

Green Fund Connecting Farmers and Investors Through Transparent Crowdfunding

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Abstract- With the increasing financial challenges in the agricultural sector, the need for transparent, efficient, and accessible funding solutions has become critical. Traditional financing methods often involve intermediaries, lack transparency, and place significant financial risk solely on farmers. This paper presents GreenFund: A Direct Farmer–Investor Crowdfunding Platform with Real-Time Profit Tracking, a system designed to bridge the gap between farmers and investors through a secure and transparent digital platform. The proposed system enables farmers to publish detailed agricultural projects, including crop information, funding requirements, and expected returns, while allowing investors to directly fund these projects. The platform integrates real-time monitoring and tracking mechanisms to analyze project progress and calculate profit or loss based on actual outcomes. It incorporates features such as automated notifications, secure transaction management, and risk visibility to enhance trust and decision-making. The system is capable of reducing dependency on traditional intermediaries, improving financial accessibility for farmers, and providing investors with a structured and transparent investment environment. Experimental results indicate that the proposed solution enhances operational efficiency, reduces manual effort, and offers a scalable and cost-effective approach for agricultural funding. The architecture is designed to be flexible and suitable for both small-scale farmers and large agricultural ecosystems.

Keywords- Crowdfunding, Agriculture, Farmer–Investor Platform, Profit Sharing, Transparency, Automation, Financial Inclusion, Risk Management.

I. INTRODUCTION

With the increasing challenges in agricultural financing, farmers often face difficulties in accessing timely and affordable capital, while investors lack transparent and structured opportunities to invest in agriculture. Traditional funding methods involve intermediaries, limited visibility, and high financial risk for farmers, leading to inefficiencies and reduced profitability. The integration of digital platforms with real-time tracking and automation provides a promising solution to bridge this gap.

The proposed system, GreenFund: A Direct Farmer–Investor Crowdfunding Platform with Real-Time Profit Tracking, enables farmers to connect directly with investors through a secure and transparent digital platform. Farmers can publish detailed farming projects, including crop type, investment requirements, and expected returns, while investors can browse, analyze, and fund these projects. The system continuously tracks project progress and calculates profit or loss based on actual farming outcomes, improving transparency and

accountability. By integrating secure transactions, automated notifications, and data-driven insights, the platform enhances efficiency and reduces dependency on traditional intermediaries.

1. Sub-Heading : Advantages of GreenFund Platform

Compared to traditional agricultural financing methods, the GreenFund platform provides enhanced transparency and direct interaction between farmers and investors. Real-time project tracking and profit-sharing mechanisms improve trust and decision-making. The platform enables better risk visibility, allowing investors to make informed investment decisions. Additionally, the digital and scalable architecture ensures accessibility for both small-scale farmers and large agricultural networks, making it a cost-effective and efficient solution.

2. Sub-Heading : Overview of Proposed Work

This paper presents the design and implementation of a smart crowdfunding platform for agricultural funding, focusing on transparency, automation, and real-time tracking. The system performs continuous data management, including project creation, investment tracking, and profit calculation. It incorporates secure authentication, transaction handling, and monitoring features to ensure system reliability. The overall system workflow includes project submission, verification, funding, monitoring, and profit distribution, as illustrated in Figure 1.

II. PROBLEM STATEMENT

In recent years, the agricultural sector has faced significant financial challenges, making access to timely and affordable funding a critical concern for farmers. Traditional financing methods, such as bank loans and local moneylenders, often involve complex procedures, high interest rates, and strict eligibility criteria. These limitations make it difficult for small and marginal farmers to secure the necessary capital for their farming activities, ultimately affecting productivity and profitability.

Therefore, there is a need for a secure, transparent, and scalable platform that enables direct interaction between farmers and investors, provides real-time project tracking, and ensures structured profit-sharing mechanisms. Such a system should reduce dependency on intermediaries, improve trust, and make agricultural investment more accessible and efficient.

The proposed system, GreenFund: A Direct Farmer–Investor Crowdfunding Platform with Real-Time Profit Tracking, addresses these challenges by providing a digital platform that facilitates transparent funding, continuous monitoring, and efficient profit distribution, thereby improving financial accessibility and operational efficiency in the agricultural sector.

GreenFund: Decentralized Agricultural Financing - System Architecture and Flow.

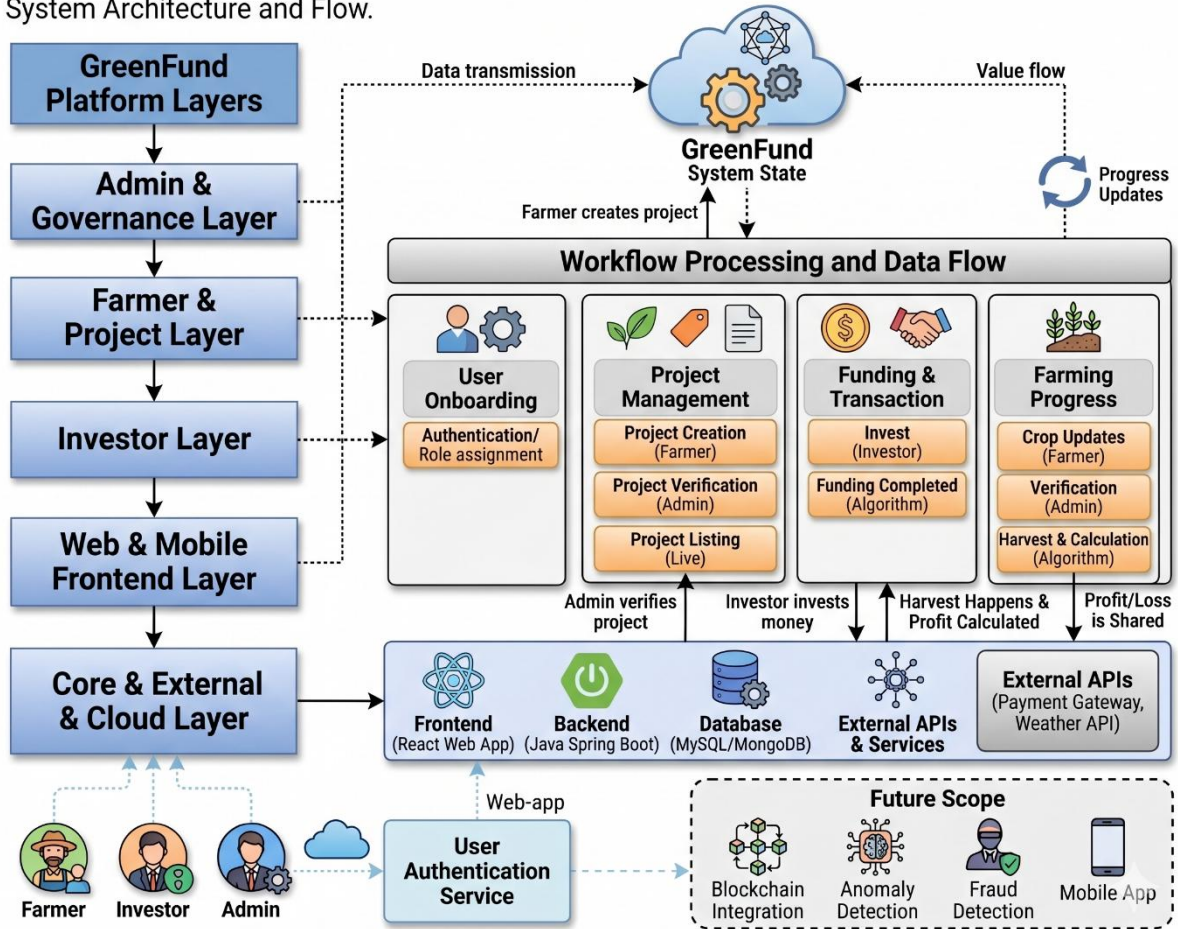


Figure 1: System Architecture of Smart AI-Based Network Assistant.

Table 1: Key System Parameters.

Parameters	Description / Values
Platform Type	Decentralized Agriculture Crowdfunding Platform
Architecture	Client-Server Architecture (React Frontend & Java Backend)
Local Environment	On-Premise Server / Local Network Deployment
Data Verification	Multi-step Admin Audit & Document Verification
Financial System	Equity-Based Profit/Loss Sharing Model
Database Management	Local RDBMS (MySQL / MongoDB) with Daily Backups
Security Layer	JWT (JSON Web Tokens) & AES Data Encryption
Primary Actors	Farmers (Project Owners), Investors, and System Admins

III. CONCLUSION

- The following conclusions are drawn from the analysis and implementation of the GreenFund: Agricultural Crowdfunding System:
- Financial Accessibility: The platform successfully provides farmers with a direct alternative to high-interest traditional loans by connecting them with a diverse pool of investors, ensuring easier access to capital.
- Risk Mitigation & Transparency: By implementing a structured Profit/Loss Sharing model, the system ensures that the financial risk is balanced between the farmer and the investor, fostering a more sustainable agricultural ecosystem.
- Verification & Trust: The integration of a centralized Admin Approval Layer ensures that only verified farming projects reach investors, significantly reducing the risk of fraud and increasing platform credibility.

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