

# Farm Direct: A Smart Bridge Between Farmers and Consumers

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#### ABSTRACT

In order to facilitate direct transactions between farmers (sellers) and purchasers, Farm Direct is an online marketplace. To guarantee that only verified users may access the system, the platform offers distinct registration and login modules for buyers and vendors. Before they can access their dashboard, sellers must first register by supplying information such as their name, email address, mobile number, address, company name, and login. They must then wait for admin clearance. Following approval, sellers have the ability to monitor booked products, edit their product listings, add products, and access the buyer list. By limiting the listing of agricultural items to verified sellers, the system fosters a safe and open marketplace. Prior to accessing their dashboard, buyers must additionally complete a registration and approval process. Buyers can view vendor information, follow their order history, and peruse the product list after admin permission. By ensuring that only legitimate buyers and sellers complete transactions, this methodical approach lowers the likelihood of fraudulent activity. While merchants may effectively track bookings, the buyer dashboard facilitates easy product selection, booking, and order management.

The platform is a strong option for direct agricultural trading because of its dual-verification method, which increases platform trust and dependability. The market module functions as an administrative interface that offers a thorough summary of buyers, sellers, orders, and products. Admins oversee transactions, handle approvals, and make sure the platform runs smoothly. Farm Direct increases the efficiency of agricultural trading and reduces middlemen expenses by enabling direct communication between producers and purchasers. The platform's admin moderation, role-based access control, and organized workflow all help to create a safe and easy-to-use environment that promotes an equitable and open online market for agricultural goods.

**Keywords:** Agricultural Marketplace, Direct Farmer-Buyer Trade, Product Management System, Secure Transaction Platform

#### **1. INTRODUCTION**

By bridging the gap between farmers (sellers) and purchasers, Farm Direct is an online platform that facilitates direct agricultural trading with increased

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efficiency and transparency. While customers may browse items, place orders, and read seller details, sellers can register, add products, manage inventory, and track bookings in this organized and secure environment. By guaranteeing authenticity, administrator clearance stops fraud and illegal access. A real-time order tracking function in the system guarantees seamless transactions and accurate delivery updates. Farm Direct wants to empower farmers, simplify agricultural trade, and establish a sustainable online marketplace for fresh produce and farm-related goods with its user-friendly interface, scalable design, and effective product management system.

#### **1.1 Agricultural Marketplace**

A digital marketplace that links farmers, buyers, and sellers allow for the direct exchange of agricultural goods without the need for middlemen. It offers a controlled setting where customers may peruse merchandise, place orders, and communicate with vendors, and farmers can post their produce, keep track of inventories, and monitor sales. The marketplace uses real-time order monitoring, admin approvals, and user identification to guarantee safe transactions. An agricultural marketplace that makes use of technology improves accessibility, efficiency, and transparency while assisting farmers in expanding their market reach, cutting expenses, and encouraging reasonable prices. In the end, this approach promotes economic expansion and sustainable agriculture by updating conventional trading practices.

## **1.2 Direct Farmer-Buyer Trade**

Direct Farmer-Buyer Trade is a simplified strategy that removes middlemen and enables farmers to sell their goods directly to customers or companies. This approach offers consumers fresh, premium product at competitive prices while guaranteeing fair pricing, transparency, and increased profit margins for farmers. Direct trade improves accessibility and efficiency by utilizing digital tools, which give farmers the ability to track orders, manage inventories, and interact with buyers instantly. Furthermore, it minimizes post-harvest losses, cuts down on delays, and promotes sustainability and trust in the agricultural supply chain. Both parties gain from this approach since it establishes a dependable and reasonably priced market for agricultural products.

#### **1.3 Product Management System**

Sellers may effectively add, update, and manage their product listings with the help of a Product Management System, a structured digital solution that guarantees smooth inventory control. In order to give customers correct information before they make a purchase, it enables vendors to enter crucial information such the product name, price, availability status (in stock or out of stock), and photographs. Additionally, the technology allows for real-time updates, which helps retailers effectively manage orders and track reserved products. Additionally, by classifying products, automating stock changes, and making it simple for purchasers to navigate, it improves transparency and organization. A properly implemented product management system enhances user experience, accuracy, and efficiency, resulting in more dependable and seamless transactions.

## **1.4 Secure Transaction Platform**

A Secure Transaction Platform integrates strong authentication, encryption, and access control measures to guarantee safe and dependable financial and data interactions between users. By using admin approvals, secure login credentials, and role-based access for administrators, buyers, and sellers, it stops unwanted access. When necessary, the platform uses secure payment gateways and encryption techniques to protect sensitive data, including transaction records, product information, and personal information. It also ensures accountability and transparency by offering real-time order and transaction tracking. A Secure Transaction Platform instills confidence in users by emphasizing security, data integrity, and fraud protection, which makes online marketplaces safer and more effective.

## 2. LITERATURE REVIEW

According to Mengtian Zhang [1] et al., this system Farmers continue to participate at a relatively low rate, even though numerous governments have actively

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emphasized the value of advancing ecological agriculture. Thus, it is crucial to investigate the elements that motivate farmers to engage in agroecological farming. Here, we used an expanded theory of the planned behavior model to determine the intention to engage in eco-agriculture. In the Gansu region of Qilian Mountain National Park, China's Tianzhu County, we employed a systematic probability proportional sampling technique to gather 409 samples. The findings confirmed the favorable influence of farmers' attitudes, subjective standards, and perceived behavioral control on their intention to engage in agroecology. If perceived behavioral control influences willingness to participate through the mediating variable of attitude, ecological values moderate the mediating role of attitude. This is why the extended model incorporates ecological value factors. Enhancing agroecological communication and raising farmers' understanding of environmental issues are two ways to support agroecological development in national parks. In order to better understand the factors influencing farmers' engagement in agroecological farming, policymakers can benefit from our study's expansion of the theoretical model of planned behavior. It can also act as a model for how agriculture is developing ecologically in other protected regions.

In this system, Oncilla Maring [2] et al. have suggested Digital agriculture revolutionizes the farming process and provides developing countries with significant benefits by tackling rural poverty and hunger. Artificial intelligence (AI), blockchain, indoor vertical farming, precision agriculture, automation, and livestock technology are some of the innovations propelling this shift. Agronomy, communication, and machinery, among other agricultural fields, are now highly connected due to the use of digital technologies. The use of mobile devices has further increased efficiency and accessibility. Notably, the main forces behind these advancements are artificial intelligence, mobile solutions, and the Internet of Things (IoT). Consequently, digital agriculture offers numerous advantages, including improved communication, monitoring, and decision-making. It also encourages time money savings, increased productivity and and profitability, and better operational efficiency through targeted applications. Additionally, the industry benefits from improved marketing strategies, streamlined recordkeeping, real-time information access, improved risk management, and relaxed regulatory constraints. By using these digital technologies, agriculture can become more sustainable and efficient, surpassing old methods in the quest for a more prosperous and fruitful future.

In this system, Harrington Nyirenda [3] et al. One of the main cereal crops in the world, maize provides almost 4.6 billion people with 30% of their daily caloric intake. 125 developing nations, where smallholder farmers make up the majority of producers, view the crop as a staple. Although maize production and acreage have grown since the 1960s, yield in the majority of developing nations has remained uncertain. Among the issues restricting maize production globally include a lack of information, weak connections between service providers, climate change, land degradation, and input costs. The cost of better seed, climate change, unproductive soils, and differences in variety preferences are just a few of the issues that have long plagued Malawi's maize production. Evaluations of maize output have mostly focused on the short term (1-5)years) and seldom ever take farmer perspectives into account. Reactions to the dynamics of maize production have been conflicting. Based on production data from 2004/05-2018/19 and farmer perspectives obtained through Focus Group Discussions (FGD) in Salima, Central Malawi, this study evaluated the dynamics of maize output, area, and yield. Each season, 2,400 households (36,000 over 15 years) were sampled in order to assess the district's annual dynamics of maize output. 15 farmers from the district's socioeconomic, geographic, and maize-producing domains provided sufficient representation at the FGD. Constructivism epistemology was used to examine the FGD data, whereas R Statistical Software Version 3.6.2 was used to analyst the maize production data. According to the findings, farmers utilized 17, 6, and 2 types of hybrid, open-pollinated (OPV), and local maize, respectively. While farmers sourced their own native maize, they purchased hybrid and OPV maize seeds from private agro dealers. Because local maize was inexpensive, tasty, easy to store, and resistant to pests despite its poor yield, farmers favored it.

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In this system, Olawale Gazal Hammed [4] et al. For food security, supply chain movement is crucial, especially to prevent food loss between producers and consumers. Chronic hunger, local food shortages, and abrupt price spikes are all having a significant impact on public opinion and response, making food security a very sensitive topic. This calls into question the evaluation of supply chain management and sustainable food security in Nigeria, which uses the quality of seed, efficient storage facilities, and honesty among supply chain actors as determinants. This study used a structured questionnaire and a survey research design. The study included both convenient and purposeful sampling strategies to choose 80 farmers from the state of North-Western Nigeria. Charts were used to display the data, which was analysed using descriptive statistics. Based on the responses of the chosen farmers, the study's conclusions demonstrate that honesty among supply chain participants, efficient facilities for storing farm produce, and high-quality seeds for planting will improve the availability of nutrient-dense foods in society. They also encourage affordability and high profits for all supply chain participants. The survey also showed that genuine farmers working in the agricultural industry are not effectively utilising government assistance in the form of subsidies and loan facilities. Therefore, among other things, it was suggested that the government construct an efficient feedback system to make sure the subsidy is truly serving the reason it was created.

In this system, Thi Ha Lien Le [5] et al. have offered The Vietnamese Mekong Delta (VMD) is a mega-delta in Asia that is experiencing demographic transition and is susceptible to climate change and sea level rise. In order to control labour productivity, mitigate adverse environmental effects, and adapt to climate change, farmers are urged to switch from monocultures of rice to more varied and flood-based farming options. But this change happens gradually, particularly in the Upper VMD's flood-zone zones. Currently, little is known about the intricate decision-making processes of farmers in this subregion that take into account the dynamic interconnections between farmers, socioeconomic conditions, and biophysical surroundings. In order to give lessons learnt and policy recommendations for a resilient and sustainable agricultural transformation in the Upper VMD, the study set out to examine the main determinants influencing farmers' decisions to transition between rice monocultures and other flood-adaptive crops. In order to replicate individual decision-making in the Upper VMD, the study created an agent-based model. The model was validated by contrasting the simulation results with actual data from the baseline, and it was parameterized using secondary data on social, policy, economic, and biophysical causes. We performed sensitivity analyses to learn more about the important elements.

## **3. EXISTING SYSTEM**

For consumers to receive fresh, safe, and high-quality products, the food supply chain that links farmers and wholesalers is essential. But this supply chain can be disjointed, unclear, and ineffective, especially for local food systems and small-scale producers. Based on a thorough examination of fifty review papers from prestigious publications, we examine the difficulties and possibilities of bringing together farmers and wholesalers in this review paper. Building relationships and trust, using technology and digital platforms, cutting out middlemen, enhancing logistics and transportation, and promoting cooperation and partnerships are some of the major themes and insights we identify. We draw attention to the need for increased sustainability, efficiency, and transparency in the food supply chain through our analysis, and we offer some possible directions for further study and development. Policymakers, researchers, and practitioners interested in enhancing the food supply chain and fortifying ties between farmers and wholesalers may find this review article to be a useful resource.

## 4. PROPOSED SYSTEM

In order to ensure fair trade and do away with the need for middlemen, the suggested method, Farm Direct, is a webbased platform that links farmers (sellers) and buyers directly. In order to access their separate dashboards, buyers and sellers must first obtain admin clearance through a structured registration and login process. Sellers can add products by uploading photographs and providing information such the product name, price, and stock



availability. In addition, they have the ability to monitor a list of registered buyers, track booked products, and manage their product listings. This improves transaction security and authenticity by limiting the listing of products verified vendors. to In order to guarantee that only legitimate users engage with the marketplace, buyers must also go through an approval process after registering. Buyers get access to the seller's information, order history, and product list after approval. They are able to order, peruse the products that are available, and effectively keep track of past transactions. Customers can communicate with farmers directly and acquire agricultural products without incurring extra expenses because to the system's smooth user interface. The organized process lowers fraudulent activity improves transaction transparency. and With its centralized dashboard for managing buyer and seller approvals, keeping an eye on product listings, and tracking order activity, the market module serves as the administrative interface. Because they have complete control over the platform, administrators can guarantee safe transactions and seamless functioning. Farm Direct improves agricultural trade efficiency by combining an approval-based registration system, role-based access management, and real-time order monitoring. This suggested method guarantees a fair and transparent marketplace, fostering sustainability and economic growth in the agriculture industry while also empowering farmers by providing them with direct access to consumers.

## A. Pre-Home Module

As the gateway to the Farm Direct platform, the Pre-home module makes it simple for users to access different parts of the system. Home, Seller Registration, Seller Login, Buyer Registration, Buyer Login, and Market are among the options that appear. According to their jobs, this module makes sure users can easily access the sections they need. Both buyers and sellers may register, log in, and explore with ease because to its organized and userfriendly interface. The Pre-home module guarantees a seamless onboarding process and improves the overall user experience by providing instant access to various activities.

#### **B. Seller Module**

Farmers and suppliers of agricultural products can register, log in, and effectively manage their products with the Seller Module. It gives retailers a methodical way to market their goods, keep track of reservations, and communicate with customers. By limiting participation in the marketplace to certified sellers, this module establishes a reliable environment for transactions.

## **Seller Registration**

Farmers can register on the site by completing the seller registration process, which requires them to enter basic information like their name, email address, phone number, address, company name, login, and password. The purpose of submitting this information for admin approval is to verify its legitimacy and stop fraudulent registrations. The seller can only control their products and access the login page after approval.

#### Seller Login

After approval, vendors can use their username and password to log in. Only verified sellers will be able to access the platform thanks to this login procedure. The seller cannot continue without admin clearance, guaranteeing a safe and regulated setting for product postings.

## Seller Dashboard

Farmers may manage their products and buyer relations with the use of the seller dashboard, which acts as their primary control panel.

• Add Product: By providing information such the product name, price, stock status (in-stock or out-of-stock), and product photos, sellers can add agricultural products. Customers can access updated product listings thanks to this functionality.

• Product List: The seller can review, edit, or remove products as necessary from this part, which shows every product they have added. It facilitates the upkeep of an orderly inventory.

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• Booked Product: This feature gives vendors access to a list of goods that customers have reserved. It facilitates order tracking and effective delivery preparation for merchants.

• Buyer List: Shows a list of registered customers who have communicated with the merchant or bought goods from them. This enables retailers to keep an eye on buyer activity and manage their client connections.

#### 3. Buyer Module

The purpose of the Buyer Module is to make it easier for consumers to buy agricultural products. While preserving transaction security, it guarantees that buyers have access to verified sellers and an up-to-date product list.

#### **Buyer Registration**

Users can sign up by supplying the required information throughout the buyer registration process. Buyers cannot access the platform until they have received admin approval after registering. By limiting order placement to legitimate customers, this authentication process stops spam and fraudulent activity.

## **Buyer Login**

After approval, buyers can use their password and email address to log in. Only verified buyers will be able to access the platform thanks to this safe login procedure. In order to maintain a controlled atmosphere, a buyer who is not approved will not be allowed to continue.

## **Buyer Dashboard**

Buyers can access their dashboard, which offers crucial functions for perusing and controlling orders, after registering in.

**Product List:** Shows every product that merchants have uploaded, enabling customers to peruse, check details, and make reservations. This guarantees a clear and effective shopping experience.

**Seller List:** To assist customers in making wise purchases, this area offers a list of verified sellers. Customers can choose who to buy from by viewing vendor details.

**Order History:** Customers can view information about their past purchases, including product names, order dates, and reservation statuses. This aids purchasers in effectively handling their deals.

## 4. Market Login

An administrative control panel that shows a summary of all buyers, sellers, products, and orders is the Market Login module. It enables the administrator to oversee transactions, authorize registrations, and keep an eye on activity.

• Seller List: Provides a list of all registered sellers together with their contact information and available products. Admins are able to monitor seller behavior and guarantee adherence to platform regulations.

• **Buyer List:** Provides administrators with a list of all registered purchasers so they may monitor and validate buyer activity. This feature makes sure that only real people are making purchases.

• **Product List:** Provides an overview of all products featured on the platform. Administrators have the ability to examine product entries and, if necessary, take appropriate measures, such eliminating items that are not relevant.

• Order List: Shows every order that a customer has placed, enabling administrators to monitor transactions and address any problems. This ensures seamless operations and preserves the integrity of the platform.

## Level 0





Level 1



Level 2



#### 5. Conclusion

The Farm Direct system eliminates middlemen and offers a smooth and effective platform for direct farmer-to-buyer interactions, guaranteeing security, fair pricing, and Easy product management, transparency. safe transactions, and real-time order tracking are made possible by the system's integration of organized modules for administrators, customers, and sellers. Data integrity and user trust are guaranteed by using a database that is optimized and secure authentication methods. The platform also encourages scalability and future growth, which enables it to adjust to the changing demands of the industry. Farm Direct's user-friendly interface and effective workflow improve agricultural commerce by empowering buyers and farmers and promoting a dependable and sustainable online marketplace.

#### 6. Future work

In order to improve customer experience, Farm Direct plans to integrate secure digital payment channels, AIdriven recommendations, and advanced analytics into its future operations. For farmers and consumers, the use of mobile applications for iOS and Android will improve accessibility and convenience. Real-time chat support will also make it easier for buyers and sellers to communicate directly, which will improve transaction management and build confidence. To maintain transparency and stop fraud, future improvements might also use blockchainbased transaction security. Adding multilingual accessibility and regional customization to the platform would enhance usability even further and make Farm Direct a more scalable, effective, and globally flexible agricultural marketplace.

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