IRJCS: International Research Journal of Computer Science
Volume 13, Issue 03, March 2026
ISSN: 2393-9842
https://www.irjcs.com/archives
https://doi.org/10.26562/irjcs.2025.v1303.35

Farm to Market Platform - A Digital Agricultural Market place for Transparent, Efficient and Fair Agricultural Trade

Dr.B.Sujatha
Professor, Dean-Academics, Department of CSE,
Sengunthar Engineering College Autonomous),Tiruchengode, India
bsujatha.cse@scteng.co.in
https://orcid.org/0009-0004-2895-5906
Satheeshkumar.T, Santhosh.R, Venkatesan.A
UG Students, Department of CSE
Sengunthar Engineering College Autonomous), Tiruchengode, India
sksatheesh116@gmail.com,santhoshrs3141@gmail.com,venkatvenkat9068@gmail.com

Publication History
Manuscript Reference: IRJCS/RS/Vol.13/Issue03/CSMR26.MRCS10114
Research Article | Open Access | Double-Blind Peer Reviewed Article ID: IRJCS/RS/Vol.13/Issue03/CSMR26.MRCS10114
Received: 30, January 2026, Revised: 13, February 2026, Accepted: 28 February 2026 Published Online: 25 March 2026
https://www.irjcs.com/volumes/Vol13/iss-03/35.CSMR26.MRCS10114.pdf
Article Citation: Dr.Sujatha,Satheeshkumar,Santhosh,Venkatesan(2026),Farm to Market Platform - A Digital Agricultural Market place for Transparent, Efficient and Fair Agricultural Trade, IRJCS: International Research Journal of Computer Science, Volume 13,Issue 03 of 2026 pages 304-307 **Doi:>** https://doi.org/10.26562/irjcs.2026.v1303.35
BibTeX Key Dr.Sujatha@2026Farm **Orcid:** https://orcid.org/0009-0004-9398-7488
IRJCS papers should be cited as IRJCS (International Research Journal of Computer Science, AM Publications, India 2026, ISSN 2393-9842, https://doi.org/10.26562/ijrcs.2025.v1303.35 The journal's official abbreviation is IRJCS.

Abstract: The Farm to Market Platform is a web-based digital agricultural marketplace that directly connects farmers and consumers, eliminating unnecessary intermediaries. Built on three core modules Admin, Farmer, and User the platform enables farmers to list crops, receive competitive bids, and complete direct transactions with buyers. The Admin module provides centralised management of weather reports, crop data, and fertilizer information. Users browse listings, submit bids, and complete secure digital payments. Developed in Python (Flask) with MySQL, the system promotes transparency, fair pricing, and supply chain efficiency across the agricultural sector.
Keywords: Farm-to-Market, Digital Agriculture, Bidding System, Python Flask, MySQL, E-Commerce.

I. INTRODUCTION

Agriculture is the backbone of the Indian economy, employing over 50% of the workforce and contributing significantly to national GDP. Despite this economic centrality, farmers consistently earn far below the true market value of their produce. The core reason is a deeply entrenched intermediary network commission agents, local traders, and whole salers that purchases crops at artificially suppressed prices and resells them at inflated margins to end consumers, capturing a disproportionate share of the value created by the farming community. The rapid growth in internet penetration, smart phone adoption, and digital payment infrastructure across rural India presents a transformative opportunity to redesign this supply chain. A purpose-built digital agricultural marketplace can eliminate unnecessary intermediaries, empower farmers with direct buyer access, and provide transparent and competitive price discovery for all agricultural commodities. The Farm to Market Platform is designed with this vision. It delivers a centralised, role-based web application connecting three key stakeholders Administrators, Farmers, and Buyers through a single integrated digital ecosystem that enables direct trade, transparent competitive bidding, and real-time access to agricultural advisory data. This paper presents the full system design, three-tier architecture, functional module specifications, hardware and software requirements, and the future enhancement roadmap for the platform.

II. EXISTING SYSTEM & PROBLEM STATEMENT

In the current agricultural framework, the majority of farmers sell their produce through traditional market channels involving multiple layers of intermediaries such as commission agents, local traders, and wholesalers. This conventional model introduces well-documented structural inefficiencies and inequities that persistently undermine farmer welfare:

a. Profit Erosion: Intermediaries purchase crops at suppressed prices and resell at substantially higher margins, depriving farmers of their rightful share of the final consumer price and reducing farm-level income.
b. Limited Market Reach: Farmers are geographically confined to local or regional markets, with no mechanism to access national buyer pools or competitive pricing across wider geographic areas.
c. Information Asymmetry: Farmers lack timely and reliable access to weather forecasts, crop suitability recommendations, and fertilizer guidance, severely impacting productivity, yield quality, and long-term decision-making.
d. Opaque Price Manipulation: Prices are determined and manipulated by dominant market traders, with no transparent price discovery mechanism available to farming communities or consumers.

IRJCS: International Research Journal of Computer Science
Volume 13, Issue 03, March 2026
ISSN: 2393-9842
https://www.irjcs.com/archives
https://doi.org/10.26562/irjcs.2025.v1303.35

e. Inefficient Paper-Based Transactions: The buying and selling process is heavily manual, time-consuming, and prone to disputes, with no digital audit trail for accountability or conflict resolution.
f. Consumer Trust Deficit: Buyers struggle to verify the quality, origin, or fair pricing of agricultural products in the absence of a structured, competitive, and transparent marketplace.

III. PROPOSED SYSTEM

The Farm to Market Platform introduces a structured three- module digital ecosystem that directly addresses the shortcomings identified above. Farmers list their produce with transparent pricing, buyers submit competitive bids, and administrators oversee the integrity of the agricultural information ecosystem. The competitive bidding mechanism ensures that farmers are no longer forced to accept a single opaque price instead, they receive multiple offers and retain the right to select the most favourable bid. All transactions are recorded digitally, creating a full and immutable audit trail that supports trust-building, dispute resolution, and performance tracking for all stakeholders. The platform is built to be scalable, secure, and accessible, with role- based access control ensuring each user type interacts only with functionality relevant to their assigned role. Table I provides a structured feature comparison between the existing and proposed systems.

Table I — Existing System vs. Proposed System

Feature	Existing System	Proposed System
Market Reach	Local/Regional only	Nationwide digital marketplace
Middlemen	Multiple intermediaries	Direct farmer-to-buyer link
Pricing	Opaque, manipulatedrates	Open competitive bidding
Info Access	Very limited or absent	Weather, crop & fertilizer data
Transactions	Slow, paper-based process	Real-time digital payments
Payment Security	Cash-based, no traceability	Integrated secure gateway

Table II — Module Feature Summary

Admin Module	Farmer Module	User Module
Login & Authentication	Login & Dashboard	Register & Login
Add Weather Reports	List Crops/Products	Browse Products
Add Crop Details	SetBid Starting Price	Place Bids
Add Fertilizer Details	Accept/Reject Bids	Make Payments
View User Details	View Transactions	Track Orders
View Farmer Profiles	Update Crop Listings	Submit Feedback

IV. SYSTEM ARCHITECTURE

The Farm to Market Platform is built on a classic three-tier web architecture that ensures clean separation of concerns, maintainability, and long-term scalability. The three tiers are: the Presentation Layer (web browser client interface), the Application Layer (Python Flask web server handling business logic), and the Data Layer (MySQL relational database for persistent storage). All three user roles Admin, Farmer, and User interact exclusively through the Presentation Layer; no direct database access is permitted from the client side.

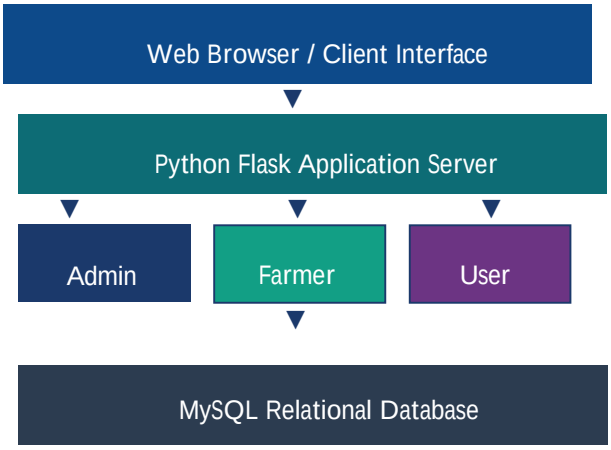

Fig.1 System Architecture Diagram

As shown in Fig. 1, all HTTP requests from the web client are routed to the Python Flask application server, which enforces role-based access control, validates session tokens, executes the appropriate business logic, and communicates with the MySQL database layer via parameter is edqueries to prevent SQL injection vulnerabilities. The server returns rendered HTML responses to the browser, maintaining a stateless RESTful interaction model. The MySQL database is structured around normalised relational tables for users, farmers, admins, product listings, bid records, weather data, crop details, fertilizer records, and payment transactions. Foreign key constraints maintain referential integrity across all related tables, ensuring data consistency throughout the platform lifecycle.

IRJCS: International Research Journal of Computer Science
Volume 13, Issue 03, March 2026
ISSN: 2393-9842
https://www.irjcs.com/archives
https://doi.org/10.26562/irjcs.2025.v1303.35

Fig.2—CoreTransactionData Flow

Fig. 2 illustrates the core transactional data flow across the platform. A registered farmer creates a product listing with crop details and a starting bid price. The Flask server validates the listing and publishes it to the marketplace. Registered buyers browse and submit competitive bids. The farmer reviews all incoming bids via their dashboard and accepts the most favourable offer. Upon acceptance, the buyer is directed to complete payment through the integrated gateway. The confirmed transaction is recorded in the MySQL database, and both parties receive digital confirmation. Registered farmers access a personalised dashboard upon authentication. The module provides: product listing creation (crop name, quality grade, available quantity, harvest date, and starting bid price); real-time bid notification and management (review, compare, accept, or reject bids from multiple buyers); access to all admin-published weather forecasts, crop advisory data, and fertilizer recommendations; and a complete transaction history for financial accounting, performance tracking, and dispute resolution.

C.User (Buyer) Module

Registered buyers interact with the marketplace through a product-browsing interface that supports filtering by crop type, quality grade, and geographic region. Key capabilities include: competitive bid submission on any active product listing; automated payment processing via the integrated secure payment gateway upon bid acceptance by the farmer; real-time order status tracking from payment confirmation through to delivery; and post-purchase feedback submission to support platform quality assurance and seller rating systems.

V. SYSTEM REQUIREMENTS

A. Hardware

Table III — Hardware Specifications

Processor	DualCore, 2.6 GHz
RAM	4GB Minimum
Storage	500GB HDD
Input	Keyboard & Mouse
Display	15-inch Colour Monitor

VI. MODULE DESIGN

A. Admin Module

The Admin module serves as the centralised control and information management centre of the platform. After secure login with password-encrypted credentials verified against the MySQL database, the administrator gains access to the full administrative dashboard. Key functions include: weather report management for different agricultural zones (temperature, rainfall forecast, humidity, seasonal conditions); crop detail database management (name, type, suitable growing season, soil requirements, current price trend benchmarks); fertilizer record management (fertilizer type, recommended crop pairings, application dosage, agronomic benefits); complete oversight of all registered user and farmer profiles; and comprehensive booking and transaction monitoring with full chronological audit history.

B. Farmer Module

Table IV — Software Specifications

OS	Windows10
Frontend	Python Flask/Jinja2
Backend	MySQL Server
Dev Tool	Python 2.7IDLE
Language	Python, HTML, CSS,JS

VII. ADVANTAGES & LIMITATIONS

A. Advantages

- Direct farmer-to-buyer connectivity eliminates middlemen and ensures fair profit distribution.
- Transparent competitive bidding drives fair, market- driven price discovery for all parties.
- Centralised agri-data (weather,crops, fertilizers) empowers data-driven farming decisions.
- Digital transaction records provide full auditability and reduce inter-party disputes.
- Role-based access control ensures security and stakeholder-appropriate functionality.

B. Limitations

- Reliable internet connectivity is a prerequisite; rural infrastructure gaps may restrict access.
- Digital literacy requirements may create initial adoption challenges without training support.
- Current version lacks real-time logistics or delivery tracking for perishable goods.

ISSN: 2393-9842
https://www.irjcs.com/archives
https://doi.org/10.26562/irjcs.2025.v1303.35

VIII. FUTURE ENHANCEMENTS

The following enhancements are planned for subsequent development phases, each significantly expanding the platform's functionality, geographic reach, and impact:

- Mobile Application: Development of native Android and iOS applications with offline-capable data synchronisation, ensuring uninterrupted accessibility for farmers in rural areas with limited or intermittent internet connectivity.
- AI-Based Crop & Price Prediction: Integration of machine learning model strained on historical agricultural datasets to predict future crop demand, seasonal price fluctuations, and optimal planting schedules based on real-time soil profiles and weather pattern analysis.
- Real-Time Logistics Tracking: GPS-enabled live tracking of product delivery with smart route optimisation algorithms to minimise transportation costs and reduce spoilage of perishable agricultural goods in transit.
- Government Scheme Integration: Automated display of all relevant government agricultural subsidies, crop insurance programs, and welfare schemes, with built-in support for online claim submission and application status tracking directly through the platform.
- Multi-Language Support: Implementation of regional language interfaces including Tamil, Hindi, Telugu, Kannada, and Marathi to maximise adoption and accessibility among diverse rural farming communities across India.
- Blockchain-Based Provenance Tracking: Incorporation of a distributed ledger to provide immutable, tamper-proof records of product origin, quality certification, supply chain handling, and transaction history, enhancing consumer trust and regulatory compliance.

IX.CONCLUSION

The Farm to Market Platform presents a comprehensive and well-architected digital solution to the longstanding structural in efficiencies of traditional agricultural supply chains in India. By creating a transparent, bidding-based digital market place that directly connects farmers and consumers, the platform systematically eliminates the exploitative intermediary layers that have historically suppressed farm-level income and distorted market pricing. The centralized Admin module ensures that farmers receive timely, accurate, and actionable agricultural information including weather forecasts, crop suitability data, and fertilizer guidance enabling more productive and profitable cultivation decisions. The Farmer module empowers producers to control their own pricing and select the most competitive buyer offer, while the User module provides consumers with access to fresh, traceable, and fairly priced agricultural products through a seamless digital purchasing experience. The platform's three-tier Python Flask and MySQL architecture ensures clean separation of concerns, security, and scalability. The modular design facilitates future integration of advanced capabilities including AI-driven price prediction, mobile deployment, real-time logistics, and government scheme connectivity. Each planned enhancement builds incrementally on the solid technical foundation established in this phase. The Farm to Market Platform is more than a software product it is a meaningful step toward a more equitable, transparent, and technologically empowered agricultural economy. By bridging the digital divide between rural farming communities and the broader marketplace, the platform contributes directly to India's goals of rural livelihood enhancement, food security, and sustainable agricultural development.

ACKNOWLEDGEMENT

The authors gratefully acknowledge the guidance and support of Dr.B.Sujatha,M.E.,Ph.D., Professor, Department of Computer Science and Engineering, Sengunthar Engineering College, Tiruchengode, whose expertise and mentorship were invaluable throughout the research and development of this project. The authors also thank the Department of CSE at Sengunthar Engineering College for providing the technical resources, laboratory facilities, and institutional support that made this work possible.

REFERENCES

1. Ministry of Agriculture & Farmers Welfare, Govt. of India.[Online]. Available: https://agricoop.gov.in/
2. National Agriculture Market(e-NAM).[Online].Available: https://www.enam.gov.in/
3. Indian Council of Agricultural Research.[Online].Available: https://icar.org.in/
4. Government Farmer Portal ,India.[Online].Available: https://farmer.gov.in/
5. AGMARKNET Agricultural Marketing.[Online].Available: https://agmarknet.gov.in/ https://www.fao.org/