WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

GREEN LINK COMMERCE

Mr. E. Subramaniam #1, Kishore P #2, Arulraj Jebasingh E#3, Jeevasathya B#4, Madhumitha R#5

[#1] Assistant Professor, Department of Computer Science and Engineering, Sri Shakthi Institute of Engineering and Technology, Coimbatore, Tamil Nadu, India. **E-mail:** subramaniamcse@siet.ac.in

[#2] Student, Department of Computer Science and Engineering, Sri Shakthi Institute of Engineering and Technology, Coimbatore, Tamil Nadu, India. **E-mail:** kishorep23cse@srishakthi.ac.in

[#3] Student, Department of Computer Science and Engineering, Sri Shakthi Institute of Engineering and Technology, Coimbatore, Tamil Nadu, India. **E-mail:** arulrajjebasinghe23cse@srishakthi.ac.in

[#4] Student, Department of Computer Science and Engineering, Sri Shakthi Institute of Engineering and Technology, Coimbatore, Tamil Nadu, India. **E-mail:** jeevasathyab23cse@srishakthi.ac.in

[#5] Student, Department of Computer Science and Engineering, Sri Shakthi Institute of Engineering and Technology, Coimbatore, Tamil Nadu, India. **E-mail:** madhumithar23cse@srishakthi.ac.in

ABSTRACT:

Green Link Commerce is an innovative and socially driven e-commerce platform designed to revolutionize the agricultural sector by directly connecting farmers with shopkeepers and end consumers, eliminating the need for intermediaries. This direct-to-market model ensures fair pricing, increases profit margins for farmers, and provides consumers with fresh, affordable produce. The platform is inclusive and accessible, bridging the digital divide by serving both rural and urban users with a user-friendly interface. Key features include real-time product listings, seamless order management, role-based access, and customer feedback systems that foster transparency and trust. By promoting local sourcing and reducing reliance on wholesale markets, it minimizes transportation costs, post-harvest losses, and food waste. Green Link Commerce also encourages sustainable agricultural practices, supports rural entrepreneurship, and strengthens the economic resilience of farming communities. In addition, it empowers youth and women in agriculture by offering equal opportunities for digital participation and market access. The platform integrates basic data analytics to help farmers understand market trends and make informed decisions about crop planning and pricing. Furthermore, it creates a foundation for future scalability by allowing integration with financial services, logistics networks, and government support programs. More than just a digital marketplace, it stands as a transformative initiative aimed at achieving food security, environmental sustainability, and inclusive growth in the agricultural economy.

Keywords: E-commerce, Agricultural marketing, Direct farmer-to-consumer, Fair trade, Rural empowerment, Sustainable agriculture, Food supply chain, Digital marketplace, Post-harvest loss reduction, Inclusive economy, Local sourcing, Farm-to-table, Social innovation, Community development, Agricultural entrepreneurship.

I.INTRODUCTION

Green Link Commerce is a visionary initiative aimed at transforming the agricultural economy by establishing a direct, transparent, and inclusive marketplace for farmers, shopkeepers, and consumers. In many parts of the world, particularly in rural areas, farmers face immense challenges in accessing fair markets for their produce. These challenges stem largely from the presence of multiple intermediaries who reduce farmers' profit margins and inflate prices for end consumers. Green Link Commerce seeks to eliminate this traditional inefficiency by providing a digital platform where farmers can showcase and sell their produce directly to buyers without any middlemen. By doing so, it ensures that the maximum share of profits goes to the farmers themselves while consumers benefit from access to fresher and more affordable goods.

The traditional agricultural marketing system is often marked by long supply chains, lack of transparency, and limited access to fair trade opportunities for small-scale producers. Farmers have long been dependent on agents or wholesalers who control pricing and distribution, often leading to the exploitation of the producer. In such a system, the actual grower earns only a fraction of what the product eventually sells for in the market. Green Link Commerce addresses this imbalance by leveraging technology to shorten the supply chain and allow producers and consumers to interact directly. This direct connection ensures fair trade, improves pricing equity, and creates a more sustainable business model that benefits everyone involved.

One of the key objectives of Green Link Commerce is to empower farmers economically and technologically. By giving them the tools to list, promote, and sell their produce online, the platform not only increases their earning potential but also enhances their understanding of digital trade and market dynamics. It enables them to respond to demand in real-time, adjust pricing based on customer feedback, and build a loyal customer base. This kind of empowerment leads to increased confidence and participation in the marketplace, encouraging a culture of entrepreneurship among rural agricultural workers. In addition, shopkeepers also gain significantly by being able to buy fresh products directly from farms, which helps them maintain quality standards and reduce costs.

From a consumer standpoint, Green Link Commerce offers several advantages that extend beyond pricing and freshness. The platform promotes transparency by allowing users to see exactly where their food comes from and how it was grown. This traceability increases trust and makes consumers more conscious of the value of local produce. Moreover, the user-friendly interface and efficient order management features make the shopping experience smoother and more reliable. Consumers also have the opportunity to engage with sellers, ask questions, and leave feedback, creating a more connected and informed buying environment that is often missing in conventional systems.

Inclusivity and accessibility are central principles in the design of Green Link Commerce. The platform is intentionally built to be simple and easy to navigate so that even individuals with limited exposure to technology can participate. This inclusiveness is crucial in ensuring that small and marginal farmers are not left behind in the digital revolution. By bringing rural populations into the fold of digital commerce, the platform helps bridge the urban-rural divide and promotes equitable access to market resources. Additionally, it opens up new possibilities for women and youth in farming communities, giving them a platform to contribute economically in ways that were previously unavailable or limited.

Beyond economic empowerment, Green Link Commerce makes a substantial contribution to sustainability and community resilience. It reduces the environmental footprint associated with long transportation chains by promoting local sourcing and consumption. Furthermore, it helps mitigate post-harvest losses by enabling faster sales and better inventory management. These improvements result in reduced food waste and more efficient distribution, which are critical for achieving food security. The platform also fosters collaboration among users, encouraging knowledge sharing and collective growth within agricultural communities. In doing so, it not only enhances individual livelihoods but also strengthens the social fabric of rural economies.

Green Link Commerce envisions a future where agriculture is not just a means of survival but a sustainable and profitable occupation supported by technology, fairness, and community-driven innovation. As the platform evolves, it holds the potential to integrate with government agricultural schemes, financial services, logistics partners, and educational resources. These integrations can enhance the platform's capabilities and ensure that farmers receive the support they need at every stage of the production and marketing process. Ultimately, Green Link Commerce stands as a model of how digital tools can be used to foster economic justice, environmental responsibility, and inclusive development in the agricultural sector.

II.LITERATURE REVIEW

1. Android application for farmers to sell their produce at better rates

This paper focuses on addressing the persistent issue of farmers receiving low returns due to lack of timely market information and overreliance on intermediaries. It proposes the development of a user-friendly Android application designed to provide farmers with real-time data on market prices of fruits and vegetables across different regions, enabling them to make informed selling decisions. The app also integrates essential features like weather forecasts and updates on government schemes, helping farmers optimize production and distribution strategies. The app is designed to bring more transparency to the system, cut out middlemen, and help farmers earn better by giving them direct access to digital tools.

2. Farmer's e-market

This paper is designed to empower farmers by facilitating direct sales of their crops and vegetables to consumers. This system aims to eliminate intermediaries, thereby ensuring that farmers receive fair prices for their produce. The application offers features such as product listing, direct communication between farmers and buyers, and provisions for future enhancements like online payment integration and multiple product bookings. Emphasizing user-friendliness, the platform is tailored to be accessible for farmers with basic technological knowledge, promoting ease of use and efficiency. The authors highlight the system's robustness, security, and potential for scalability, envisioning it as a dynamic solution to modernize agricultural marketing and improve the economic well-being of farmers.

3. Development of Web Based System for Farmer to Consumer Product Selling Through Direct Marketing

This paper proposes a digital platform aimed at empowering farmers by facilitating direct sales of their produce to consumers, thereby eliminating intermediaries and ensuring better pricing. The system offers real-time market information, profitability analyses, and access to e-learning resources on modern farming techniques. It also offers helpful information on common farming challenges and keeps users updated on government plans and support schemes like compensation programs. By leveraging this web-based platform, farmers can maximize profitability through direct marketing, enhancing transparency and efficiency in the agricultural supply chain.

4. E-FARMING WEBSITE

This method introduces a digital platform designed to empower farmers by facilitating direct sales of their agricultural products to consumers. This web-based system aims to eliminate intermediaries, thereby ensuring that farmers receive fair prices for their produce. The platform is easy to use, letting farmers display their products, keep track of their stock, and connect directly with customers. By leveraging technology, the E-Farming Website seeks to bridge the gap between rural producers and urban consumers, promoting transparency, reducing exploitation, and enhancing the overall efficiency of the agricultural supply chain. The authors highlight the potential of such digital solutions in transforming traditional farming practices and improving the economic well-being of farmers.

5. Implementation Paper on an Android Application for Farmers to Solution of their Problems and for Selling Products

This paper introduces the Virtual Fruits Market application, a digital platform designed to empower Indian farmers by facilitating direct connections with end-users. This Android-based app aims to eliminate intermediaries, ensuring farmers receive fair and consistent prices for their produce. Key features include real-time market information, direct communication channels between farmers and consumers, and access to expert advice to address agricultural challenges. By leveraging technology, the application seeks to promote sustainable agriculture practices, enhance transparency in transactions, and improve the overall economic well-being of farmers. The authors emphasize the app's potential to revolutionize the Indian agriculture sector by providing a user-friendly and efficient solution to longstanding issues faced by the farming community.

III. TOOLS IMPLEMENTED

Android Application

The core tool implemented in the platform is the Android application, which serves as the primary interface for farmers to interact with the system. The application is designed with a user-friendly interface that allows farmers to easily list their products, view orders, and manage their inventory. Given the diverse technological backgrounds of farmers, the app ensures that even those with minimal technical knowledge can navigate it seamlessly. With the help of this application, farmers can directly sell their produce to consumers, cutting out intermediaries, and ensuring better price margins. The application is lightweight, responsive, and optimized to function well on a variety of devices commonly used by rural farmers.

Web-based Backend

A robust web-based backend supports the Android application, managing the data flow and ensuring smooth operations. The backend handles various tasks such as product listings, order management, and secure user authentication. It processes incoming orders, updates inventory, and ensures that the information displayed on the Android application is consistent and real-time. This backend also manages the database, storing user data, transaction history, and market pricing information. A centralized system ensures the platform’s scalability and allows for future updates, ensuring that the platform can accommodate an increasing number of farmers and consumers.

Real-Time Market Pricing APIs and Notifications

One of the most crucial features integrated into the platform is the use of Real-Time Market Pricing APIs, which provide farmers with up-to-date market data on product prices. These APIs fetch pricing information from various markets and present it to the farmers, empowering them to make informed pricing decisions and avoid selling below fair market value. In addition to market pricing, the platform uses push notifications to keep both farmers and consumers informed. Farmers are alerted about new orders, product updates, and market trends, while consumers are notified about new product listings, price changes, and order statuses. These notifications ensure that all parties are engaged and updated in real time, enhancing communication and satisfaction.

Secure Transactions and User-Centric Design

Security is a top priority in the platform, which is why secure payment gateways are implemented to ensure safe financial transactions. These gateways support multiple payment methods, including credit/debit cards, online banking, and mobile wallets, providing farmers and consumers with a variety of payment options. Along with secure transactions, the platform is designed to be user-centric, focusing on simplicity and accessibility. The design of the platform emphasizes ease of use, with a minimal learning curve required for farmers and consumers to use the system effectively. This inclusive approach ensures that people in rural areas, with limited exposure to advanced technology, can fully benefit from the platform. The user interface is simple yet effective, ensuring that the focus remains on seamless product selling and buying without any unnecessary complexity.

Data Security and Privacy

In addition to the functional tools, the platform places a strong emphasis on data security and privacy to protect both farmers and consumers. The system uses encrypted data storage to ensure that all sensitive information, such as personal details, transaction records, and payment information, is securely stored. Moreover, secure login mechanisms, such as two-factor authentication, are implemented to prevent unauthorized access to accounts. The platform follows strict privacy policies, ensuring that user data is never shared without consent. With these security measures in place, users can confidently engage with the platform, knowing that their data is protected from potential cyber threats and breaches. This commitment to data security helps establish trust, which is crucial for the platform's long-term success and the adoption of digital solutions in agriculture.

IV. PROPOSED SYSTEM

The proposed system aims to revolutionize the agricultural market by establishing a digital platform that directly connects farmers with consumers and shopkeepers, eliminating intermediaries in the supply chain. This system is designed to empower farmers by enabling them to showcase and sell their products directly to buyers, ensuring better price margins and greater profitability. By bypassing middlemen, the platform not only provides farmers with more control over their earnings but also enables consumers and shopkeepers to access fresh, high-quality produce at affordable prices. The system’s

core goal is to create a fair and transparent marketplace where transactions are based on real-time data and market dynamics, contributing to the overall efficiency of agricultural commerce.

The platform will be built with a user-friendly interface, allowing even farmers with limited technical expertise to easily navigate the system. It will offer functionalities such as product listings, inventory management, order tracking, and real-time market price updates. Farmers will be able to upload their produce, set prices, and specify quantities, allowing consumers and shopkeepers to browse available products. Furthermore, the system will facilitate direct communication between farmers and buyers, allowing them to negotiate, ask questions, and finalize transactions without the need for any intermediaries. This direct communication model fosters trust and transparency, as buyers and sellers can engage in real-time conversations to better understand each other's needs and expectations.

A key feature of the proposed system is the integration of real-time market pricing APIs, which will help farmers stay informed about current market prices for their products. These APIs will pull data from various markets, providing farmers with up-to-date pricing trends, which they can use to adjust their pricing strategies accordingly. This feature empowers farmers to make informed decisions and helps them avoid the trap of underpricing their products or selling them at a loss. Additionally, the platform will include notifications that alert users about price fluctuations, new product listings, or special offers, keeping both farmers and consumers engaged and informed at all times.

Another important aspect of the proposed system is its ability to reduce post-harvest losses and food waste. By enabling farmers to sell their produce directly to consumers or shopkeepers, the system shortens the supply chain, reducing the time products spend in transit and the chances of spoilage. This efficient distribution method not only improves the quality of produce but also ensures that surplus food can be quickly accessed by those in need, including local markets and communities. Moreover, by encouraging local sourcing, the system helps reduce the environmental impact associated with long-distance food transportation, aligning with sustainable practices and promoting eco-friendly agricultural commerce.

The platform will also integrate secure payment gateways to facilitate safe and hassle-free transactions between farmers and consumers. These payment systems will offer multiple payment options, including mobile wallets, online banking, and credit/debit cards, ensuring that users can choose the most convenient method for their transactions. The system will implement robust security measures such as data encryption and two-factor authentication to protect users' sensitive information and transaction details. This focus on secure transactions will help build trust among users, making them more likely to adopt the platform for their agricultural transactions.Lastly, the proposed system is designed with scalability in mind, ensuring that it can grow and adapt to meet the needs of an expanding user base. As the platform attracts more farmers, consumers, and shopkeepers, the system will be able to handle a larger volume of transactions, products, and users without compromising performance. Future enhancements could include the addition of analytics tools to help farmers track their sales, monitor trends, and gain insights into consumer behavior. Additionally, the platform could integrate educational resources to help farmers improve their farming practices, increase productivity, and adopt more sustainable agricultural techniques. The ultimate goal of the proposed system is to create a lasting impact on the agricultural sector by improving economic opportunities for farmers and fostering a more efficient, transparent, and sustainable food supply chain.

V. SYSTEM IMPLEMENTATION

1. System Setup and Configuration

Environment Setup

- The platform is hosted in a local development environment using XAMPP, where the PHP backend runs smoothly. MongoDB is configured as the NoSQL database for efficient and scalable data storage. Visual Studio Code is used as the integrated development environment for code management.

Database Initialization

- Collections are created in MongoDB for users, products, orders, and feedback. Each collection includes necessary fields and relations such as user roles, product ownership, and order statuses. Proper indexing is done to improve query performance.

Server Configuration and Testing

- The Apache server is configured to run PHP scripts, while the connection between PHP and MongoDB is established using MongoDB PHP drivers. Unit and integration tests are performed to ensure all system modules (registration, login, product upload, ordering, and payment) work seamlessly together.

2. Product Management

Product Listing by Farmers

- Farmers can list fresh produce with details like name, quantity, price, and description. This creates transparency and accessibility for buyers.

Image Upload Feature

- Farmers can upload high-quality images of their produce, helping consumers and shopkeepers visually assess the product before purchase.

Real-Time Inventory Updates

- Inventory is automatically updated as orders are placed, ensuring buyers only see available stock and preventing overselling.

3. User Registration and Authentication

Farmer/Shopkeeper/Consumer Roles

- The system supports multiple user roles to ensure tailored access. Farmers can upload produce, shopkeepers can buy in bulk, and consumers can place individual orders.

Secure Login System

- A secure login mechanism ensures that only verified users access their dashboards. Password encryption and login validation protect user accounts.

Two-Factor Authentication (2FA)

- For added security, the system implements 2FA using email or SMS-based verification, minimizing the risk of unauthorized access.

4. Order Management System

Order Placement by Consumers/Shopkeepers

- Consumers and shopkeepers can browse products and place orders directly through the platform with minimal steps.

Order Notification System

- Farmers receive instant notifications of new orders via app alerts or email, enabling timely preparation and delivery.

Order Tracking

- Both buyers and sellers can track the status of an order—pending, confirmed, dispatched, or delivered—creating trust and clarity.

5. Market Price Integration

Real-Time Price API

- The system pulls live pricing data from various markets, enabling farmers to compare and price their products fairly.

Price Suggestion Algorithm

- Based on current trends, the platform suggests competitive price ranges to farmers, helping them stay market-relevant.

Dynamic Price Display for Buyers

- Buyers can view updated prices before purchasing, avoiding outdated or incorrect listings.

6. Payment Gateway Integration

Multiple Payment Modes

- The system supports UPI, mobile wallets, credit/debit cards, and net banking for buyer convenience.

Transaction History Log

- Every user can view a complete log of their transactions, aiding transparency and future reference.

Secure Payment Handling

- All transactions are encrypted using SSL, protecting user data and preventing fraud.

7. Feedback and Review System

Buyer Review for Farmers

- After every purchase, buyers can rate and review the seller, which helps future buyers make informed choices.

Farmer Feedback Option

- Farmers can also rate the buyer's transaction experience, fostering mutual accountability.

Star Ratings & Comment Moderation

- A 5-star system with optional text comments is implemented, with admin controls to moderate inappropriate feedback.

VI. ADVANTAGES

1. Empowerment of Farmers

Direct Market Access

- Farmers can sell their produce directly to consumers and shopkeepers without relying on intermediaries, increasing their income and market reach.

Better Pricing Control

- Farmers can set their own prices based on current market rates, ensuring they receive fair compensation for their efforts.

Increased Visibility

- The platform allows farmers to showcase their products online, reaching a wider audience and gaining exposure beyond their local markets.

2. Fair and Transparent Trade

No Middlemen Involved

- Eliminating mediators ensures that the profit margins go directly to the producers, and buyers get competitive pricing.

Transparent Transactions

- Each transaction is logged and visible to both parties, reducing the chances of fraud and promoting accountability.

Trust through Feedback

- Rating and review systems enable trust-building between buyers and sellers by providing insights into product quality and service.

3. Improved Supply Chain Efficiency

Real-Time Inventory Updates

- Automated inventory systems help sellers manage stock effectively and ensure buyers only see available products.

Order Tracking and Status

- Users can track orders from confirmation to delivery, improving planning and customer satisfaction.

Reduced Post-Harvest Losses

- By connecting farmers directly to markets, the platform helps reduce delays and waste that typically occur during distribution.

4. Economic and Social Impact

Support for Rural Economy

- The platform creates digital earning opportunities for rural farmers and shopkeepers, boosting local economies.

Job Creation and Entrepreneurship

- Encourages entrepreneurship by enabling small-scale producers to run their businesses online.

Bridging the Urban-Rural Divide

- Promotes digital inclusion by making e-commerce accessible to rural communities, contributing to balanced regional development.

5. Personalization and Customization

Tailored Recommendations

- AR systems can integrate AI to provide personalized product recommendations based on user preferences and behaviour. This adds value to the **shopping experience.**

Customization Options

- Customers can customize products in real-time, such as changing colours or materials, and instantly see how their choices affect the product's appearance.

Enhanced User Satisfaction

- By offering personalized and customizable options, AR enhances customer satisfaction and builds trust in the brand.

6. Environmental and Sustainable Growth

Reduction in Carbon Footprint

- By shortening the supply chain and encouraging local sourcing, transportation emissions are significantly reduced.

Minimized Food Waste

- Timely sales and direct marketing reduce spoilage, especially of perishable goods, promoting sustainability.

Promotion of Eco-Friendly Practices

- The platform encourages sustainable farming and consumption habits by highlighting local and organic produce.

7. Enhanced Digital Inclusion

User-Friendly Interface

- The platform is designed with simplicity in mind, making it easy for farmers and shopkeepers with limited technical knowledge to use and navigate.

Multi-Device Accessibility

- Green Link Commerce can be accessed via desktop, tablet, or smartphone, ensuring broad reach even in rural areas with varying device availability.

Language and Regional Customization

- The system can be adapted to support regional languages and preferences, improving user engagement and adoption among diverse user groups.

VII. RESULT AND ANALYSIS

The Green Link Commerce platform demonstrated strong functionality and effectiveness during its testing phase. The direct farmer-to-consumer and farmer-to-shopkeeper connections streamlined the selling and purchasing processes significantly. Farmers were able to list their products easily, update quantities, and manage orders without external assistance, showcasing the platform's user-friendly design. On the buyer's side, both individual consumers and shopkeepers could seamlessly browse listings, compare prices, and place orders. The real-time product listing and order update features performed efficiently, enabling accurate inventory management and eliminating common issues such as overselling or miscommunication. This functionality was validated through multiple simulations using sample user accounts representing various roles.

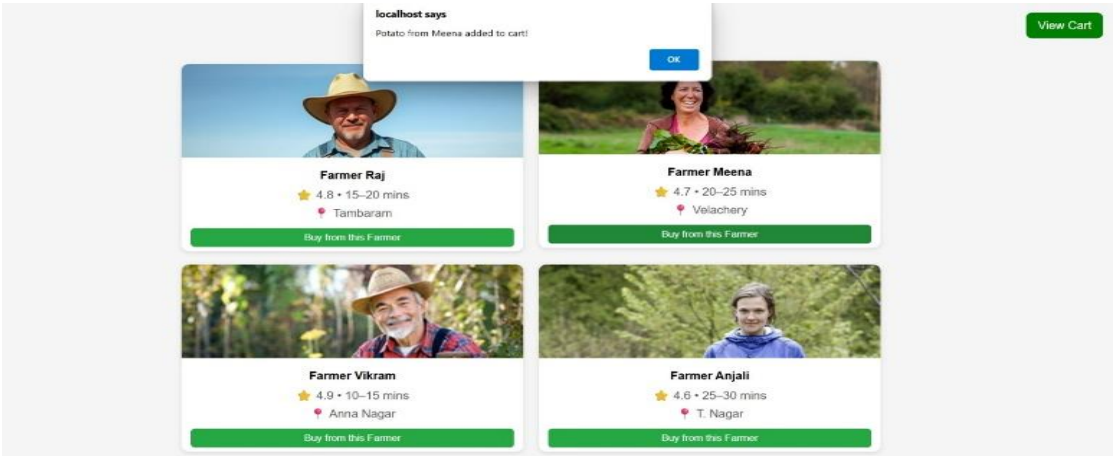
User engagement and satisfaction were assessed through usability testing and feedback collection. The feedback indicated that the interface was intuitive even for users with minimal digital literacy, a critical success factor considering the rural demographic of many farmers. The platform's role-based access also allowed tailored functionality—for example, shopkeepers could purchase in bulk and manage larger orders, while customers focused on smaller, retail-like transactions. The transparent pricing, order confirmation, and feedback mechanisms were highly appreciated, as they helped build trust between buyers and sellers. Additionally, the integration of local sourcing principles helped reduce delivery distances, which was observed to minimize both time and cost, thus supporting the goal of reducing food waste and enhancing supply chain efficiency.

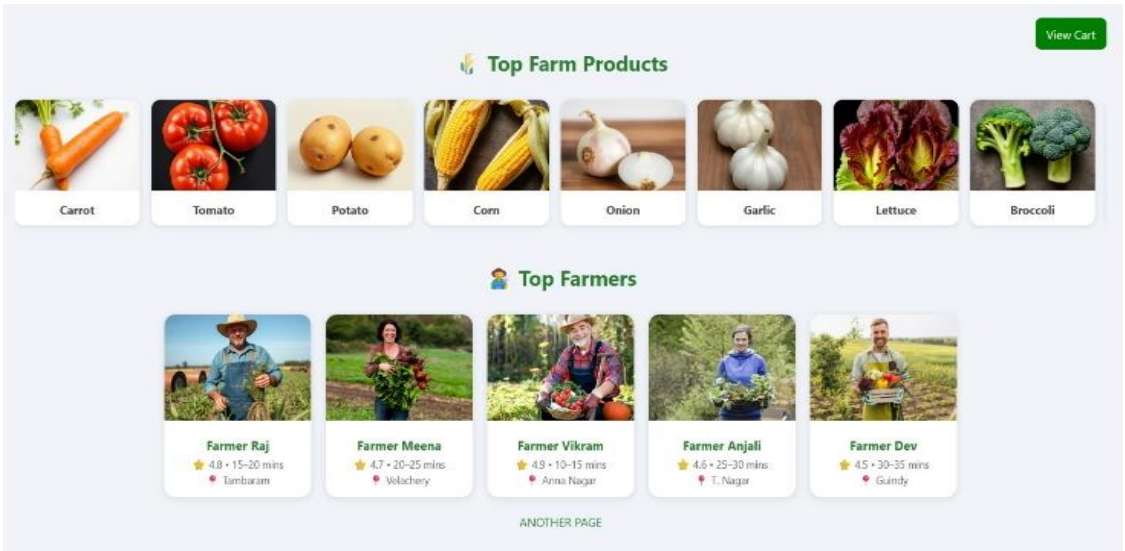
In terms of scalability and performance, the system maintained stability under moderate loads and showed potential for expansion. Tests showed that the platform could handle multiple concurrent users without performance lag, and data retrieval from the MongoDB database remained consistent. The absence of intermediaries and the digital nature of the marketplace led to quicker transaction cycles and better communication flow. Overall, the project achieved its intended goals by simplifying agricultural commerce, promoting fairness, and encouraging digital empowerment. The analysis suggests that with further enhancements like mobile app integration, language localization, and payment gateway support, Green Link Commerce can be a powerful, nationwide solution for inclusive and sustainable agricultural marketing.

OUTPUT

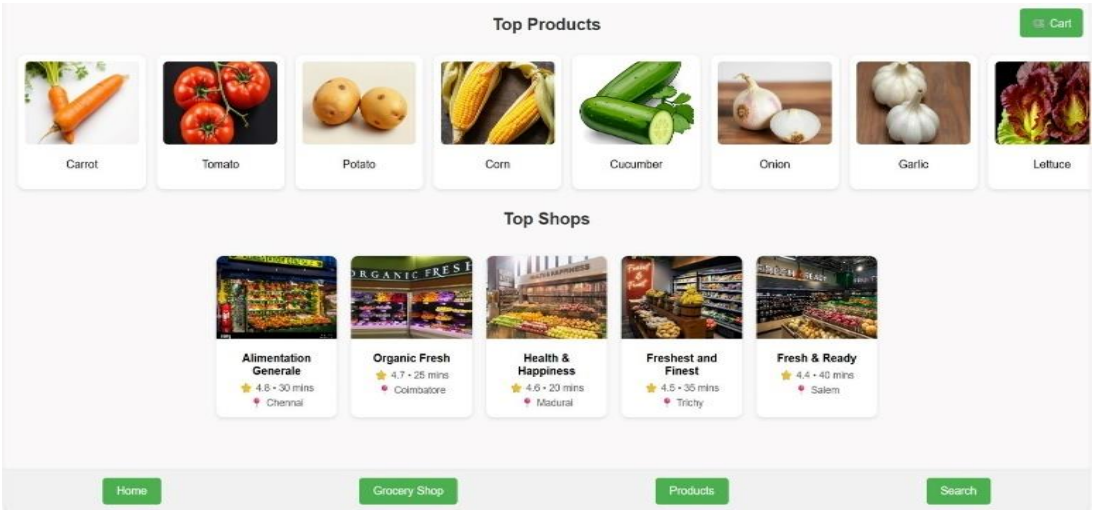
1.Output of Homepage

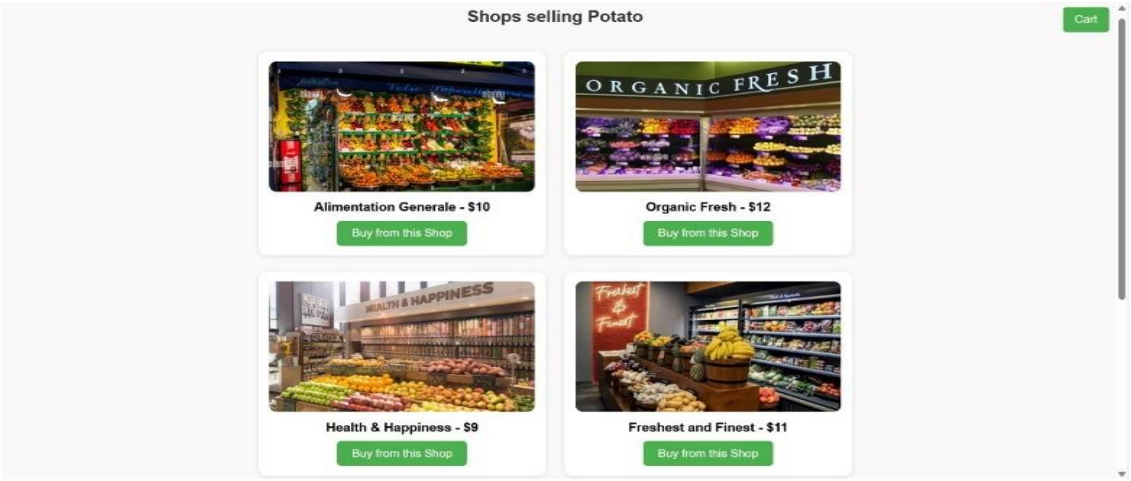
2.Output of Farmers page



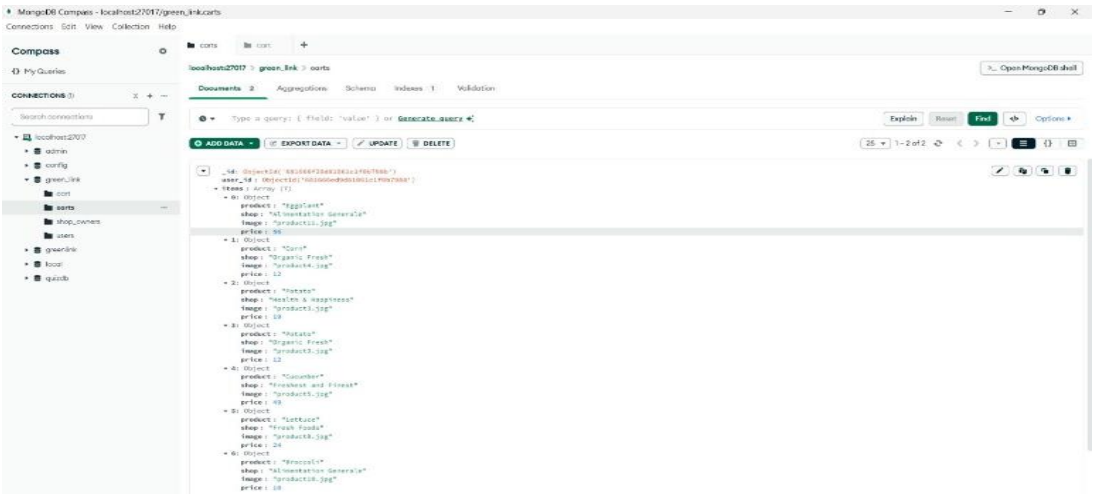


3.Output of Shopkeeper page

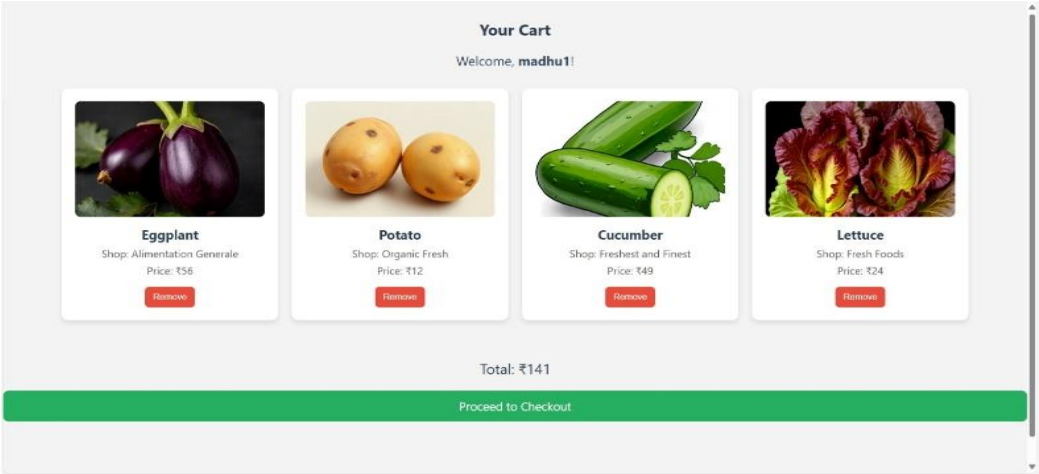




4.Output of Database



5.Output of cart



VIII. CONCLUSION

Green Link Commerce emerges as a powerful and purpose-driven digital solution that redefines the way agricultural trade operates by bridging the gap between farmers and end consumers or shopkeepers. The platform effectively eliminates intermediaries who traditionally consume a significant portion of the farmer's profits, ensuring that the true producers of food get fair compensation for their efforts. This not only boosts farmer incomes but also makes fresh produce more affordable and accessible to the end-user. Through direct marketing, farmers are now empowered to take control of their pricing and product visibility, marking a significant shift in the dynamics of agricultural commerce. The system also contributes to the creation of a transparent, fair, and resilient supply chain that fosters trust and collaboration among all stakeholders.

The implementation of Green Link Commerce highlights the strength of digital innovation in solving real-world problems, particularly in the agricultural sector where digital inclusion has historically lagged. The platform's easy-to-navigate interface, role-based access, and live product updates offer a seamless experience that caters to users regardless of their technological background. By including both shopkeepers and direct consumers, the system opens multiple channels for farmers to sell their produce, thereby increasing their market reach. Furthermore, the system’s impact extends beyond just commerce—it helps in reducing post-harvest losses, lowering transportation costs through localized sales, and minimizing food wastage by streamlining supply and demand in real time. These multifaceted benefits not only support the environment but also promote community-level economic development.

In conclusion, Green Link Commerce is more than a technological product; it is a socio-economic initiative with the potential to transform the agricultural landscape. It supports digital empowerment, rural development, sustainable agriculture, and food security—all critical components for national growth. By leveraging digital tools to enable direct farmer-to-buyer interactions, the platform encourages self-reliance, fairness, and inclusivity in agricultural trade. As it continues to evolve, future integration of features like regional language support, digital payment gateways, logistics coordination, and a dedicated mobile application will further strengthen its impact. Ultimately, Green Link Commerce stands as a scalable, replicable model that showcases how thoughtful technology can create meaningful change in society while building a sustainable future for agriculture.

IX.FUTURE WORK

In the future, Green Link Commerce can be enhanced by introducing a dedicated mobile application for both Android and iOS platforms to increase accessibility and user convenience, especially in rural areas where mobile usage is more common than desktop access. This app can include offline capabilities, push notifications for orders and price updates, and GPS integration for location-based recommendations. Additionally, incorporating multilingual support will make the platform more inclusive for farmers and consumers who are more comfortable with regional languages. Integrating secure digital payment gateways like UPI, wallets, and direct bank transfers will facilitate seamless transactions and reduce dependency on cash. A built-in logistics module could also be developed to coordinate delivery services, enabling farmers to partner with local transport providers for efficient and timely product delivery.

Moreover, future versions of Green Link Commerce can introduce AI-based analytics and recommendation systems to help farmers make informed decisions about pricing, demand forecasting, and seasonal trends. The system could be extended to include government schemes, agricultural advisories, and weather updates directly on the dashboard, giving users more tools for productivity and planning. A community feature could be added to allow interaction among farmers, experts, and buyers, encouraging knowledge sharing and collaboration. Scalability is also a key focus for future development—expanding the platform to multiple regions and states with support for regional currencies and agricultural practices will enhance its impact. These enhancements will not only improve the user experience but also solidify Green Link Commerce as a long-term, sustainable digital ecosystem for agricultural commerce and rural empowerment.

REFERENCES

1. R. Delima, F. Galih and A. Wibowo, ”Development of Crop and Farmer Activity Information System,” Researchers World, vol. VIII, no. 4, pp. 180 - 189, October2017.
2. Miss. Monali Pagar1, Miss. Manasi Nehate2, Miss. Aditi Godse3, Miss. Shrutika Patil4 Savitribai Phule Pune University Late G.N. Sapkal College of Engineering, Nashik, India EG Poll Counting. [Online Application], Dream step Software Innovations Pvt Ltd, March. 2019. Available:https://play.google.com/store/apps/details?id=com.election.dreamstep
3. Potential of E-Commerce as a Method of Agricultural Business Marketing on MSME Scale Publish: 27 September 2022.
4. Digital Market: E-Commerce Application For Farmers Dr. D.Y. Patil Institute of Engineering
5. Management & Research, Akurdi, Pune. 2018 Fourth International Conference on Computing
6. Communication Control and Automation (ICCUBEA).
7. Kiran Shinde, Jerrin Andrei, AmeyOke “Web Based Recommendation System for Farmers” March, 2015.
8. Magheshkumar, M. Pavithra."Forming Assistant Web Service" *International Journal for Research in Applied Science & Engineering Technology (IJRASET).*
9. Dr. Deshmukh Nilesh Kailasrao. "An Overview on ICT for Indian Agricultural Informatics Developments." *International Journal of Advanced Research in Computer Science and Software Engineering*.
10. Sumitha Thankachan, Dr. S. Kirubakaran. "E-Agriculture Information Management System."*International Journal of Computer Science and Mobile Computing*
11. Sami Patel Sayyed I U, "Impact of Information Technology in Agriculture Sector", International Journal of Food, Agriculture and Veterinary Sciences, Vol. 4(2), pp. 17-22, May-Aug 2014M. Young, The Technical Writer’s Handbook. Mill Valley, CA: University Science, 1989.
12. Sotiris Karetsos, Constantina Costopoulou, Alexander Sideridis, "Developing a Smartphone App for M-Government in Agriculture", Journal of Agricultural Informatics, Vol. 5.