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Farmarket: Enhancing Market Accessibility for Local Farmers Through a Digital Marketplace

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Abstract

This study evaluates the acceptance and viability of FARMARKET, a digital marketplace system developed to enhance market accessibility for local farmers. By integrating direct farmer-to-consumer transactions, real-time messaging, and streamlined order management, the platform aims to bridge the gap between rural production and urban demand. Utilizing the Technology Acceptance Model (TAM), the research analyzed perceived usefulness (PU), perceived ease of use (PEU), and behavioral intention (BI) to adopt the platform. A mixed-methods design was employed, involving 70 local farmers and 5 IT experts through surveys, interviews, and user acceptance testing. Data analysis utilized thematic analysis for qualitative insights and descriptive statistics, including weighted means and standard deviations for quantitative metrics. Findings indicate that FARMARKET is perceived as a highly effective tool for bypassing traditional middlemen and increasing profit margins. IT experts validated the system's technical reliability and its alignment with current agricultural digitalization trends. While results show a strong behavioral intention to adopt the system, the study identifies critical adoption challenges, including limited digital infrastructure and the need for specialized technical training. The research concludes that FARMARKET serves as a viable digital solution for localized trade. However, widespread success requires strategic investments in internet connectivity and user-focused training programs to fully realize enhanced market accessibility.

Keywords: Agricultural digitalization, consumer connectivity, marketplace adoption, sustainable agriculture, technology acceptance

1. Introduction

Farming remains a cornerstone of the economy. However, many local farmers earn a low income because they cannot reach consumers directly. They usually depend on middlemen who purchase produce at low prices and sell them for much more, leaving farmers with very little profit (Briones et al., 2023).

While the digital marketplace is popular in other industries, it is not used much in local farming. This is due to poor internet, the high cost of phones, and low digital skills. Most current apps are made for big corporations and do not meet the needs of small local farmers (Gumbi et al., 2023).

Research shows that technology can improve market accessibility, create fair pricing, and help reduce poverty (IFAD, 2024). To address these issues, this study presents FARMARKET. This is a digital mark-

etplace designed to help local farmers connect directly with consumers.
By removing the need for middlemen, the platform helps farmers earn more money and adopt digital tools. FARMARKET provides consumers with fresh, affordable food and gives future researchers a model for building similar systems (Lapitan, 2025; Javier et al., 2024).
Furthermore, FARMARKET supports the United Nations Sustainable Development Goals. It aligns with SDG 8 (Decent Work and Economic Growth) by helping farmers earn a fair living through better market access. It also supports SDG 9 (Industry, Innovation, and Infrastructure) by using new technology to close the digital gap in the local agricultural sector.

2. Methodology

2.1 Research Design and Study Approach

This study utilized a mixed-methods research design combining qualitative and quantitative approaches to evaluate the acceptance, feasibility, and usability of FARMARKET among local farmers. The qualitative component involved semi-structured interviews to identify existing agricultural marketing challenges, digital readiness, and user expectations. The quantitative component applied structured survey questionnaires based on the Technology Acceptance Model (TAM) to measure Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Behavioral Intention (BI) using a four-point Likert scale. This design was selected to provide a comprehensive analysis of both user experiences and measurable technology adoption factors.

2.2 Participants and Study Setting

It was conducted in the province of Pampanga, where local farmers actively participate in agricultural production. A total of 70 local farmers served as primary respondents, while 5 IT experts evaluated the technical functionality and system performance of FARMARKET. Participants were selected through snowball sampling, beginning with referrals from local agricultural offices, specifically the Department of Agriculture. Eligibility criteria included active farming involvement, access to smartphones or computers, and stable internet connectivity.

2.3 Research Instrument

The primary research instrument consisted of a validated structured questionnaire divided into four sections: (1) Demographic profile of participants, (2) Current agricultural marketing practices and challenges, (3) Technology Acceptance Model variables (Perceived Usefulness, Perceived Ease of Use, Behavioral Intention of Use), and (4) System usability and satisfaction assessment. Semi-structured interview guides were also utilized to obtain deeper qualitative insights regarding user challenges, trust concerns, and expectations for digital agricultural commerce. User Acceptance Testing (UAT) was additionally conducted to evaluate interface accessibility, navigation, and technical performance.

2.4 Data Collection Procedure

Data collection commenced after securing ethical approval and necessary permissions from agricultural authorities. Respondents were provided informed consent forms prior to participation. Surveys were administered directly to farmer respondents, while interviews were conducted with selected farmers and IT experts. During system deployment, participants interacted with the FARMARKET platform to assess real-world usability. Feedback was collected throughout multiple Agile iterations to refine system features and improve user experience.

2.5 Data Analysis

Qualitative data were analyzed using thematic analysis to identify recurring patterns related to adoption

barriers, digital literacy challenges, and system expectations. Quantitative responses were analyzed using descriptive statistical methods, including weighted mean and standard deviation, to evaluate user acceptance across TAM dimensions. The study's primary parameters of observation included: Perceived Usefulness, Perceived Ease of Use, Behavioral Intention, User Satisfaction, and Technical Reliability.

3. System Development Methodology

The FARMARKET platform was developed using the Agile Software Development Methodology under the System Development Life Cycle (SDLC). Agile methodology was chosen for its iterative and flexible framework, allowing continuous system enhancement through stakeholder feedback. The development process included requirement gathering, interface design, feature integration, prototype development, usability testing, and iterative revisions. Key system components included secure authentication, product listing management, farmer dashboards, direct consumer communication, order processing, and reporting systems. This methodology ensured that the platform remained adaptive to user needs while maintaining technical reliability.

Figure 1: Agile System Development Methodology

4. Results and Discussion

The FARMARKET platform is built with a strong technical framework to make agricultural trade more efficient and transparent. While the system has great potential, the study found specific challenges that make it difficult for local farmers to start using the platform. To understand how to overcome these barriers, the study evaluates the farmers' perceptions using the Technology Acceptance Model (TAM). The research focuses on three key areas: Perceived Usefulness (PU), Perceived Ease of Use (PEU), and the farmers' Behavioral Intention (BI) to use the system.

Table 1: Challenges Faced by Local Farmers Towards Agricultural Platform

Category	Mean	Standard Deviation	Verbal Interpretation
Hidden Fees	2.71	0.73	High
Middlemen Dependency	3.06	0.70	High
Privacy Concerns	3.13	0.64	High
Trust to Online Consumers	3.19	0.77	High
System Learning Difficulty	3.21	0.78	High
Scam Concerns	3.36	0.78	Very High
Final Mean/SD	3.11	0.73	High

Results in Table 1 show that local farmers face a high level of challenges in adopting digital agricultural platforms, with scam concerns identified as the most critical issue. Overall, the findings indicate strong hesitation driven by trust, security, and usability concerns, which may hinder the adoption of systems like FARMARKET.

Table 2: Evaluation Results of FARMARKET Based on Technology Acceptance Model (TAM)

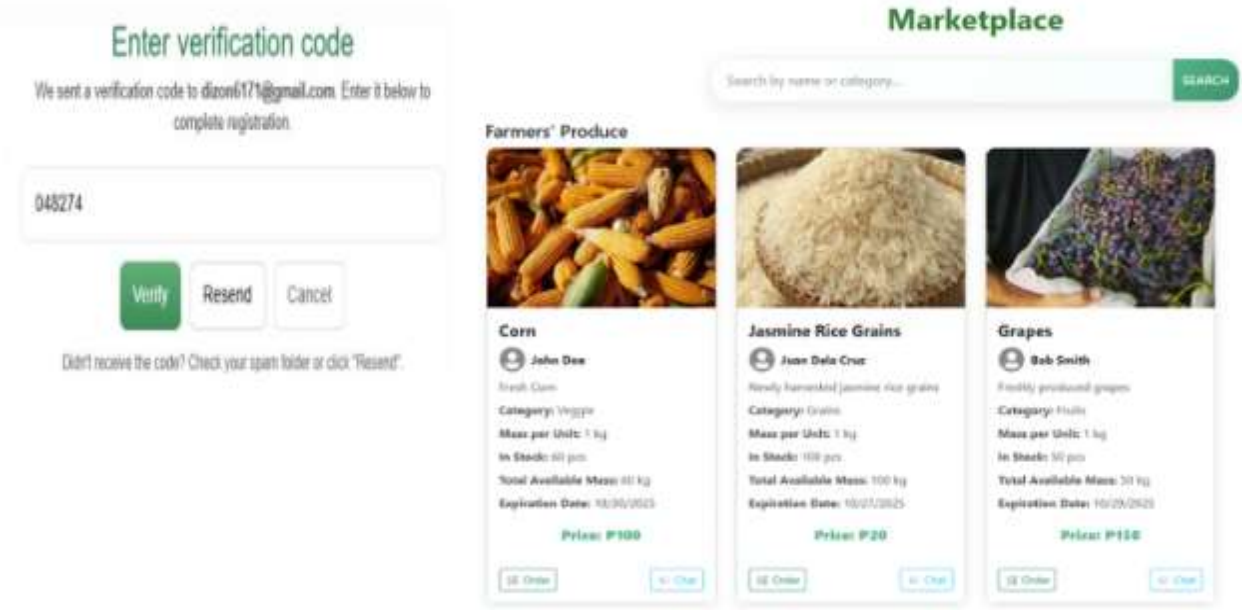
Category	Mean	Standard Deviation	Verbal Interpretation
Perceived Usefulness	3.43	0.61	Very High
Perceived Ease of Use	3.43	0.69	Very High
Behavioral Intention of Use	3.29	0.57	Very High
Final Mean/SD	3.11	0.73	Very High

Table 2 presents the results of the system evaluation based on the Technology Acceptance Model (TAM). The data shows that the FARMARKET system received "Very High" scores across all categories. These results prove that a digital marketplace is a feasible and highly welcomed platform for enhancing market accessibility. Even though there are challenges, FARMARKET remains a powerful and effective solution for local farmers. Its high scores in usefulness and ease of use show that it is the right platform to help farmers gain independence from middlemen and improve their market accessibility.

5. System Features

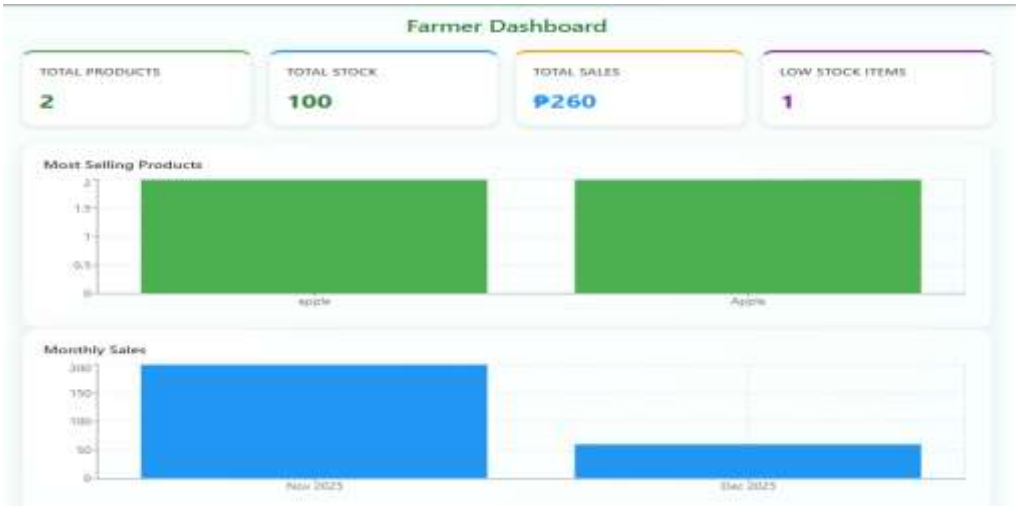
The FARMARKET system provides farmers and consumers with a user-friendly digital marketplace for direct agricultural trading.

Figure 2: Register Verification Code and Marketplace



FARMARKET provides a secure experience by requiring email verification during user registration, ensuring only legitimate users can enter the platform. The Marketplace page serves as the main hub, allowing users to easily search for agricultural products using a search bar and view detailed product cards, which also allows them to order right away and message the farmer directly.

Figure 3: Farmer Dashboard



The Farmer's Dashboard offers farmers a clear overview of their business, displaying key metrics such as total products, stock levels, sales, and low-stock items. It also features visual insights through a bar chart of best-selling products and a monthly sales chart for tracking performance.

6. Conclusion

The FARMARKET system serves as a transformative digital marketplace designed to bridge the systemic gap between rural agricultural production and urban consumer demand. By establishing a direct farmer-to-consumer ecosystem, the platform actively dismantles the traditional reliance on middlemen who historically suppress farmers' profit margins. Removing these intermediary barriers empowers local

cultivation networks with optimized pricing autonomy, allowing them to capture equitable financial returns while providing consumers with fresh, affordable food options.

The practical implementation of the platform successfully addresses the operational realities of its target demographic through localized, user-centric utilities. While foundational challenges such as localized internet infrastructure limitations and restricted digital literacy present real adoption hurdles, empirical findings indicate an exceptionally high willingness and strong behavioral intention among local farmers to integrate this technology.

Ultimately, FARMARKET positions itself as a viable and highly welcomed framework for the modernization of local agriculture. By prioritizing an accessible interface alongside core transactional transparency, the platform facilitates a reliable mechanism to increase individual incomes and simplify historically volatile price negotiations. Moving forward, transitioning this platform from a successful prototype into permanent regional infrastructure will depend heavily on sustained technical optimization and strategic, ongoing public-private investments in rural internet connectivity and specialized user training.

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