

A Project Report

On

**“KISSAN BUDDY”**

Batch Details

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**1. INTRODUCTION**

* This Android-based application helps farmers find the nearest mandi (local market) based on their location using Google Maps.
* It estimates the cost of transactions for selling different types of produce and helps farmers choose the mandi with the least transaction costs.
* Firebase is used as the backend for data storage, user information, and transaction details.
* The app aims to provide a smart solution for small-scale farmers to improve their profit margins by reducing transportation and transaction costs.
* The application integrates GPS technology and Google Maps to facilitate real-time location tracking, enabling farmers to quickly identify the nearest mandis. This feature is essential for reducing travel time and transportation costs.
* The app incorporates a sophisticated cost estimation algorithm that takes into account various factors, such as distance to the mandi, transportation fees, and mandi-specific commission rates. This allows farmers to make informed decisions about where to sell their produce.
* The app is designed with a focus on usability, ensuring that it is accessible to farmers with varying levels of digital literacy. A straightforward interface allows users to easily navigate the app and utilize its features effectively.
* By leveraging Firebase as the backend, the app ensures real-time updates of mandi information and transaction costs. This dynamic feature helps farmers adapt to market changes and make timely decisions.
* Beyond individual benefits, the app has the potential to foster stronger community ties by connecting farmers to local markets, enhancing their bargaining power, and promoting fairer pricing practices.
* The architecture of the app allows for future enhancements, such as additional features for crop management, weather updates, and integration with financial services, thus providing a comprehensive toolkit for farmers.
* The development of the app is grounded in extensive research into the needs and challenges faced by farmers, as well as existing solutions in the agricultural technology landscape. This ensures that the app is both relevant and effective.
* The primary objective of the app is to empower farmers by providing them with the tools they need to access markets efficiently, reduce costs, and ultimately improve their livelihoods.

**2. LITERATURE REVIEW**

  **Physical Visits to Markets:**

Farmers must travel to mandis to compare prices and fees.

High transportation costs and time wasted.

 **Traditional Middlemen:**

Middlemen charge high commissions, reducing farmers' profit margins.

Information asymmetry leads to unfair pricing for the farmers.

 **Limited Access to Digital Tools:**

Existing digital platforms may not account for real-time market dynamics.

Language barriers and poor usability hinder adoption.

 **Phone-Based Market Inquiry:**

Farmers often rely on phone calls to traders or middlemen for price information.

Drawback: This method can be time-consuming and may not provide real-time or accurate market prices.

 **Local Community Networks:**

Farmers exchange information through informal community groups or cooperatives.

Drawback: This can lead to misinformation and may not include comprehensive market data, limiting farmers' options.

 **Static Price Boards:**

Many mandis display price boards with fixed rates for certain crops.

Drawback: Prices can change rapidly due to demand fluctuations, rendering this information outdated and unreliable.

 **Agricultural Extension Services:**

Some farmers consult extension officers for market insights and guidance.

Drawback: Limited reach and infrequent updates can result in delayed or inadequate market information.

 **Online Marketplaces:**

Some platforms exist for farmers to list their products for sale.

Drawback: High competition and lack of local market data can make it difficult for small farmers to gain visibility and sell effectively.

**3. OBJECTIVES**

* To develop an Android application that helps farmers locate the nearest mandi using GPS and Google Maps.
* To estimate the transaction costs for each mandi based on the farmer's produce and quantity.
* To recommend the mandi with the lowest transaction cost for the farmer.
* To utilize Firebase as the backend for storing mandi data, crop information, and transaction history.
* To offer a simple, user-friendly interface for farmers, ensuring ease of access and utility.

**EXPERIMENTAL DETAILS/METHDOLOGY**

**Hardwares and Softwares used:**

**Hardware Requirements:**

Android device with GPS capability.

Internet connectivity.

**Software Requirements:**

**Android Studio:** For app development.

**Google Maps API:** For location services.

**Firebase:** Backend for user data, crop prices, and mandi details.

**Java/Kotlin:** Programming language for Android development.

**4. METHODOLOGY**

**- DESIGN PROCEDURE**

1. **Requirement Analysis**

**Gather User Requirements:**

Conduct surveys and interviews with farmers to understand their needs and challenges related to selling produce.

Identify specific features desired, such as location tracking, cost estimation, and user-friendly interfaces.

**Define Functional Requirements:**

User registration and login.

Input options for crop types and quantities.

Real-time location tracking.

Mandi search and comparison features.

Transaction cost calculation.

2. **System Architecture Design**

**Architecture Overview:**

Define a client-server architecture where the Android app acts as the client and Firebase serves as the backend server.

**Data Flow Design:**

Outline how data will flow between the app and Firebase, including user inputs, mandi information retrieval, and transaction cost calculations.

**Component Identification:**

Identify key components: User Interface (UI), Firebase database, Google Maps API, and transaction cost algorithm.

**3. UI/UX Design**

**Wireframing:**

Create wireframes for the app to visualize the layout and navigation.

Design screens for user registration, crop input, mandi search results, and cost comparison.

**User Experience Considerations:**

Focus on simplicity and intuitiveness, ensuring the app is easy to navigate for users with varying tech skills.

Use visual cues and clear instructions to enhance usability.

**4. Development**

**Frontend Development:**

Use Android Studio to develop the app interface using Java/Kotlin.

Implement Google Maps API for location services, allowing users to view nearby mandis.

**Backend Development:**

Set up Firebase for user authentication, data storage, and real-time updates.

Structure the database to store mandi information, crop details, and transaction costs.

**Cost Calculation Algorithm:**

Develop an algorithm to estimate transaction costs based on distance, mandi fees, and crop types.

Ensure the algorithm provides accurate and quick calculations.

**5. Integration**

**Integrate Components:**

Connect the frontend with Firebase to ensure seamless data retrieval and storage.

Integrate Google Maps API to allow users to interact with the map and view distances to mandis.

**Test Integration:**

Conduct integration testing to ensure that all components work together as expected.

**6. Testing**

**Functional Testing:**

Test each feature of the app to ensure it meets user requirements and performs correctly.

**User Acceptance Testing (UAT):**

Involve farmers in testing the app to gather feedback on functionality and usability.

Make adjustments based on user feedback to improve the overall experience.

**7. Deployment**

**Prepare for Launch:**

Finalize the app based on testing feedback and ensure all features are working as intended.

Publish the app on the Google Play Store for easy access by farmers.

**8. Maintenance and Updates**

**Monitor App Performance:**

Continuously track user feedback and app performance post-launch.

**Regular Updates:**

Update the app regularly to fix bugs, improve features, and incorporate user suggestions.

**5. OUTCOMES**

1. **Enhanced Market Access for Farmers**

Farmers will have real-time access to information about the nearest mandis, enabling them to make informed decisions about where to sell their produce.

**2. Cost Savings**

By estimating transaction costs and recommending the mandi with the lowest fees, farmers can save on transportation and commission costs, ultimately increasing their profit margins.

**3. Improved Decision-Making**

The app will provide farmers with critical data on crop prices and market dynamics, allowing them to time their sales better and negotiate more effectively.

4. **Increased Digital Literacy**

As farmers engage with the app, they will improve their digital skills, fostering greater adoption of technology in agriculture.

5. **Real-Time Data Utilization**

Farmers will benefit from real-time data updates, ensuring they have the latest information on mandi locations, distances, and associated costs.

6. **User-Centric Design**

The app will offer an intuitive interface tailored to the needs of farmers, facilitating easier navigation and interaction with the features.

7. **Community Building**

By connecting farmers with local markets, the app may foster a sense of community and collaboration among users, potentially leading to shared resources and knowledge.

8. **Scalability**

The backend (Firebase) allows for scalability, accommodating more users and expanding features over time based on feedback and market needs.

9. **Potential for Future Integrations**

The app can pave the way for future integrations with other agricultural services, such as weather forecasts, pest control recommendations, or financial assistance programs.

10. **Economic Impact**

The app aims to contribute to the economic upliftment of farmers by increasing their market access and profitability, ultimately supporting local economies.

**6. TIMELINE OF THE PROJECT/ PROJECT EXECUTION PLAN**

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11 Sept 18 Sept 9 Oct 31 Oct 14 Nov 22 Nov

**7. CONCLUSION**

the Farmers' Market Locator and Transaction Cost Estimator App represents a significant advancement in connecting farmers with local markets, empowering them to make informed decisions that enhance their profitability. By leveraging modern technology such as Google Maps and Firebase, the app addresses the critical challenges faced by farmers in accessing mandis and understanding transaction costs.

**Key takeaways include:**

**Increased Accessibility:** The app provides farmers with real-time information about the nearest mandis, reducing the time and effort required to sell their produce.

**Cost Efficiency:** By estimating transaction costs, the app enables farmers to select the most economical options, ultimately leading to better profit margins.

**Empowerment Through Technology:** As farmers become more familiar with using digital tools, they will likely experience greater confidence in their market participation, fostering a more competitive agricultural sector.

**Community Impact:** The app has the potential to strengthen local economies by ensuring that farmers can access fair prices and improve their livelihoods.

**Future Opportunities:** The foundation laid by this app can lead to further developments, including additional features and integrations that support farmers in other aspects of their work, such as weather updates and crop management.

By focusing on the needs of farmers and providing an intuitive, user-friendly platform, we can significantly enhance their market opportunities and contribute to the overall sustainability and growth of the agricultural sector. As we move forward, continuous feedback and iterative improvements will be vital to ensure the app meets evolving user needs and maximizes its impact.

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