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Farmer Bazar

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ABSTRACT: This research presents a comprehensive study on digital agricultural marketplaces, focusing on a mobile application that enables direct interactions between farmers and consumers. The traditional agricultural supply chain often involves multiple intermediaries, leading to inflated consumer prices and reduced farmer earnings. The proposed application provides a streamlined marketplace where farmers can list their produce, and consumers can browse, compare, and purchase directly.

Key features of the application include real-time crop listings, price transparency, direct farmer-consumer communication, and secure payment options. The development followed a user-centric approach, incorporating feedback from stakeholders to optimize usability. The system was evaluated through field tests, demonstrating increased transaction efficiency, fairer pricing, and improved farmer revenues. Future enhancements will focus on integrating AI-driven demand forecasting, multi-farmer listings, and enhanced logistics support.

KEYWORDS: Direct market access, agriculture technology, farmer-to-consumer transactions, digital marketplace, supply chain transparency.

I. INTRODUCTION

Agriculture plays a crucial **role** in the global economy, providing food, raw materials, and employment opportunities to billions of people. It is particularly significant in developing countries, where a substantial portion of the population depends on farming as their primary source of income. Despite the sector's importance, small-scale farmers continue to face persistent challenges, including limited access to markets, price volatility, and inefficient supply chains. The presence of intermediaries further compounds these issues by inflating consumer prices and reducing the profit margins of farmers.

Traditional agricultural markets, though essential, are often plagued by inefficiencies such as delayed transactions, price manipulation, and logistical challenges. Farmers frequently struggle to sell their produce at fair prices due to a lack of direct access to consumers. Additionally, the absence of price transparency forces farmers to rely on middlemen, who often dictate terms that are unfavorable to producers. As a result, the agricultural sector needs innovative solutions that empower farmers, enhance pricing fairness, and improve overall supply chain efficiency.

The goal of this research is to evaluate the impact of the Farmer Bazar app on transaction efficiency, customer satisfaction, and farmer profitability. Through field testing and user feedback, this paper will assess whether the app can serve as a scalable solution to improve the agricultural marketplace, particularly for small-scale farmers who lack access to traditional supply chains. Additionally, the study explores how the app can contribute to sustainable agriculture by fostering a more direct and equitable relationship between farmers and consumers.

II. LITERATURE SURVEY

Kanika Sehgal (2024) examined the role of digital agricultural marketplaces in providing farmers with direct access to consumers. The study found that while digital platforms reduce dependence on intermediaries, usability challenges remain a significant barrier to adoption among small-scale farmers.

Mahesh T. R. (June 2023) analyzed the impact of e-commerce platforms on agricultural sales. The research highlighted that although online marketplaces improve price transparency, logistical challenges such as transportation and storage still hinder the widespread adoption of digital trade solutions in rural areas.

Prof. Kiran Bidua (March 2022) explored the integration of artificial intelligence (AI) in agricultural marketplaces. The study concluded that AI-driven pricing models can help farmers maximize their profits by offering dynamic pricing recommendations based on real-time market trends.

Raj Kumar Jain (2021) studied the role of blockchain technology in securing digital agricultural transactions. The findings indicated that blockchain can significantly reduce fraudulent activities and ensure fair pricing by maintaining immutable transaction records.

Subhash S. (2020) investigated the effectiveness of direct-to-consumer agricultural marketplaces. The study suggested that single-farmer-to-customer platforms enhance buyer-seller relationships and reduce competition-related complexities compared to multi-vendor marketplaces.

III. METHODOLOGY

Architecture

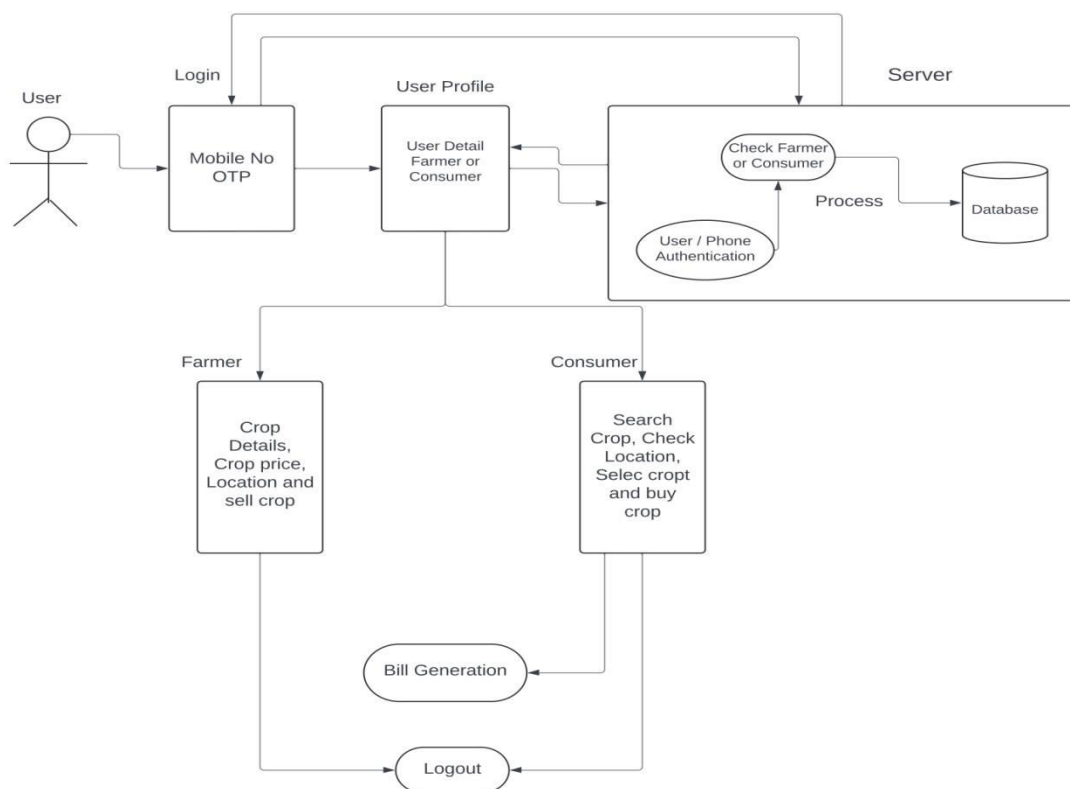


Fig 1. System Architecture

Problem Identification A qualitative study was conducted with 30 farmers and 30 consumers in semi-urban and rural areas. Surveys and interviews identified key pain points, including difficulties in price negotiation, lack of market access, and mistrust in digital platforms.

System Requirements Based on stakeholder feedback, the application was designed with essential functionalities:

- Real-time crop listing with pricing information
- Secure payment gateway integration
- Chat functionality for buyer-seller communication

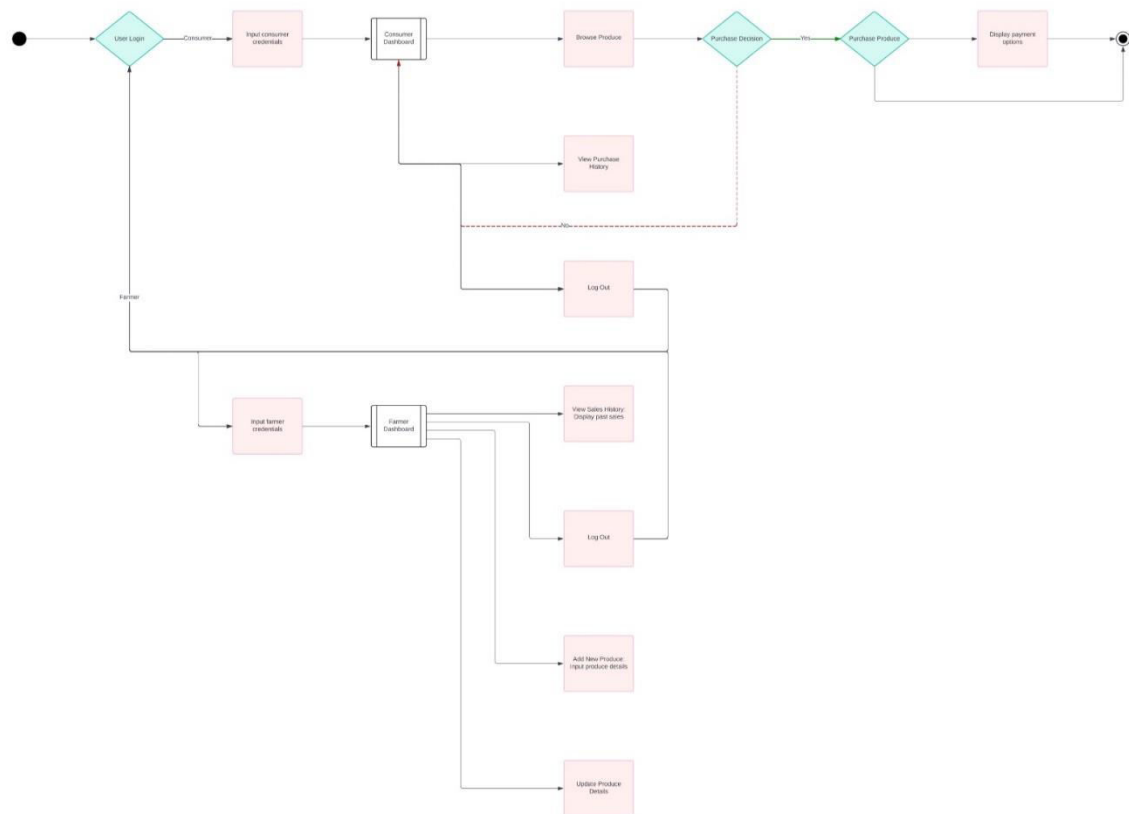
- A user-friendly interface suitable for farmers with minimal digital literacy

Development & Technology StackThe application was developed using Flutter for cross-platform compatibility, Firebase for real-time data processing, and integrated with secure payment APIs. The backend infrastructure ensures seamless data synchronization and security.

Deployment & TestingA pilot deployment was conducted over four weeks. Farmers listed their crops, while consumers made purchases through the application. Transaction efficiency, pricing fairness, and user satisfaction were measured to assess the system's impact.

Data AnalysisMetrics such as transaction time, sales volume, and farmer profit margins were analyzed. Statistical techniques, including paired t-tests, were used to compare pre-application and post-application performance.

IV. ACTIVITY DIAGRAM



V. CONCLUSION

This study presents the development, implementation, and evaluation of the Farmer Bazar app, a mobile platform designed to facilitate direct transactions between farmers and customers. The app was specifically created to address several challenges that small-scale farmers face, including limited market access, pricing transparency, and difficulties in managing secure, direct transactions. Through the usercentered design approach, the Farmer Bazar app offers a simple, intuitive interface that allows farmers to list their crops and customers to purchase them directly, thereby removing unnecessary intermediaries from the supply chain.

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