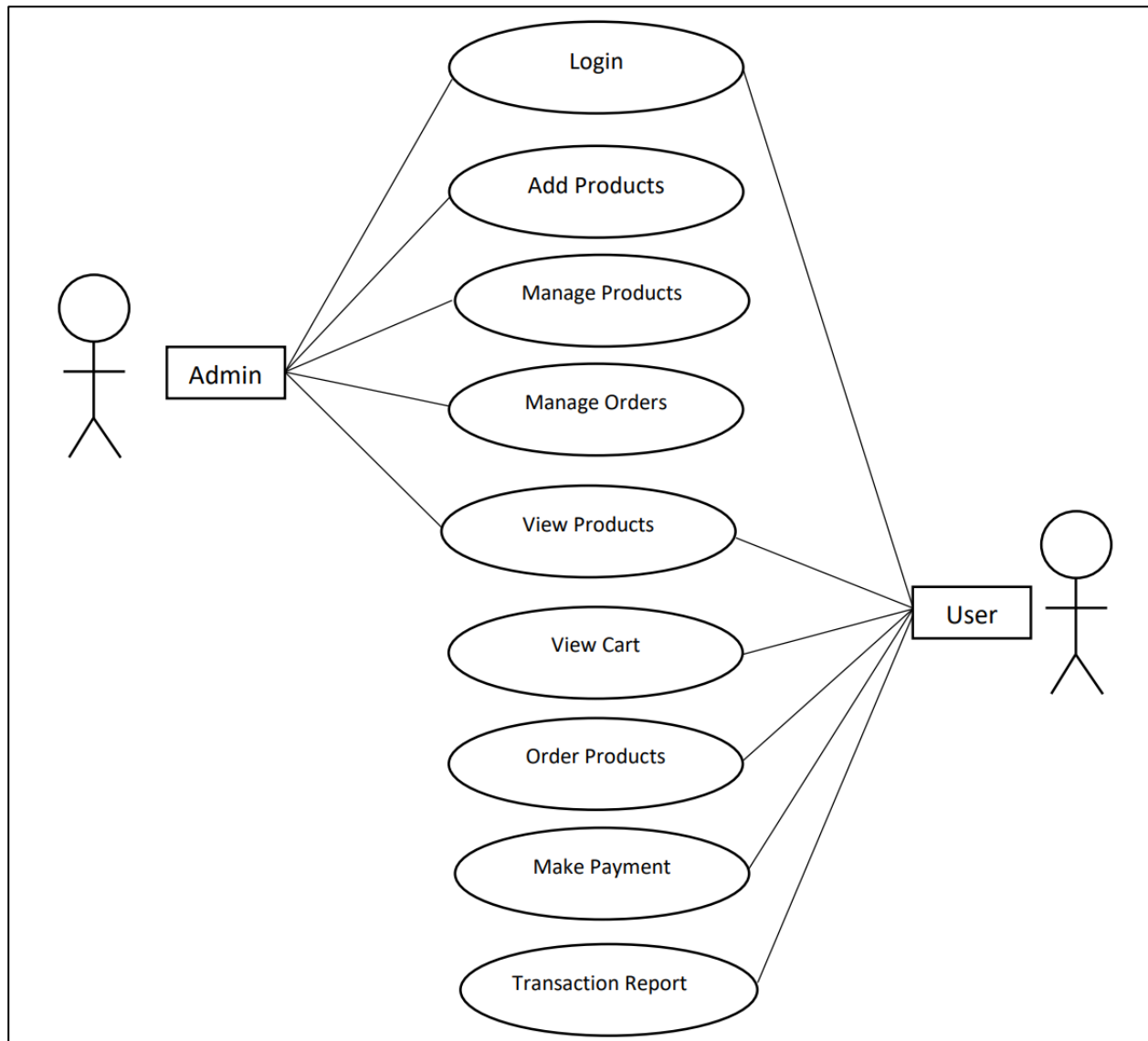


Fig. 3 Use Case Diagram

4.2 Basic Architecture Diagram

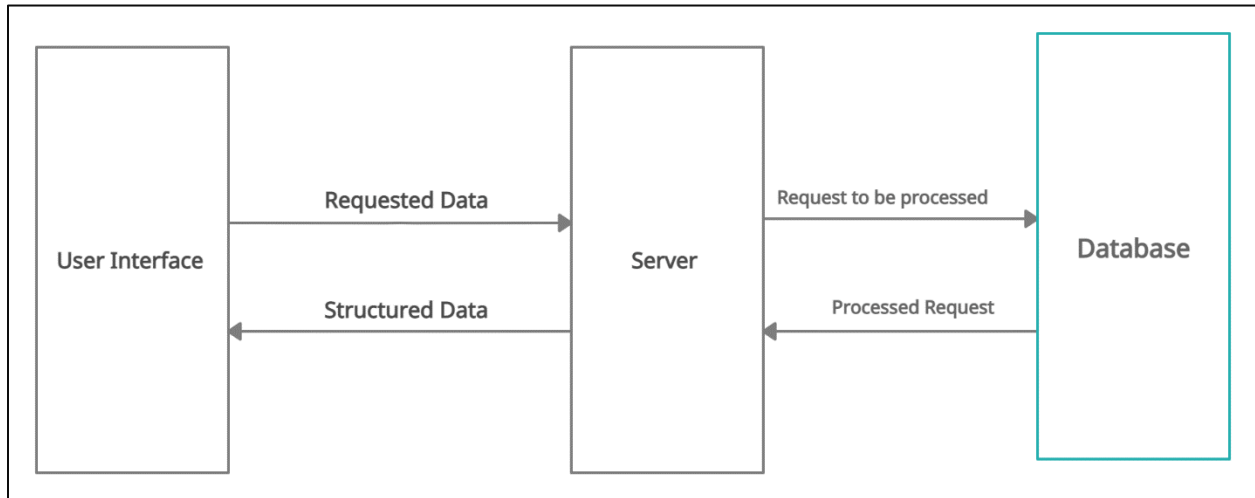


Fig. 4 Basic Architecture Diagram

4.3 Information Architecture Diagram

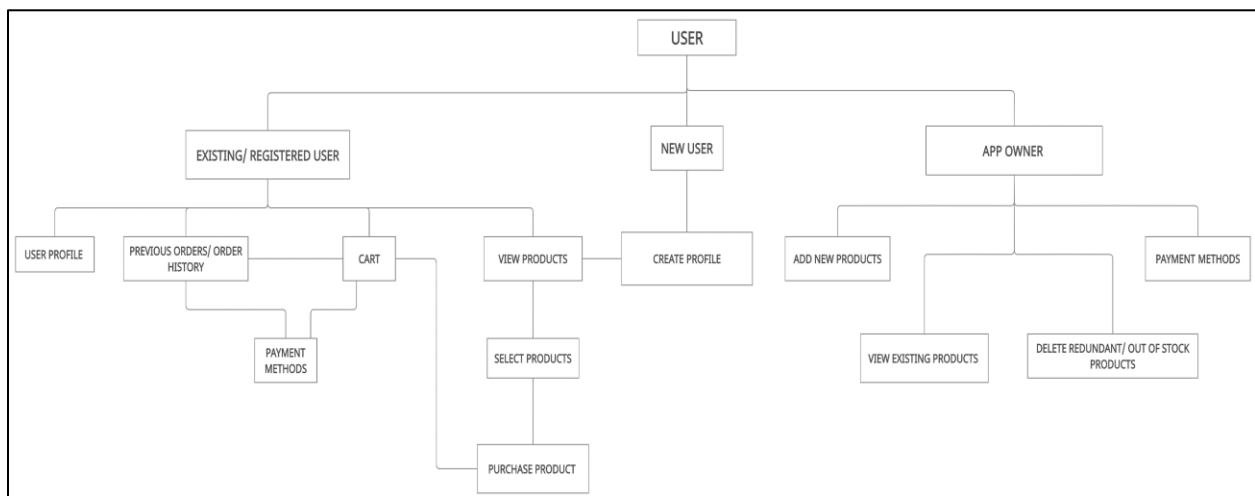


Fig. 5 Information Architecture Diagram

4.4 User Flow Diagram

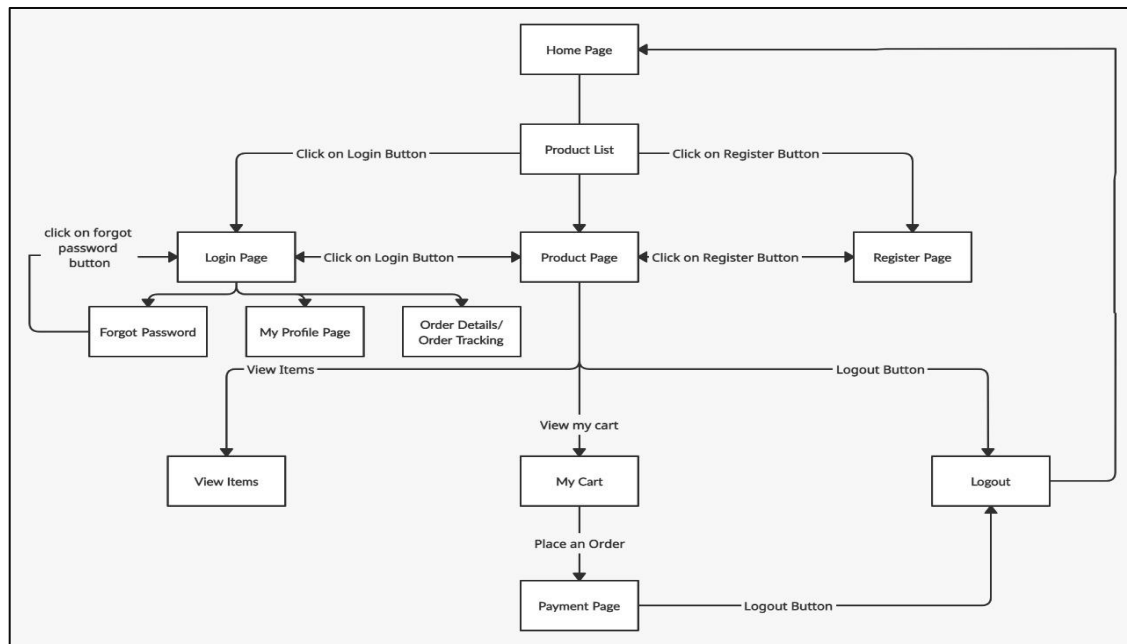


Fig. 6 User Flow Diagram

4.5 Data Model Diagram

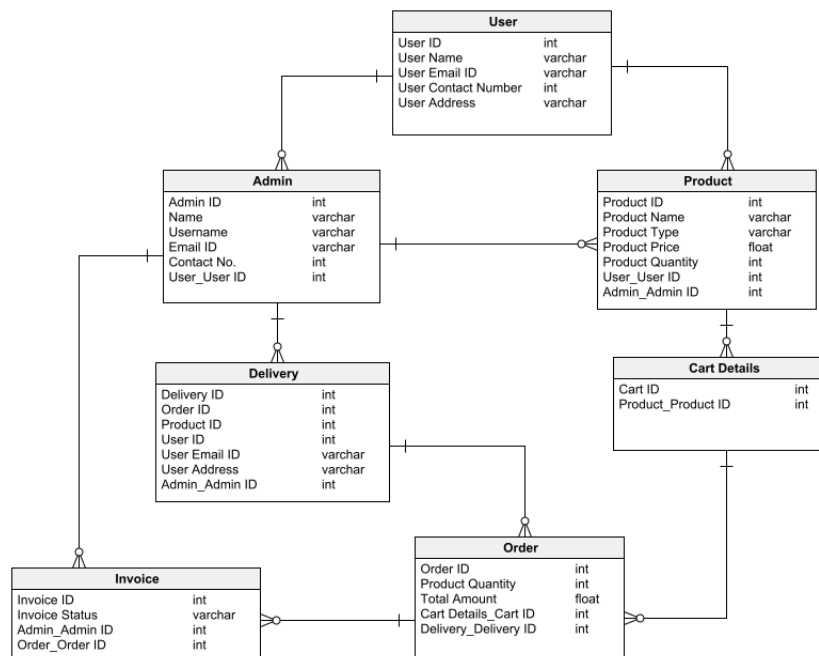


Fig.5 Data Model Diagram

4.5 Hardware and Software Requirements

4.5.1 Hardware Requirements

- ❖ 1 GB RAM
 - Intel 1.66 GHz Processor Pentium 4
 - 200 GB HDD
- ❖ Any Android Mobile Phone

4.5.2 Software Requirements

- ❖ Integrated Development Environment:
 - i. Microsoft Visual Studio
 - ii. Android Studio
- ❖ Database: Microsoft SQL Server
- ❖ Operating System:
 - i. Windows
 - ii. Android
- ❖ Web Browser: Google Chrome (recommended)
- ❖ Technology Stack:
 - i. Asp.Net
 - ii. HTML
 - iii. CSS
 - iv. C#
 - v. Android Studio: Java

CHAPTER - 5

Methodology

5.1 Project Module

In today's world farming has become very important because whatever products like fruits, vegetables come through agriculture. Farmers need various methods to maintain their farms by using manures, fertilizers which will increase their crop production yield. To maintain their farms, farmers can buy products easily through our E-Shetkari app and can increase the rate of crop growth and also maintain the soil fertility for adding new crops, plants etc. The proposed methodology contains two structures, namely the Admin and the User.

Admin's End

The admin will access the website through a web browser like Google Chrome, Firefox etc. On the web framework, Admin will manage the variety of products and their stock. Admin can add the products which they wish to display on the app. Admin also has the privilege to delete products from the app which they wish not to display or incase are out of stock. Admin can also keep check on sales history and the list of customers who have signed up on the application. The website is created to track the database and manage the elements of the mobile application which will be available to users. To manage multiple users at a time we need a medium to manage the application. This can be done through a website which will be handled by the admin.

User's End

At the User's end, the user will access the mobile application on their android phone. To use this app, user has to sign up on the app by entering details like email id, phone number, first name, last name. After signing up, user can sign in and look for the required product. If a user wants to order multiple products, they can add those products in the cart and get the transaction done as well. This transaction will be authorized as the user will receive an e-mail notification of the complete transaction details. Ecommerce app will be accessible by users and will help them to buy the

required product for farming. As the changes or updates done by the admin through the website will be visible to users by the app medium on their phones.

5.2 Features

❖ Admin Features:

- Manage products
- Add or remove products
- Add Product details like name and their cost
- Edit Product Details
- Keep track of Sales History
- View and Manage Customers

❖ User Features:

- User Signup
- Add contact and address details
- View products
- Add desired products to the cart
- Add multiple products to the cart
- Purchase desired products by online payment
- Receive an e-mail about transaction confirmation

CHAPTER - 6

Implementation Details

6.1 Working of the System

The system is categorized into two sections namely Admin and User.

Admin is web-based, whereas the user gets access to the mobile application.

The Admin will access the website through a web browser like Google Chrome, Firefox etc. On the web framework, the database is connected through Microsoft SQL Server.

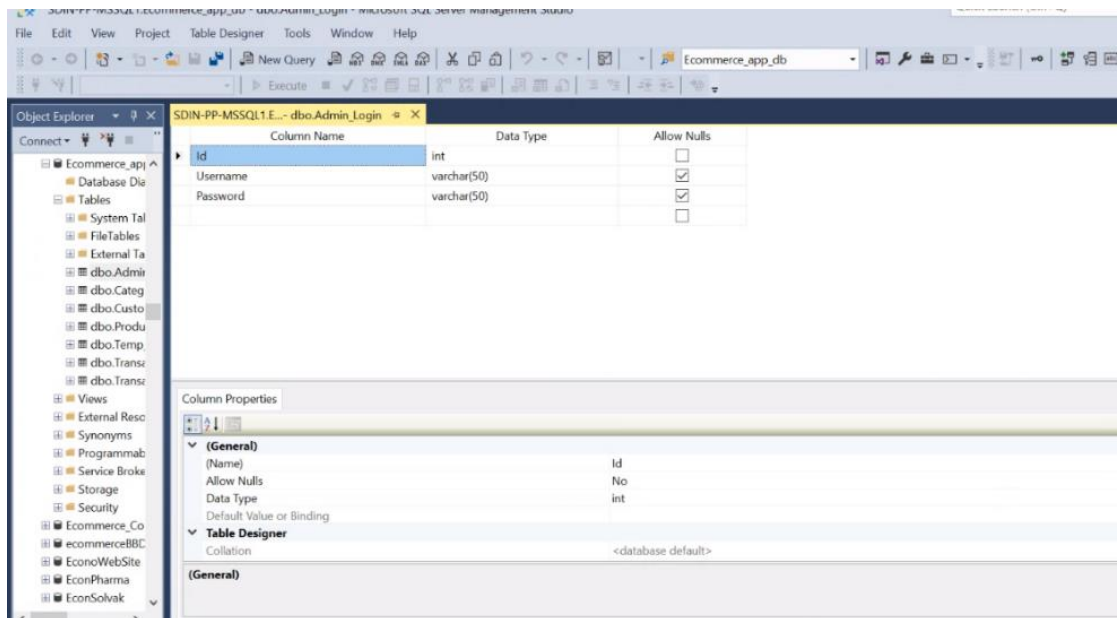


Fig. 8 Database Connectivity



The user will access the mobile application on their android phone. Below are the layouts of the java app implementation process.

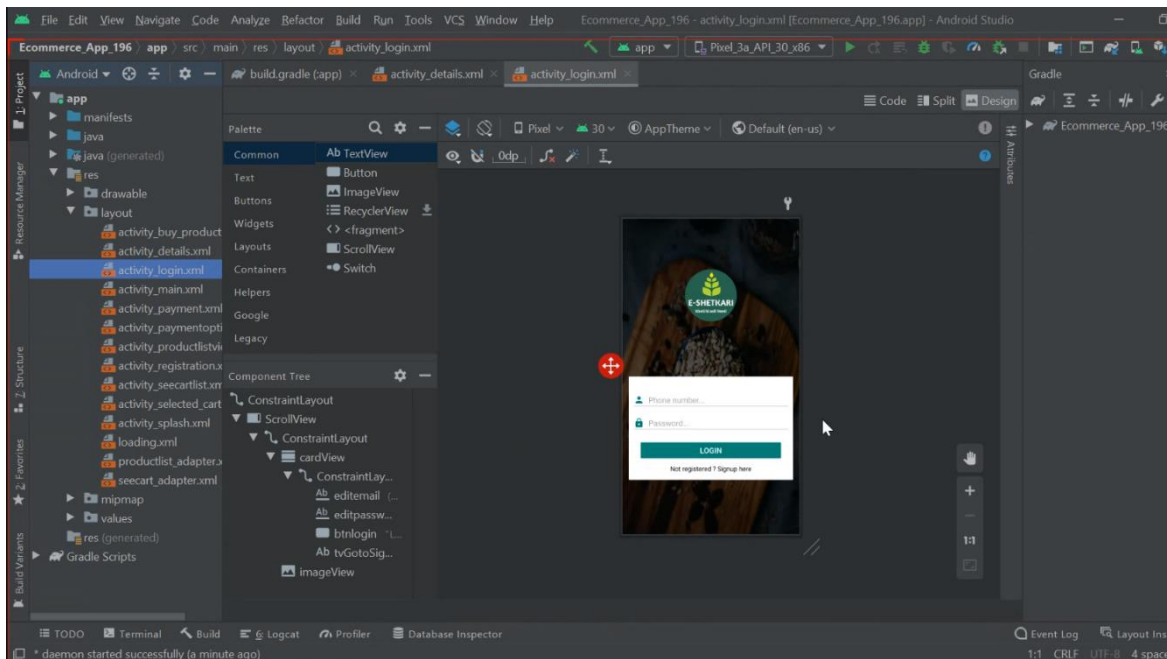


Fig. 11 App Layout of Login Page

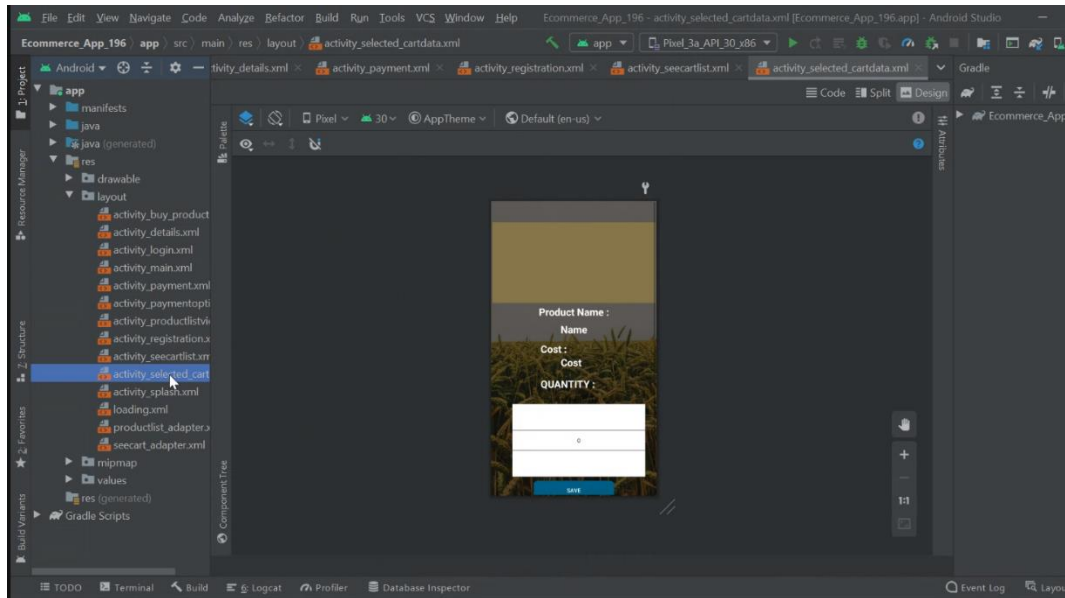


Fig. 12 App Layout for Product Page

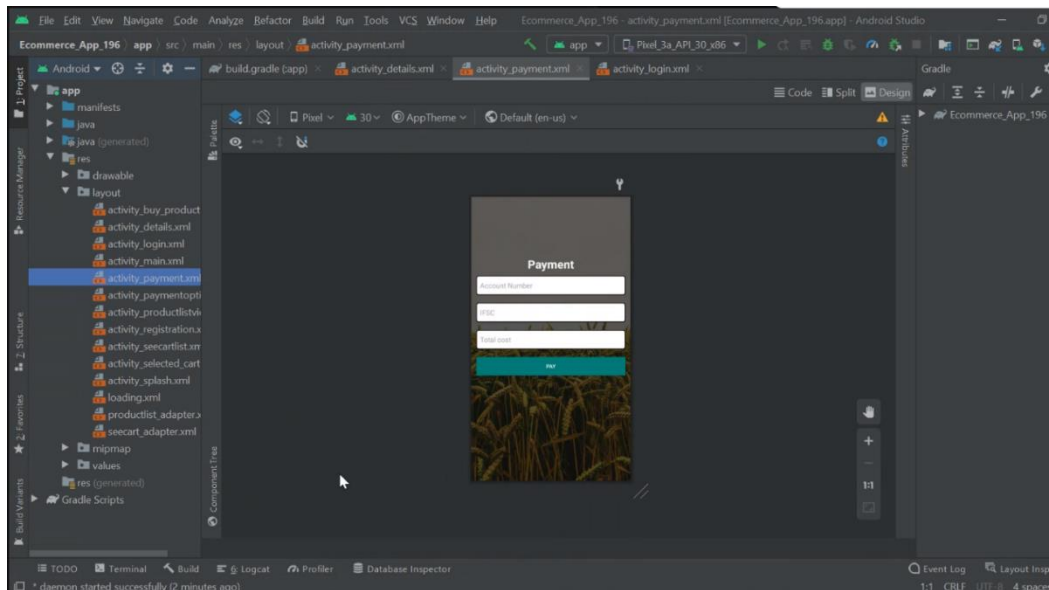


Fig. 13 App Layout for Payment Page

CHAPTER - 7

Problem Timeline

Sr no.	Task	Start Date	End Date
1.	Domain & Topic Selection	05-07-20	31-07-20
2.	Planning Initiation	01-08-20	12-09-20
3.	Literature Survey	01-09-20	15-09-20
4.	Architecture & Model Design	16-09-20	20-10-20
5.	Wireframe Design	13-10-20	18-11-20
6.	Planning Implementation	10-11-20	12-12-20
7.	Web Development	13-12-20	17-02-21
8.	Android Development	13-12-20	28-02-21
9.	Testing Phase	01-03-21	15-04-21
10.	Draft Project & Research Paper	16-03-21	20-04-21
11.	Final Project Evaluation	14-04-21	28-04-21

Table 1. Problem Timeline

7.1 Gantt Chart

E-Commerce Application for Agricultural Products

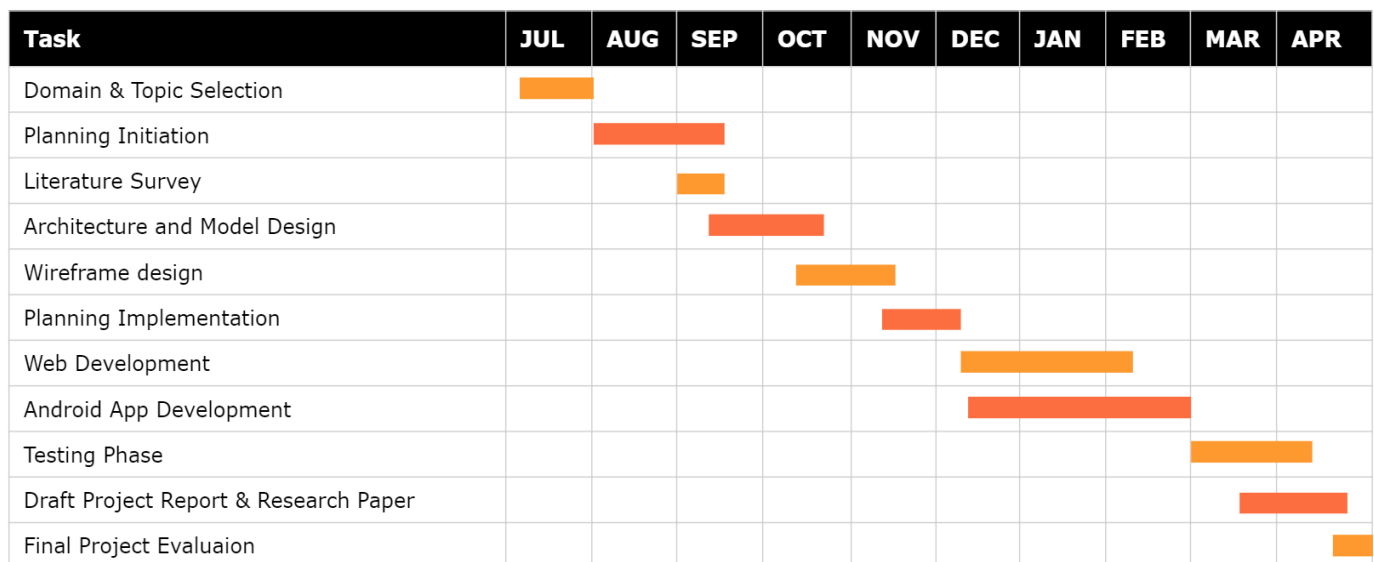


Fig.14 Gantt Chart

CHAPTER - 8

Result and Conclusion

8.1 Project Screenshot

Screenshots of the Mobile Application:

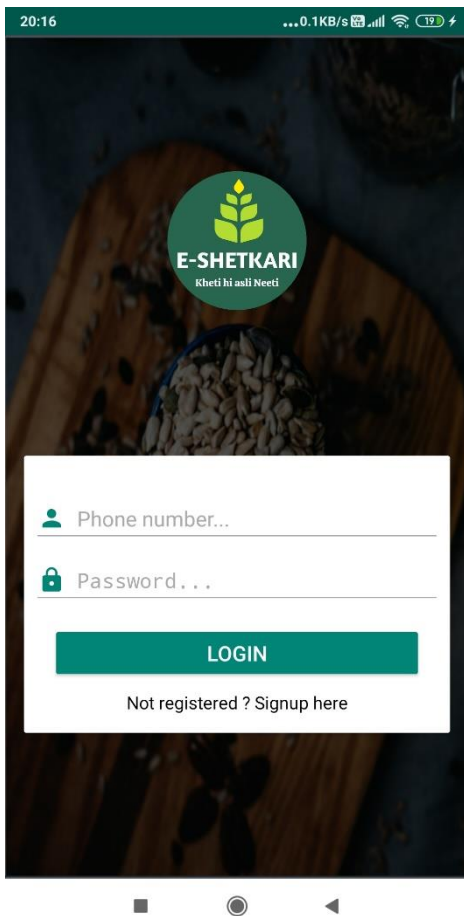


Fig.15 App Login Page

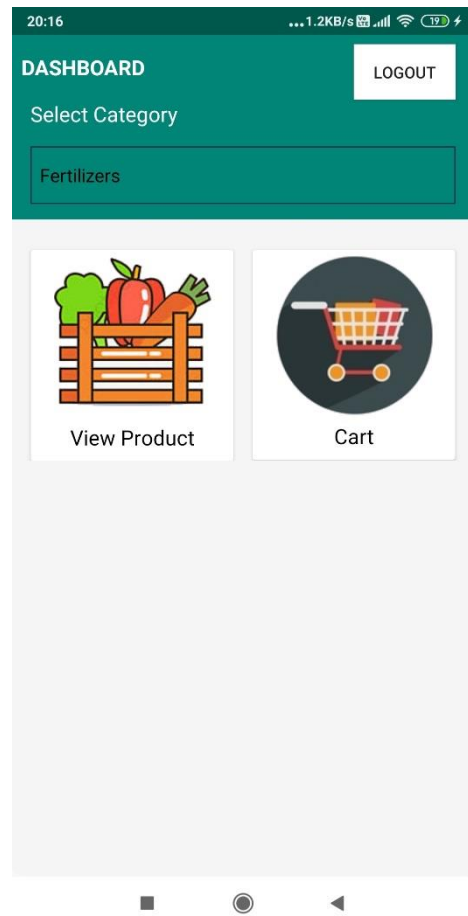


Fig.16 Dashboard

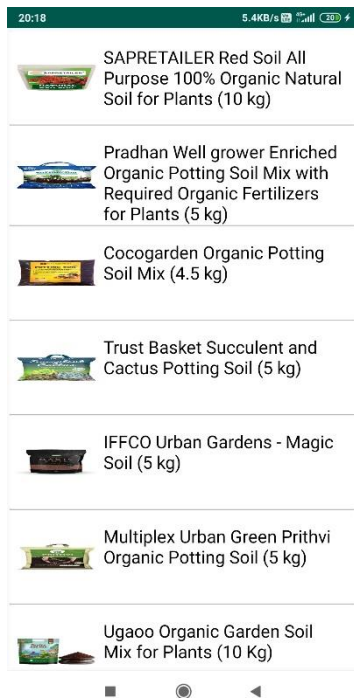


Fig. 17 List of products

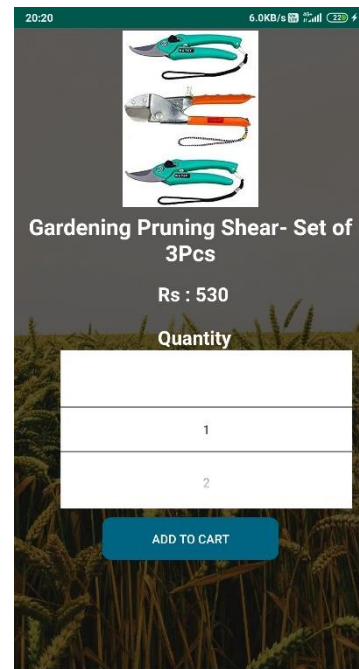


Fig.18 Individual Product Page

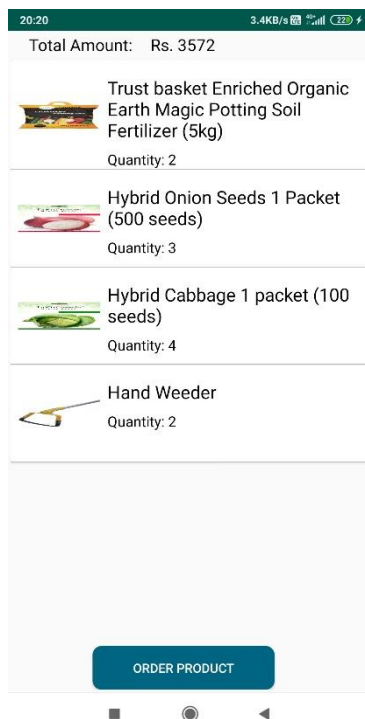


Fig.19 Cart Page

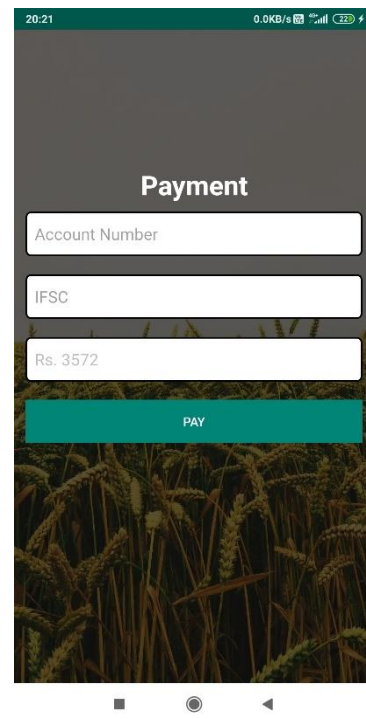


Fig.20 Payment Page

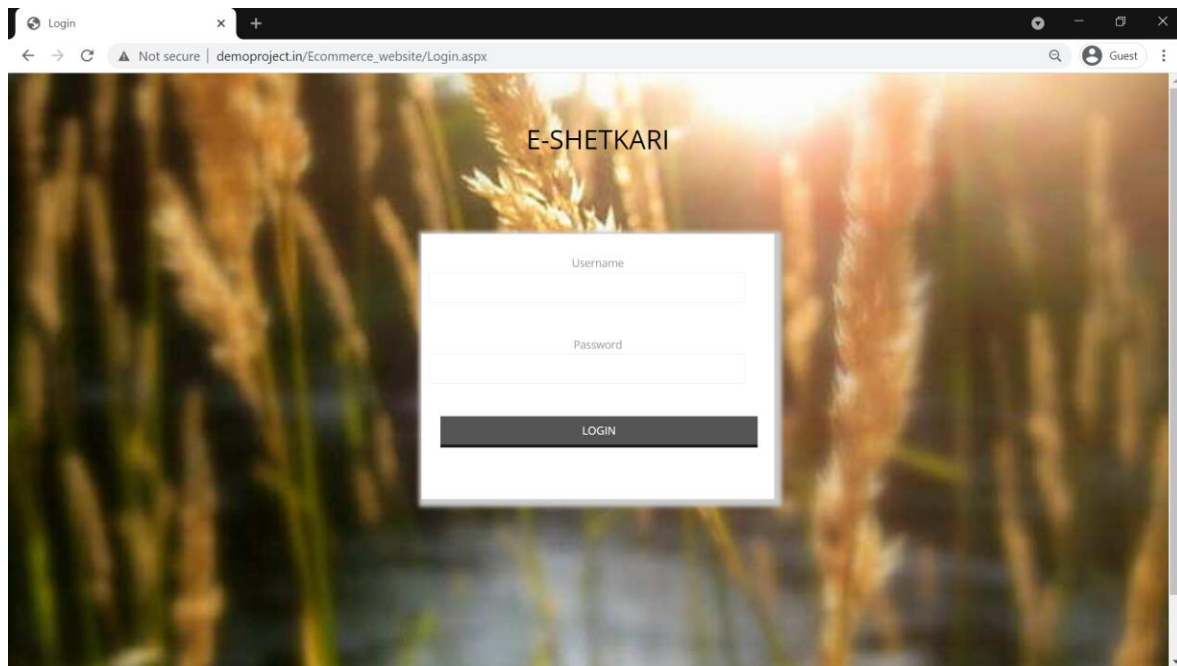


Fig.21 Admin Login Page

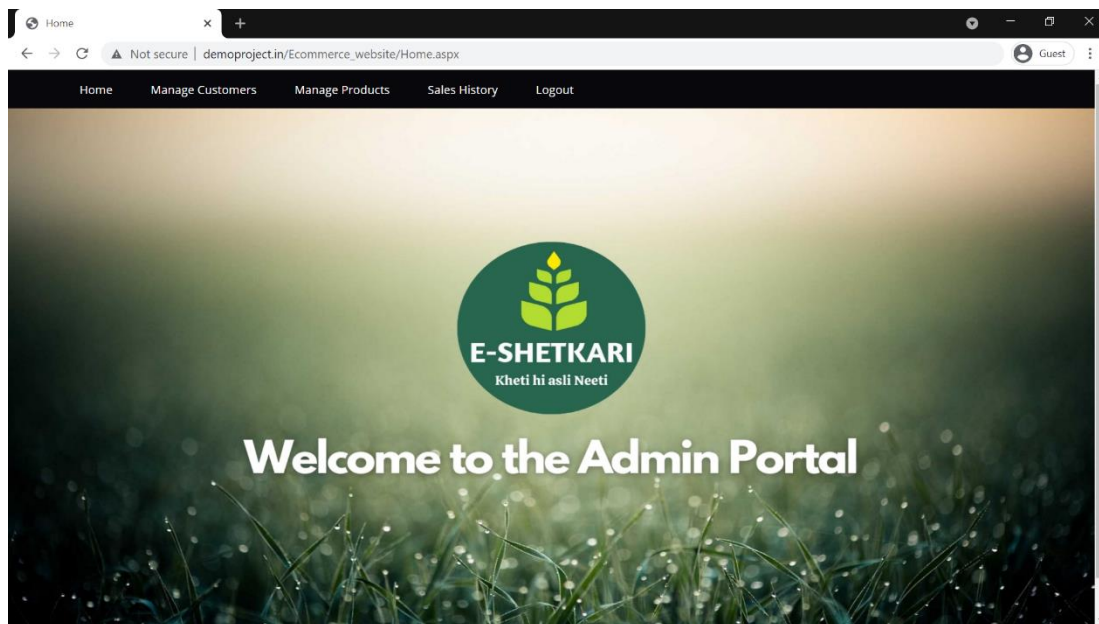


Fig.22 Admin Login Page

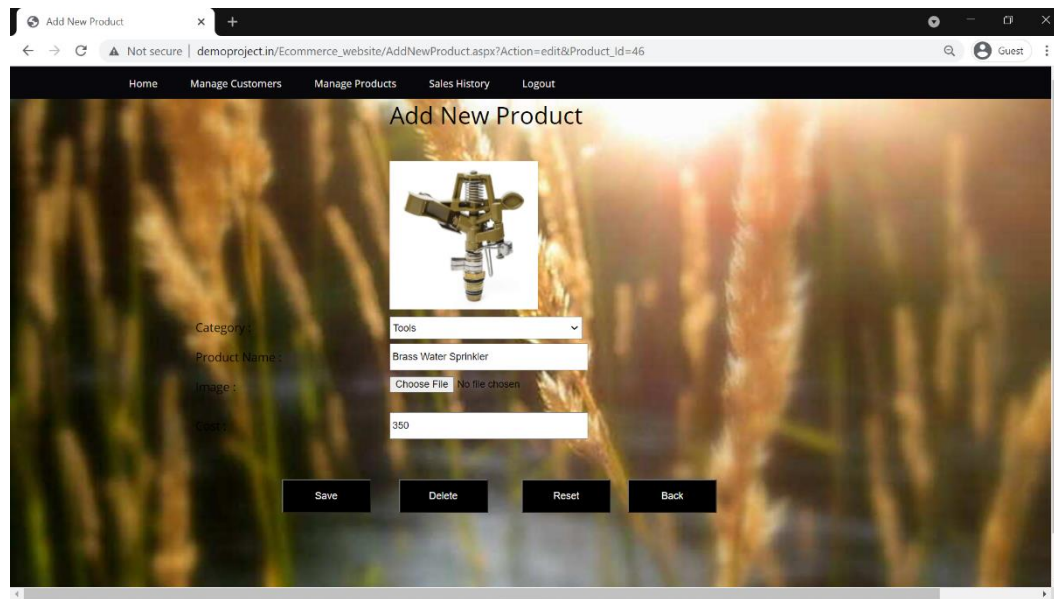


Fig.22 Admin Add New Product

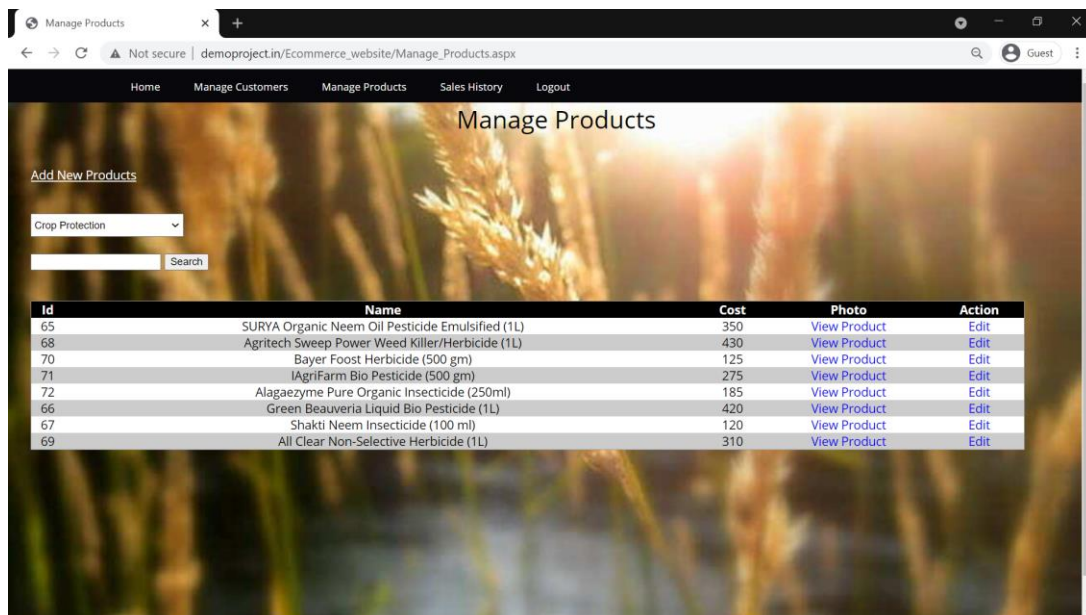


Fig.23 Admin Manage Products Page

CHAPTER - 9

Conclusion

The main intent of the agricultural e-commerce framework is to channelize digitalization in order to improve the agricultural sector in India. In a broad spectrum, two important factors are used as a base for developing the appropriate framework. Firstly, by focusing on Agriculture Production the total agricultural output can be increased by applying better farming practice, better seeds in market, more appropriate fertilizers for crops and understanding the dynamics of prices. All these parameters along with the timely intervention of ministry of Agriculture can help boost the agricultural productivity of rural India.

Secondly, structuring the marketing and sales will help in the marketing of agricultural products. A well-maintained database will help track farmer and trader information which can be used for trading purposes. The trading platform will help showcase agro-products to a wide range of customers thus giving the farming community an opportunity to market their agricultural products. Lastly, the comprehensive framework becomes a good basis for development of an appropriate agriculture e-commerce application with relevant features that will take all parameters and factors involved into consideration.

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