Farmers Buddy: Farmers Online Selling Application

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Abstract: *Farmers face difficulties in selling their produce at fair prices due to a lack of market access, leading to reliance on middlemen who take substantial profits, leaving farmers with minimal returns and sometimes losses. Consumers also struggle to find quality produce at reasonable prices because of these middlemen. The root cause is the lack of direct, real-time communication between farmers and consumers. To address this, the "Farmers Buddy: A Farmers Online Selling Application" is being developed to connect farmers directly with consumers, eliminating middlemen. This app will enable farmers to sell their produce directly, ensuring better profits, while consumers benefit from quality products at fair prices. The implementation of this app is expected to empower farmers, promote sustainability, and create a more efficient agricultural economy by reducing dependence on intermediaries. The main cause of this development of the middle man is because of the lack of the communication between the farmers and the consumers in the real time. This is causing the farmers and the consumers to suffer a lot. This can be resolved by establishing a direct connection between the farmers and the consumers. For developing this, we can for this, we are developing an android application known as: "Farmers Buddy: A Farmers Online Selling Application"*

Keywords: *Mobile application, Farmers Buddy, Direct Order, Order History, Request Handling, Profile Management, direct selling, agricultural sector, market access, middlemen, profits, quality produce, consumer prices, sustainability, efficiency, producer-to-consumer model.*

I. INTRODUCTION

Efficient selling of vegetables or crops for farmers will result in more profit. The farmers are facing the challenges while selling the produces. In response to these challenges, we have developed the Farmers Buddy, an Android-based application designed to increase the profits for farmers and fresh produces for the customers. The Farmers Buddy aims to address the limitations of existing system by eliminating the middle-man, user-friendly platform that supports farmers [1]. The application allows farmers to sell their produces, add products, and monitor orders and requests. Farmers can efficiently handle product pricing, view costumer purchase requests, and manage their orders. Customers benefit from an intuitive interface to browse products, place orders, and provide feedback, ensuring a seamless and interactive experience [1][3]. Built using Java and XML, and leveraging a firebase database for backend storage, the Farmers Buddy is developed in Android Studio to ensure compatibility with a wide range of Android devices. The development process follows a systematic approach, including requirements gathering, system design, module development, integration, and rigorous testing to ensure reliability and performance. This paper details the design and implementation of the Farmers Buddy, highlighting its key features and the benefits it brings to farmers as well as consumers. By integrating modern technologies and adhering to best practices in software development, the Farmers Buddy provides a scalable and efficient solution for farmers looking to sell their produce [7]. The application was developed in native language to ensure that each farmer can use the application easily and to sell their produce by eliminating middle-man to get more profits.

1.1. PROBLEM STATEMENT

Farmers often face challenges in reaching a wider market for their produce, leading to limited sales opportunities and lower income. They frequently rely on traditional methods of selling through local markets or intermediaries, which restricts their customer base and forces them to accept lower prices for their hard-earned produce. Many customers are keen to support local agriculture and prefer to purchase fresh produce directly from farmers but they often find it difficult to locate and connect with these producers. The farmers Buddy application is designed to bridge this gap by providing a digital platform that connects farmers directly with consumers [8].

1.2. OBJECTIVE OF THE PAPER

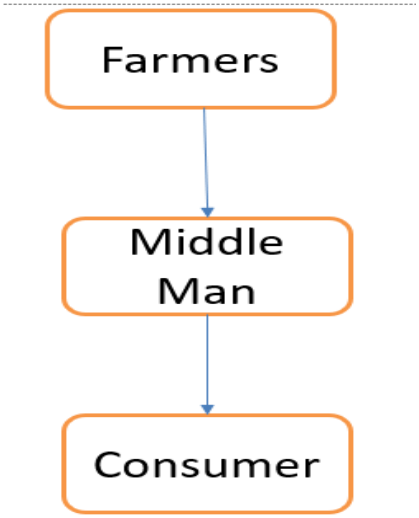
The project aims to develop an Android application to benefit both customers and farmers. It is developed in native language and it can be used easily by farmers [5]. The objective is to enable farmers to list and showcase their produce on a digital platform and provide a user-friendly interface for farmers and consumers. By managing products, orders, and requests in one place, the app aims to make the procurement process smoother, more transparent, and user-friendly. This will eliminate middle-man, increased profits, and ensure everyone has a better experience when buying and selling products.

II. EXISTING WORK

The current agricultural sales and marketing system is riddled with inefficiencies that ultimately hurt both farmers and consumers. Here's a breakdown of the existing problems and how a direct farmer-to-consumer approach can provide a solution. The existing work in this field ranges from traditional manual methods to android application, each with its own set of advantages and limitations [8].

2.1 TRADITIONAL METHODS TO SELL THEIR PRODUCE

Traditional method involves manual records of produce quantity often using books and the middleman with these records and methods which lead to reduce the profits for farmers and reduce the freshness of the produces for the consumers. These methods are prone to human error, are time-consuming [8].



2.1 EXISTING WORK

In fig 2.1, we can observe the existing work. The figure tells that there will be a middle man who gains profit between farmers and consumers. The existing system in agricultural sales and marketing is characterized by inefficiencies, limited market access, and a lack of direct engagement between farmers and consumers.

2.2 Limitations of Existing Work

Despite the advancements, existing systems still face several limitations:

- Real-Time Data Processing: Many systems do not offer real-time updates, leading to reduce profits for farmers.
- Higher prices for consumers: Consumers end up paying inflated prices for agricultural products due to the added profit margins of middlemen.
- Food Waste: The long and complex supply chain often leads to a significant amount of food waste. Produce can be damaged during transportation, handling, and storage
- Lack of Transparency: Consumers may wonder if the food they are buying is fresh, locally grown, and produced using environmentally friendly methods.

2.3 The Farmers Buddy Approach

The Farmers Buddy application aims to address these limitations by providing a user-friendly, mobile-based application as a solution. It leverages modern technologies such as Java and XML for development and firebase database for backend storage. The application is designed to be intuitive and accessible for farmers and consumers.

2.4 Key features of the Farmers Buddy include:

Farmer Management: Allows farmers to add, remove, and manage products, and view orders and user requests.

Consumer Management: Enables consumers to view product, view previous orders, and give the feedback to the farmers.

III. PROPOSED WORK

The Farmers Buddy project proposes the development and deployment of a mobile-based application used for farmers and consumers [8]. The goal is to create a comprehensive, user-friendly application that addresses the inefficiencies of traditional system by leveraging modern technology and better user experience.

3.1 REQUIREMENTS ANALYSIS AND SYSTEM DESIGN

Goals: Clearly define the requirements and scope of the project, ensuring all needs of farmers and consumers [3].

Tasks [3]:

- Conduct surveys to gather detailed requirements.
- Create detailed use cases and user stories.
- Develop the system architecture, database schema, and user interface designs.

3.2. DEVELOPMENT OF CORE MODULES

Farmer Module:

Features: Add and manage products, assign prices for products, view order requests [3].

Activities: Implement product management, and order management functionalities.

Consumer Module:

Features: User registration and login, browse products by field name, request to purchase products, view order history, provide feedback [4].

Activities: Implement user registration, product browsing, purchase requests, order history viewing, and feedback submission functionalities.

3.3. INTEGRATION & DATA MANAGEMENT

Goals: Ensure seamless interaction and data flow between the farmer and consumer modules [2].

Tasks:

- Develop and implement communication between the frontend and backend.
- Ensure data consistency and integrity through proper validation and error handling.
- Set up and configure the firebase database to handle backend.

3.4. USER INTERFACE & EXPERIENCE ENHANCEMENT

Goals: Create an intuitive & responsive interface for all users.

Tasks:

- Design & implement responsive interfaces for farmers& consumers.
- Ensure accessibility & easy navigation of the application [6].

3.5. TESTING

Goals: Validate functionality performance security of the application.

Tasks:

- Conduct unit testing for components to ensure correct functioning.
- Perform integration testing for module interactions validation along with whitebox and blackbox testing.

IV. EXPERIMENTAL RESULTS

4.1 FARMER HOME

The fig 4.1 shows the farmer page of the application. This is the main screen of the Farmer in the application. Once the user logs into the application as a farmer, then the application will show him this page as a result. This screen holds the data as follows

- A logout button
- Welcome message along with name
- Orders made for the farmers
- Feedback Page

Here, the farmer is allowed to see all the orders that are made to him via application form the consumers. In the each fragment, the farmer is able to see the data like mobile number, order ID, order status, grand total and a button to deliver the products.

Fig: 4.1 Farmer Home

4.2 ADD PRODUCT

The fig 4.2 shows the product addition page of the application. It is the page where the farmers can add the products. In this screen the farmer can add the product by providing the necessary details. Firstly, if the farmer need to add the product, the farmer need to enter the product name, price for one kilogram, quantity of the product and finally addition the image of the product.

After adding the product, the product is displayed in the same screen with all details. So the farmer can see the products after adding. If there are any modifications, the farmer can edit the product by clicking on the product name in the same screen.There's a "Check on the Above Image" button available, which is used for adding an image. Towards the bottom, there's a large "ADD" button that kicks off the process of adding the new product to the app's database and linking it to the chosen dealer.

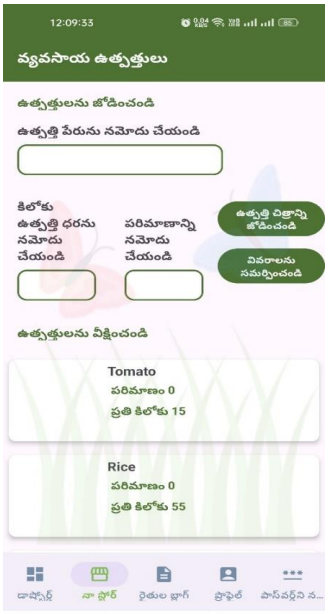


Fig: 4.2 Add Product

4.3 CONSUMER HOME

The fig 4.3 shows the consumer home screen of the application. This is the main screen of the Consumer in the application. Once the user logs in into the application as a consumer, then the application will show him this page as a result. This screen holds the data as follows

- A logout button.
- Welcome message along with user name.
- Navigation bar at the bottom of the screen
- Cart option
- Profile icon
- Password chage option.
- Order history navigation button
- Field names of the farmers.

Once the consumer logs in into the account using the consumer profile, he/ she will be able to see the fields present for the user to buy the products. Once the consumer selects the farmer field, he/she can buy the products that the farmer is selling. One farner can sell multiople products like wheat, paddy, vegitables like tomato, brinjal etc. this provides the option for the farmers to buy the products from the same farmer and makes the decrease in the delvery charges for the consumer from the farmer side. This will be more benifitail for the both farmer and the consumer that the middleman in the existing system is not at all present in the entire scenario making it middleman free. This will make the farmers to get the maximum profits from the app as possible.

Fig: 4.3 Consumer Home

4.4 VIEW ORDER SCREEN

The fig 4.3 shows the consumer home screen of the application. This screen shows the previous order of the consumer. This screen demonstrates the functionality related to orders.

The consumer can view the order history based on their orders. This page contains the mobile number of the farmer and the total amount for the order.

Each order entry has the following details:

1. Order id

2. Total amount of the order

3. Order status

4. To enter the feedback

5. Contact number of the farmer

Fig: 4.4 View Order Screen

4.5 ADD FEEDBACK

Figure 4.5 illustrates the feedback interface within the consumer profile of the application, designed to be user-friendly and intuitive. After receiving their order, consumers are prompted to share their experience by navigating to this page. The feedback mechanism is straightforward: consumers write their thoughts in the provided space and submit them by clicking the 'Submit Feedback' button. Once submitted, this valuable input is directly accessible to the farmers in their respective profiles, allowing them to gain insights into the consumer's perspective.

The design of the feedback section is intentionally unrestricted, offering consumers the freedom to express detailed opinions without any character limits. This open-ended approach encourages comprehensive reviews, enabling consumers to comment extensively on various aspects of their purchase, such as product quality, packaging, delivery experience, and overall satisfaction. Such detailed feedback is instrumental for farmers to understand consumer needs better and to continuously improve the quality of their products and services.

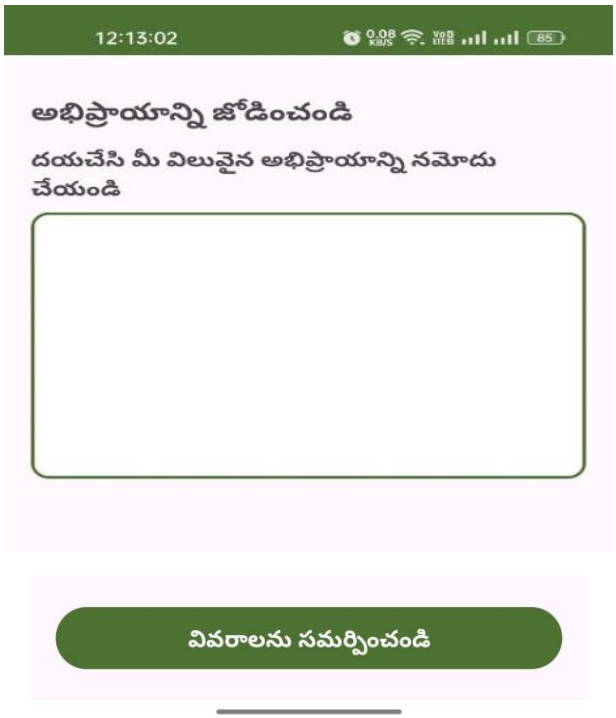


Fig: 4.5 Add Feedback

V. CONCLUSION

In conclusion, our Android application represents a significant step forward in revolutionizing the procurement process and enhancing the mobile commerce experience for farmers and consumers alike. The Farmers Buddy application stands as a transformative platform that bridges the gap between farmers and consumers, ensuring a more direct, transparent, and equitable marketplace for agricultural products. This innovative solution effectively eliminates the need for middlemen, thereby allowing farmers to receive fairer prices for their goods while providing consumers with access to fresh, high-quality produce at competitive rates.

VI. FUTURE ENHANCEMENTS

Enhance weather forecasting capabilities within Farmers Buddy to provide accurate and localized weather predictions. Integrate climate risk assessment tools to help farmers mitigate risks related to extreme weather events and climate change impacts. Develop financial management features such as budgeting, accounting, and financial planning tools tailored for farmers. Provide access to microfinance options, insurance products, and investment opportunities to support sustainable farming practices.

VII. REFERENCES

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