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Uzhavan – A Direct Farmer to Customer Product Selling Web Application

Dr. K. Mohan[1], T. V. Siddharth[2], R. Rajaguru[3], S. Sivakumar[4],
Associate Professor & Head of the Department, Department of Information Technology[1]
Students, B.Tech., Final Year, Department of Information Technology[2,3,4]
Anjalai Ammal Mahalingam Engineering College, Thiruvarur, India

Abstract: *The Uzhavan web application is a farmer-centric e-commerce platform designed to facilitate direct sales of agricultural produce from farmers to consumers, eliminating the need for intermediaries. This ensures fair pricing for farmers and provides consumers with access to fresh, cost-effective products. The platform incorporates a responsive interface, multilingual support, real-time price updates, and secure transaction processing. Developed using Python (Flask), MySQL, HTML, CSS, and JavaScript, Uzhavan includes modules for user authentication, farmer and customer dashboards, product management, payment processing, and administrative oversight. The Naive Bayes algorithm enhances functionality by classifying products and predicting customer preferences. This paper explores the system's design, implementation, and its potential to address challenges in agricultural e-commerce, such as middlemen exploitation, limited market access, and technological barriers for rural farmers.*

Keywords: E-Commerce, Farmer-to-Customer, Naive Bayes Algorithm, Web Application, Agriculture

I. INTRODUCTION

Agriculture forms the backbone of India's economy, employing over 50% of the workforce and contributing significantly to the nation's GDP. Despite its critical role, the agricultural sector faces numerous challenges that undermine farmers' livelihoods and economic sustainability. A primary issue is the reliance on middlemen who purchase produce at low prices and sell to consumers at inflated rates, drastically reducing farmers' profit margins. Traditional wholesale markets and mandis, dominated by traders, further limit farmers' bargaining power, leaving small-scale farmers particularly vulnerable. Additionally, the lack of direct market access prevents farmers from reaching consumers efficiently, forcing them to depend on intermediaries who control pricing and distribution.Uzhavan leverages modern web technologies, including Python with Flask for backend logic, MySQL for data storage, and HTML, CSS, and JavaScript for a responsive frontend. To enhance the visual quality and organization of product listings, the platform employs Median Filtering for noise removal in product images and the VGG16 algorithm for accurate image classification. These technologies ensure a seamless and trustworthy user experience for both farmers and consumers. This paper discusses the limitations of the existing agricultural market system, the proposed Uzhavan platform, its architecture, modules, and the role of image processing algorithms in improving functionality. It also highlights the platform's potential to transform agricultural e-commerce and contribute to rural empowerment.The project also aligns with India's broader digital transformation goals, such as the Digital India initiative, which seeks to enhance technological access in rural areas .The platform is designed with rural farmers in mind, featuring a simple user experience.

.The platform is built using Python with Flask for backend logic, MySQL for data storage, and HTML, CSS, and JavaScript for a responsive frontend Uzhavan web application employs two key algorithms to enhance the quality and functionality of product image processing: Median Filtering for noise removal and VGG16 for image classification. These algorithms are integral to ensuring high-quality visuals and accurate product categorization on the platform

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II. ALGORITHMS USED

Median Filtering Algorithm :

Median Filtering is used to remove noise from product images uploaded by farmers, ensuring clear and professional visuals. The algorithm operates using a 3x3 sliding window approach with the following steps:

- Identify the minimum, maximum, and median pixel values within the 3x3 window.
- If the central pixel's value is within an acceptable range, it remains unchanged.
- If the central pixel is an outlier (e.g., noise), it is replaced with the median value.
- The process iterates across the entire image, producing a noise-free output.

This technique is computationally efficient and preserves image edges, making it ideal for enhancing product images displayed to customers..

VGG16 Algorithm :

VGG16 is a deep convolutional neural network used for classifying product images into appropriate categories (e.g., fruits, vegetables). Its architecture and functionality include:

- **Input**: Accepts RGB images with a resolution of 224x224 pixels.
- **Architecture**: Comprises five sets of convolutional layers (using 3x3 and 1x1 filters) followed by MaxPooling layers, and fully connected layers at the end.
- **Feature Extraction**: Extracts deep features from images, enabling accurate classification of agricultural products.
- **Implementation**: Trained on a dataset of agricultural product images, VGG16 categorizes uploaded images, ensuring products are correctly organized on the platform.

The algorithm's deep learning capabilities make it highly effective for handling diverse and complex image data, improving the platform's usability and trustworthiness.

These algorithms work together to ensure that product images on Uzhavan are clear, accurately classified, and visually appealing, enhancing the overall user experience for both farmers and customers.

III. EXISTING SYSTEM

The current agricultural market system is heavily reliant on middlemen who purchase produce from farmers at low prices and sell to consumers at inflated rates, reducing farmers' profit margins. Wholesale markets and mandis are controlled by traders, limiting farmers' bargaining power. Existing e-commerce platforms like Amazon and Flipkart primarily cater to bulk sellers and established businesses, making them unsuitable for small-scale farmers. These platforms often lack farmer-friendly interfaces, multilingual support, and logistics solutions, resulting in low adoption rates among rural farmers due to trust issues and technological barriers.

Demerits:

- Middlemen reduce farmers' earnings by controlling pricing.
- Existing e-commerce platforms are not designed for small-scale farmers.
- Lack of multilingual support and user-friendly interfaces for rural users.
- Logistical challenges and trust issues hinder platform adoption.
- Inconsistent data and lack of real-time updates affect reliability

IV. PROPOSED SYSTEM

Uzhavan is a dedicated e-commerce platform that enables farmers to sell agricultural produce directly to consumers, bypassing middlemen. The system empowers farmers by allowing them to list products, set prices, and manage inventory through a simple dashboard. Consumers can browse products, filter by state and district, and complete purchases securely it can be modified to react quickly to user demands. This system mainly focused to the Budget Prediction, Resource Allocation.

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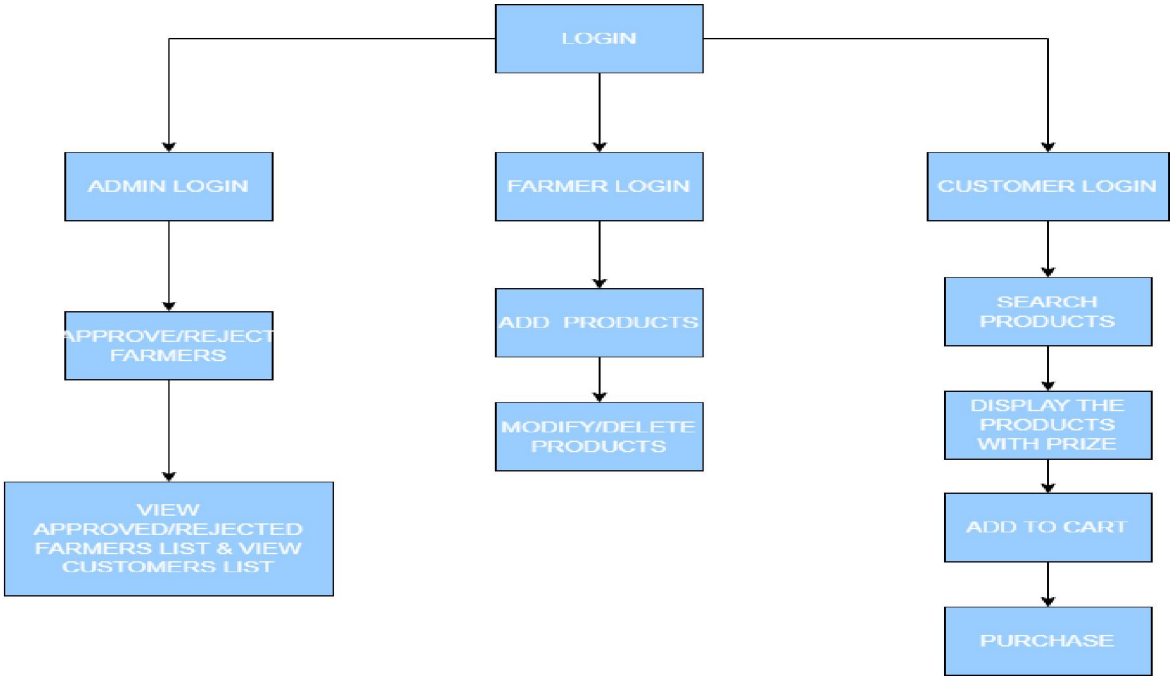
Advantage of Proposed System

- Eliminates middlemen, ensuring fair prices for farmers.
- Multilingual support enhances accessibility for diverse users.
- Real-time updates improve transparency and reliability.
- Logistics support streamlines delivery operations.
- Responsive design ensures usability across devices.

V. SYSTEM ARCHITECTURE DIAGRAM



VI. MODULES

List of Modules

- User Authentication
- Farmer Dashboard
- Customer Dashboard
- Product Management
- Payment Processing
- Admin Module

1. User Authentication:

This module manages secure login for farmers, customers, and admins using Flask session management. It supports role-based access, directing users to their respective dashboards. Google authentication is integrated for customers to enhance security and ease of use.

2. Farmer Dashboard:

The farmer dashboard enables farmers to add, update, and manage products. It supports real-time inventory tracking and allows farmers to set prices, descriptions, and availability. Product images can be uploaded and stored in the database.

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3. Customer Dashboard:
The customer dashboard provides a user-friendly interface for browsing products, filtering by state and district, and viewing detailed descriptions. Customers can add items to a cart, proceed to checkout, and complete purchases securely.

4. Product Management:
This module stores and manages product details, including name, price, quantity, and description, in the MySQL database. It updates availability based on farmer inputs and customer purchases, ensuring an organized product display.

5. Payment Processing:
The payment module facilitates secure transactions, displaying a "Payment Successful" message upon completion. It is designed for future integration with payment gateways to enhance functionality.

6. Admin Module:
The admin module provides a dashboard to manage farmer and customer accounts. Admins can approve or reject farmer registrations, monitor platform activity, and ensure product quality and user trust.

VII. CONCLUSION

Uzhavan addresses critical challenges in agricultural e-commerce, such as middlemen exploitation, limited market access, and technological barriers. By leveraging modern web technologies and the Naive Bayes algorithm, the platform provides a scalable, user-friendly solution that empowers farmers and benefits consumers. Its successful implementation highlights its potential to improve farmer livelihoods and promote sustainable agriculture..

VIII. FUTURE WORK

Future enhancements for Uzhavan include integrating advanced machine learning models for demand forecasting and price optimization. Developing a mobile application will improve accessibility. Incorporating IoT for real-time crop monitoring and logistics tracking will streamline operations. Additionally, expanding multilingual support and integrating blockchain for supply chain transparency will enhance trust and scalability.

REFERENCES

[1] A. G. Raut, A. S. Lanjewar, "AgriBazaar - An E-Commerce Platform to Connect Farmers and Consumers," International Journal of Engineering Research & Technology (IJERT), 2021, pp. 193-197.
[2] P. D. Patel, "A Review on Online Agriculture Marketing Platform using IoT and Cloud Computing," 2021.
[3] Neha Rani, "E-Commerce in Agriculture: Development and Adoption," 2023.
[4] G. Kanagavalli et al., "Exploring the Growth of E-commerce in the Agricultural Products Sector," 2024.
[5] Kavita Kumari, "Role of Agri-Tech and E-Commerce in Transforming Cultivation," 2024.
[6] P. Uma Rani, Padmalosani, "Technology Adoption by Farmers for Agriculture Sustainability," 2019.
[7] R. Muthulakshmi, "Smart Farming using IoT and Cloud-based E-commerce Platform," 2020.
[8] S. Gopinath, "Direct Marketing Platforms for Farmers in India," 2021.
[9] L. Harish, K. Keerthana, "Agricultural Supply Chain Digitalization," 2022.
[10] Anushka Mishra, "A Study on Farmer Portals and Apps," 2023.
[11] Deepak M., Vinayaka, "Design of Farmer-to-Customer Marketplace," 2022.
[12] Prerna Jha, "Digital Agriculture and E-Marketing in India," 2023.
[13] International Journal of Future Research, "An Evaluation of the Challenges Farmers Face in the New Era of E-Commerce," IJFMR, 2023, pp. 101-106.
[14] International Journal for Research in Applied Science and Engineering Technology, "E-Commerce Platform for Farmers," IJRASET, 2023, vol. 11, issue 4, pp. 1234-1239.