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ijirset@gmail.com

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Agrocart: An E-Commerce Portal for Farmers Selling Produce and Farmers Forum

Ms. Sri Aishwarya U¹ Mr. Santhosh S²

Assistant Professor, Department of Master of Computer Application, Gnanamani College of Technology, Namakkal,
Tamilnadu, India¹

PG Scholar, Department of Master of Computer Application, Gnanamani College of Technology, Namakkal,
Tamilnadu, India²

ABSTRACT: The agriculture industry in many countries faces numerous challenges, including low farm productivity, limited market access, and poor price realization. In India, for instance, small and marginal farmers, who form a significant proportion of the agricultural community, often struggle to get adequate returns on their investments due to the presence of intermediaries in the supply chain. The existing agricultural marketing system in the country is fragmented and unorganized, with middlemen often taking advantage of the situation by offering low prices to farmers and charging high commissions from buyers. In this context, there is a need for a platform that directly connects farmers with buyers and helps them realize better prices for their produce. The project aims to bridge the gap between farmers and consumers by providing a user-friendly e-commerce portal where farmers can directly sell their produce to buyers. The platform allows farmers to create profiles and list their products, including detailed descriptions, quantities, prices, and images. Buyers can easily browse through the available products, make purchases, and securely complete transactions using integrated payment gateways. The project also includes a dedicated Farmers Forum, providing a space for registered users to engage in discussions, seek advice, and share experiences related to farming practices. This forum fosters a supportive community where farmers can learn from each other, exchange valuable insights, and gain new perspectives to improve their farming techniques and approaches.

KEYWORDS: agriculture, fragmented and unorganized, engage in discussions, exchange valuable insights.

I. INTRODUCTION

Agricultural marketing is a method that includes gathering, storage, preparation, shipping, and delivery of different farming materials across the country. In agriculture marketing, the selling of an agriculture product depends on various components like the demand for the product at that time, availability of storage, etc.

Before Independence, farmers while selling their products to traders experienced massive incorrect weighing and manipulation of accounts. The farmers did not have required information about the prices and were forced to sell at low prices with no proper storage facility. Sometimes, the product could be sold at a weekly village market in the farmer's village or in a neighbouring village. If these shops are not available, then the product is sold at irregular markets in a nearby village or town, or in the mandi. So, the government took various measures to control the activities of the traders.



II. LITERATURE SURVEY

Agriculture is the main occupation in India as it has major contribution in Indian economy as well as it is a primary source of livelihood of common masses. Farming contributes around 18% of the India's GDP and half of the population depends on it. Farmers are the backbone of the Indian economy; still they suffer from poverty, poor agricultural marketing, and many other problems. Our aim is to introduce the concept of digital marketing in the field of agriculture. We are trying to eliminate the role of middlemen from agricultural marketing in order to insure fair price to farmers.

III. EXISTING SYSTEM

The existing manual system of agriculture produce marketing varies from country to country and region to region, but generally involves farmers bringing their products to local markets or middlemen who then sell the products to retailers or wholesalers. Some common features of the manual system include:

Direct Marketing

- **Ulavar Santhai:**

In Tamilnadu, India, "Ulavar Santhai" is also used to refer to regulated markets or Agricultural Produce Market Committees (APMCs) established by the state government to facilitate the buying and selling of agricultural produce. These markets aim to provide farmers with a fair price for their products and ensure that consumers have access to quality agricultural produce.

- **Physical markets**

In many countries, farmers bring their products to physical markets, such as open-air markets or specialized marketplaces. Here, they sell directly to buyers, which can include wholesalers, retailers, or even individual consumers.

- **Middlemen**

In some cases, farmers may sell their products to middlemen, who then sell the products to retailers or wholesalers. These middlemen may be local traders, brokers, or processors who specialize in buying and selling agricultural products.

- **Auction system**

In APMC markets, the auction system is used to determine prices for agricultural products. Buyers bid for products, and the highest bidder wins the product.

- **Commission agents**

Farmers in Tamilnadu often rely on commission agents or 'Arhatiyas' to sell their produce in APMC markets. These agents help farmers in transportation, storage, grading, and marketing of their produce, but they charge a commission fee for their services.

Disadvantages

- Lack of transparency in pricing, which can result in farmers receiving low prices for their produce.
- The presence of intermediaries or middlemen who often charge high commissions, reducing farmers' profits.
- Inefficient market infrastructure and services provided by Agricultural Produce Market Committees (APMCs).
- Limited market access and marketing options for farmers.
- The absence of price information and market demand data, making it difficult for farmers to make informed decisions.
- The involvement of corrupt practices and cartels that restrict competition and market access for farmers.
- Inadequate support for farmers to adopt modern technologies and farming practices.

E-Commerce Marketing

There are several existing systems for agriculture e-commerce that farmers and customers can use to buy and sell agricultural products online. Here are a few examples:

- **AgroStar:**

AgroStar is an Indian e-commerce platform that connects farmers with buyers and suppliers of agricultural products. It allows farmers to buy seeds, fertilizers, pesticides, and other inputs, as well as sell their produce directly to customers. The platform also provides farmers with agronomy advice and market intelligence.

- **Farmigo**

Farmigo is a US-based e-commerce platform that connects farmers with consumers who want to buy locally grown food. It allows consumers to order fresh produce, meat, dairy, and other farm products online, and pick them up at a local pickup point or have them delivered to their doorstep.

- **FreshDirect**

FreshDirect is a US-based online grocery platform that sources produce and other food products directly from farmers and producers. It allows customers to order fresh produce, meat, dairy, and other products online, and have them delivered to their doorstep.

- **Alibaba**

Alibaba is a Chinese e-commerce platform that has a dedicated section for agricultural products. It allows farmers to sell their produce online, and provides buyers with a wide range of options for sourcing agricultural products.

- **Amazon**

Amazon is a global e-commerce platform that has a dedicated section for groceries and fresh produce. It allows customers to order fresh produce, meat, dairy, and other products online, and have them delivered to their doorstep.

These are just a few examples of the many existing systems for agriculture e-commerce. The specific features and functionalities of each platform vary, so farmers and customers should research different options to find the one that best meets their needs.

DISADVANTAGES

- Limited reach and accessibility, as e-commerce platforms may not reach all farmers, especially those in remote areas with limited internet connectivity or digital literacy.
- Inequalities in access, where small-scale or marginalized farmers may face challenges in participating in and benefiting from e-commerce platforms due to factors such as language barriers or lack of resources.
- Reliance on technology and digital infrastructure, which can be a barrier for farmers who have limited access to smartphones, computers, or reliable internet connections.
- Quality control and trust issues, as farmers may have concerns about the quality, authenticity, or reliability of the products and services offered through e-commerce platforms.
- Dependency on logistics and delivery systems, where timely and efficient delivery of agricultural inputs or produce can be a challenge, especially in rural areas.

IV. PROPOSED SYSTEM

The proposed system of "Agroculture: An E-Commerce Portal for Farmers Selling Produce and Farmers Forum" will be developed using PHP programming language, MySQL database management system, WampServer as the local development environment, and Bootstrap framework for responsive web design. Here are the key components of the proposed system:

- **User Registration and Authentication:** Farmers will be able to register on the platform by providing their details and creating a secure account. The system will incorporate authentication mechanisms to ensure secure access to user accounts.
- **Product Management:** Farmers will have a dashboard where they can manage their products. They can add, edit, and delete product listings, including details like crop type, quantity, quality, pricing, and location. They can also upload images of their products.
- **E-Commerce Marketplace:** The system will provide a user-friendly marketplace interface where farmers can showcase their products. Buyers can browse through different categories, search for specific products, view product details, and add items to their cart for purchase.
- **Cart and Checkout:** The platform will have a cart functionality where buyers can review their selected products, update quantities, and proceed to the secure checkout process. The system will integrate with a payment gateway to facilitate secure online transactions.
- **Order Management:** Farmers will have access to an order management system where they can view and manage their orders. They can track order status, update order fulfilment, and communicate with buyers regarding delivery details.
- **Farmers Forum:** The system will incorporate a dedicated section for the Farmers Forum, where registered users can participate in discussions, ask questions, share experiences, and provide advice to fellow farmers. It will include features like posting threads, commenting, and engaging in discussions.

- **Responsive Design:** The system will be developed using the Bootstrap framework, ensuring a responsive design that adapts to different devices and screen sizes. This will enable users to access the platform seamlessly from desktops, laptops, tablets, and smartphones.
- **Database Management:** The system will utilize the MySQL database management system to store and manage user data, product information, orders, forum discussions, and other relevant data.

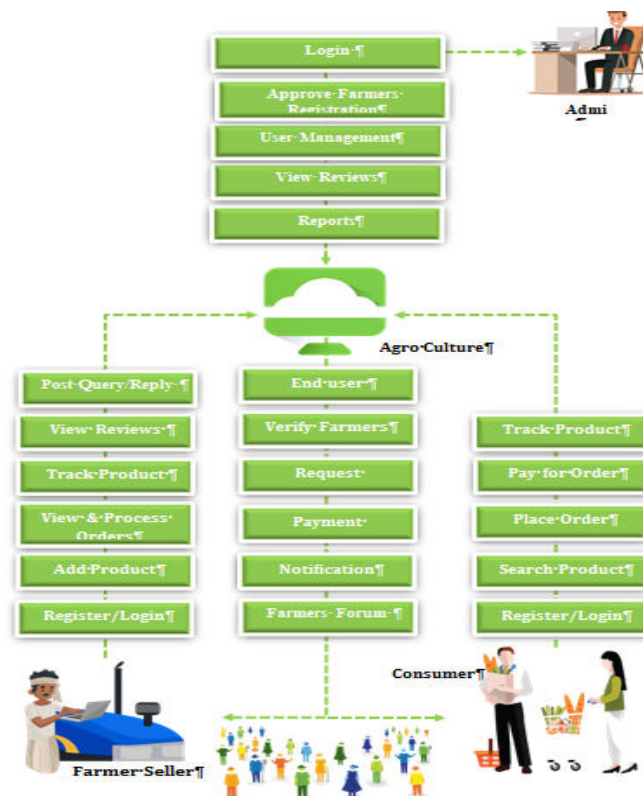
By leveraging PHP, MySQL, WampServer, and Bootstrap, the proposed system of "Agroculture" aims to provide a robust, user-friendly, and responsive e-commerce portal for farmers to sell their produce and engage in meaningful discussions within the farming community.

Advantages

- Direct market access for farmers.
- Elimination of intermediaries and higher profit margins.
- Price transparency for both farmers and buyers.
- Convenient and efficient management of product listings and orders.
- Access to a dedicated Farmers Forum for knowledge-sharing.
- Enhanced marketing and branding opportunities for farmers.
- Increased market reach through responsive design.
- Secure online transactions through integrated payment gateway.
- Feedback and ratings for improved product quality.
- Empowerment of farmers through technology and digital platforms.

V. SYSTEM OVERVIEW

The system analysis for the "Agro Culture E-Commerce Web App" project involves a comprehensive examination of the requirements, processes, and components necessary to build a functional and efficient e-commerce platform tailored for the agricultural sector.



Work Flow Diagram For Web Application

VI. SYSTEM IMPLEMENTATION

The system implementation of the Agro Culture E-Commerce Web App ensures that the application is effectively deployed and configured to function optimally in a live environment. This process includes the following steps:

1. Preparation and Planning

- Develops a comprehensive implementation plan detailing tasks, timelines, and responsible parties.
- Ensures all stakeholders are prepared for the transition to the new system.

2. Server Setup

- Establishes a robust hosting environment, either cloud-based (e.g., AWS, Azure) or on-premises.
- Configures essential server components, including web servers (e.g., Apache, Nginx), application servers, and database servers.

3. Database Configuration

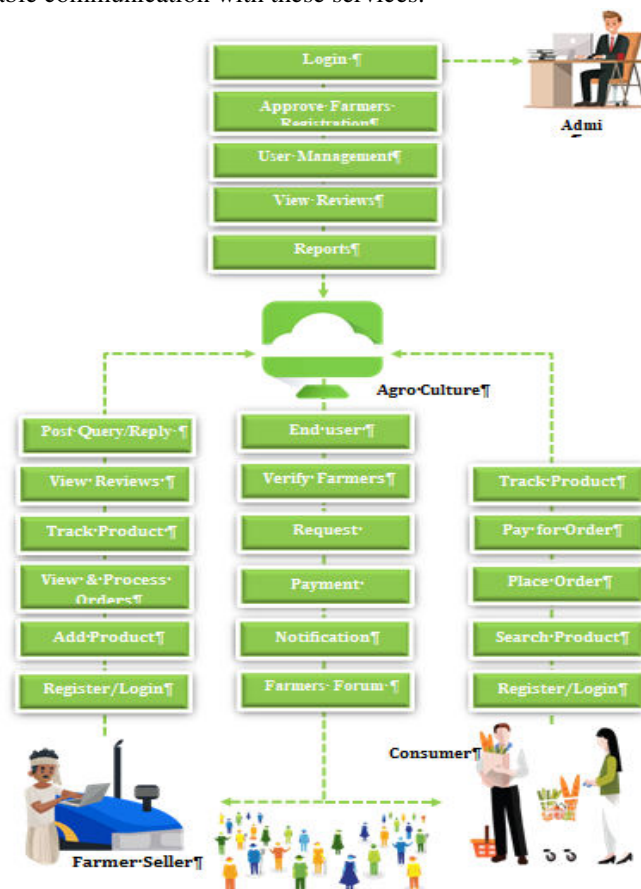
- Initializes and configures the MySQL database to support the application's data needs.
- Imports initial data, including product categories and user information, ensuring data integrity.
- Optimizes the database for performance through indexing and configuration.

4. Application Deployment

- Deploys the application codebase, integrating frontend technologies (HTML, CSS, JavaScript, Bootstrap) with backend systems (PHP, MySQL).
- Configures environment variables and dependencies to ensure seamless operation.

5. Integration with External Services

- Configures and integrates external APIs for payment processing (e.g., Stripe, PayPal) and shipping/logistics services.
- Ensures secure and reliable communication with these services.



Architecture Diagram

VII. FUTURE ENHANCEMENT

Future Scope of "Agroculture: An E-Commerce Portal for Farmers Selling Produce and Farmers Forum":

1. **Integration of Mobile Application:** Developing a mobile application for Agroculture can enhance the accessibility and convenience for users, allowing them to access the platform and perform transactions on their mobile devices. This can significantly increase user engagement and reach.
2. **Enhanced Communication and Collaboration Features:** Implementing real-time chat functionality or video conferencing capabilities within the platform can enable direct communication between farmers and buyers, fostering better understanding and collaboration. This can facilitate negotiations, product inquiries, and build stronger relationships between the parties involved.
3. **Integration of Advanced Analytics and Data Insights:** Incorporating advanced analytics and data visualization tools can provide valuable insights into market trends, buyer preferences, and demand patterns. This information can help farmers make informed decisions about the types and quantities of produce to cultivate and improve their marketing strategies.
4. **Collaboration with Agricultural Organizations and Government Initiatives:** Partnering with agricultural organizations and government initiatives can provide additional support and resources to the farmers using the platform. This can include access to training programs, subsidies, and information on new farming techniques and technologies.
5. **Enhanced User Feedback and Ratings:** Implementing a robust feedback and rating system can help in building trust and credibility within the platform. Buyers can provide reviews and ratings for the products they purchase, enabling other buyers to make more informed decisions.
6. **Integration of AI and Machine Learning:** Incorporating artificial intelligence and machine learning algorithms can provide personalized product recommendations to buyers based on their preferences and purchase history.

VIII. CONCLUSION

The "Agroculture: An E-Commerce Portal for Farmers Selling Produce and Farmers Forum" project has been successfully developed, tested, and demonstrated its effectiveness in meeting the needs of various user roles, including Web Admin, Farmers, and Buyers. The system provides a user-friendly interface and a wide range of features and functionalities to facilitate the buying and selling of agricultural products. The Web Admin module allows for secure login, management of user registrations, verification of farmers using their Farmers Card and Aadhar details, approval of farmers as sellers, user management, maintenance of product categories, system maintenance tasks, viewing of reviews, customization of notifications, and generation of reports. This module empowers the admin to effectively manage the entire system. The Farmers module enables farmers to register with their Farmers Card and Aadhar details, receive registration approval, login to their accounts, add and manage their products, view orders, receive payments, process and deliver orders, track order and delivery status, view transaction history, post queries in the farmer's forum, receive replies and notifications, and generate reports. This module provides farmers with a platform to showcase and sell their produce efficiently. The Buyers module allows buyers to register, login to their accounts, search for products, choose desired products, add them to the cart, make payments, place orders, track their orders, receive products, request bulk orders, post reviews, view transaction history, and manage their profiles. This module provides a seamless buying experience for the buyers and facilitates their interaction with the system.

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