International Journal of Computer Sciences and Engineering
Vol.**13**, Issue.**1**, pp.**56-63**, January **2025**
ISSN: 2347-2693 (Online)
Available online at: www.ijcseonline.org

ISSN: 2347-2693 (E)

Review Article

FarmBuddy: Connecting Farmers and Customers for Local, Quality Produce

Shital Karande[1*], Shruti Menkudale[2], Ashwini Chopade[3], Maya Darane[4], Gayatri Jadhav[5]

[1,2,3,4,5]Computer Engineering, SVERI's College of Engineering (Poly.), Pandharpur, Maharashtra, India

**Corresponding Author: shrutimenkudale951@gmail.com Mob. No.: 7820967032*

Received: 19/Nov/2024; **Accepted**: 21/Dec/2024; **Published**: 31/Jan/2025. **DOI**: https://doi.org/10.26438/ijcse/v13i1.5663

Abstract: The FarmBuddy App helps people easily find and buy fresh fruits and vegetables. It helps to customer discover nearby farmers markets, see what suppliers have available, and learn about where the products come from and their prices. For farmers, the app acts as a marketplace to features their products, keep track of what they have for sale, and connect directly with customers. The Farmers Market App is a dynamic mobile platform designed to connect local farmers directly with consumers, fostering the farm-to-table experience while promoting sustainable agriculture. As demand for fresh, organic produce rises, this app addresses the growing consumer interest in supporting local economies and accessing quality food. By offering real- time inventory updates, location-based services, and online ordering capabilities, the app enhances convenience and efficiency for both farmers and consumers. Additionally, it cultivates community engagement through user reviews and educational resources, empowering users with knowledge about sustainable practices and seasonal eating. Ultimately, the Farmers Market App aims to revolutionize the local food system, creating a vibrant marketplace that supports farmers and nurtures healthier communities. The Farmers Market App is an innovative mobile platform designed to connect local farmers with consumers, enhancing the farm-to- table experience while promoting sustainable agriculture. This app addresses the increasing demand for fresh, organic produce and the desire for consumers to support local economies.

Keywords: Marketplace, Fresh Product, Organic Products, Real-Time Tracking, Customer Support, Empowering, Agriculture

1. Introduction

The FarmBuddy aims to address these challenges by providing a user-friendly platform that connects consumers directly with local farmers, simplifying the process of finding and purchasing fresh produce. This app serves as a centralized marketplace where users can access real-time information about available products, market locations, and operating hours. By leveraging technology, the app eliminates common barriers such as the need to travel long distances or the difficulty in finding reliable sources of local food. Additionally, it enhances the shopping experience by allowing users to browse various products, compare prices, and read reviews, ultimately building trust in the local food system. The aim of the proposed project is to explore how the Farmers Market App can bridge these gaps by providing a user-friendly platform that connects consumers with local farmers, offering real-time product information and market accessibility. The primary objectives of the study are to Evaluate the app's effectiveness in improving the shopping experience, enhancing farmer visibility, and promoting sustainable food choices. This study seeks to contribute to the understanding of how digital platforms can facilitate healthier food options and support local agricultural economies, ultimately benefiting the community by fostering a more accessible and sustainable local food system. Recent studies emphasize the growing demand for fresh, locally sourced food, driven by a cultural shift toward healthier eating and sustainability. Consumers increasingly seek direct access to local farmers, but navigating FarmBuddy can be difficult due to inconsistent hours, limited product visibility, and geographic barriers. Technological solutions, particularly mobile applications, have shown promise in addressing these challenges by enhancing access to local food systems. Research has demonstrated that apps connecting consumers with local markets can improve shopping experiences and increase the visibility of small-scale farmers, promoting both consumer convenience and farmer sustainability. The FarmBuddy App is designed to bridge the gap between Farmers and customers, providing a seamless platform for the accessing local, high-quality produce. Section 1 outlines how the app connects farmers and customers, ensuring the delivery of fresh fruits and vegetables directly to consumers. Section 2 discusses related work, focusing on how the app addresses the need for fresh and locally sourced produce by facilitating easy access to farmers' offerings. Section 3 presents some measures taken to ensure product quality and sustainability. Section 4 details the architecture of the app, highlighting the

essential steps involved in its development and operation. Section 5 explains the methodology used to design the app, including a flow chart to demonstrate the user interaction process. Section 6 describes the results and discussion, providing insights into the app's effectiveness in improving the local food market experience. Section 7 offers recommendations for further enhancements to optimize the app's usability and market reach. Finally, Section 8 concludes the research work, offering future directions for expanding the app's impact in the local food ecosystem.

2. Literature Review

1. Otipy: Fresh Vegetable & Fruit

This app is directly connected to farmers these enables customer to purchase fresh product. This app provides fresh fruits and vegetables to customer from farm to home. The main aim of this app is to provide fruits and vegetable from farmers to customer with involvement of any middlemen. The company has created a strong connection between farmers and customers. They take products directly from farmers and bring them to their warehouse. The product quality is checked after that packaging is done, and then orders are picked up and delivered to the consumers. Otipy ensures that farmers receive fair payment quickly for their harvests. The company also guides the farmers which crop should be grown to get the maximum income. Otipy is an app that helps people buys fresh fruits and vegetables straight from local farmers. It makes ordering simple and offers delivery options, including subscriptions for regular deliveries of seasonal produce. Studies indicate its positive impact on fostering sustainable agricultural practices and improving food accessibility. By supporting local farmers and eco-friendly practices, Otipy aims to make fresh food more accessible and encourage healthy eating. The Otipy app is an innovative platform that connects consumers directly with local farmers, enabling them to purchase fresh, farm-to-table produce while promoting sustainable agriculture and reducing food waste. The Otipy app is a digital platform designed to bridge the gap between local farmers and consumers, enabling users to purchase fresh, organic produce directly from farms. By leveraging technology, it enhances farm-to-table experiences, supports local agriculture, and promotes sustainability. The app offers convenient and efficient ensuring fair prices for both farmers and consumers. Studies indicate its positive impact on fostering sustainable agricultural practices and improving food accessibility. In conclusion, platforms like Otipy exemplify the potential of technology-driven solutions in transforming the fresh produce supply chain. By addressing inefficiencies, reducing food wastage and empowering farmers, they contribute to sustainable agricultural practices and urban consumption patterns. Future research could further explore the scalability of such models, their long-term economic that Impact on rural farmers, and potential innovations in cold storage and delivery systems to enhance their effectiveness [1].

2. Egreens Packer: VegEase

This app provides the largest variety farm-fresh vegetables and fruits with free home delivery. It provide customer to choose time and schedule of the delivery. Customer information is not shared with anyone outside the company. It provides maximize space utilization and decrease the wastage. It gives smooth data flow between crop monitoring, harvesting and packing. Customer get real time updates of product and packing status. It offers user friendly interface which gives information of packing process, tracking of orders and easy access to packing instruction. For packing robots and machinery are used. The app generated detailed reports on packing performance, as well as packing speed, accuracy and production. User gets notification of important event and updates in real time. Egreens Packer is an app that helps farmers and producers manage how they package and deliver fresh fruits and vegetables. It makes the packing, tracking, and delivery process easier and more efficient. The app includes features for managing inventory, tracking orders, and providing real-time updates, helping users improve their operations. By connecting The Egreens Packer App is a tool that makes the packing and shipping of produce and grocery orders easier and faster. It helps packers manage orders accurately; making sure each order has the right items. The app has useful features like tracking orders, checking inventory, and controlling quality to reduce mistakes and make packing smoother. Studies on consumer behavior indicate that preferences for organic, locally-sourced, and seasonal produce differ across regions, requiring platforms like VegEase to offer customizable options. By emphasizing quality, convenience, and sustainability, VegEase not only addresses the practical needs of its customers but also contributes to promoting healthier consumption habits and a greener environment. This literature review highlights that VegEase, through its eco-conscious ethos and technological integration, exemplifies modern solutions for fresh produce delivery, fulfilling consumer needs while addressing pressing environmental and logistical challenges. In addition to environmental benefits, the literature underscores the importance of technology in enhancing supply chain efficiency. Smart inventory systems, real-time order tracking, and optimized delivery routes are central to minimizing delays and maintaining product integrity [2].

3. iFresh

iFresh is Jodhpur's online fruit and vegetable store. It provides 150 plus product category catalog of fruits and vegetable in their app. The main aim of this app is to reduce a lot of carbon emissions generated by the traditional supply and reduces the number of cars on roads, and also supermarket consume a lot of energy for lighting, air-Conditioning and powering their refrigerators and freezers. It provides fresh fruits and vegetables right at customer's doorstep with 24x7 well packaged delivery. This deliver order in early morning to late night delivery, it feeds to every schedule. It is a large online supermarket and online grocery store that fulfill customers need. Customer can pay online using Debit/Credit card or by cash or online payment on delivery time. Customer can discover new products and order it from home or office. This app provide customer to purchase product without getting stuck in traffic jams, paying for parking, standing in long queues and carrying heavy bags. iFresh Farmer is an app that helps farmers manages their

work better. It has tools to track crops, keep track of inventory, and check the weather. Farmers can record and look at information about their fields to make smarter decisions for bigger harvests. The app also connects farmers with buyers, making it easier to sell fresh produce directly to customers and stores. By providing useful information and making tasks simpler, iFresh Farmer helps farmers boost their productivity and earnings. iFresh, Inc., founded in 2009, operates through its retail stores, wholesale distribution, and e-commerce platforms, primarily catering to the Asian-American community in the United States. Research indicates that the company has positioned itself as a leader in offering a wide range of ethnic groceries, especially fresh produce, seafood, and other products that are crucial to Asian cuisine. The company's business model relies on capturing a niche market segment while expanding its reach through acquisitions and partnerships. Literature on iFresh often cites the volatility in the fresh produce market, supply chain disruptions, and intense competition as major factors contributing to its challenges. The rise of e-commerce platforms also means that iFresh faces increasing competition from other online and brick-and-mortar retailers offering similar products, often with better logistics or more advanced customer engagement strategies. [3].

4. Amazon Fresh

The Amazon Fresh app is developing for users to purchase fresh groceries. The app provide huge array of products including fresh fruits, vegetables, meats and pantry staples. The food is refrigerated by ice and dry ice according to need. It offers an "add to cart" feature, allowing users to search for and select products to add to their cart. The best part is that Amazon Fresh delivery has two options for shoppers: attended delivery or unattended delivery. It provides exclusive deals and offers for saving money on groceries. User can discover new meals idea by getting recipe suggestions on their orders. For users help and safety payments and delivery is done without physical contact. They use strong encryption and security methods during payment to keep users' financial information safe. It allows customer of all ages can purchase and navigate their order.24/7 customer support via chat, email, or phone to assist users with inquiries or issues. Amazon Fresh is an online grocery service that lets customers shop for a wide selection of fresh fruits and vegetables, pantry staples, and household items. The app provides convenient features like same-day delivery and scheduled delivery, allowing users to get their groceries delivered right to their door. Customers can browse different categories, including organic and local products, and find special deals. With an easy-to-use interface and integration with Amazon Prime, Amazon Fresh aims to create a smooth shopping experience while ensuring high- quality food and essentials. A key feature of Amazon Fresh is its integration with Amazon Prime, which provides subscribers with benefits such as free delivery and exclusive discounts. This has contributed to Amazon Fresh's ability to attract and retain customers, especially in urban areas where convenience and delivery speed are paramount. Studies suggest that Amazon Fresh's ability to leverage its data-driven approach and AI technologies to offer personalized recommendations and optimize delivery schedules plays a crucial role in its appeal. The company's use of smart logistics and automated fulfillment centers has also been a factor in enhancing efficiency and reducing delivery times, helping it compete with established grocery retailers like Walmart and Kroger. However, despite its advantages, Amazon Fresh faces several challenges. The grocery delivery market is intensely competitive, with both traditional retailers and specialized e-commerce platforms like Instacart vying for market share. Research shows that although Amazon Fresh has succeeded in urban areas, it has struggled to make a significant impact in rural regions where logistical challenges and lower population density make grocery delivery less viable. Moreover, concerns regarding the profitability of Amazon Fresh persist, as the grocery sector's thin margins present a challenge for long-term profitability, especially as the company invests heavily in infrastructure and customer acquisition [4].

5. bb mandi

This app is online grocery delivery service based app developed by Bigbasket.com. It is user friendly and helps you to save time and money, it provides fresh and quality based products. It allows customer to conveniently order a wide range of grocery items .It is easy for customers to search for products and manage their shopping lists. This app offers customers support through chats, email, and phone with issues related to their orders. This app works hard to make sure the products are fresh and good quality. It's great option for anyone who wants to save time. Fresh fruits and vegetables are available in wholesale prices. It provides 100+ different varieties of fruits and vegetables directly from farmers. It ensures that customer to get freshest and highest quality fruits and vegetables at their doorstep every day early morning. In these middlemen are not involved users can see the original prices of product? It promotes locally sourced product, to support regional farmers and reduce transportation cost. Orders are tracked in real time to know the expect delivery. It ensures customer to receive fresh quality, standards and safe product. The business model of bb mandi relies heavily on efficient logistics and local sourcing to maintain the freshness of its products. Studies suggest that bb mandi's success is also linked to its ability to streamline its supply chain and delivery processes, ensuring fast and reliable service to its customers. The company has embraced technology to optimize its operations, using data analytics to track inventory, predict demand, and manage deliveries. This technology-driven approach allows bb mandi to minimize waste and enhance customer satisfaction, offering tailored delivery times and real-time order tracking. Despite its strengths, BB Mandi faces considerable challenges in highly competitive market. The online grocery delivery industry is Crowded with both global giants, such as Amazon Fresh and regional players like GrabMart and Gojek, as well as traditional brick-and-mortar grocery chains expanding into e-commerce. Research indicates that maintaining competitive pricing while ensuring product quality and freshness remains a significant hurdle for bb mandi. Additionally, the company has to overcome logistical challenges, such as managing last-mile delivery in densely populated urban areas, where traffic and infrastructure limitations can affect delivery times.

Looking forward, literature on bb mandi suggests that its future growth may depend on expanding its market reach, improving customer loyalty programs, and diversifying its product offerings to include more specialized or premium items. Further, aligning with sustainability trends, such as offering eco-friendly packaging and sourcing products from local and organic farms, could appeal to increasingly conscious consumers. As the online grocery delivery sector continues to evolve, bb mandi's ability to adapt to changing market conditions and consumer preferences will be critical to its long-term success [5].

6. Instacart

Instacart is an online delivery app which provides grocery from near store of the customer. It help customer to contact with shopkeeper through the app without sharing their contact number. This also helps to keep track on the orders and allow communicating with customer. It provide customer to schedule delivery as per their choice. User can easily shop from more than one store at a time. It helps retailers to bring their business online. Different services are provided by the app for the customer to purchase the grocery easily. Instacart is an app and website that lets people order groceries from local stores for delivery or pickup. Users can browse products, create shopping lists, and select when they want their groceries delivered or ready for pickup. Instacart partners with various grocery stores, providing fresh fruits, vegetables, and household items. The app also lets users track their orders in real time and chat with personal shoppers if they have questions or need changes. By simplifying grocery shopping, Instacart helps busy individuals save time and enjoy more convenience. Despite its market dominance, Instacart faces significant competition from both traditional grocery chains expanding into e-commerce and other tech-driven delivery services, such as Amazon Fresh and Walmart Grocery. Research on the company often points to the high cost of customer acquisition, logistical challenges, and the thin margins inherent in the grocery industry as ongoing obstacles. While Instacart partnerships with established retailers provide a competitive advantage, it still faces pressure to keep prices competitive and meet customer expectations around delivery speed, product quality, and service reliability. Looking ahead, studies on Instacart suggest that the company's future growth may be shaped by its ability to continue innovating within the grocery delivery space. This includes enhancing its technology to improve operational efficiencies and exploring new market segments, such as offering specialty items or integrating services like meal kits. Additionally, strengthening its direct relationships with consumers and retailers will be crucial in maintaining its position in a crowded and the Competitive market. As consumer preferences evolve towards healthier, sustainable, and locally sourced products, Instacart ability to adapt to these trends will likely influence its long-term success [6].

7. FarmSSMart

FarmSSMart is a mobile app that connects customers directly with local farmers, allowing users to browse and purchase fresh produce and other farm products. With a user- friendly interface, the app features farm profiles, real-time inventory updates, and seasonal offerings, making it easy for users to find and support local agriculture. FarmSSMart also includes recipe suggestions and subscription services for regular deliveries, promoting healthy eating and sustainability. By encouraging direct purchases from local producers, the app fosters community engagement and ensures access to fresher, high- quality food. Excellent App for buy and sell of farm products and support services. It's highly useful for all farm business professionals. Farmers Smart is an app that helps connect farmers with consumers to make farming better. It allows farmers to show their produce and sell it directly to customers, which simplifies shopping. Users can look at products, see market prices, and get helpful tips about farming. The app also has tools for managing crops and gives weather updates to help farmers make smart decisions. By promoting direct sales and sharing useful information, Farmers Smart aims to help farmers and make fresh food more accessible to consumers. A key aspect of FarmSSMart's business model is its focus on strengthening the relationship between farmers and their local communities. The company operates in a competitive space, with many other startups and established grocery delivery services also seeking to capitalize on the demand for fresh and locally sourced food. Research on the platform indicates that managing logistics and ensuring timely delivery of perishable products remains a significant challenge, especially in regions with underdeveloped transportation infrastructure. Additionally, the platform must contend with fluctuating supply and demand, which can make inventory management difficult for both farmers and consumers [7].

8. Farmers Shop

The Farmer Trader Application is an Android app for farmers and retailers. It helps village farmers sell their products online and learn about e-farming. Farmers who know how to use computers can register directly on the app. If they need help, they can contact company staff for basic computer and internet classes. With this app, farmers can sell their goods directly to customers in different cities, which help them earn better prices. Customers benefit too, as they can buy products for less. The app also helps stop hoarding by food grain traders, which can drive prices up. Overall, the Farmer Trader Application provides a secure and easy way for farmers to market their goods. A farmer shop app helps local farmers sell their fresh produce directly to consumers. It includes features like user accounts, product listings, a shopping cart, secure payment methods, and options for delivery. Users can rate and review products to build trust, and there are search and filter options to easily find items. The app encourages community interaction through forums and educational content while being easy to use on all devices. Marketing efforts include social media promotion and partnerships with local farms to support sustainability and improve access to fresh food. Research on Farmers Shop indicates that the platform is part of a broader movement toward sustainable agriculture, where consumers are increasingly looking for transparency in sourcing and are willing to pay a premium for high-quality, locally produced food. The service is particularly appealing to those concerned about food quality, environmental impact, and supporting local economies. A

critical advantage of the Farmers Shop business model is its emphasis on reducing the reliance on middlemen in the food supply chain, ensuring that farmers receive a fair price for their products. Literature suggests that this direct-to-consumer model benefits both producers and consumers by increasing profit margins for farmers while offering consumers access to fresher, healthier food at competitive prices. Furthermore, by supporting small-scale, local farmers, Farmers Shop plays a role in promoting food security and sustainability, addressing issues such as food waste, overproduction, and the environmental toll of long supply chains. Despite its promise, Farmers Shop faces a number of challenges in growing its customer base and scaling its operations. Logistics and delivery of perishable goods are significant hurdles, especially in regions with poor infrastructure or where demand for local produce is still limited. Research indicates that the platform's ability to effectively manage inventory and ensure timely delivery is critical to its success. Additionally, the business must differentiate itself from competitors in the growing online grocery sector, where many other services are offering similar fresh produce and locally sourced items, often with faster delivery times or broader product selections [8].

9. Fruit Delivery

A fruit delivery app is a modern solution that provides customers with the convenience of ordering fresh fruits online. Through this app, users can select their favorite fruits and have them delivered right to their doorstep in fresh condition. The app offers a variety of fruit options, allowing customers to choose according to their preferences. Additionally, users often benefit from regular promotions, discounts, and special offers, making the shopping experience even more appealing. This service has made the process of accessing fresh fruits more convenient and enjoyable. A fruit delivery service offers a wide selection of fresh, high-quality fruits, including seasonal and exotic options. It provides flexible delivery choices, such as same- day or scheduled deliveries, and a user-friendly app or website for easy navigation and checkout. Customers can customize their orders by creating their own fruit baskets and can track their deliveries in real time. The Service often includes special offers and sustainable practices, like eco- friendly packaging. Additionally, it ensures customer satisfaction with accessible support for any inquiries or issues. One of the key factors driving the success of fruit delivery services is the increasing awareness of health and wellness among consumers. Studies suggest that as the people become more health-conscious; there is a growing preference for fresh, natural foods, with fruits being a central part of this dietary shift. The convenience of ordering fruit online appeals to busy individuals and families who seek to integrate healthier eating habits into their routines. Moreover, the ability to select specific fruits or create custom fruit baskets has made these services more appealing, offering both flexibility and a personalized shopping experience. However, despite the growing demand, fruit delivery services face several challenges. Logistics and the perishable nature of fruits present operational difficulties, such as maintaining the freshness of the produce during delivery. Research indicates that packaging, cold storage, and timely delivery are critical factors in ensuring customer satisfaction. Furthermore, competition in the online grocery sector is fierce, with many players entering the market, ranging from large e-commerce platforms like Amazon Fresh to specialized services focusing solely on fruits. Price sensitivity and the ability to offer competitive rates without compromising quality remain key considerations for businesses in this space. Looking forward, literature suggests that fruit delivery services can continue to expand by incorporating value-added offerings such as organic, exotic, or pre-cut fruit options, catering to diverse consumer preferences. Technological advancements in supply chain management, AI-driven inventory systems, and enhanced delivery tracking will help improve operational efficiency and customer experience [9].

10. KissanKonnect

KisanKonnect is India's first digital farmers market for urban consumers. The initiative connects over 5,000 farmers from Maharashtra to consumers in Mumbai and Pune. KisanKonnect has a market opportunity of ~US$ 30 billion market The KisanKonnect app is a free app that connects customers with farmers to buy fresh fruits and vegetables, grains, pulses. Helps farmers by providing relevant information to them quickly. Straight from the farm largest assortment of fruits and vegetables Soil testing to ensure good soil health Trace your orders to their farm Safe and hygienic with quality checks A-Grade fruits and vegetables Convenience- Slotted Delivery. KissanKonnect is a useful app that links farmers directly to consumers for selling agricultural products. It has an easy-to-use design, making it simple for farmers to list their items and for consumers to browse and buy. The app also offers secure payment methods, delivery options, and a rating system to ensure quality and build trust. Additionally, KissanKonnect provides information and resources to help users learn about farming and nutrition. By connecting local farmers with consumers, the app promotes sustainable agriculture and makes fresh produce more accessible. A significant advantage of KissanKonnect business model is its emphasis on empowering farmers by providing them with a direct channel to sell their goods. Research indicates that this approach helps farmers achieve better profit margins by eliminating the traditional supply chain's inefficiencies and middlemen. Consumers, in turn, benefit from fresher produce and the knowledge that they are supporting local agriculture. The platform's commitment to sustainability, such as promoting organic farming and Reducing food waste is also a key factor in its appeal, especially to environmentally-conscious consumers seeking to make more responsible purchasing decisions. Despite its advantages, KissanKonnect faces challenges that are common in the online grocery and agricultural sectors. The perishable nature of agricultural products makes logistics and delivery a significant hurdle. Timely delivery, effective inventory management, and ensuring product quality during transit are ongoing concerns. Research also highlights that scaling operations in rural areas or regions with limited infrastructure can present logistical challenges. Furthermore, competition from larger e-commerce platforms and traditional grocery stores expanding their online offerings makes it difficult for smaller platforms like KissanKonnect to maintain a competitive edge. Looking forward, literature suggests that

KissanKonnect growth prospects depend on expanding its market reach, improving its supply chain efficiencies, and further diversifying its product range. By incorporating value-added products such as organic or processed food items, as well as enhancing the customer experience with features like personalized delivery and subscription services, KissanKonnect can better meet consumer demands [10].

3. Objectives

- Creating a way for local farmers to communicate directly with people who want to buy their products. This helps to customers by find fresh fruits, vegetables easily.
- Letting users place orders in advance for items they want to pick up at the market. This helps minimize waiting times and ensures that the products they want are available when they arrive.
- It shows the products are currently in stock at the market, including their prices, quantity, and what items are in season.
- It focuses on seasonal fruits and vegetables so that customer can purchase it easily.
- Provide community members with easy to access fresh fruits, vegetables and other products.
- Encourage people to buy fresh food from local sources, which helps improve their health and supports sustainable farming practices.
- Create a friendly atmosphere where farmers and consumers can connect and support each other locally.
- Share helpful resources and tips about farming methods, seasonal fruits and vegetables, and healthy eating to educate users.
- Make it easy for people to look at products, place orders, and choose between delivery or pickup.
- Provide helpful resources and information about farming methods, what produce is in season, and the benefits of healthy eating to inform users.

4. Procedure

4.1 Methodology

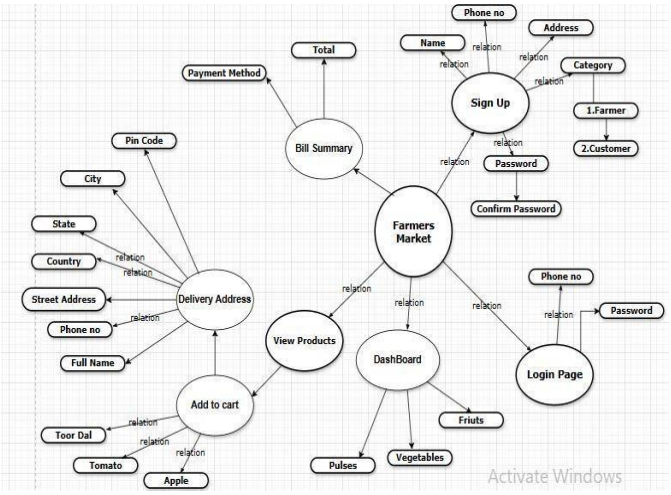

Figure 1. Methodology FarmBuddy Application

4.2 Explanation

The Data Flow Diagram (DFD) for the FarmBuddy application outlines a systematic methodology for designing an efficient and user-friendly platform to connect users with fresh farm produce. The system begins with user registration through the Sign-Up module, where essential details like name, phone number, address, and login credentials are collected. Existing users can log in via the Login Page using their phone number and password. Upon successful login, users are directed to the Dashboard, which serves as the central navigation interface, offering product categories such as fruits, vegetables, and pulses. Users can explore products in the View Products module and add items, such as tomatoes or apples, to their cart. For order fulfillment, the Delivery Address module collects comprehensive details, including city, state, country, street address, pin code, and door number, ensuring accurate and timely deliveries. Finally, the Bill Summary module aggregates the order details, including the total cost, payment method, and delivery address, allowing users to review and confirm their orders. The data flow within FarmBuddy ensures seamless interaction between modules, processing user inputs such as personal details, product selections, and delivery information efficiently. This structured methodology provides a cohesive framework for the application, ensuring a smooth and convenient experience for users while promoting access to fresh produce directly from farmers. Data flow across the system is designed to be seamless and efficient. User inputs, such as registration details, login credentials, product selections, and delivery information, are processed and integrated across the respective modules. Each module communicates with others, Ensuring the continuity of operations without redundancies or delays. The FarmBuddy methodology effectively addresses key requirements such as secure user authentication, intuitive product browsing, accurate order processing, and reliable delivery management. This structured approach ensures that the application provides a hassle-free and efficient platform, enabling users to access fresh produce directly from farmers while fostering a seamless connection between users and local producers.

5. Results and Discussion

The Data Flow Diagram (DFD) for the FarmBuddy application illustrates the efficient and systematic operation of its components, aimed at connecting farmers and customers through a user-friendly platform. The results reflect the application's ability to address the needs of both user groups, ensuring a seamless process from account creation to order delivery. The Sign-Up and Login modules ensure secure user management by collecting and authenticating essential information. The inclusion of distinct user roles—Farmers and Customers—demonstrates the dual functionality of the app, catering to both the supply and demand sides of the marketplace. This feature empowers farmers by providing them with a platform to market their produce while offering customers a reliable source for fresh products. The Dashboard acts as the central navigation hub, categorizing items into Fruits, Vegetables, and Pulses. This categorization simplifies product exploration, allowing users

to browse items like tomatoes or apples efficiently. The Add to Cart functionality further enhances the shopping experience by providing users with a straightforward way to manage their selections. The Delivery Address module is designed to ensure accuracy and reliability in order fulfillment. By capturing detailed information such as city, state, street address, and pin code, FarmBuddy minimizes errors in delivery logistics and ensures that orders reach the correct location promptly. This focus on precision highlights the application's commitment to user satisfaction. The Bill Summary module provides a transparent overview of the order, including the total cost, payment method, and delivery details. This final review step ensures that users can confirm their purchases with confidence, enhancing the overall user experience. The system's data flow is efficient and well-integrated, with seamless interactions between modules. For instance, the data entered during Sign-Up or Login directly impacts the functionality of the Dashboard and Delivery modules. Similarly, the transition of cart data into the Bill Summary module showcases the streamlined processing within the application. The results demonstrate that FarmBuddy is not just a tool for purchasing produce but also a platform fostering a sustainable connection between farmers and consumers. Its structured methodology addresses key challenges such as product availability, delivery accuracy, and order transparency. By ensuring ease of navigation, secure data handling, and robust delivery management, FarmBuddy effectively bridges the gap between local farmers and urban consumers. This innovative design makes it a Valuable solution for promoting fresh produce accessibility while empowering the farming community.

Tables 1

MODULE	FUNCTION
User Management	Signup and Login Account Verification Password Recovery
Product Management	Browse Products Search and Filter Product Details
Order Management	Cart Functionality Checkout Process Order Tracking
Invoice Management	Create Invoices Download Invoices View Purchase History.
Farmer Dashboard	Sales Overview Manage Inventory Order Management

6. Conclusion and Future Scope

Conclusion:

The FarmBuddy application, as represented in the Data Flow Diagram (DFD), provides an efficient platform that bridges the gap between farmers and customers, enabling a streamlined process for buying and selling fresh produce. The app's modular design ensures a seamless user experience, with functionalities such as secure user authentication, intuitive product browsing, precise delivery management, and transparent order summaries. By integrating essential features, FarmBuddy not only simplifies the process of accessing fresh agricultural products but also empowers farmers by giving them a direct channel to reach consumers.

The application's focus on user satisfaction and operational efficiency makes it a practical solution for addressing challenges in the agricultural supply chain. By ensuring transparency, reliability, and ease of use, FarmBuddy creates a trusted environment for customers to purchase farm-fresh produce and for farmers to showcase their offerings. This platform not only benefits individual users but also contributes to the larger goal of supporting local farming communities and promoting sustainable agriculture.

Future Scope

The future of FarmBuddy is bright, with several opportunities for growth and improvement. Expanding the app's payment options to include digital wallets, UPI, and subscription models can enhance user convenience and increase customer loyalty. Additionally, integrating AI-based features like personalized product recommendations and inventory management can improve operational efficiency for both farmers and customers. Real-time delivery tracking and optimized logistics can further refine the user experience, ensuring timely deliveries and reducing operational costs.

Introducing features such as multi-language support and offline functionality can broaden the app's reach to rural areas and non-English speaking users. Partnering with local governments and NGOs to promote organic farming and sustainable practices can align FarmBuddy with broader environmental and social goals. Furthermore, empowering farmers with analytics tools and community features would allow them to plan production more effectively and connect with peers for shared learning and growth.

Data Availability

The data that supports the findings of this study can be accessed from the corresponding author upon a reasonable request.

Conflict of Interest

The authors declare that they have no conflict of interest related to this research.

Funding Source

The authors confirm that this research was conducted without any external funding.

Authors' Contributions

Author-1 (Shital Karande) guided the project, offering support in conceiving the study and ensuring academic alignment.
Author-2 (Shruti Menkudale) designed the research and edited the manuscript.
Author-3(Ashwini Chopade) designed the methodology.
Author-4(Maya Darane) analyzed the data.
Author-4 (Gayatri Jadhav) drafted the manuscript.

Acknowledgements

We would like to express our heartfelt thanks to everyone who helped us complete this project. First and foremost, we are very grateful to SVERI College of Engineering (Polytechnic) for providing us with the opportunity and

platform to work on the Farmers Market Application. We would like to give a thanks to Miss. S. N. Karande for his valuable guidance and support throughout the entire project. We also want to recognize the hard work of our team members Shruti Menkudale, Ashwini Chopade, Maya Darane, and Gayatri Jadhav. Their teamwork and dedication were key to making this project successful.

Finally, we want to thank our families and friends for their continuous encouragement and understanding during this journey. Their support motivated us and helped us overcome challenges along the way. We would also like to extend our gratitude to the administrative staff and faculty at SVERI College of Engineering (Polytechnic) for their insights and feedback, which significantly contributed to refining our project. Special thanks to the students who participated in our surveys and provided valuable input on their experiences with the leave application process. Their perspectives helped us understand the needs and expectations of the end-users, allowing us to create a more effective system.

We appreciate the resources provided by the college, including access to necessary technology and infrastructure, which facilitated our development efforts. Last but not least, we are thankful for the spirit of collaboration and innovation that permeates our institution, inspiring us to strive for excellence in our work.

References

[1] Otipy: A Health & Wellness App," *Google Play Store*, Vol.**1**, Issue.**1**, pp.**11, 2025**

[2] EgreensPacker: A Comprehensive Review - Google Play Store, Vol.**1**, Issue.**1**, pp.**1-5, 2025.**

[3] iFresh, "Customer App Overview," In the Google Play Store, pp.**1-4, 2025.**

[4] AmazonFresh: Exploring Products and Offers - Amazon India, Vol.**1**, Issue.**1**, pp.**1-5, 2025.**

[5] BigBasketMandi: Revolutionizing Online Grocery Shopping - Google Play Store, Vol.**1**, Issue.**1**, pp.**1-6, 2025.**

[6] Instacart: Innovative Approaches to Online Grocery Shopping – *Journal of E-Commerce and Technology*, Vol.**7**, Issue.**1**, pp.**10-15, 2025.**

[7] Classibiz App**:** *Innovative Solutions for Business Listings – Journal of Mobile Applications and Technology*, Vol.**3**, Issue.**5**, pp.**45-50, 2025.**

[8] Farmers Stop. *Farmers Stop: Your Online Grocery Shopping Destination*. Vol.**5**, Issue.**2**, pp.**15-20, 2025.**

[9] JioMart: Fresh Fruits Online Shopping – *Journal of E-Commerce and Retailing*, Vol.**6**, Issue.**3**, pp.**22-27, 2025.**

[10] KisanKonnect: Revolutionizing Agricultural Supply Chains – *Journal of Agricultural Technology and E-Commerce*, Vol.**5**, Issue.**2**, pp.**30-35, 2025.**

AUTHORS PROFILE

Shital Karande is a lecture at SVERI's College of Engineering (Polytechnic), Pandharpur.

Shruti Menkudale is a third-year diploma student in the Department of Computer Engineering at SVERI's College of Engineering (Polytechnic), Pandharpur.

Maya Darane is a third-year diploma student in the Department of Computer Engineering at SVERI's College of Engineering (Polytechnic) Pandharpur.

Ashwini Chopade is a third-year diploma student in the Department of Computer Engineering at SVERI's College of Engineering (Polytechnic) Pandharpur.

Gayatri Jadhav is a third-year diploma student in the Department of Computer Engineering at SVERI's College of Engineering (Polytechnic) Pandharpur.