

Abstract

AgriPriceSense is an innovative mobile application designed to empower farmers by providing real-time access to agricultural crop prices based on their location. The app fetches up-to-date price information from nearby mandis and trusted government sources, helping farmers make informed decisions without the need to visit physical markets.

In addition to real-time price updates, the app offers historical price trends, enabling farmers to analyze past market fluctuations and determine the best time to sell their produce. It also includes a price comparison feature, allowing users to compare rates of similar crops across different locations and choose the most profitable mandi.

To enhance accessibility, the app supports multiple languages, ensuring that farmers can receive price updates and notifications in their preferred language. Weather updates and agricultural news are also provided, keeping users informed about conditions that may impact their crops and the latest developments in the farming sector.

For added convenience, the app allows users to store fetched price data for offline access, ensuring that they can view important information even without an internet connection. Additionally, an automated notification system alerts farmers whenever there are significant changes in crop prices, enabling them to react promptly to market fluctuations.

With its user-friendly interface and comprehensive features, AgriPriceSense aims to transform the way farmers access and utilize market data, ultimately leading to better financial outcomes and informed decision-making.

Chapter 1

Introduction

1.1 Project Description

1.1.1 Problem Scenario

Rural farmers lack access to real-time prices of their crops because of poor internet connectivity and untrustworthy platforms. They have to bank on intermediaries or go to far-off markets, which is time, money, and unfair pricing-wasting. Farmers lose money without current price information and are unable to select optimal selling markets for their crops, earning them lower returns and economic uncertainty.

1.1.2 Proposed Solution

AgriPriceSense is a Flutter-enabled mobile application that offers farmers location-based, real-time crop price information from local mandis and reliable sources. It enables farmers to take well-informed decisions, bypass intermediaries, and get the most out of their income, ensuring their economic stability.

- Real-time crop prices.
- Location-based updates.
- Multi-language message support.
- Offline access.
- Market comparison.

1.1.3 Purpose

The aim of this project is to equip farmers with real-time, location-specific crop price information via an easy-to-use mobile application. This enables them to make informed choices, bypass middlemen, and increase their returns. Finally, it aims to enhance farmers economic stability and autonomy.

1.1.4 Scope

Project scope covers the delivery of real-time updates of crop prices and comparisons from the market using a mobile application. It involves coverage of multiple languages for sending messages, offline usage, as well as local mandi and government data.

Chapter 2

Literature Survey

2.1 Domain Survey

2.1.1 Introduction to the Domain

AgriPriceSense is a company in the agricultural technology (AgriTech) and market intelligence space that specializes in offering real-time updates on crop prices and market information for farmers. Conventional agricultural trade involves physical market visits and middlemen, and therefore it is prone to inefficiencies and losses of money. The unavailability of transparent price comparison mechanisms hinders farmers from being able to identify the optimal-selling sites for their crops.

AgriPriceSense fills this gap by providing live price updates, past price trends, and price comparisons of crops to enable farmers to make data-based decisions. The platform also includes weather reports and farm news, keeping users aware of conditions that influence the market. Moreover, it provides multilingual SMS alerts, enabling farmers to be notified of price updates in their chosen language to enhance accessibility.

Through offering an automated SMS alert system, farmers are notified of major price changes, enabling them to react swiftly to price movement. The platform further supports offline access to historic mandi prices, which has been fetched, and this keeps them functional even in low connectivity regions. AgriPriceSense looks to increase agricultural trade efficiency, advance price transparency, and maximize profits for farmers by harnessing digital technology for an increasingly connected and sustainable agricultural value chain.

2.1.2 Core Terminologies and Definitions

- **Mandi (Agricultural Market)**

A designated marketplace where farmers sell their crops, and buyers determine prices based on supply and demand.

- **Real-Time Crop Prices**

The latest market rates of various crops, updated dynamically based on mandi data and other sources.

- **Historical Price Trends**

A record of past crop prices, enabling farmers to analyze fluctuations and make informed selling decisions

- **Price Comparison**

A feature that allows farmers to compare the prices of similar crops across different mandis to identify the most profitable selling location.

- **Multilingual SMS Notifications**

Automated text messages sent in the farmer's preferred language, informing them about significant price changes or market updates.

- **Weather Updates**

Real-time information about climatic conditions that may impact crop growth, harvesting, and selling decisions.

- **Agriculture News**

Latest updates on farming policies, government schemes, and market trends that affect the agricultural sector.

2.2 Literature Survey

2.2.1 Related Work

This involves the study of research papers and journals. Literature survey is completed by considering following research papers.

1. Mobile Applications Empowering Smallholder Farmers: An Analysis of the Impact on Agricultural Development "(2023)

Authors: Mostafa Kamal, Tarek Aziz Bablu

This research investigates how mobile applications offer instant access to agricultural information, such as weather forecasts, market prices, and optimal farming practices. The study emphasizes the revolutionary impact of such apps in enabling smallholder farmers through greater access to information, market connections, financial access, and better resource governance.

2. An Empirical Analysis of the Use of Agricultural Mobile Applications Among Smallholder Farmers "(2022)

Authors: Sanga, C., Mlozi, M., Haug, R., Tumbo, S.

In this paper, the extent of availability and use of agricultural mobile apps in Myanmar is examined, determining influences on their adoption among farmers. The research indicates that young, educated farmers who cultivate specialized crops are more likely to utilize such technologies, leading to a call for focused interventions to increase adoption levels.

3. AgroTIC: Bridging the Gap Between Farmers, Agronomists, and Merchants Through Smartphones and Machine Learning" (2023)

Authors: Carlos Hinojosa, Karen Sanchez, Ariolfo Camacho, Henry Arguello
This paper introduces AgroTIC, which is a smartphone app that is meant to link farmers, agronomists, and traders through machine learning methodologies. The application allows farmers to track crop wellness and makes market linkages easier, with the aim of enhancing agricultural productivity and economic success.

4.eKichabi v2: Designing and Scaling a Dual-Platform Agricultural Technology in Rural Tanzania“(2024)

Authors: Ananditha Raghunath, Alexander Metzger, Hans Easton, XunMei Liu, Fanchong Wang, Yunqi Wang, Yunwei Zhao, Hosea Mpogole, Richard Anderson
This paper presents the development and roll out of eKichabi v2, a two-platform agribusiness technology with access through USSD and Android apps. The system offers a directory search for agriculture-related businesses to help improve access to information for farmers in rural Tanzania.

5. ”Artificial Intelligence Enables Mobile Soil Analysis for Sustainable Agriculture“(2023)

Authors: Ademir Ferreira da Silva, Ricardo Luis Ohta, Jaione Tirapu Azpiroz, Matheus Esteves Fereira, Daniel Vitor Marçal, André Botelho, Túlio Coppola, Allysson Flávio Melo de Oliveira, Murilo Bettarello, Lauren Schneider, Rodrigo Vilaça, Noorunisha Abdool, Vanderlei Junior, Wellington Furlaneti, Pedro Augusto Malanga, Mathias Steiner

This study presents a mobile chemical analysis system based on colorimetric paper sensors and artificial intelligence for real-time, on-the-spot soil analysis. The system is designed to maximize agricultural productivity by giving instant soil health readings, making sustainable farming easier.

6. A Mobile Based Market Information System“(2021)

Authors: Adebayo Abayomi-Alli, Oluwaseun O. Fakolujo, and Olumide O. Ade-wale

This research introduces a mobile-based market information system that is used to improve farmers marketing decisions through real-time market information. The system is meant to upgrade the decision-making capabilities of farmers to view current market prices and demand statistics, hence maximizing their sales and returns.

2.3 Existing System

Feature	AgriPrice Sense	Kisan Su-vidha	Enam	FarmRise
Real-time crop prices	YES	YES	YES	No
Localization	YES	NO	NO	No
MultiLanguage SMS	YES	NO	NO	No
Top agriculture News	YES	NO	NO	NO
Weather Updates	YES	NO	NO	YES

Agricultural market data is currently accessed from government websites, local news, and middlemen, resulting in delays and inaccuracies. Farmers have difficulties accessing real-time prices, past trends in prices, and price comparison functionalities, rendering decision-making challenging. Current platforms do not support localized weather updates, agriculture news, and multilingual SMS alerts, making the platforms inaccessible. Most need uninterrupted internet connections, which limits usage in rural settings. Also, most solutions offer static price information without interactive insights to choose the best mandi. These challenges make it evident that there is a need for a farmer-friendly, data-driven solution such as AgriPriceSense.

Chapter 3

Hardware and Software Requirements

3.1 Introduction

This chapter gives a detailed overview of the **software and hardware** tools utilized in the development and deployment of this project. The use of these technologies is based on **performance, scalability, and compatibility** with the requirements of the project.

3.2 Hardware Requirements

The project requires a system with sufficient computational power to support development, testing, and execution efficiently.

3.2.1 Hardware Specifications

The following table lists the **hardware configuration** required:

Component	Specification
Processor	Intel Core i (or equivalent)
RAM	8GB
Storage	256GB SSD
Network Interface	Wi-Fi 802.11ac / Ethernet
Peripherals	Keyboard, Mouse, Display

Table 3.1: Hardware Requirements

3.3 Software Requirements

It is important to have a strong software infrastructure for the development, testing, and operation of the platform. It should be scalable and dependable, while being optimized for data processing, and having robust authentication (for real-time communications). The ease of integration and performance optimization will be dependent on compatibility with existing frameworks, databases, and deploy tools.

3.3.1 Software Specifications

The following table lists the **software technologies** required:

Category	Requirement
Frontend	Flutter SDK(3.13.7),Dart Programming Language(3.1.2),Android Studio(2023.2.1)
Backend	Firebase Firestore (24.11.1),Firebase Authentication(22.1.2),Flask(3.0.3)
DataBase	SQLite, SQLite in Flutter

Table 3.2: Software Requirements

Chapter 4

Software Requirements Specification

4.1 Users

- **General Users**

Users of the AgriPriceSense system can register to view real-time crop prices, updates on weather, and agricultural news. Users are also able to enter their location information to track mandi prices and can store the data offline, allowing them to compare the price of similar crops and figure out the best time to take their crops to market. Users can add crops to a list, identify price fluctuations, and subscribe to SMS alerts via Twilio. AgriPriceSense enables farmers to access accurate data and make informed decisions that will help optimize their profits, and keeps them abreast of money and market trends.

Roles of General Users in AgriPriceSense:

- Register and log in to access personalized experiences.
- Retrieve live crop prices for a manually selected location
- Search for crops and filter by area
- Review historical price trends.
- Receive messages and alerts for price changes or updates.
- Use the app offline to view fetched crop prices

- **Admin**

The AgriPriceSense administrators supervise user management, examine profiles, and moderate content to guarantee truthfulness and reliability within the platform. Administrators manage reports and suspicious activity, and take appropriate measures against violations of Policy. The administrators maintain and secure the system, troubleshoot errors, and enhance user experience by examining trends in crop prices and user interaction, and make suggestions to improve engagement. By enforcing policies and maintaining data integrity, the administrators help ensure farmers have a reliable and trustworthy environment to get market information in real-time and make decisions.

Roles of Admin in AgriPriceSense:

- Control crop price information by adding, modifying, or deleting records in the database.
- Approve, suspend, or delete users according to platform policies.
- Send users announcements and notifications regarding price changes or vital alerts.
- Track user behavior and feedback to enhance app functionality and fix problems.
- Create crop price trend and app usage statistic reports and analytics
- Approving the user registrations.

4.2 Functional Requirements

FR1. Real-Time Crop Prices

Display live crop prices using manually entered regions.

FR2. Historical Price Trends

Look up past price data to assist you in making informed choices. .

FR3. Multilingual Message Support For Price Fluctuation

Uses Google Translation to send messages in the user's language of choice (e.g., Kannada) for better communication

FR4. Weather Information

Get real-time weather updates in relation to agriculture. .

FR5. Agriculture Top News

Keep abreast of agriculture related news.

FR6. Price Comparison for Similar Crops

Compare the prices of two or more similar crops to help farmers to make informed selling decisions.

4.3 Non-Functional Requirements

NFR1. Performance

Ensure that the crop prices load quickly and that users can navigate with ease, regardless of their device's capabilities.

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NFR2. Scalability

The system must sustain the user and data volume and not deter in performance.

NFR3. Availability

The app should work 24/7 without too much downtime.

NFR4. Compatibility

The app should work well with Android devices and all their screen sizes.

Chapter 5

System Design

5.1 Architecture Diagram

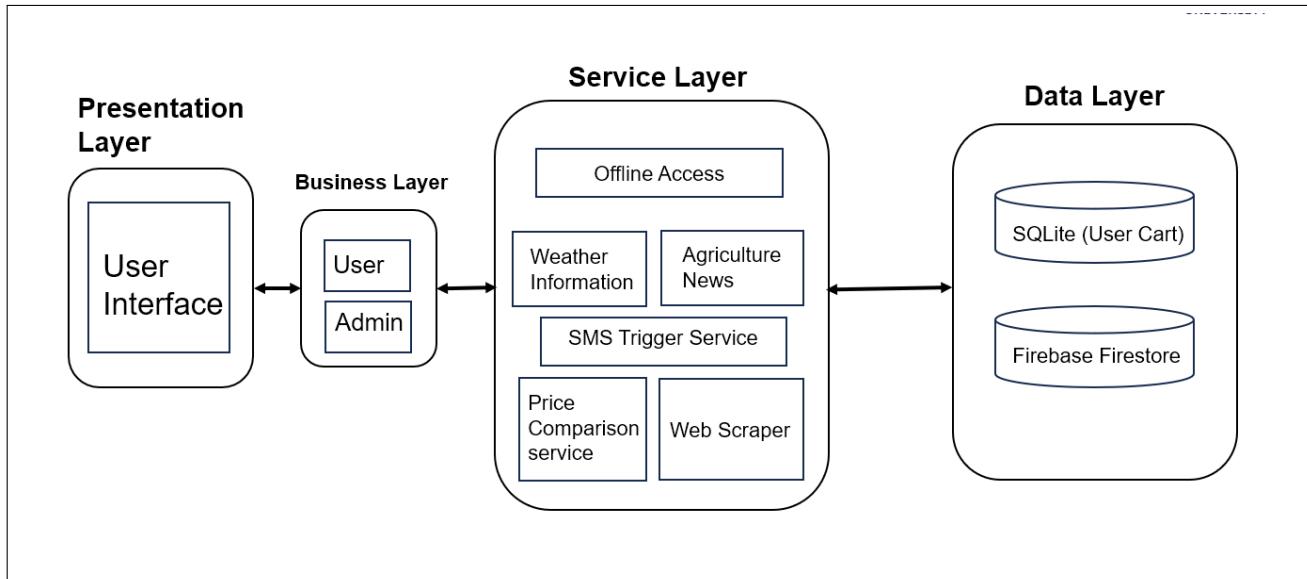


Figure 5.1: Architecture Diagram

This diagram outlines the design layers of the AgriPriceSense application. The Presentation Layer contains the User Interface to carry out an interaction for the user and admin. The Business Layer will manage the user roles and the request process. The Service Layer provides services like Offline Access, Weather Information, Agriculture News, SMS Trigger Service, Price Comparison Service, and a Web Scraper that pulls in live crop prices. The Data Layer will consist of SQLite as the local database for user-selected items, and Firebase Firestore as user detail management and crop prices. All of these features serve to streamline good data flow, scalability, and offline access to farmers.

5.2 Data Flow Diagram

5.2.1 Context Diagram

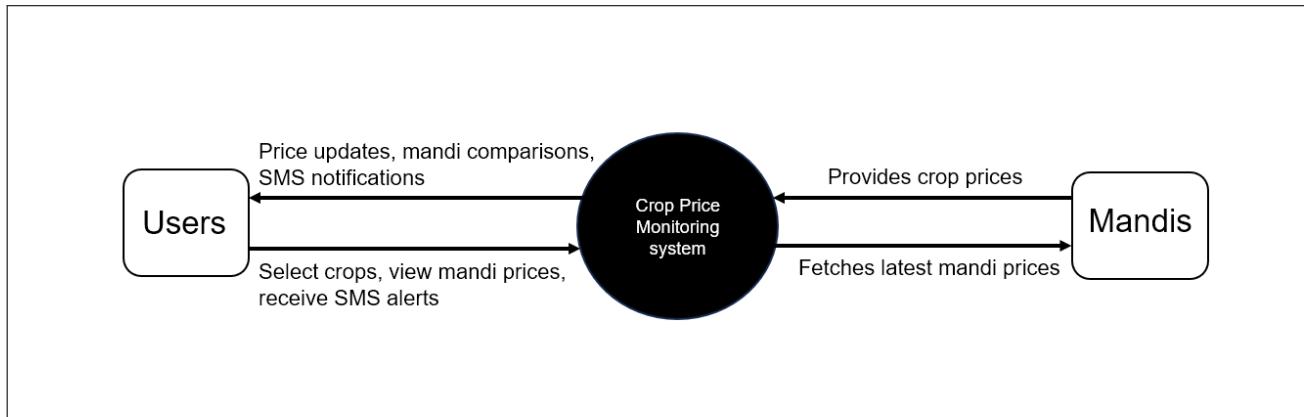


Figure 5.2: Context Diagram

At a high level, the context diagram shows what users, mandis and the Crop Price Monitoring System are able to do: users can select crops, view prices from mandis, and receive SMS alerts; the Crop Price Monitoring System provides users with real-time price updates, comparisons of mandi price, and SMS alerts; mandis provide latest prices of crops to the Crop Price Monitoring System, the Crop Price Monitoring System pulls down and processes that price for the purposes of aiding the user; the Crop Price Monitoring System is used as a conduit for price monitoring, comparing prices at mandis, and sending alerts to users. The diagram captures this external interaction between what the Crop Price Monitoring System does and how it works without specifying how the system works - an important distinction to make.

Chapter 6

Detailed Design

6.1 Use Case Diagram

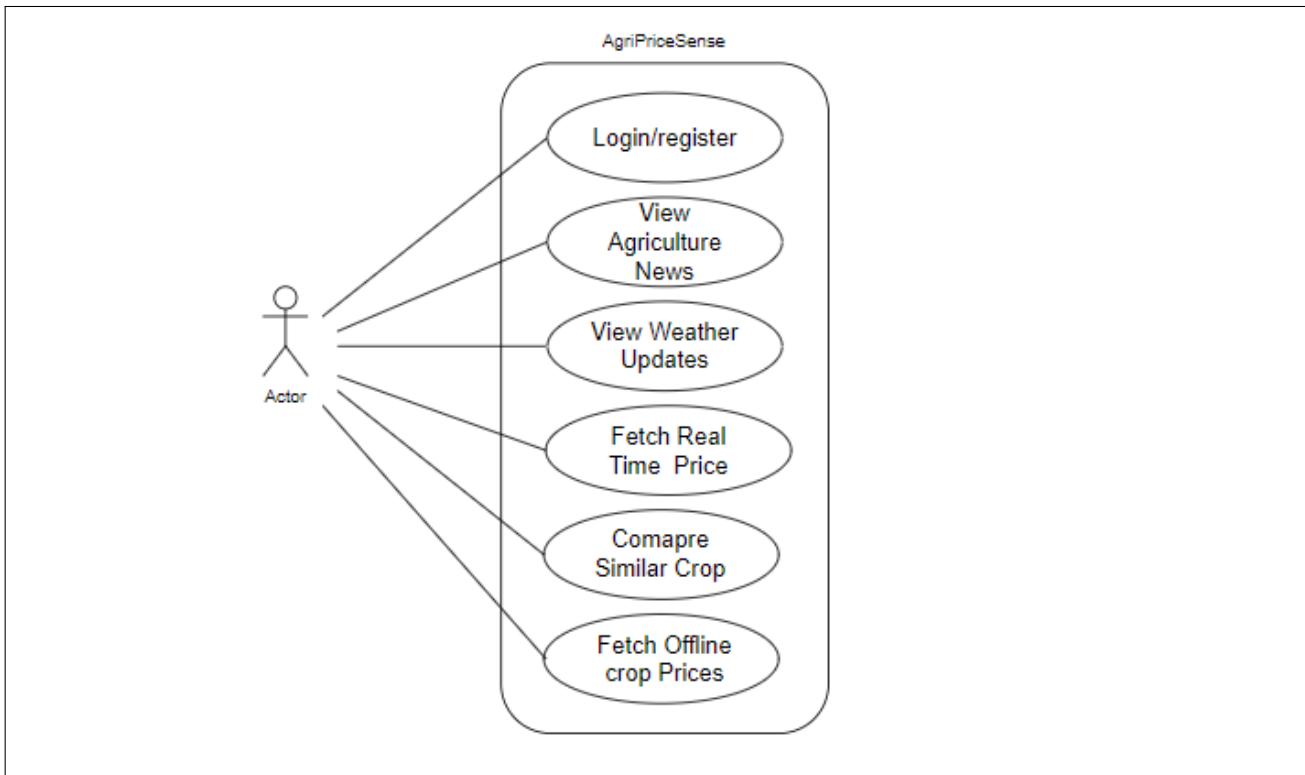


Figure 6.1: Use Case Diagram

The AgriPriceSense Use Case Diagram demonstrates how users interact with the system and its features. The main actor is the user, who has access to a variety of functions. The application allows the user to log in or register, view agriculture-related news, and view the latest weather information. The user can also get live crop prices, select similar crops to compare prices in order to make informed decisions, and get offline crop prices to reference when disconnected from the Internet. Each use case describes a unique feature of the system that

will allow the user to make informed decisions in agriculture with real-time data and information for the user.

6.2 Activity Diagram

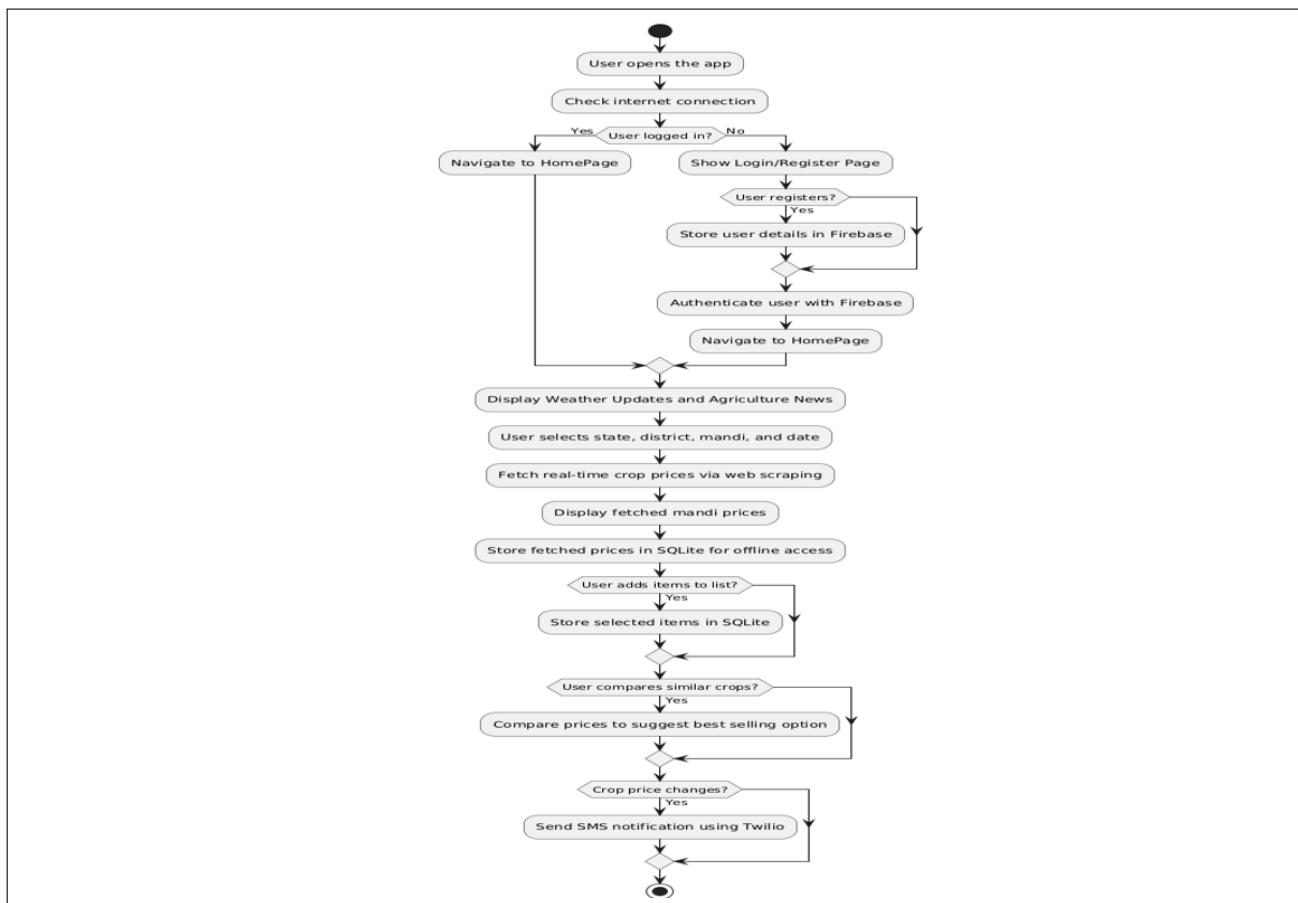


Figure 6.2: Activity Diagram

The Activity Diagram is displaying the user flow of the AgriPrice application. The activity starts when a user launches the AgriPrice application, checks for internet connectivity clearly. If the user is logged in, the user will proceed to the Home Page; otherwise, the user will proceed to the Login/Register Page, where in the case of new users, they must register and authenticate through Firebase. After being on the Home Page, the user can view weather updates as well as news related to agriculture. Users will also have the option to choose the state, district, mandi, and date to scrape for real-time availability of crop prices. Checked prices are copied to local SQL Lite storage of the app for offline access later on. Users will also have the facility to add an item to a list, compare against similarly-grouped crops, and get twilio-burst price change notifications, if required.

6.3 Database Design

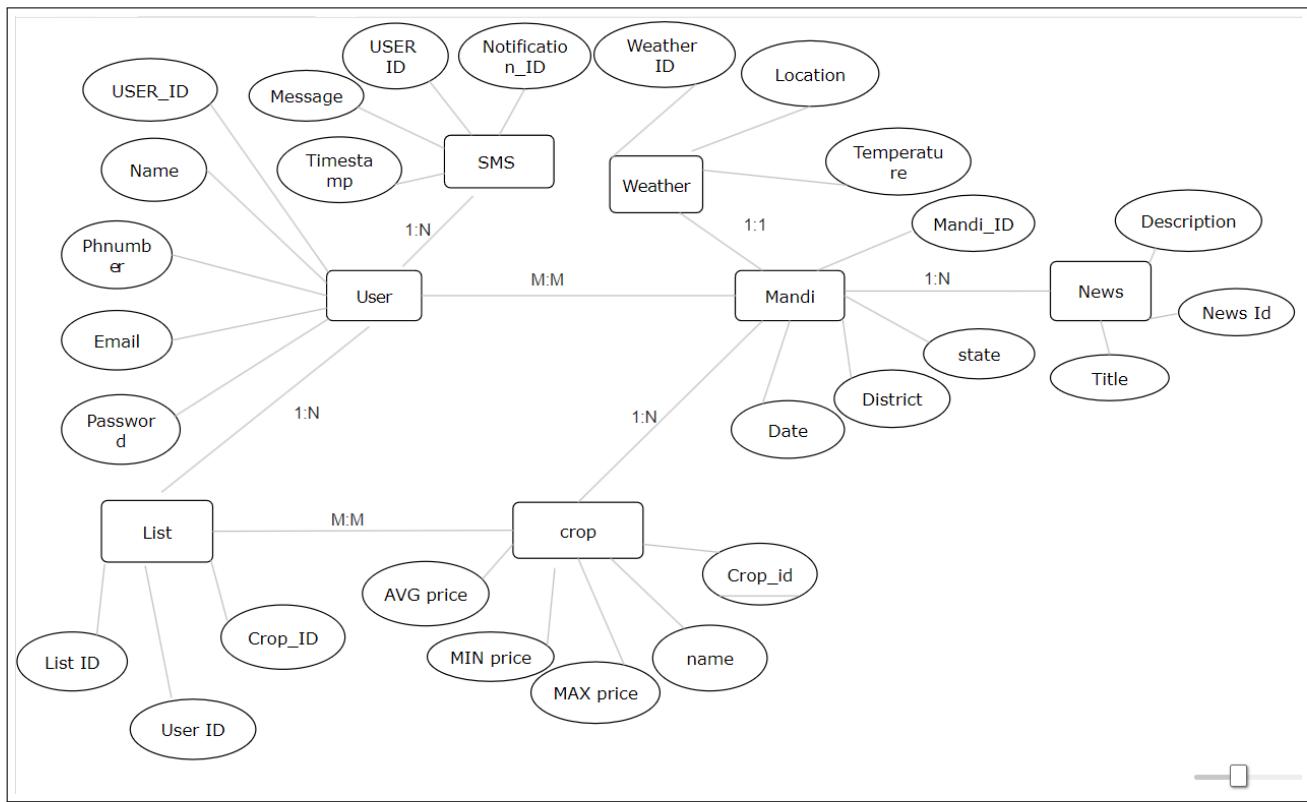


Figure 6.3: Database Design

The ER diagram shows the AgriPrice Sense crop price fetching and comparison app. The User entity is where the user detail is stored and has a one-to-many (1:N) relationship with SMS Notification, enabling the user to have multiple price alerts. The Mandi entity represents the market details and has a one-to-many (1:N) relationship to Crop entity. This means a mandi has multiple crops listed with their details, including pricing details for minimum, maximum, and average. The Crop entity is a many-to-many (M:M) relationship to List entity, allowing users to select similar crops and can now compare them. The Weather entity has a relation to Mandi, which is a one-to-one (1:1) relationship, providing mandi specific weather updates. The News entity has a relationship to Mandi with a one-to-many (1:N) relationship, sending relevant news related to agriculture specific to that mandi. The app will provide the user with real-time mandi prices, the weather, news, and alert them via SMS when there is a price change.

7.2 Implementation Screenshots

7.2.1 Landing Page



Figure 7.1: Landing Page

This is the Landing Page (Splash Screen) of the AgriPriceSense app. This displays the app logo, which contains a agricultural associated logo that consists of a sun, field, and wheat to indicate the agronomic responsibility of the app and the use of crops for pricing. The Landing Page serves as the app's first interface to a launch; therefore the user will experience a branded welcome screen before being redirected to the login or home page. Again, the design is basic and clean to allow the user to transition easily through the app.

7.2.2 Register Form

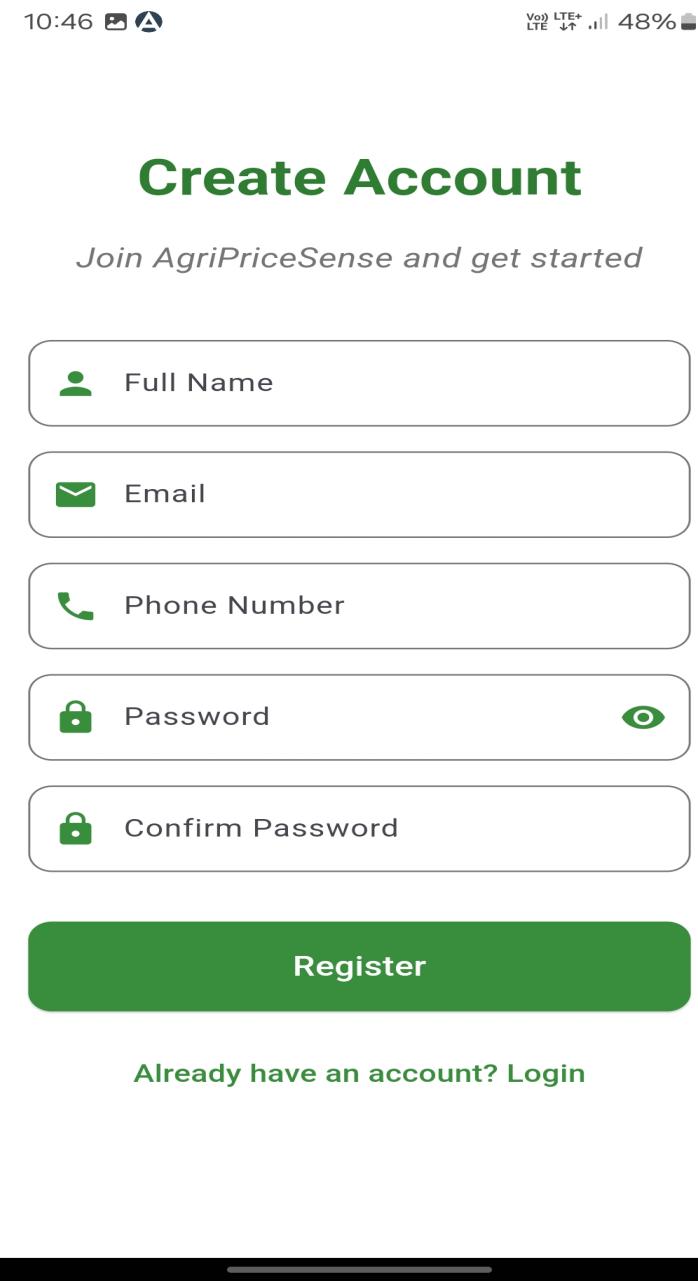


Figure 7.2: Register Form

The Registration Page is where a user will create an account on the AgriPriceSense app. We have a field for Full Name, Email, Phone Number, Password, Confirm Password , each with an associated icon for assistance. There is an eye icon on the password field to make the password visible as well. There is a green "Register" button to create the account, and a "Login" link if you are an existing user . The layout is clean and natural looking using a green color theme. It makes for an easy user experience.

7.2.3 Login

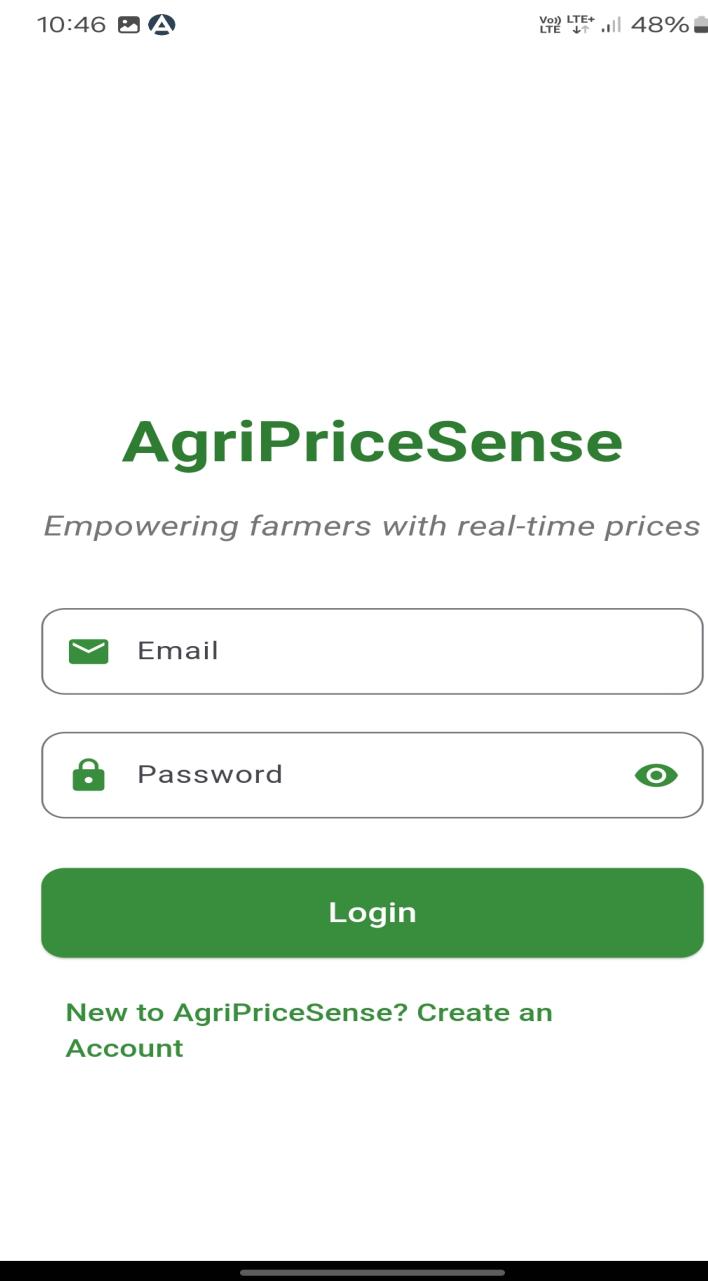


Figure 7.3: Login

The login page of the AgriPriceSense app has a nice design where the input fields are used to enter email and password with icons and a toggle to show or hide password. The green “Login” button gives the user permission to login and there is a link below to create a space for a user to create a new account. The simplicity and green colors result in an experience that is easy for the user.

7.2.4 Home Page

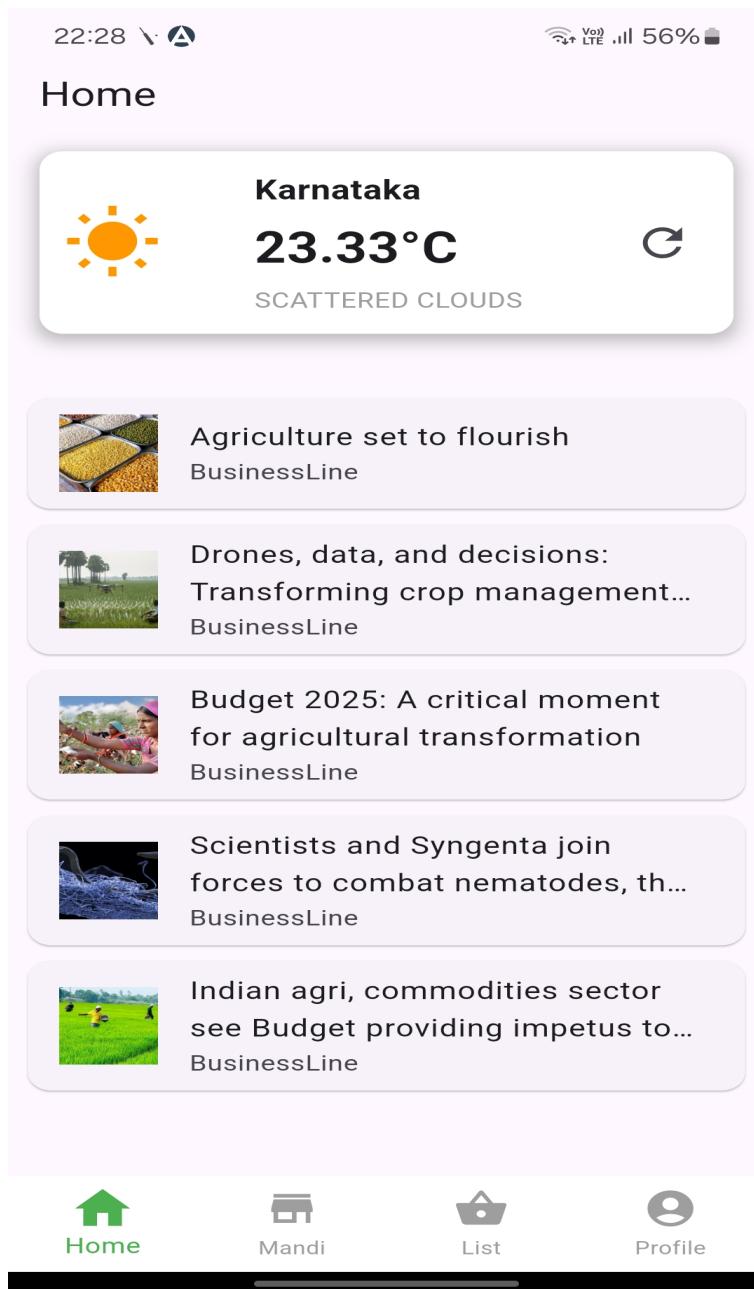


Figure 7.4: Home Page

The Home Page of the AgriPriceSense application contains real-time weather information, based on user location, and industry news articles related to agronomy. The card notes the weather temperature and condition along with a refresh button, then below it is the news feed containing new agriculture-related articles.

7.2.5 Profile Page

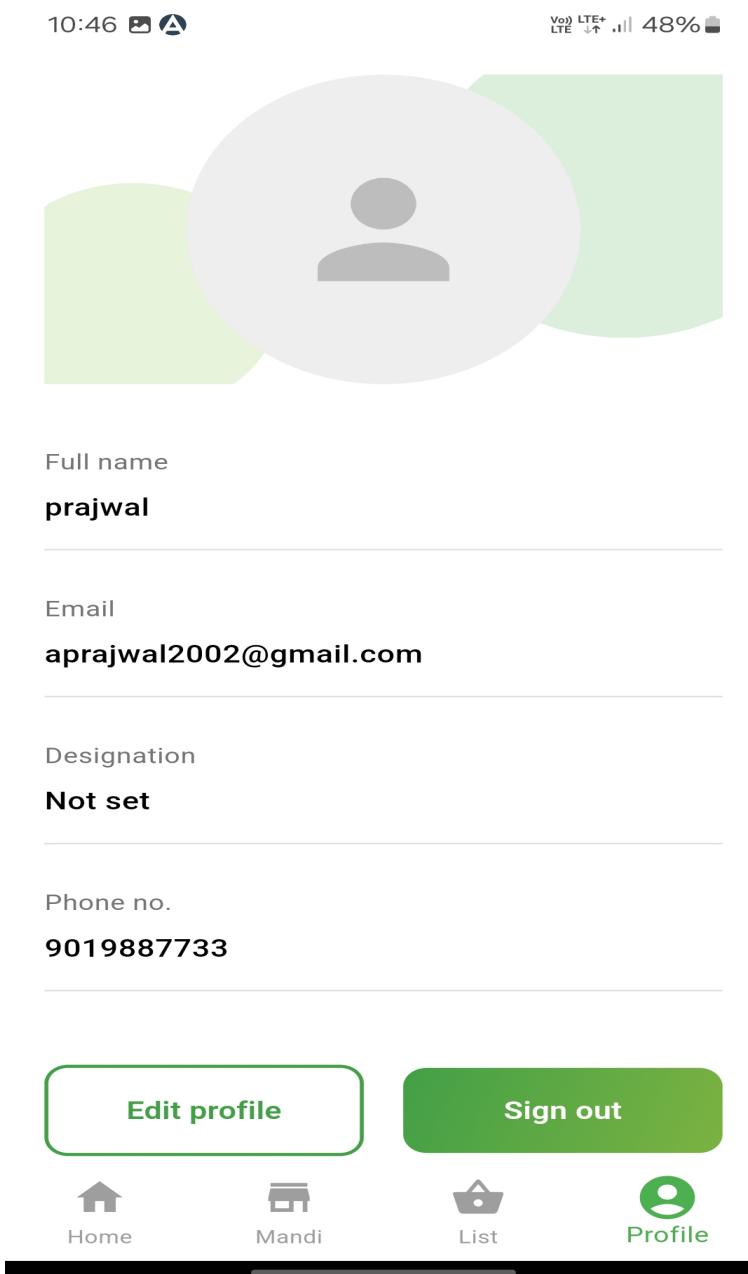


Figure 7.5: Profile Page

The Profile Page displays the user's personal details: profile picture (or default avatar), full name, email address, designation (if assigned), and phone number. Users can click on the Edit Profile button to change their details. The Sign Out button is used to sign out of the app. There is a navigation bar at the bottom with Home, Mandi, List, Profile to allow the user to jump to those areas of the app quickly.

7.2.6 Real-Time Crop price

The screenshot shows the 'Mandi Prices' page. At the top, it displays the time (00:05), signal strength (VoLTE), battery level (88%), and a user ID (User: bA1OnCX51ZNDKX78SNv53qxhAec2 | Phone: 9019887733). Below this, there are dropdown menus for 'State' (set to Karnataka), 'District' (set to Bangalore), and 'Market' (set to Bangalore). A date selector shows 'Date: 15-Feb-2025' with a 'Select Date' button. A large blue button labeled 'Fetch Prices' is centered below the date selector. Below this, a table lists crop commodities with their maximum prices:

Commodity	Max Price
Alasande Gram	₹ 8,400
Arhar Dal(Tur Dal)	₹ 14,000
Avare Dal	₹ 11,700
Bengal Gram Dal (Chana Dal)	₹ 9,000
Bengal Gram(Gram)(Whole)	₹ 7,000
Black Gram (Urd Beans)(Whole)	₹ 14,000

At the bottom, a navigation bar includes icons for Home (house), Mandi (green building), List (shopping cart), and Profile (person).

Figure 7.6: Real-Time Crop price

The Mandi Prices page gives users the ability to select their state, district, and market to receive real-time crop prices. The date the user selected is presented, and users can select "Fetch Prices" to be able to acquire the mandi prices. The table below provides commodities with the maximum, minimum, and average price in Rupees. The bottom navigation section indicates Home, Mandi, List, and Profile.

7.2.7 Crop List Page

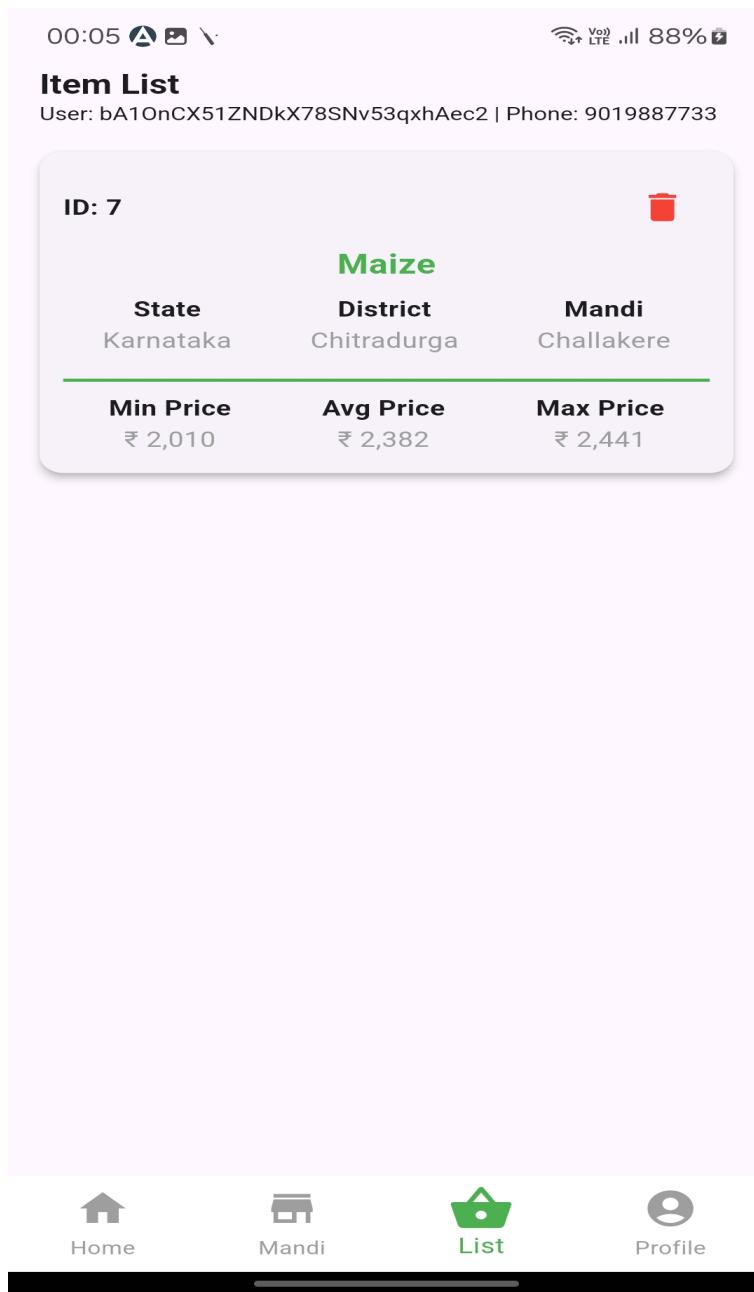


Figure 7.7: Crop list page

The Item list page provides information about saved crop pricing for the selected mandi. It provides fields related to; State, District, mandi name, Crop type and pricing information (Minimum, Average, Maximum) for the saved crop pricing. Each price entry has a unique ID and delete button for the price entry. The bottom navigation bar has; Home, Mandi, List and Profile to allow you to move around the different areas of the app.

7.2.8 SMS Alert Screenshot

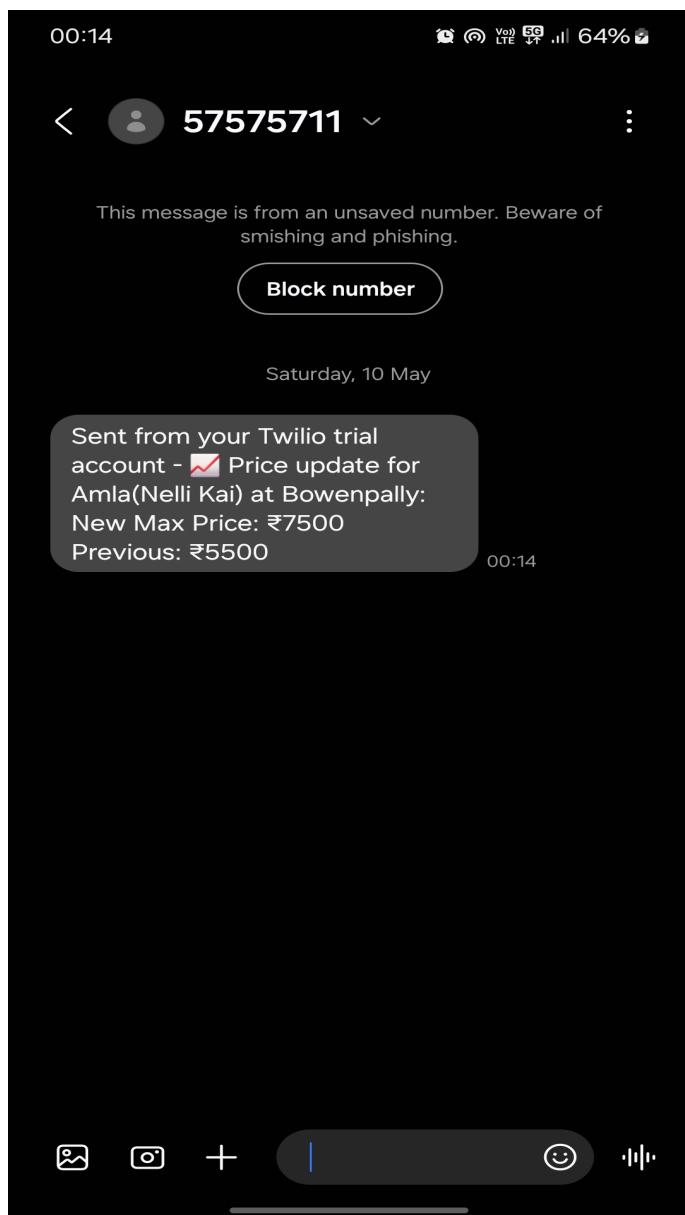


Figure 7.8: SMS alert for commodity price change via Twilio

The SMS alert system alerts users when a commodity price is changed substantially at a particular mandi. The SMS alerts were sent using the Twilio API which is attached. As seen on the screenshot, the maximum price of Amla (Nelli Kai) at Bowenpally mandi increased from 5500 to 7500. The alerts can provide market price changes for the farmers to make fast selling decisions depending on the market conditions.

Chapter 8

Testing

8.1 Manual Testing

Test Case: Login Module

In this section, we will describe the manual test cases performed for the Login function for the application.

MANUAL TESTING										
MODULE NAME: Login										
TEST ID	TC01 – TC04									
TEST NAME	Login Validation									
TEST DESCRIPTION										
To verify login functionality with valid and invalid input combinations.										
STEP #	TEST STEPS	TEST DATA	EXPECTED RESULT	ACTUAL RESULT	STATUS					
TC01	Enter a valid email and password	Valid Email, Valid Password	User should be logged in and redirected to Home Screen	Successfully logged in using valid credentials and redirected to Home Screen	Pass					
TC02	Leave email empty and enter password	(Empty), Valid Password	Error message: "Username or password cannot be empty"	Error message displayed: "Username or password cannot be empty"	Pass					
TC03	Enter email and leave password empty	Valid Email, (Empty)	Error message: "Username or password cannot be empty"	Error message displayed: "Username or password cannot be empty"	Pass					
TC04	Enter invalid email and password	Invalid Email, Invalid Password	Error message: "Invalid username or password"	Error message displayed: "Invalid username or password"	Pass					

Table 8.1: Test Case: Login Validation

Test Case: Fetch Mandi Prices Module

This section describes the manual test cases executed for the Fetch Mandi Prices functionality of the application.

MANUAL TESTING										
MODULE NAME: Fetch Mandi Prices										
TEST ID	TC01 – TC03									
TEST NAME	Fetch Mandi Price Validation									
TEST DESCRIPTION										
To verify mandi price retrieval based on selected state, district, mandi, and date.										
STEP #	TEST STEPS	TEST DATA	EXPECTED RESULT	ACTUAL RESULT	STATUS					
TC01	Select valid state, district, mandi, and date	Valid selections	Price table with commodities should be displayed	Price table displayed with correct mandi data and commodities	Pass					
TC02	Do not select state/district/mandi	One or more empty fields	Error message should prompt user to complete selection	Error displayed prompting user to select all fields	Pass					
TC03	Select future date	Future date selected	Warning or message stating "No data available" should be shown	"No data available for selected date" message displayed	Pass					

Table 8.2: Test Case: Fetch Mandi Price Validation

Test Case: Add to List Module

This section describes the manual test cases executed for the Add to List functionality of the application.

MANUAL TESTING				
MODULE NAME: Add to List				
TEST ID	TC01 – TC05			
TEST NAME	List Functionality Validation			
TEST DESCRIPTION	To verify add, view, and remove functionalities for selected commodities in the list.			
STEP#	TEST STEPS	TEST DATA	EXPECTED RESULT	ACTUAL RESULT
TC01	Click "Add" on commodity row	Valid commodity row	Item should be added to the user's list/cart	Commodity successfully added to the list
TC02	Add same item twice	Same item added again	App should restrict duplicates or show warning	App displayed message "Item already added"
TC03	View cart with items	Items previously added	All added items should be shown in a table	Cart table displayed with correct items
TC04	Remove item from cart	Selected item to be removed	Item should be deleted from the list	Selected item successfully removed
TC05	View cart when empty	No items in cart	Message "No items selected" should be shown	Displayed message: "No items selected"

Table 8.3: Test Case: List Functionality Validation

Test Case: Price Comparison Most Profitable Mandi

This section describes the manual test cases executed for the Price Comparison and Most Profitable Mandi functionality of the application.

MANUAL TESTING				
MODULE NAME: Price Comparison & Most Profitable Mandi				
TEST ID	TC01 – TC04			
TEST NAME	Price Comparison & Most Profitable Mandi Validation			
TEST DESCRIPTION	To verify the price comparison for multiple crops from different mandis and determine the most profitable mandi based on distance and weight.			
STEP#	TEST STEPS	TEST DATA	EXPECTED RESULT	ACTUAL RESULT
TC01	Select two or more crops using checkboxes	Multiple crops from different mandis	Items should be selected and enabled for comparison	Selected crops were successfully marked and enabled for input
TC02	Enter distance for each mandi and weight once	Distances for mandis. Single weight value	Inputs should be accepted and validated	All distances and weight were accepted without error
TC03	Tap on "Compare" button after input	Valid selected crops and inputs	Show dialog with cost breakdown for all selected mandis	Comparison dialog displayed detailed transport cost per mandi
TC04	Tap OK in first dialog	N/A	Show second dialog with most profitable mandi recommendation	Final dialog showed the mandi with best profit margin based on transport and price

Table 8.4: Test Case: Price Comparison & Most Profitable Mandi (Multiple Crop Selection)

Test Case: Weather and News on Home Screen

This section describes the manual test cases executed for the Weather and News functionality on the Home Screen.

MANUAL TESTING				
MODULE NAME: Weather and News on Home Screen				
TEST ID	TC01 – TC02			
TEST NAME	Weather and Agriculture News Display			
TEST DESCRIPTION	To verify the display of weather and agriculture news on the Home Screen.			
STEP#	TEST STEPS	TEST DATA	EXPECTED RESULT	ACTUAL RESULT
TC01	Open HomePage with internet	Internet connection available	Weather and agriculture news should be displayed	Successfully displayed real-time weather and latest agriculture news
TC02	Open HomePage with no internet	No internet connection	Show error or notify user about offline status	Displayed error message indicating lack of internet

Table 8.5: Test Case: Weather and News on Home Screen Validation

Chapter 9

Conclusion

AgriPriceSense is a smart and practical solution aimed at empowering farmers by providing real-time crop price updates, mandi comparisons, and SMS alerts in regional languages. By integrating web scraping, SQLite and Firebase storage, and services like Twilio and Google Translate, the system ensures that farmers receive timely, localized, and actionable market insights. This helps them make informed decisions, reduce losses, and improve profitability, making AgriPriceSense a valuable tool for modern agricultural support.

Chapter 10

Future Work

- **Price Prediction Using AI:** Implement machine learning models to forecast mandi prices based on past trends and weather data.
- **Weather-Based Smart Alerts:** Add more precise weather impact alerts for specific crops and regions.
- **In-App Farmer-to-Buyer Marketplace:** Enable direct connections between farmers and potential buyers to improve profits.
- **Graphical Price Trends:** Show crop price trends over time using interactive graphs and charts.
- **Offline Mode Enhancements:** Improve offline access to historical data and allow users to enter and queue actions without internet.

Chapter 11

Application in the Real World

The advances in **AgriPriceSense** have led to phenomenal applications in many areas. In this section we identify some important areas where the proposed system could be maximally used.

11.1 Market Decision-Making

Farmers may use the app to make informed decisions on selling their crops based on live price trends. The utilization of live data analysis allows farmers to make the most money possible and limit losses due to price fluctuations.

11.2 Price Comparison

Users can access price comparisons of the same crop in areas which can assist users in determining the market that will be best to sell into. This convenient comparison shows the farmer where the crop had more demand which should guide their selling decisions based on that demand.

11.3 Supply Chain Management

Agricultural businesses can use the app to keep tabs on crop prices and adjust their supply chains according to market conditions. This will help optimal decisions for efficient distribution, as well as minimize supply chain waste.

11.4 Budgeting and Planning

Farmers can create planting and harvesting schedules that take into consideration expected changes in prices and optimize their profits. With predictive analytics, farmers can determine the optimal time to plant and harvest crops to maximize profits.

11.5 Investment and Financing Decisions

Price data can be used by both investors and financial institutions to determine whether it makes sense to fund agricultural plans. This will all help with their financial planning and investment in the agricultural area.

11.6 Policy Making and Research

The agricultural researchers and critical policymakers can use price trends to help farmers and stabilize markets by forming price forecasts. The combination of historic trends and real-time data allows the formation of policies that can enhance fairness of price and improved market regulation.

11.7 Future Scope and Expansion

The applications of **Real-Time Crop Price Monitoring and Analysis** continue to evolve. Some of the future upgrades are:

- Integration with machine learning and AI to facilitate better decision-making.
- Expansion into intelligent IoT-based environments for autonomous data collection.
- Improvements in automation in various industrial and consumer uses.

11.8 Conclusion

This part describes the real-world applications of **Real-Time Crop Price Monitoring and Analysis** in various real-world uses. With regular updates, its influence will grow further, making it a technology that is crucial in the future.

Appendix A :References

References

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