e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:09/September-2022 Impact Factor- 6.752 www.irjmets.com

A WEB DESIGNED SMART FARMING SYSTEM: "APPLICATION FROM FARMERS TO CONSUMERS"

Dr. Dayanand G. Savakar*1, Mahesh Bijjaragi*2, Danesh Telsang*3

*1Professor, Department Of Computer Science, Rani Channamma University, Belagavi, Karanataka, India.

*2Student Of MCA, Department Of Computer Science, Rani Channamma University, Belagavi, Karanataka, India.

*3Research Scholar, Department Of Computer Science, Rani Channamma University, Belagavi, Karanataka, India.

DOI : https://www.doi.org/10.56726/IRJMETS29607

ABSTRACT

Agriculture is a top priority in India but today people engaged in agriculture are from lower class and face many problems in their daily life due to extreme poverty. In India, about 15% of GDP (good domestic product) comes from agriculture, but these jobs employ 50% of our working population. Income generation is one of the biggest causes of farmer suicides in India. Lack of awareness of modern technology or advanced techniques leads to farm poverty, although farmers work hard and produce by farmers, in today's market, farmers are forced by agents, which leads to poverty. The role of the middleman in marketing the agricultural product must be removed to ensure direct sales between farmers and customers. The study shows changes in consumer preferences in India when it comes to food choices. Currently several organizations are selling fresh fruits and vegetables and people in India prefer to buy them through online websites, Farmeeco plays a significant role in predicting the outcome of these digital fruit and vegetable markets. This will talk about information regarding Farmeeco, their previous works, software and tools adopted by the company to manage their online applications, as well as their marketing strategies.

Keywords: Farmeeco, Fruit And Vegetable, Marketing, Smart Farm, Website.

I. INTRODUCTION

The lifestyle of people from all over the world has changed a lot in recent days and their preferences have also changed, economic conditions have improved and people's earnings are constantly showing great prosperity. Therefore, the farming strategies and eating habits of Indians are modified with new alternatives where people consume fresh fruits and prefer to buy these fruits online, therefore companies are focusing on serving fresh fruits and vegetables to their consumers to fulfill their needs. The study deals with the services of these fruit and vegetable supply management systems and also their disadvantages in India, Farmeeco is one of the popular marketing organization and they are mainly known for serving fresh fruits and vegetables to their consumers. people's perspective and marketing application can easily determine the trading conditions of fruit and vegetable markets. Preferred crops or vegetables also indicate the need to increase production of that crop. In addition, it will analyze consumer satisfaction regarding product quality, product delivery, service and other factors, which will also show the necessity of direct marketing and build a relationship between farmers and consumers. For the development of the Farmeeco project, Marketing is one of the most important factors determining the success of any fruit or vegetable business, which includes all operations and decisions made by producers, these decisions range from identifying the most profitable crops for production to deciding how the products should be delivered to the buyer efficiently and economically while maintaining product quality Contrary to popular belief, marketing does not begin after the crop is grown. Instead, marketing alternatives should be well considered before production begins.

II. LITERATURE WORK

Pritam Ramteke et.al.,[1] developed a web-based system to sell products between farmers and consumers through direct marketing. To ensure direct sales between farmers and customers, it is necessary to eliminate the role of the middleman in the marketing of farm products. This area will guide farmers in all aspects, current

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:09/September-2022 Impact Factor- 6.752 www.irjmets.com

market value of various products, total market value and profitability of products sold, access to new e-learning farming techniques. Each order placed on the site has a unique ID, which leads to a secure sale

Yuhong Dong et. al.,[2] explained a nutritional quality and safety traceability system for a Chinese leafy greens supply chain based on fault tree and QR code analysis. Using the principles of risk analysis and critical control points (HACCP), a traceability model is compiled for the entire process of production and sale of leafy vegetables. this research introduces a nutritional quality index system using fuzzy mathematics subordinate function method to evaluate nutrition quality. A system based on a browser/server architecture and a quick response (QR) code is then designed and developed for full quality traceability of leafy vegetables.

FM Javed Mehedi Shamrat et. al.,[3] developed a web application for agriculture: "Smart Farming System" To help farmers and improve the agriculture sector, designed and developed a web application "Smart Farming System". HTML5, CSS, Bootstrap and JavaScript were used to develop this system. In addition, the PHP framework is used to manage the MySQL database. In the testing phase, he tested it with the community social media on Facebook and it worked great with the expectation of the output, people expect these services to be interesting.

Indhra Priyadharshini et. al.,[4] explained the Smart Farm Web Application agreement where e-commerce activity in recent decades has resulted in consumers shifting their purchases from a virtual marketplace to an online marketplace. Farming is a manual process. and in addition, this website guides farmers to find new farming avenues, compare the current market rate for various materials, and sell wholesale and net profit.

Mitul Deliya et. al.,[5] produced a study on "Fresh Fruit and Vegetable Marketing Differentiators from a Supply Chain Management Perspective" Quality of Marketed Fruit and Vegetables. The supply chain plays a key role in the marketing of perishable fruits and vegetables. The very nature of land is held by farmers. In India, SCM is in the growing phase of fruit and vegetable sales. Marketing fruits and vegetables is challenging because they are perishable. According to this paper, the important disadvantages of the current supply chain are some intermediaries, high levels of waste, quality degradation, poor infrastructure and high costs.

Mukesh Kumar Tripathi and Dr. Dhananjay D. Maktedar.[6] explained the role of computer vision in fruits and vegetables among different horticulture products in agricultural areas, it was found that the existing review paper did not properly focus on the mathematical framework, feature descriptor and defect detection on multiple fruit and vegetable datasets. . Widely related to fruits and vegetables among various horticulture products in agricultural areas, the specific model, data preprocessing, data analysis method, and overall performance accuracy value using a specific performance metric. In addition, study the different types of diseases present in different fruits and vegetables.

Symphorien Karl Yoki Donzia and Haeng-kon Kim.[7] explained the architecture and design of smart farm system based on big data equipment To evaluate the overall result of smart farming sub-use cases, each economic and environmental benefit and social aspects Increasing crop productivity is also important to increase the income of basic needs, increase farmer-level information and practical knowledge to produce when the crop is of the best quality or to sell it at a good price.

Sindhu MR et. al.,[8] proposed E-Farming in today's market farmers are cheated by agents leading to poverty agro marketing would automate all things making it easy to serve as the best solution to all problems The site will guide farmers in all aspects current market rate of various products total sales and profit earned for products sold, access to new farming techniques through e-learning and centralized access to view various government agricultural schemes including agricultural compensation schemes.

Oberoi HS and Dinesh MR.[9] developed by workers or farmers powerful enough to check the quality of the fruit and the whole process was done with sincerity The initial stage of fruit and vegetable production, harvesting and moving to the factory, all are done under the supervision of experts. After these fruits ripen, they can use the ripe pulp to produce good quality fruit. After harvesting the fruit, workers are required to wash these fruits at least 3 times and also confirm that they are free of microbial activity. They do not use the "carbide ripening process" and introduce "ethylene" to ripen the fruit.

Stefano Boccaletti and Michele Nardella.[10] explained by consumers' willingness to pay (WTP) for pesticide-free fresh fruits and vegetables. A consumer survey on WTP for organic products was conducted in three large

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:09/September-2022 Impact Factor- 6.752 www.irjmets.com

grocery stores in northern Italy. An ordered logit analysis was performed on the collected data designed to identify the effects of relevant explanatory variables on the probability of consumers' WTP for different product price premiums.

III. METHODOLOGY

According to the survey, there are various websites that offer fruits and vegetables online. Customers generally choose fresh foods such as vegetables and fruits that they consume in their daily life. Our project aims to deliver fruits and vegetables to customers as soon as possible to keep the products fresh. With farmeeco, customers can get a fair price for fruit and vegetables. This system mainly deals with the activities of farmers and in this way they can directly sell their products to consumers. In addition, farmers can upload their products directly and consumers can contact them directly and buy fruits and vegetables, they can also ignore the risk of overpayment. We used HTML, Bootstrap, CSS and Python. We used MySQL to design the front-end to store the database of farmers and customers. In this case, the code editor is used and it is a "noble text editor".

3.1 BUSINESS PROCESS MODELING

Nowadays, the web clients in India are developing rapidly and countless of them are enthusiastically sitting and smooth and getting assistance in shipping items from the worldwide market. It is quite possible to get a business opportunity and it is possible to make a profit on a decent scale. Individuals are happy to pay a high amount for a business opportunity that they can get at minimal cost. The administrator (admin) will benefit from the farmer, and another update to this user task would be a huge deal. It will open up a new world of business. Since everyone has a smartphone these days, it will be easy to provide services to Android users as well and promoting this business will also be easier than other businesses. Figure 1. Shows The administrator is the one who can add, delete and update the details of the farmer. Admin has full authority to update the page at any time by entering respective email id and password. For security reasons, each module keeps its own email ID and password. The farmer is the only one who can add, delete and update the details of vegetables and fruits available in his/her farm; website visitors will not see this page. Only farmers can also view order details. User is the one who visits the site to buy any vegetables and fruits by online or offline payment.

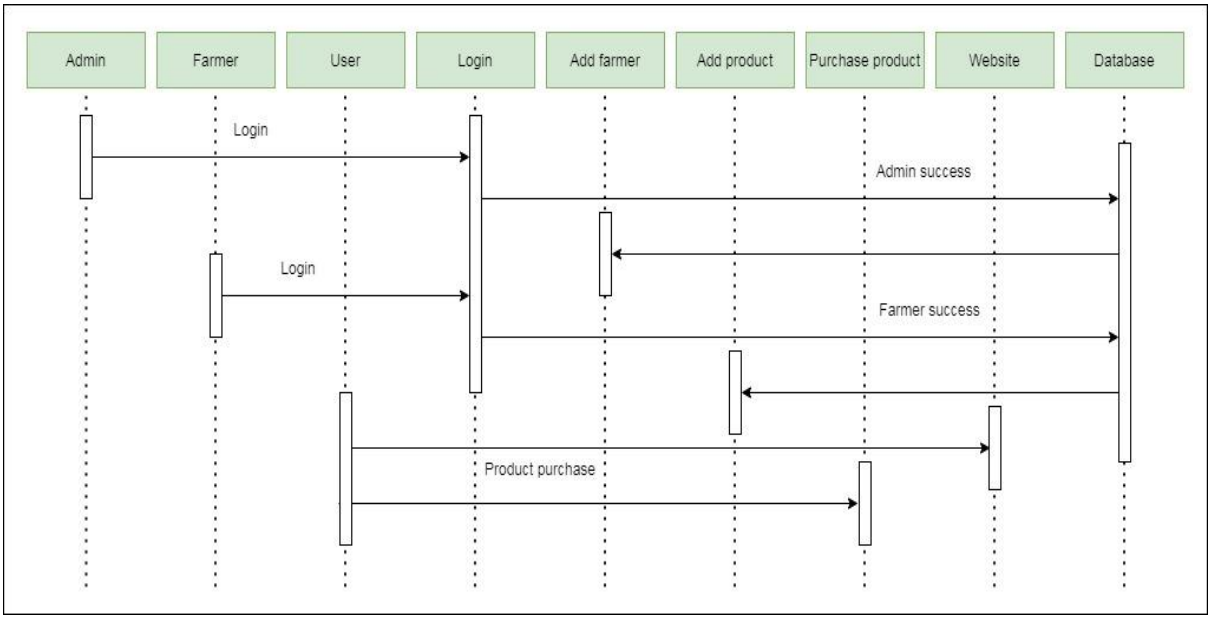

Figure 1: Business Process Model

3.2 REQUIREMENT COLLECTION AND ANALYSIS

Here are some requirements we need in this "Smart Farming System".

The requirements are as follows:

- If users want to use any service, they must first register on our website and after completing the registration, they will be able to get the service of their choice.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:09/September-2022 Impact Factor- 6.752 www.irjmets.com

- The need to provide all the right information and subsequently properly discounted doctor directory services.

Analytically, if farmers and agronomists want to get any services from a "smart farming system", they must first provide information. If so, you will be able to access the registered service.

3.3 USE CASE MODELING

Here is a use case diagram that shows what role and activity the user, farmer and administrator of this framework have. It just shows what they can and can't do. Use case graphs are mostly used to build the assets and determine the needs of the framework, both internal and external impacts.

3.3.1 USE CASE SCENARIO FOR ADMIN

An administrator is expected to log in with an authoritative secret password. At that moment he can get to the place. Currently can include any new user and farmer referrals on this site.

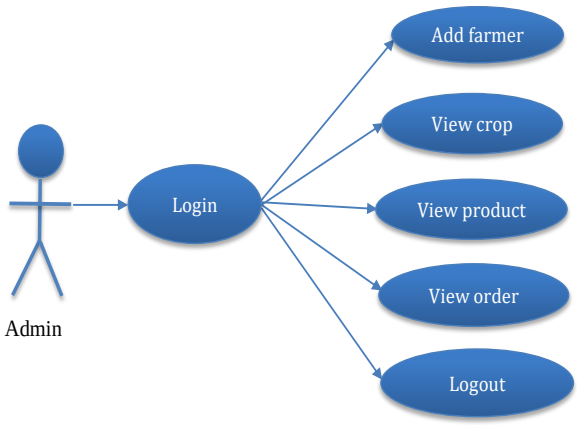

Figure 2: Use Case Diagram for Admin

3.3.2 USE A CASE SCENARIO FOR FARMER

A farmer who likes to use our services must go first with the selection of winning assistance service. Now they have to register on the website.

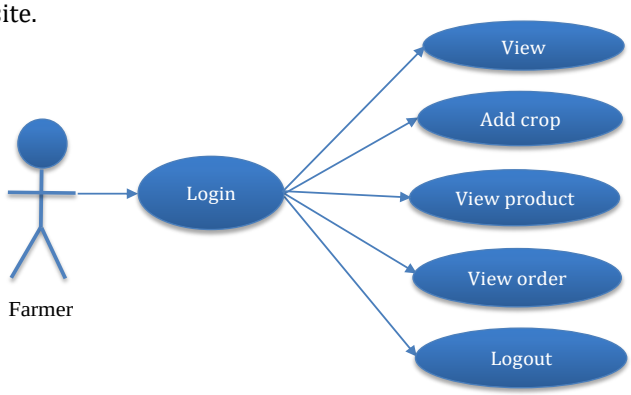

Figure 3: Use Case Diagram for Farmer

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:09/September-2022 Impact Factor- 6.752 www.irjmets.com

3.3.3 USE CASE SCENARIO FOR USER

A user who likes to serve us must first select the auxiliary benefits he has obtained. Currently, you need to log in on the website.

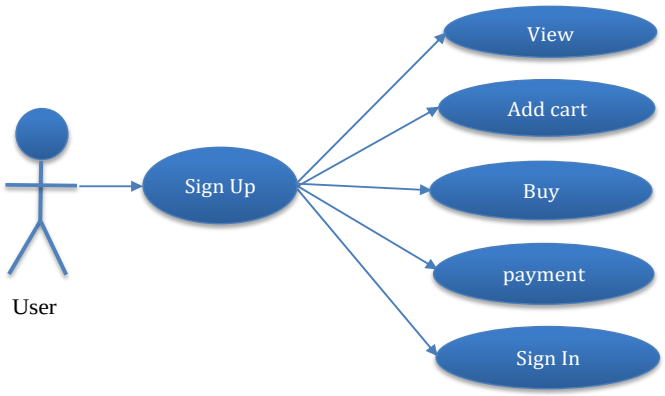

Figure 4: Use Case Diagram for User

3.4 WORKFLOW DIAGRAM

The workflow of the farmer application is shown in Figure 5. The workflow starts with login, where user/admin can login, if the username and password are correct, they can login, i.e. admin/user. When the admin login successfully, he can view the farmer files and add farmers, he can log out when he finished his work. The farmer logs into the site, can add products and view order details, as well as cancel the order. If the user login, he will be shown a web page where he can view the product, purchase and pay online or offline website, he can log out when he is done with his work.

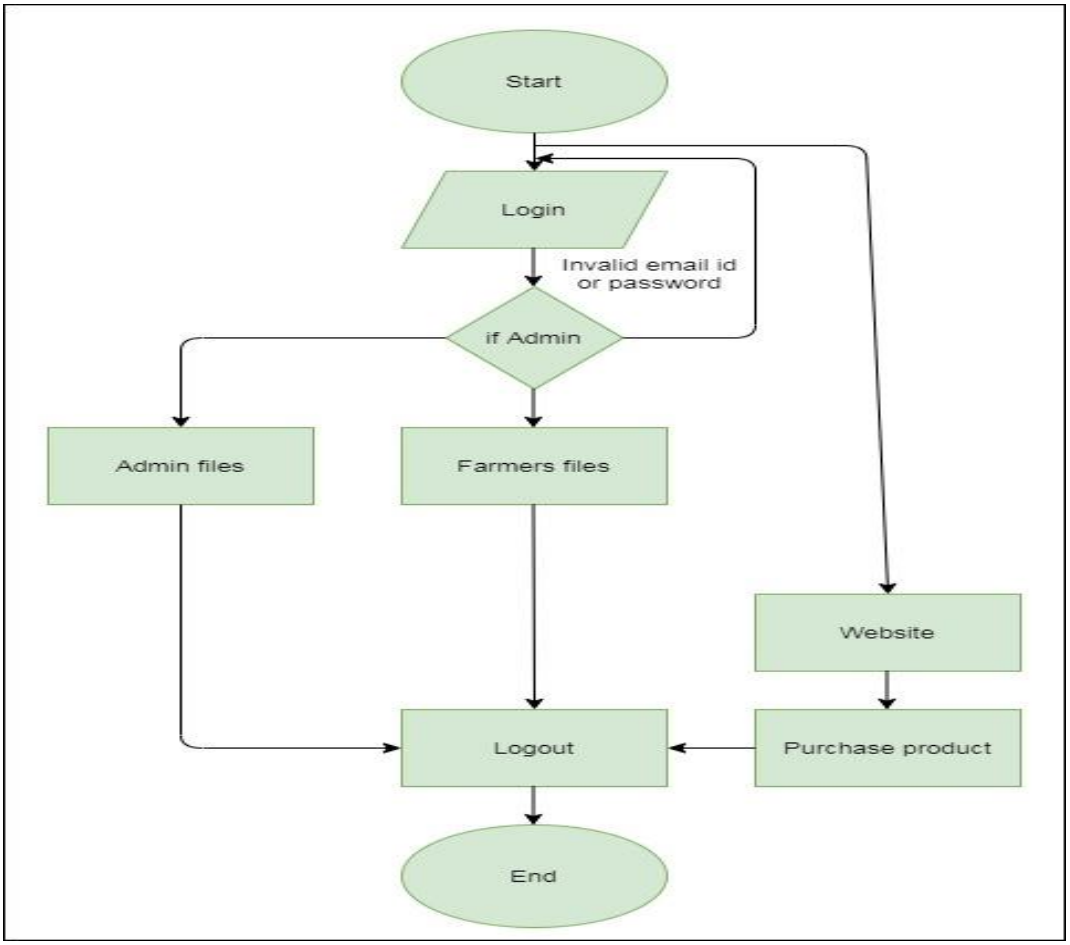

Figure 5: Work Flow Diagram

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:09/September-2022 Impact Factor- 6.752 www.irjmets.com

IV. DESIGN AND SPECIFICATION

4.1 FRONTEND-DESIGN

Without an easy-to-use interface, getting them the right page is unrealistic. In this way, they pay attention to the structure of the front-end Our top specialists confirmed that the front-end interface is very easy and we double-checked that HTML, CSS, Bootstrap, JavaScript and so on will be needed to structure the front-end. The necessity of the basic planning was satisfied by using raw HTML and bootstrap, in addition it gives some extraordinary things they used JavaScript, the shading direction was completed with CSS and the shading direction code was honestly tried and used vital soldiers to confirm a super easy to understand interface and we expect it made visible.

A) HTML: Hyper Text Markup Language This is basically a traditional markup language everyone uses it to create their web pages and web applications in this company uses HTML to create edited text, tables, and different components that can't easily be spoken to, it contains several other authoritative commitments for designers.

B) CSS Framework: CSS is the language we use to style a web page CSS stands for Cascading Style Sheets CSS describes how HTML elements are to be displayed on screen, paper or other media CSS saves a lot of work. It can control the layout of multiple web pages at once, external style sheets are stored in CSS files.

4.2 Back end: NODE.JS

Node.js is an open-source, cross-platform, back-end JavaScript runtime that runs on the V8 engine and executes JavaScript code outside of the web browser. Node.js allows developers to use JavaScript to write command-line and server-side applications. scripting tools that run server-side scripts to create dynamic web page content before sending the page to the user's web browser. As a result, Node.js represents a "JavaScript everywhere" paradigm that unifies web application development around a single programming language, rather than different server-side and client-side scripting languages.

Node.js is a platform built on the Chrome JavaScript runtime that helps develop scalable network applications, uses an event-driven, non-blocking I/O model, making it an ideal choice for developing data-intensive real-time Node applications. js offers higher performance and speed. It is an ideal solution for developing messaging or chat applications. It is also useful for developing high-load applications and e-commerce sites that depend on processing speed, it is used for traditional websites and back-end API services, but it was designed with a real-time, push-based architecture in mind.

V. IMPLEMENTATION

5.1 LOGIN PAGE

If the farmer/administrator username or password is correct, only the administrator/farmer will log in, if it is incorrect, it will throw an error message User must log in to post on the blog, but must be authenticated by the system first. First, he must enter the login page and fill in the required data. Then they get access. As shown below in Figure 6.

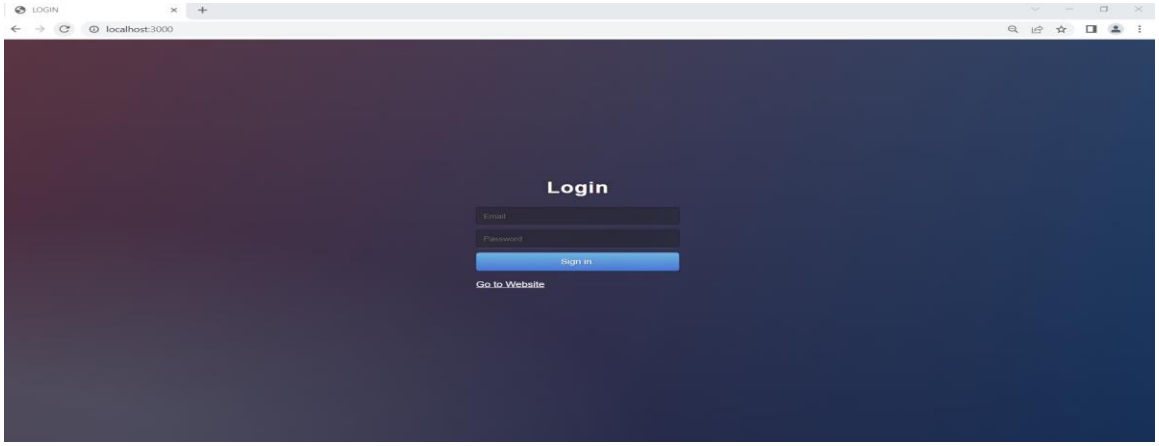

Figure 6: Login Page

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:09/September-2022 Impact Factor- 6.752 www.irjmets.com

5.2 ADMIN PANEL

Admin has full authority to update pages at any time by entering their respective email and password. Here admin can add farmers and view farmer details like crops. Admin can view customer order details like customer name, payment, product name and quantity each module keeps their email id and password for security purposes. As shown below in Figure 7.

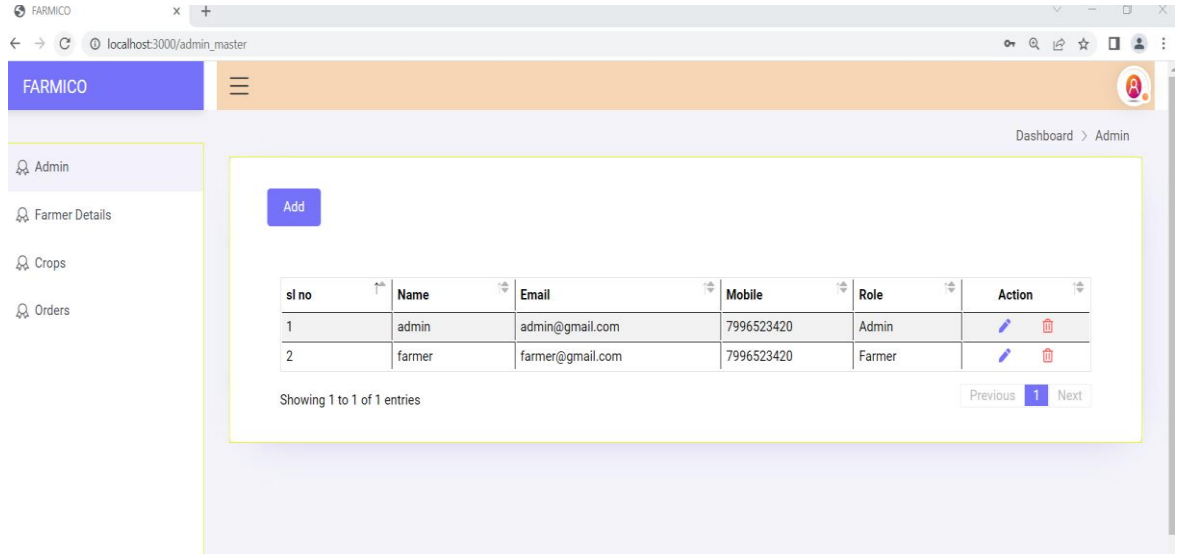

Figure 7: Admin Panel

5.3 FARMER PANEL

Farmer Page Farmer can add crops and delete and update details of vegetables and fruits available in his/her farm, this page will not be visible to website visitors. In addition to the crop quantity, the farmer can check and view the order details, accept the customer's order details and also cancel the order. As shown below in Figure 8.

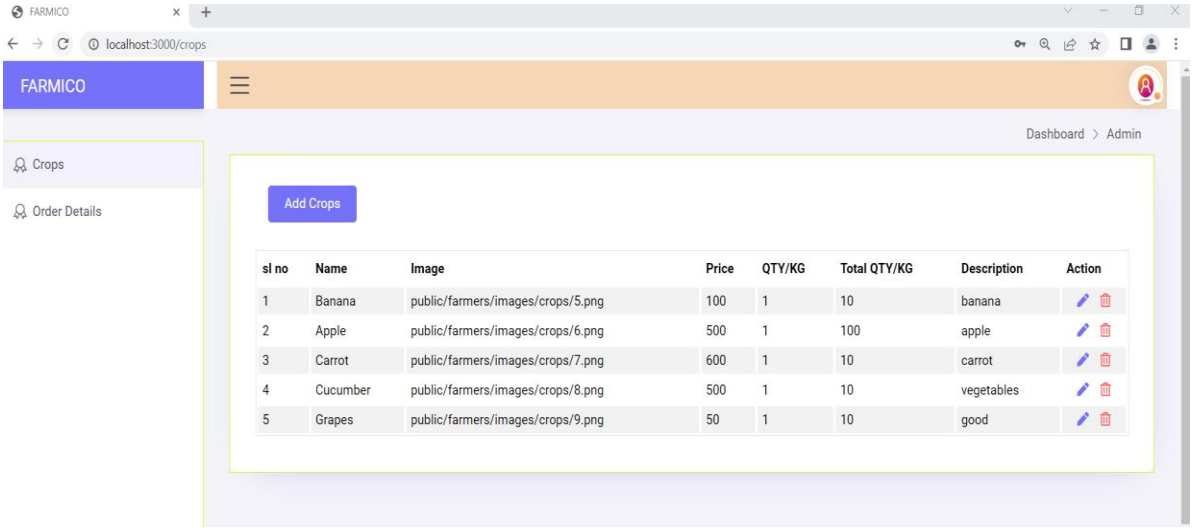

Figure 8: Farmer Panel

5.4 WEB PAGE

The website user's home is the one who is going to visit the website, the user can register and log in, the user can search for vegetables and fruits. If the user wants to buy, he can add it to the cart, the user can make the payment for his orders online or offline. As shown in Figure 9 below.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:09/September-2022 Impact Factor- 6.752 www.irjmets.com

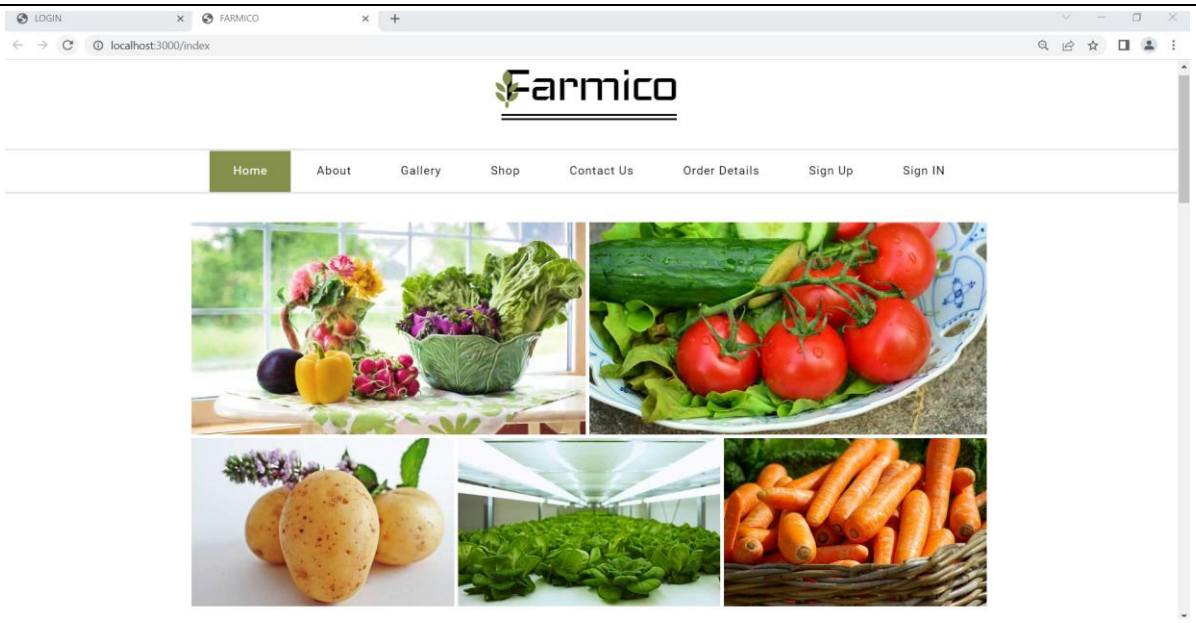

Figure 9: Web Page

5.5 PAYMENT SLIP

Confirmation of payment when the user or customer selects fruit and vegetables on the website. The total will be displayed based on the customer's purchase if the customer is satisfied with the amount they can go through with the payment. After successful payment, payment confirmation will be displayed as shown in Figure 10.

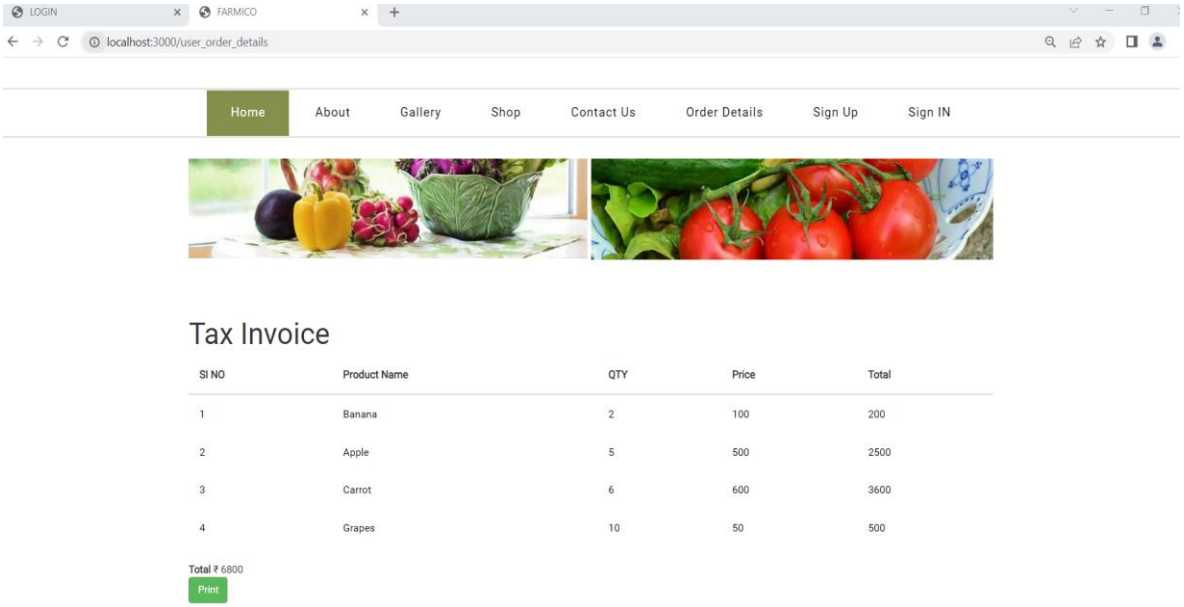

Figure 10: Payment Slip

VI. TESTING

The testing is an important part of software development. It is a process of finding errors and missing operations as well as complete validation to see if the requirements are met. The following Table 1 contains the test case, the test input, the expected result, the result obtained, and the successful or unsuccessful experimental results. Testing starts with farmer registration, at this stage we have to check if the farmer has added his profile successfully or not and check admin and user login only for the first attempt, at the order stage the customer will order the product or not ie. product number, select another product, etc. During the payment phase, the correct amount is displayed for the selected product, and various payment options work, also a payment receipt is generated or not can be tested, the user can successfully add the product to the cart can be tested in the cart phase.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:09/September-2022 Impact Factor- 6.752 www.irjmets.com

Table 1: Test case: Testing of the implementation project.

Test case	Test Input	Expected Outcome	Obtain Outcome	Pass/Fail
Farmer Register	Farmer can add his/her profile	Register successfully	Login Successfully	Pass
Admin	Admin can log in to the site to manage	Successfully done	Successfully done	Pass
User	Users can log in to the site for a view.	Successfully done	Successfully done	Pass
Order	Users can order the product	Successfully done	Successfully done	Pass
Payment	Users can make payment	Successfully done	Successfully done	Pass
Cart	Users can add the product to the cart	Successfully done	Successfully done	Pass

Nothing can be confirmed without actual testing. Accordingly, after the completion of the entire enterprise, we began to test the performance in many areas, previously reviewed tests for confirmation. It is important to know how the business works. Is it ready or not? Because it is important for everyone to create a task and also an engineer. This kind of result shows the natural state of any image. So we tried testing several times in different ways. It works deftly. The report can display test results without hesitation. Every time we don't get 100% result, payment fail after some time or user can't add product to cart etc.. for the first time out of 6 test cases 5 test cases will be correct and 1 test case will fail, After adjustment , we will get 100% result., as is shown in Table 2 below.

Table 2: Test Report

Number of Unit Test Case	100% Success in the first iteration	Less than 100%	Total Succession %
Total: 6	**5**	**1**	**80%**
Total: 6	**6**	**0**	**100%**

VII. CONCLUSION

The study clearly illustrated changes in consumer marketing practices and focused on online purchasing by farmers. The company has gained too much popularity due to the best services in providing high quality fruits and vegetables. Farmeeco's marketing website helps consumers buy fresh fruits and vegetables and get them at the best price. The company has also utilized advanced software and hardware tools to manage the entire process with ease. They monitor the entire process from the beginning and use high-quality biofertilizers and pesticides to care for their plants. The main objective of this study was to create a profitable business model for selling vegetables and fruits online and help modern people improve the way they sell vegetables and fruits. Online selling of vegetables is the right way for modern people. With this application, farmers get their profit without any intermediaries between their sales.m

VIII. REFERENCES

[1] Pritam Ramteke, Sandeep Pathak, Pooja Raut, Pradnya Parade, Naina Palandurkar "Development of Web Based System for Farmer to Consumer Product Selling Through Direct Marketing", March 2020 ISSN:2320-2882

[2] Yuhong Dong, Zetian Fu, Stevan Stankovski, (Member, Ieee), Siyu Wang, And Xinxing Li "Nutritional Quality and Safety Traceability System for China's Leafy Vegetable Supply Chain Based on Fault Tree Analysis and QR Code", August 26, 2020

[3] F. M. Javed Mehedi Shamrat, Md Asaduzzaman, Pronab Ghosh, Md Dipu Sultan, Zarrin Tasnim. A Web Based Application for Agriculture: "Smart Farming System", June 2020

[4] Indhra Priyadharshini S, Abinaya S, Indhuja R, Keerthana Shree S. "Smart Farm Web Application Using Machine Learning Algorithm", April 2020, ISSN: 2319-7064

[5] Mitul Deliya , Chanduji Thakor and Bhavesh Parmar. A Study on "differentiator in Marketing of fresh fruits and Vegetables from Supply Chain Management Perspective", ISSN: 2277-1166

[6] Mukesh Kumar Tripathi, Dr. Dhananjay D. Maktedar "A role of computer vision in fruits and vegetables among various horticulture products of agriculture fields: A survey", July 26, 2019

[7] Symphorien Karl Yoki Donzia, Haeng-Kon Kim "Architecture &esign of a Smart Farm System Based on Big Data Appliance Machine Learning", ICCSA50381.2020.00019

[8] Sindhu M R, Aditya Pabshettiwar, Ketan.K.Ghumatkar, Pravin.H.Budhehalkar, Paresh.V.Jaju "E-FARMING", 2012,3479-3482, ISSN:0975-9646

[9] Oberoi HS, Dinesh MR. Trends and innovations in value chain management of tropical fruits. Journal of Horticultural Sciences. 2019 Dec 31;14(2):87-97.

[10] Stefano Boccaletti, Michele Nardellab "Consumer willingness to pay for pesticide-free fresh fruit and vegetables in Italy", 2001, PII: S1096-7508(01)00049-0

[11] Chakraborty M. Cold Storage in India: Challenges and Prospects. Agriculture & Food E-Newsletter. 2020;2(10):458-60.

[12] Raut RD, Gardas BB, Narwane VS, Narkhede BE. Improvement in the food losses in fruits and vegetable supply chain-a perspective of cold third-party logistics approach. Operations Research Perspectives. 2019 Jan 1;6:100117.

[13] Aravindaraj K, Chinna AR, Paul J. A review: Present scenario of cold chain storage facilities in India. InAIP Conference Proceedings 2020 Feb 28 (Vol. 2207, No. 1, p. 020009). AIP Publishing LLC.

[14] Gardas BB, Raut RD, Narkhede B. Evaluating critical causal factors for post-harvest losses (PHL) in the fruit and vegetables supply chain in India using the DEMATEL approach. Journal of cleaner production. 2018 Oct 20;199:47-61.

[15] Arshinder K, Balaji M. Understanding the models of Indian fruit and vegetable supply chains-a case study approach. International Journal of Agricultural Resources, Governance and Ecology. 2019;15(4):307-2

[16] Surendran S, Selvaraj K, Turner C, Addanki S, Kannuri NK, Debbarma A, Kadiyala S, Kinra S, Walls H. Characterising the fruit and vegetable environment of peri-urban Hyderabad, India. Global Food Security. 2020 Mar 1;24:100343.

[17] Oberoi HS, Dinesh MR. Trends and innovations in value chain management of tropical fruits. Journal of Horticultural Sciences. 2019 Dec 31;14(2):87-97.

[18] Nedumaran S, Selvaraj A, Nandi R, Suchiradipta B, Jyosthnaa P, Bose D. Digital integration to enhance market efficiency and inclusion of smallholder farmers: a proposed model for fresh fruit and vegetable supply chain. International Food and Agribusiness Management Review. 2020;23(1030-2020-1727):319-37.

[19] Trivedi A, Sohal A, Joshi S, Sharma M. A two-stage optimization model for tactical planning in fresh fruit supply chains: A case study of Kullu, India. International Journal of Supply and Operations Management. 2021 Feb 1;8(1):18-28.

[20] Rais M, Kaul A, Jain A. Evaluation of public private partnerships in perishable food supply chain in India. Journal of Supply Chain Management Systems. 2019 Apr 1;8(2):52-63.