

Agri cart: An Online Marketplace for Framers

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Abstract

Digital transformation has begun to reshape the agricultural sector by introducing online marketplaces that connect farmers directly with buyers and service providers. This survey paper examines the awareness, adoption, and impact of online agricultural marketplaces among farmers. The study is based on survey data collected from farmers across different regions to understand their experiences, expectations, and challenges while using digital platforms. The results indicate that online marketplaces help farmers improve market access, obtain better price information, and reduce dependence on intermediaries. However, challenges such as limited internet access, lack of technical knowledge, and concerns regarding secure payments continue to restrict widespread usage. The paper discusses these findings and emphasizes the need for user-friendly platforms, digital

literacy programs, and supportive infrastructure to enhance farmer participation. The study concludes that online marketplaces have significant potential to strengthen agricultural marketing systems if existing barriers are effectively addressed.

Keyword: Online agricultural marketplace, Digital farming, Farmer empowerment, E-agriculture, Agricultural e-commerce, Market accessibility, Price transparency, Rural digitization, Agri-technology

Introduction

Agriculture plays a vital role in the economic development of many countries, particularly in rural regions where farming is the primary source of livelihood. Despite its importance, traditional agricultural marketing systems often involve multiple intermediaries, limited market access, and lack of price transparency, which can reduce farmers' income. In recent years, the rapid

growth of digital technologies has created new opportunities to address these challenges through online marketplaces designed specifically for farmers.

An online agricultural marketplace is a digital platform that enables farmers to sell their produce directly to buyers and purchase agricultural inputs such as seeds, fertilizers, and equipment. These platforms aim to simplify the trading process by providing real-time price information, wider market reach, and secure transaction mechanisms. By reducing dependency on middlemen, online marketplaces can help farmers receive fair prices for their produce while improving overall efficiency in the supply chain.

However, the adoption of online marketplaces in agriculture is not without challenges. Factors such as limited internet connectivity, low digital literacy, and concerns about trust and payment security can affect farmers' willingness to use these platforms. Understanding farmers' awareness, experiences, and expectations is essential for designing systems that are both accessible and effective.

This survey paper examines the current status of online marketplaces for farmers by analyzing farmers' perceptions, benefits, and challenges associated with their usage. The study aims to identify key factors influencing adoption and to highlight areas for improvement that can support the sustainable growth of digital agricultural markets.

Related Work

Several studies have explored the role of digital technologies in improving agricultural marketing systems. Early research on electronic agriculture (e-agriculture) emphasized the use of information and communication technologies to provide farmers with timely market information, weather updates, and advisory services. These studies highlighted the potential of digital platforms to reduce information asymmetry between farmers and buyers.

Recent research has focused on online agricultural marketplaces that connect farmers directly with consumers, wholesalers, and agribusinesses. Many studies report that such platforms enhance price transparency and expand market access, enabling farmers to sell their produce beyond local markets. Some researchers have observed that digital marketplaces help reduce the influence of intermediaries, which can lead to improved income for farmers.

Other related works have examined the challenges associated with adopting online platforms in rural areas. Commonly identified barriers include limited internet infrastructure, low digital literacy, and lack of trust in online payment systems. Studies also indicate that small and marginal farmers face greater difficulty in adopting these technologies compared to larger farmers due to resource constraints.

Proposed System Methodology

The proposed Agri-Cart system is designed to create a digital marketplace that directly connects farmers with buyers, ensuring transparency, efficiency, and fair pricing. The methodology follows a structured development approach beginning with requirement analysis, where the needs of farmers, buyers, and administrators are identified. These requirements include user registration, product listing, secure payment processing, order management, delivery tracking, and feedback mechanisms, with a strong focus on ease of use for farmers.

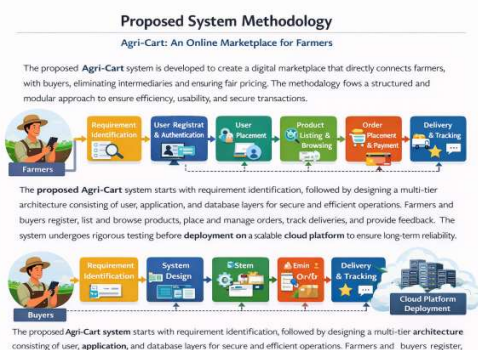


Fig 01 Agri-Cart System Development methodology

Based on the identified requirements, the system is designed using a multi-tier architecture consisting of a user interface layer, application logic layer, and database layer. The user interface provides separate dashboards for farmers and buyers, while the application layer handles core functionalities such as order processing, inventory updates, and payment validation. A centralized database is used to securely store user details, product information,

transaction records, and delivery status, ensuring data integrity and reliability.

Farmers and buyers are required to register and authenticate themselves using verified credentials to ensure secure access to the platform. Once registered, farmers can list agricultural products by specifying details such as crop type, quantity, price, and availability. Buyers can browse, search, and compare products based on their requirements, enabling informed purchasing decisions.

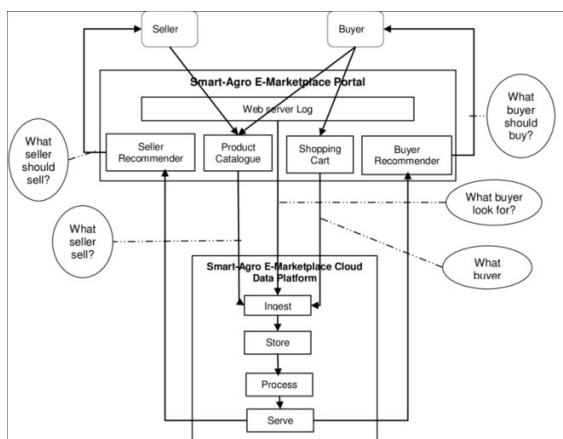
When a buyer places an order, the system processes the request and facilitates secure digital payment through an integrated payment gateway. After successful payment, the order details are shared with the farmer, and the inventory is automatically updated to prevent inconsistencies. The logistics module manages product pickup and delivery, allowing buyers to track their orders in real time.

System Architecture

The system architecture of the proposed Agri-Cart online marketplace is designed using a multi-tier structure to ensure scalability, security, and efficient data management. The architecture is divided into three main layers: the presentation layer, application layer, and data layer. The presentation layer provides user-friendly interfaces for farmers, buyers, and administrators, allowing them to access the system through web or mobile devices. This layer enables users to register, log in,

list products, search for agricultural produce, place orders, and track deliveries.

The application layer acts as the core processing unit of the system, handling business logic such as product management, order processing, payment verification, inventory updates, and communication between users. It integrates third-party services such as digital payment gateways and notification systems to ensure secure and real-time transactions. Role-based access control is implemented in this layer to manage different user permissions for farmers, buyers, and administrators.



The data layer consists of a centralized database server that securely stores user information, product details, transaction records, delivery status, and feedback data. Proper data normalization, authentication, and access control mechanisms are applied to maintain data integrity and confidentiality. An admin panel is connected to the database and application layers, enabling administrators to monitor platform activities, manage users and products, and generate analytical reports. This layered architecture ensures

smooth interaction between components, improves system reliability, and supports future enhancements.

Results and Discussion

The study revealed that farmers mainly use the Agri-Cart platform for purchasing agricultural inputs such as seeds, fertilizers, pesticides, and farming tools. Very few farmers used the platform for selling their produce. This shows that Agri-Cart is currently more popular as an input-buying platform rather than a complete agricultural marketplace. The survey results indicate that most farmers are aware of the increasing use of digital platforms in agriculture. A large number of respondents owned smartphones, but only some of them regularly used online applications for agricultural purposes. Awareness about the Agri-Cart online marketplace was found to be moderate among the farmers.

Compared Farmers reported that the main benefits of using Agri-Cart include easy access to products, transparent pricing, time savings, and reduced dependence on middlemen. Doorstep delivery was considered a major advantage, especially for farmers living in remote areas. However, the survey also identified several challenges. Poor internet connectivity, lack of digital skills, and fear of online payments were the most common problems faced by farmers. Some respondents also mentioned delayed delivery and lack of technical support as issues.

Conclusion

This present study concludes that the Agri-Cart online marketplace has significant potential to improve agricultural marketing and input procurement for farmers. The findings show that while farmers are increasingly aware of digital platforms, actual usage of online marketplaces is still limited. Farmers mainly use Agri-Cart for purchasing agricultural inputs rather than selling their produce, indicating partial adoption of digital marketing practices. Overall, the success of the Agri-Cart marketplace depends on addressing these challenges through awareness programs, training, and improved technological support. With proper implementation and farmer-friendly features, Agri-Cart can play an important role in modernizing agricultural marketing, enhancing farmer participation, and supporting sustainable agricultural development.

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