AGROCONNECT: DIRECT FARM-TO-CONSUMER MARKETPLACE

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ABSTRACT

The "Harvest Harmony" is a Web-based system that allows farmer marketing, the listing and selling of any agriculture products, online. Transactions between farmers and buyers are directly done. Farmers will upload the details of their produce, whereupon buyers can browse and add into their cart and purchase online. The product list is shown categorized, simplifying the purchase process and making easy data retrieval and updates possible. The back end of the system uses PHP, HTML, and MySQL, while interfaces for the front end are designed with the aim of smooth navigation and security in transaction. There are statistics on fertilizers and crop trends that make the platform user-friendly and help in understanding the practices of agriculture. This web-based solution thus supports economic development for a farmer and convenience for consumers while allowing the establishment of a modernized and direct agricultural marketplace.

Keywords: Agriculture Management System, Online Marketplace, Farmer-Buyer Platform, PHP, Mysql, Web Application, Agricultural Product Sales, Crop Trends, Data Retrieval, E-Commerce.

I.   INTRODUCTION

This is an online-based application known as "Harvest Harmony" which will bridge the gap of the farmers with the buyers by enabling farmers to show up and sell their agricultural products online. This website therefore is developed such that allows farmers to upload details of their products such as vegetables, fruits, and other agricultural products to later on present them online to the buyers. The allowed users include buyers, who will be allowed to scan various products offered and add items to their shopping cart or directly purchase by logging into the system. In this way, the Agriculture Management System will provide the benefits of an easy, smooth tool for both farmers and buyers, ensuring efficient agricultural commerce through technology.

II.   EXISTING SYSTEM

The current framework of agricultural trade takes precedence based mostly on traditional methods. Here, the product details are recorded and shared through manual means. Such a method has quite several challenges, including inefficiency in data management, lack of streamlined communication between farmers and buyers, and inadequate access to information regarding product availability and quality. In this system, for one, there is no clear classification of farm products, which means its buyer cannot promptly get hold of the items they want. As such, current manual processes have led to a disorganized market environment with restricted access, low efficiency, and limited choices for buyers and sellers alike.

III.   PROPOSED SYSTEM

The challenges addressed by the proposed system is a comprehensive digital platform for interaction between farmers and buyers without any glitch. In this system, the comfort of easy registration and listing their products will be there for the farmers, and then they can comfortably manage their online sales through a dedicated interface. Buyers can view categorized product listings or search for specific items and purchase products directly, thereby obliterating the role of middlemen. The architecture caters for the accuracy of the data, ease of access, and the reduction of operational effort needed in the management of products. This proposed solution doesn't only help streamline the transaction procedure but also gives analytical insight into crop trends and best farming practices, allowing farmers to make informed decisions and helping in the better experience of both sellers and buyers.

IV. SYSTEM DESIGN

4.1. Architecture

The system architecture for the Agriculture Management System is designed as a modular and secure web application that leverages all of the following components:

Frontend: The user interface is constructed by using HTML, CSS, and JavaScript in such a way that delivers a responsive and an accessible experience both to farmers and buyers. It encompasses login and registration forms, product listing pages, and purchase modules that come through the application intuitively.

Back-end: PHP and MySQL code forms the back-end part. PHP would handle the server side where user requests would be processed and user authentication along with authorization would be handled. MySQL is used as the database to hold information regarding the users, the product listings, the details of the order, and the payment methods.

Database Design: The back-end would have a MySQL database which contains separate tables for the user table of both farmers and buyers, product tables, order tables, payments tables, and a transaction history. It would be relational and ensure easy data retrieval with data consistency and be well secured.

Security and Authentication: The system uses secure sign-in functionality with encrypted passwords and session management. Limited functionalities will be available only via user authentication to both buyers and farmers, thus ensuring data privacy and safe transactions.

APIs and Integration: This system uses APIs for different functionalities, such as searching products, processing orders, and any kind of payment transaction. The API layer will also be useful in case future third-party payment gateways or any agricultural data source are integrated with the system.

4.2. Application Workflow

The Agricultural Management System has an application flow that gives farmers and buyers a smooth experience in terms of speedy listing of products and speedy transactions.

Registration and Login in User

Farmers and buyers have to sign up for creating a free account, filling some basic information details. Then, they log in using unique credentials, and then they get taken through their respective dashboards: buyer or farmer.

Farmer Dashboard

There will be a farmer's dashboard to upload his products, specify the details like what the product is, how many is available, its price, and categorize the products for easy navigation by the buyers.

There also will be a view of products and management of listed products, checking request orders, and updating the existing quantities.

Buyer Dashboard:

Buyers can search for available products under the categories that they need, like vegetables, fruits, or grains, and view detailed descriptions of what each product is.

Buyers add products to a cart, checkout, and complete the purchase. From this page, buyers can access their purchase history and account settings.

Product Search and Selection:

Buyers use search and filter options to find specific agricultural commodities quickly. They can view product information, add products to a cart and vary quantities.

Once a buyer confirms his cart, he goes to the checkout page and reviews order details with payment.

After payment, the system generates an order confirmation and updates the status of orders of both the buyer and the farmer.

Notifications and Alerts:

The farmer receives notifications on new orders and updates the inventory status.

Buyer receives alerts on order confirmations and delivery date.

Admin Functions:

An administrative module would facilitate system administrators to get an overview of user activity, product listings, and order transactions. The admins can further manage user accounts, monitor security logs, and ensure that all applications function smoothly.

V.   SYSTEM IMPLEMENTATION

5.1. Programming and Tools Used:

Front-end: HTML, PHP, JavaScript, CSS.

Back-end: MySQL database.

Development environment used was XAMPP; XAMPP is the cross-platform web application stack package.

5.2. Modules Implemented:

Modularization of the system into various key components:

Admin Module: Manages the system, which is listings, product listings, roles of users, and transactions.

Farmer/Seller: This module allows the farmer to login-in, upload products, and even manage listings.

Customer: Registration of customers, logging-in features, browsing, adding into the cart, and purchasing of products.

Produce Management: Management of the products uploaded by farmers.

Purchase Request: Buyers can send purchase requests to farmers.

Purchase Order and Billing: It manages orders and the details regarding billing

5.3. Screens and User Interface:

Farmer Login/Register: A specifically designated login page for farmers

Customer Login/Register: Specifically designated login and registration pages for the buyers

Farmer Registration Panel: It is a form wherein farmers fill in their respective details for registration.

Items List: All the products are listed for sale.

Order and Purchase Request: Buyers can make purchase requests; orders are created for them.

Customer Payment: The webpage is for handling customer payments.

5.4. Major Features:

User Login: Functions differ between buyers and the farmer/seller, with each having different logins.

Management of Products: Uploading product descriptions is possible by the seller (farmer) and the buyer can then view and buy products.

Cart and Checkout: The buyer can add to cart and check out from the system.

Payment System: payment gateway for the completion of purchases by consumers

VI.   RESULTS AND DISCUSSION

The app offers a transparent, direct marketplace where it allows independent listing and sales by farmers to connect them with consumers. With this process, the app eliminates middlemen, so the farmer can charge the right price and get more revenue from selling the produce. Testing early with users has given indications that the user-friendly interface on the app along with specific, well-organized categories for available products and notifications in real-time further enhance the experience for farmers as well as consumers. All these will be with far-reaching benefits: the farmer will get greater exposure for his produce, better communication with the buyer, while for the consumer, he will get fresh local produces at reasonable prices while creating confidence and promoting the local agricultural community

The multilingual interface enhances accessibility to allow use of the platform by a wider audience, especially in rural and regional areas where language may be a limitation. Listings become more consumer-friendly, and both the farmer and buyer will receive real-time notification about the status of their order, hence making buying and selling easier. The delivery system integration ensures that the logistics of direct farm-to-table sales come easy for both the seller and the buyer.

More value that would be added from intended features would include voice recognition for product entry, local weather forecasts, and crop price comparisons. Voice recognition would assist farmers who have difficulties in

typing, and weather alerts as well as market price data would be helpful to farmers in making the decisions regarding stock, sales, and seasonal planning. All these additions will enable farmers to handle sales better while responding to market dynamics.

Initial results of the feed back are indeed promising but challenges that exist around accessibility, internet reliability, and logistics need to be specifically addressed if this app is to reach the fullest potential.
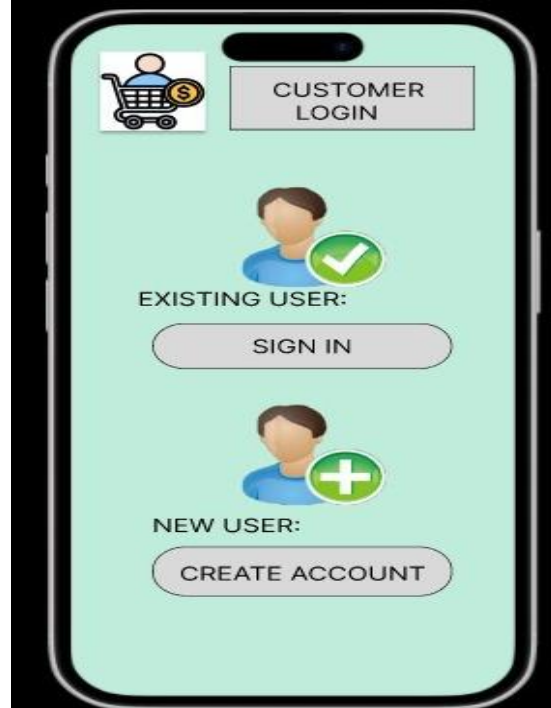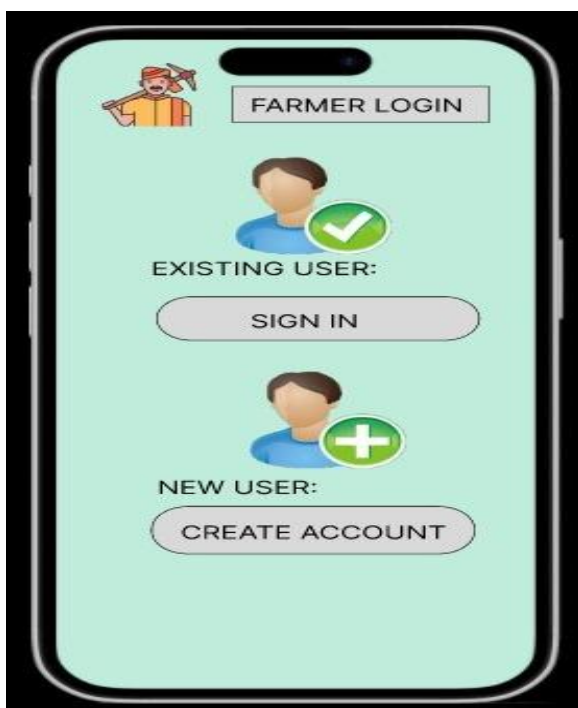
VII.   CONCLUSION

The agriculture management system manages agricultural transactions as effectively as possible to ensure that there is a structure, efficiency, and friendliness in acquiring or selling farm products. Improvements in accessibility, scale, and data analytics will amplify the impact on the platform, leading more farmers and buyers toward an easier, more streamlined, digital marketplace.

VIII.   FUTURE WORK

The following are enhancements on the usability and performance of the system:

Mobile App Development: A mobile application will make it accessible, especially to users in areas where mobile access is more reliable than accessing from a computer or laptop.

Multi-language Support: Extending the platform to deliver multi-language support will allow a broader linguistic community to access the system thus making it highly inclusive.

Advanced Payment Integration: This feature allows the integration of other payment options, such as popular local payment gateways. This in turn would offer buyers more comfort and flexibility in making their payments.

Data Analytics for Farmers: Adding analytics on product demand or sales trends will empower farmers to make data-driven decisions. By this way, they will have control over their inventory and pricing.

IX.   REFERENCES

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