

Farmer Online Selling Product

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Abstract- Agriculture plays a vital role in the economic development of developing countries such as India, where a large population depends on farming for livelihood. Traditional agricultural marketing systems rely heavily on intermediaries, resulting in reduced profit margins for farmers and lack of price transparency. This research proposes a Farmer Online Selling Application, a web-based digital platform that connects farmers directly with consumers, retailers, and wholesalers.

The proposed system enables farmers to list agricultural products, manage inventory, receive online payments, and track orders efficiently. Buyers can browse products, place orders, and make secure digital payments through integrated payment gateways. The system improves transparency, reduces dependency on middlemen, and promotes digital inclusion in rural areas. The research demonstrates how modern e-commerce technologies can transform agricultural trade into an efficient, transparent, and scalable ecosystem.

Key words- *Arduino, Passive Infrared, GSM Module, Security, PIR sensor*

1. INTRODUCTION

The safety and protection of farmhouses and agricultural land have become a significant challenge in recent times, especially in rural and forest-adjacent regions where intrusion of wild animals such as wild boars, deer, monkeys, elephants, and other species is a common occurrence. These animal intrusions often lead to large-scale destruction of crops, harm to livestock, and in extreme cases, even pose direct threats to human life, thereby causing heavy economic losses and constant fear among farmers. Conventional preventive methods like fencing, watch towers, or manual guarding are not always reliable, as they require high cost, continuous human effort, and still fail to ensure safety during the night or

when farmers are away from the fields. To overcome these limitations, the Farm House Safety from Wild Animals using Arduino based System provides an intelligent, automated, and cost-effective solution that ensures real-time monitoring and quick response to intrusions. The system primarily utilizes Passive Infrared (PIR) sensors, which are capable of detecting motion and heat signatures of animals when they cross into a predefined restricted zone. Once an intrusion is detected, the Arduino microcontroller processes the signal and immediately activates countermeasures such as loud alarms, flashing lights, or other deterrent mechanisms that can scare the animals away before they cause any harm. Moreover, the system can be further extended to send instant alerts to farmers via wireless communication modules, thereby allowing rapid action even when the farmer is not physically present at the site. By combining the benefits of sensor technology, microcontroller-based automation, and responsive safety mechanisms, this system not only reduces the risk of crop damage and property loss but also minimizes human-animal conflicts, ensures the well-being of farmers and their livelihood, and promotes sustainable agricultural practices. Thus, the project represents a practical, affordable, and innovative approach to modern farm security, providing peace of mind to farmers while effectively addressing one of the most persistent problems faced in agricultural communities.

2. METHODOLOGY

1. System Development Approach

The proposed system follows the Software Development Life Cycle (SDLC) using a modular and incremental development model. The project is divided into multiple phases including requirement analysis, system design, implementation, testing, and deployment.

Phases of Development
Requirement Gathering
System Design

Module Development
Integration
Testing

Deployment and Maintenance

This structured approach ensures proper planning and smooth execution of system functionalities.

2. Requirement Analysis

In this phase, requirements of all stakeholders were identified:

Farmers: Product listing, inventory management, order tracking

Buyers: Product browsing, online purchasing, secure payments.

Admin: User monitoring, product approval, report generation.

Both functional and non-functional requirements such as security, usability, performance, and reliability were analyzed before system design.

3. System Architecture Design

The application is designed using a three-tier architecture:

a) Presentation Layer

- Provides graphical user interface.
- Allows interaction between users and system.
- Includes farmer dashboard, buyer interface, and admin panel.

b) Application Layer

Handles business logic.

Processes orders and payments.

Manages authentication and notifications.

c) Data Layer

Stores user details, product data, transactions, and feedback.

Maintains database consistency and integrity.

4. Module-Based Development

The system is divided into independent functional modules:

User Management Module

Registration and login authentication.

Role-based access (Farmer, Buyer, Admin).

a) Product Management Module

Add, update, delete agricultural products.

Manage price, quantity, and product images.

Order Management Module

Add to cart and place orders.

Track order history and delivery status.

b) Payment Module

Integration with online payment gateways.

Transaction verification and receipt generation.

Feedback and Notification Module

Customer reviews and ratings.

Email/SMS notifications for order updates.

Admin Module

User verification.

Product approval.

Report and transaction monitoring.

5. Database Design Methodology

Entity-Relationship (ER) modeling is used to define relationships between:

- Users
- Farmers
- Products
- Orders
- Payment

The database ensures secure storage and fast retrieval of system data.

3.LITERATURE SURVEY

Digital transformation of agriculture Major development institutions argue that digital tools (market info, digital payments, logistics, and advisory) can reduce information asymmetry, lower transaction costs, and connect millions of small farms with consumers. Frameworks from FAO and the World Bank emphasize data access, interoperable platforms, and inclusion of smallholders as core to effective digital agriculture programs. Key insight: Digital agriculture works best when platforms combine market access (pricing, discovery, e-payments) with trustworthy information services (grading, quality, weather, and advisory).

Farmer e-marketplaces & the India context (eNAM)
India's National Agriculture Market (eNAM) shows how electronic trading layered on top of physical mandis can

unify markets, standardize assaying/grading, and enable e-payments directly to farmers. Government summaries cite single-window information (arrivals, prices, bids) and settlement flows, while the official portal describes the pan-India network connecting APMC markets. Implication for this project: A farmer-to-consumer app should align with eNAM learnings—transparent pricing, standardized quality, simple settlement—and fill gaps for direct retail (last-mile delivery, smaller order sizes, subscriptions).

Mobile technology for smallholders Systematic reviews find mobile apps help farmers access prices, weather, and advisory; adoption depends on perceived usefulness, literacy, connectivity, and trust. Recent reviews and comparative analyses highlight strong potential but uneven uptake across regions and crops. Design cues: Multilingual UX, ultra-low-bandwidth modes, voice prompts/IVR, and offline caching can raise adoption in low-connectivity areas.

Market access & procurement reforms Empirical work (e.g., World Bank studies in India) links better market information and direct access mechanisms with improved rural market performance and reduced margins taken by intermediaries. These findings support platforms that shorten chains and formalize transactions.

Emerging technologies (AI, satellite/data platforms) Recent reporting and policy analysis suggest AI-enabled advisories and satellite derived insights (sowing windows, weather risk) can improve yields and profitability when integrated into farmer apps—provided affordability and last mile support exists.

4. PROBLEM DEFINITION

Agriculture plays a crucial role in supporting the economy and providing livelihood opportunities for a large population. However, despite its importance, farmers continue to face significant challenges in selling their agricultural produce efficiently and profitably. The existing agricultural marketing system mainly depends on traditional selling methods such as local markets, intermediaries, and wholesalers, which often create inefficiencies and financial disadvantages for farmers.

In the current system, farmers have limited direct access to consumers and wider markets. Middlemen act as intermediaries between farmers and buyers, controlling product pricing and distribution channels. As a result,

farmers frequently receive lower profits compared to the actual market value of their produce. Additionally, manual trading processes consume time, increase operational costs, and lack transparency in transactions.

Another major issue is the absence of a centralized digital platform that allows farmers to manage product listings, monitor demand, and receive secure payments. Farmers often experience delayed payments and have no proper mechanism to track orders or maintain sales records. Buyers also face difficulties in identifying reliable sources for fresh agricultural products and verifying product quality or origin.



Fig. Flow Chart

5. EXISTING SYSTEM

In the existing agricultural marketing system, farmers primarily depend on traditional and manual methods to sell their agricultural products. The selling process usually takes place through local markets (mandis), agents, wholesalers, or intermediaries who act as a link between farmers and consumers. Although this system has been followed for many years, it presents several operational and financial challenges for farmers as well as buyers.

Farmers typically transport their produce to nearby markets where prices are determined by intermediaries or market demand rather than by farmers themselves. This dependency reduces farmers' bargaining power and limits their ability to earn fair profits. Moreover, the absence of digital systems makes product management, order tracking, and transaction monitoring difficult.

The current system lacks technological integration, resulting in inefficient communication between producers and consumers. Buyers also face difficulties in accessing fresh agricultural products directly from trusted sources, as product availability information is not centralized.

6. CONCLUSION

The Farmer Online Selling Application provides an effective digital solution to overcome the limitations of the traditional agricultural marketing system. The existing method of selling agricultural products through intermediaries often results in reduced profits, delayed payments, and limited market access for farmers. The proposed system addresses these challenges by introducing a centralized online marketplace that enables direct interaction between farmers and buyers.

The developed platform integrates essential modules such as user management, product management, order processing, secure payment integration, feedback mechanisms, and notification services. These features ensure transparency, efficient transaction handling, and improved communication among all stakeholders. By allowing farmers to manage product listings and receive payments digitally, the system simplifies agricultural trade and enhances operational efficiency.

The application promotes fair pricing, reduces dependency on middlemen, and expands market opportunities for farmers beyond geographical limitations. At the same time, consumers benefit from easy access to fresh agricultural products with reliable information about quality and source. The implementation of modern web technologies and secure payment systems demonstrates the feasibility and scalability of the proposed solution.

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