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AGROCRAFT: A SMART E-COMMERCE PLATFORM FOR FARMERS AND ARTISANS

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Abstract: Agro Craft is an innovative e-commerce platform designed to connect farmers, artisans, and suppliers of agricultural tools and pesticides. The website provides a seamless marketplace for buying and selling agricultural products, integrating a user-friendly interface with secure payment gateways and efficient logistics. A unique feature of Agro Craft is the tutorial module, which educates users on website navigation, product listing, order placement, and account management. Additionally, the platform integrates an AI-powered chatbot that provides real-time weather updates and crop recommendations based on location, helping farmers make informed decisions. This project aims to bridge the gap between rural producers and urban consumers, enhancing market accessibility and promoting sustainable agricultural practices.

Keywords: E-commerce, Agriculture, Online Marketplace, Digital Farming, Rural Empowerment, AI Chatbot

I. INTRODUCTION

Agro Craft is an e-commerce platform tailored for agricultural trade and handmade products. Unlike generic online marketplaces, it provides a dedicated platform for farmers and artisans, allowing direct transactions between producers and consumers. The key objectives are:

- To eliminate middlemen and ensure fair pricing for agricultural products.
- To simplify e-commerce adoption for farmers through an interactive tutorial module.
- To offer secure transactions and efficient order management for both buyers and sellers.
- To help farmers with real-time weather updates and crop recommendations through an AI chatbot.

II. LITERATURE SURVEY

A. Existing Systems

Existing agricultural e-commerce platforms, such as BigHaat and DeHaat, provide marketplaces for farming supplies. However, they lack a built-in educational component and direct farmer-to-consumer interactions. Amazon and Flipkart also sell agricultural products, but they are not tailored for small-scale farmers and artisans. Some platforms offer weather forecasts, but they are not integrated with crop recommendations specific to the region.

B. Comparison with Existing Platforms

Feature	Existing Platforms	AgroCraft
Dedicated to agriculture	NO	YES
Handmade product marketplace	NO	YES
Integrated tutorial module	NO	YES

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Feature	Existing Platforms	AgroCraft
Direct farmer-to-consumer trade	NO	YES
AI chatbot for Weather & Crops	NO	YES

AgroCraft addresses these gaps by integrating an educational tutorial module, direct interactions, and a dedicated marketplace for both agricultural and handmade products. Additionally, the AI-powered chatbot provides real-time weather forecasts and crop recommendations to farmers.

III. SYSTEM ARCHITECTURE

1. System Architecture:

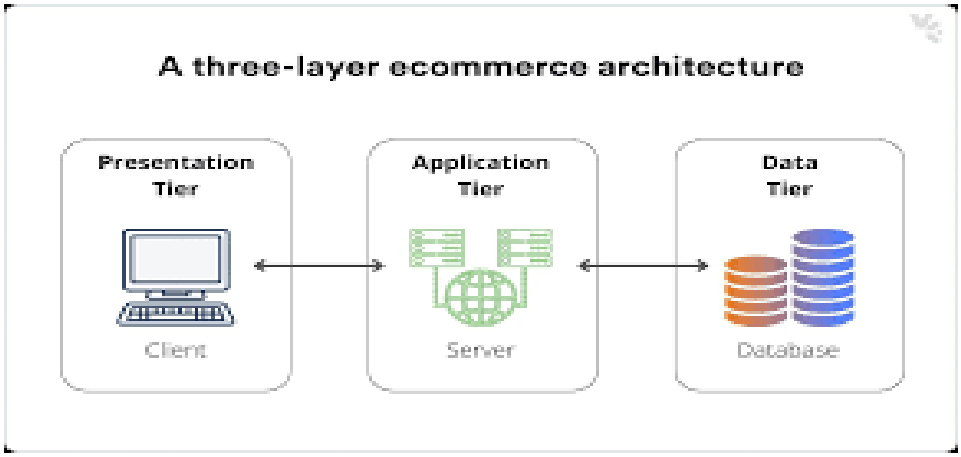

Fig. 1. System Architecture

2. Overview

AgroCraft follows a three-tier architecture:

1. Presentation Layer (Frontend): Built with React & Vite for a fast and interactive UI.
2. Application Layer (Backend): Uses Spring Boot for managing business logic and user authentication.
3. Data Layer (Database): MySQL is used for efficient data management.

3. Key Functionalities

- User Registration & Authentication (Farmers, Customers, Staff, Admin)
- Product Management (Listing, Searching, Filtering)
- Wishlist & Cart Features
- Secure Payment Integration
- Order Tracking & Logistics Management
- AI-Powered Chatbot for weather updates and crop recommendations

IV. PROPOSED METHODOLOGY

1.System Workflow

The proposed methodology focuses on developing a structured and user-friendly e-commerce ecosystem for farmers and artisans. The system workflow is as follows:

1. User Registration & Role Assignment – Farmers, customers, and staff register and receive role-based access.
2. Product Listing & Categorization – Farmers list products with images, descriptions, and pricing.
3. Search & Recommendation System – Customers can search products using keywords and receive AI-driven recommendations.

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4. Order Placement & Payment – Secure checkout process with multiple payment options.
5. Logistics & Delivery Tracking – Integration with delivery services for real-time tracking.
6. Tutorial Module Integration – Step-by-step guidance for farmers to use the platform effectively.
7. AI Chatbot Integration – Farmers can input their location to receive real-time weather forecasts and crop recommendations based on soil and climatic conditions.

2.Implementation Strategy

- Frontend Development: React & Vite for dynamic UI/UX.
- Backend Development: Spring Boot REST APIs for business logic.
- Database Management: MySQL for structured data storage.
- AI Chatbot Integration: Machine Learning model trained on weather and crop data.
- Security Measures: Role-based authentication and secure payment gateways.
- Testing & Optimization: Unit and integration testing for performance enhancement

V. EXPERIMENTAL RESULTS AND ANALYSIS

1. Screenshots of the Application:

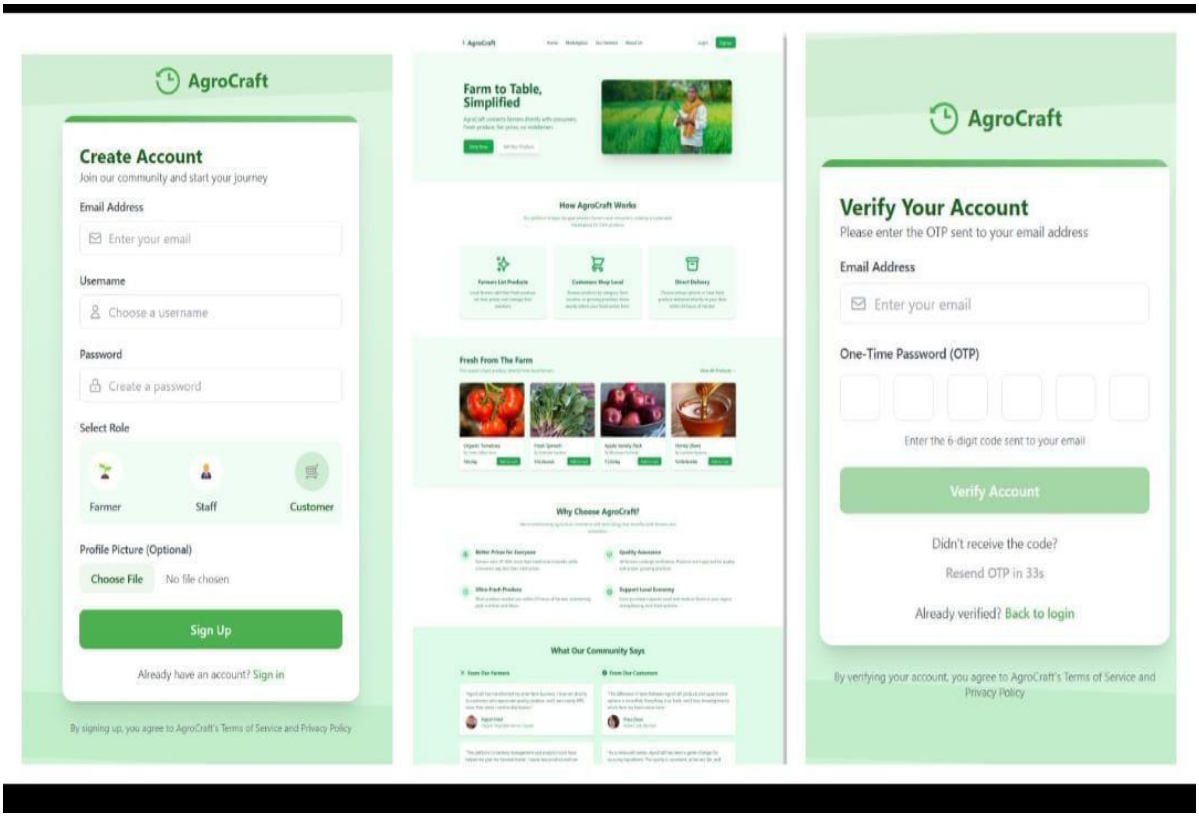

Fig. 1. Registration, Home page

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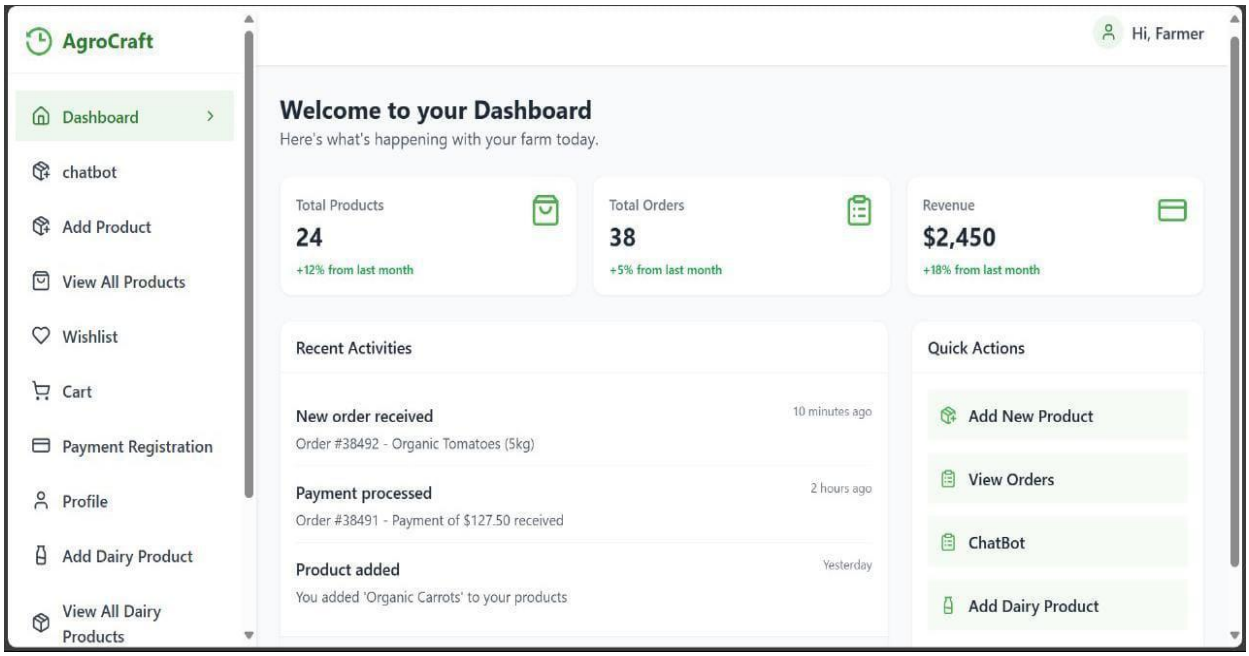

Fig. 2. Farmer Dashboard Page

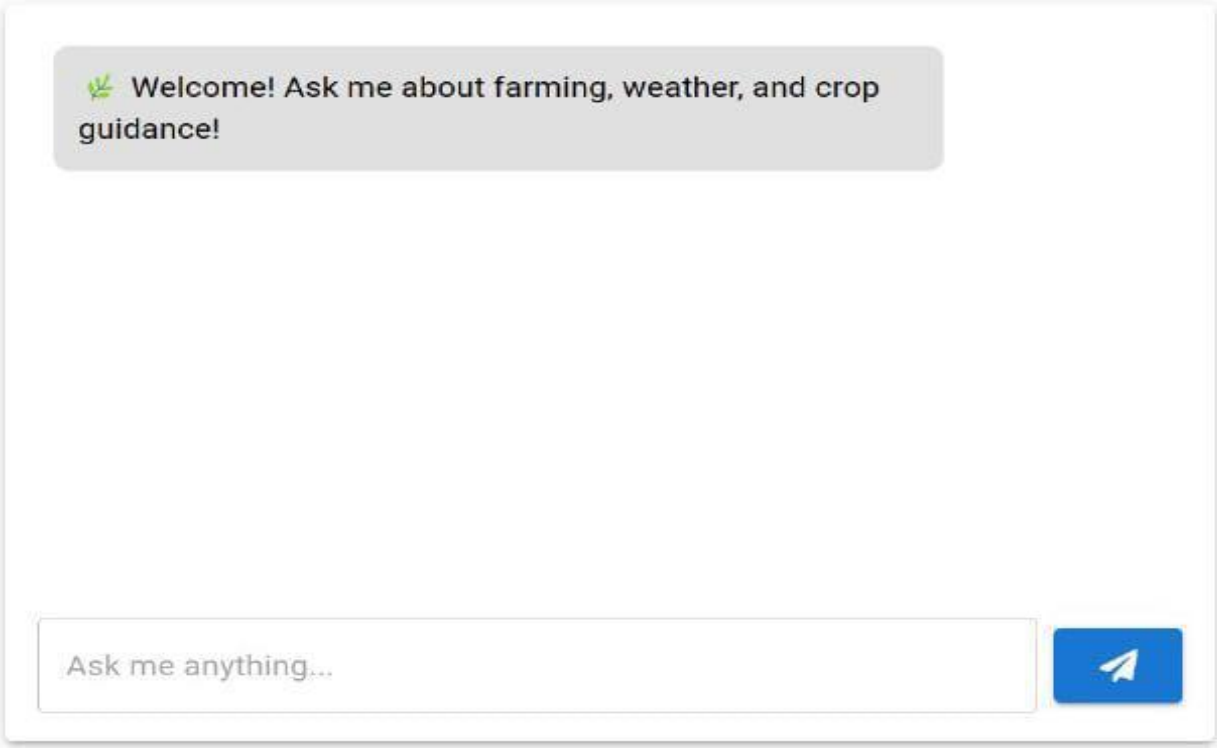

Fig. 3. AI Chatbot for weather and Crop Recommendation Page

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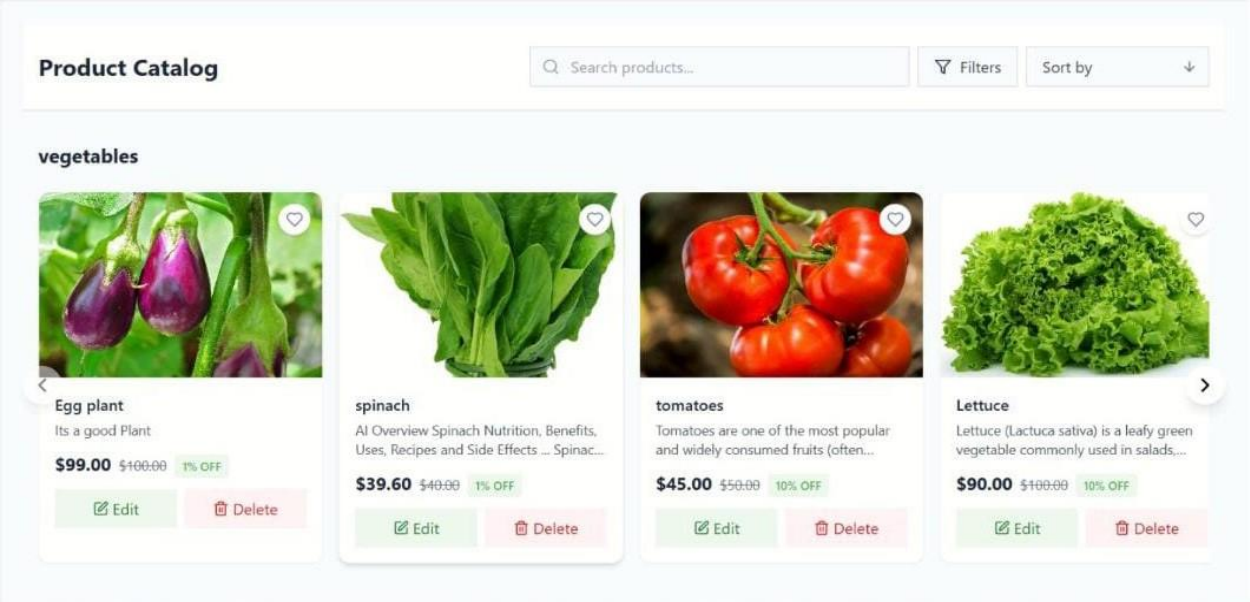

Fig. 4. Product Catalog Page

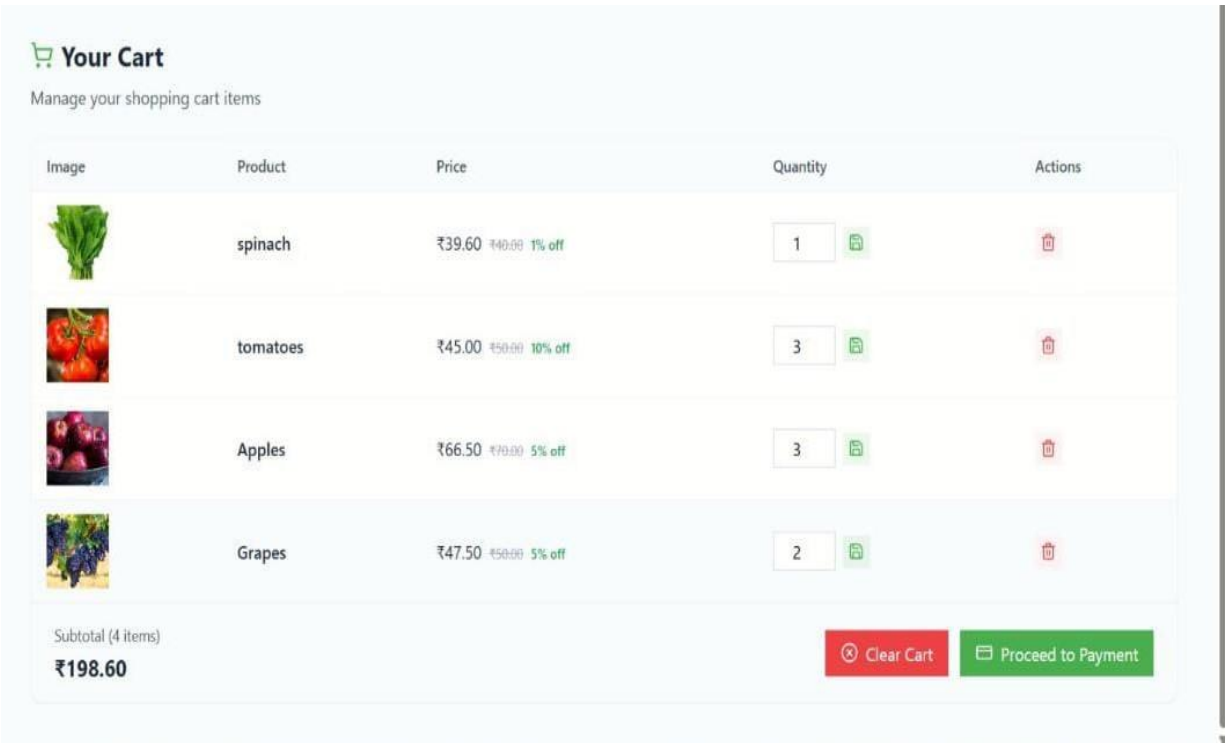

Fig. 5. Cart Page

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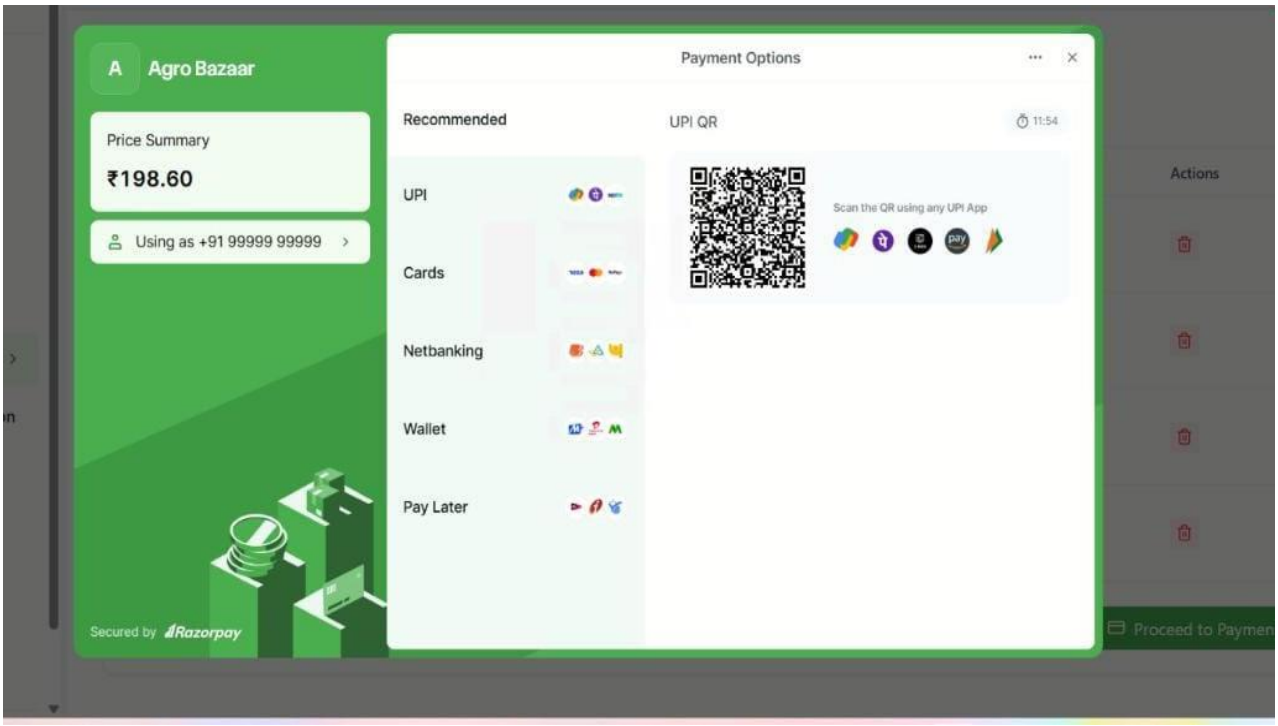

Fig. 6. Payment Page

The implementation of AgroCraft resulted in:

A fully functional e-commerce platform tailored for farmers and artisans.
Increased digital accessibility for rural producers.
Efficient transactions and order tracking via secure payment gateways.
Higher engagement due to the tutorial module simplifying the onboarding process.
Enhanced decision-making for farmers with the AI-powered chatbot providing weather updates and crop recommendations.

VI. CONCLUSION

AgroCraft successfully bridges the gap between rural producers and urban consumers, offering a dedicated marketplace**,** an educational tutorial system, and secure transactions. The integration of an AI chatbot further strengthens the platform by providing real-time weather forecasts and crop suggestions to farmers. Future enhancements will focus on AI-driven recommendations, multi-language support, and mobile app development to further improve usability.

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