KisanConnect: A Unified Smart Service Platform for Farmers and Rythu Seva Kendram

EPICS report submitted in partial fulfillment of the Requirements for the Award of the Degree of

BACHELOR OF TECHNOLOGY

In

COMPUTER SCIENCE AND ENGINEERING

by

Mamidi Tuhi	248W5A0505
Inala Jaswanth Naidu	238W1A0520
T.V.N.G. Swetha	238W1A0559

Under the Guidance of

Mrs.K.Sree Vijayalakshmi, M.Tech, (Ph.D.)

Assistant Professor, CSE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

V. R. SIDDHARTHA ENGINEERING COLLEGE

Autonomous and Approved by AICTE, NAAC A+, NBA Accredited

Affiliated to Jawaharlal Nehru Technological University, Kakinada

Vijayawada 520007

December 2025

VELAGAPUDI RAMAKRISHNA SIDDHARTHA ENGINEERING COLLEGE

(Autonomous, Accredited with 'A+' grade by NAAC)

Department of Computer Science and Engineering

CERTIFICATE

This is to certify that the EPICS Report entitled **"KisanConnect: A Unified Smart Service Platform for Farmers and Rythu Seva Kendram"** being submitted by

Mamidi Tuhi	248W5A0505
Inala Jaswanth Naidu	238W1A0520
T.V.N.G. Swetha	238W1A0559

in partial fulfilment for the award of the Degree of Bachelor of Technology in Computer Science and Engineering to the Jawaharlal Nehru Technological University, Kakinada, is a record of bonafide work carried out during the AY 2025–26.

Mrs.K.Sree Vijayalakshmi, M.Tech, (Ph.D.) **Dr. D. Rajeswara Rao,** M.Tech, (Ph.D.)

Assistant Professor & Guide   **Professor & HOD, CSE**

DECLARATION

We hereby declare that the EPICS entitled **"KisanConnect: A Unified Smart Service Platform for Farmers and Rythu Seva Kendram"** submitted for the B.Tech Degree is our original work and the dissertation has not formed the basis for the award of any degree, associateship, fellowship or any other similar titles.

Place: Vijayawada   Mamidi Tuhi (248W5A0505)

Date: 22 December 2025   Inala Jaswanth Naidu (238W1A0520)

T.V.N.G. Swetha (238W1A0559)

ACKNOWLEDGEMENT

We would like to thank **Dr. A. V. Ratna Prasad**, Principal of Velagapudi Ramakrishna Siddhartha Engineering College, for the facilities provided during the course of EPICS.

We have been bestowed with the privilege of thanking **Dr. D. Rajeswara Rao**, Professor and Head of the Department, for his moral and material support.

We would like to express our deep gratitude to our guide **Mrs.K.S. Vijayalakshmi**, Assistant Professor, for her persisting encouragement, everlasting patience, and keen interest in discussion, and for her numerous suggestions during every phase of this project.

We owe our acknowledgements to an equally long list of people who helped us during the EPICS work.

Place: Vijayawada   **Mamidi Tuhi (248W5A0505)**

Date: **Inala Jaswanth Naidu (238W1A0520)**

T.V.N.G. Swetha (238W1A0559)

Table of Contents

List of Figures

List of Tables

Abstract

Agriculture is the backbone of rural India, playing an important role in the country's economy and serving as the primary source of livelihood for millions of farmers. It contributes significantly to employment, food security, and overall economic stability. Despite its critical importance, the agricultural sector continues to face several challenges, particularly related to access to timely and accurate information, availability of essential agricultural inputs, and awareness of government welfare benefits. Farmers often struggle to obtain proper guidance on crop management practices, buying of quality seeds, fertilizers, and pesticides, as well as regular updates on relevant government schemes. These difficulties frequently result in delays in agricultural operations, reduced productivity, and limited utilization of government support programs, highlighting the need for a transparent, efficient, and farmer-centric support system.

Rythu Seva Kendras (RSKs) are government established service centers designed to address farmers' issues by functioning as one-stop hubs for agricultural services. RSKs provide a wide range of facilities, including the distribution of agricultural inputs, expert advice on modern and traditional farming techniques, and information related to various government welfare schemes. These centers play a vital role in supporting farmers at different stages of the agricultural cycle. However, despite their availability and usefulness, operations at RSKs are often constrained by manual processes, extensive paperwork, and dependence on physical visits by farmers. Such limitations can reduce the speed, efficiency, and overall effectiveness of service delivery, especially during peak agricultural seasons.

To overcome these limitations, KisanConnect has been developed as a user-friendly digital platform aimed at bridging the gap between farmers and RSKs. The application offers a single platform provide interface through which farmers can access a wide range of agricultural services without frequent physical visits. KisanConnect enables farmers to check the availability of seeds, fertilizers, and pesticides at RSKs, monitor real time stock levels, and stay informed about current government schemes. By maintaining and managing a real-time inventory system, the platform enhances transparency, reduces administrative delays, improves data accuracy, and supports efficient operations at RSKs, benefiting both farmers and service providers.

Keywords: KisanConnect, Rythu Seva Kendra, Agricultural Digital Platform, web scrap, offline access.

Chapter 1

INTRODUCTION

In India, agriculture is the major source of livelihood. Approximately 47% of the population depends on agriculture for their livelihood. Farmers require seeds, fertilizers, pesticides, and other agricultural inputs. They heavily depend on private dealers, where they have to spend a lot of money to purchase them. The Government of Andhra Pradesh launched Rythu Seva Kendram (RSK) to assist farmers financially and to supply quality seeds and fertilizers at low cost. Rythu Seva Kendram acts as a one-stop shop for supplying Government-Certified Agricultural Inputs (Seeds, Fertilizers, and Pesticides), Animal Husbandry inputs, and Fisheries inputs to farmers. Approximately 10,778 Rythu Seva Kendrams were established adjacent to village secretariats, integrating an Agri Input Shop with a Farmer Knowledge Center. These shops create a great impact on farmers, as they can access everything from a single place. Farmers from distant locations must visit the village offices, and many of them do not know the available stock or which schemes they can apply for. If this information is available through an application, it helps farmers stay better informed and prepared.

Currently, to request agricultural inputs, farmers must physically come to the office. Providing these services virtually makes it easier for farmers. Most farmers are familiar only with their mother tongue; therefore, most solutions developed for them must be localized so that they can easily use them. RSK officers maintain hard copy record of their sales information and availability of fertilizers and quantity of crop. Bringing all these services into a single mobile application would be beneficial for both farmers and officials. This application helps farmers keep track of stock data through their mobile phones, reducing the need to visit the village office regularly. It reduces the regular visits of farmers while allowing RSK officials to easily monitor stock and sales data through the app, replacing manual hard copies. Officials can access this information anytime and anywhere, and they can also communicate it easily with higher authorities. The app stores RSK officer and farmer data using MongoDB, and React is used as the interface between the farmers and the RSK officers. The application can also be accessed in offline mode, which makes farmers' lives easier.

1.1 Basic Concepts

1.1.1 Agricultural Digitalisation

Agricultural digitalization is essential for modernizing farming practices and improving efficiency in the agricultural sector. By providing farmers with real time information on weather, crop conditions, market prices, and government schemes, digital tools enable better decision-making and timely action. They help increase productivity by supporting farming techniques and efficient resource management, reducing wastage of seeds, fertilizers, and pesticides. Digital solutions also save time and lower costs by minimizing reliance on intermediaries and manual processes. Furthermore, access to mobile apps, online platforms, and expert guidance empowers farmers to learn modern techniques, adopt best practices, and solve farming challenges. Overall, agricultural digitalization not only enhances crop yields and income but also promotes sustainable farming and supports rural development, bridging the gap between traditional agriculture and modern technology.

1.1.2 Rythu Seva Kendram (RSK) and Their Services

Rythu Seva Kendras (RSK) are government established centers designed to support farmers in Andhra Pradesh by providing essential agricultural inputs and expert guidance. These centers ensure that farmers have access to quality seeds, fertilizers, and pesticides at reasonable prices, reducing their dependency on middlemen. By combining Agricultural Input Shops with Farmer Knowledge Centers, RSKs also provide advice on modern farming techniques, crop management, and government schemes, helping farmers make informed decisions. Located near village secretariats, RSKs are easily accessible to rural farmers and aim to bring resources and knowledge directly to the village level. Their services help reduce the high cost of cultivation, improve crop yields, and increase farmers' income and livelihood security. Overall, RSK serve as a crucial link between the government and the farming community, promoting sustainable agriculture and enhancing the welfare of farmers.

1.1.3 Web Scraping

Web scraping is the process of extracting the data from the websites. It allows users to collect data from the web in a structured format, such as tables, spreadsheets, or databases, which can then be analyzed and used for various applications. Web scraping is commonly used in fields like research, e-commerce, finance, and agriculture to gather data efficiently without manual effort. In agriculture and related applications, web scraping can be used to collect data such as crop prices, weather updates, government scheme information, or market trends. By automating data collection, web scraping helps farmers, researchers,

and policymakers make informed decisions based on up-to-date information.

1.1.4 Stock & Scheme Management Systems

Stock and scheme management systems are digital platforms designed to efficiently manage resources and track government schemes. In the agricultural context, these systems help monitor the availability of inputs such as seeds, fertilizers, and pesticides at service centers like Rythu Seva Kendras (RSK). By maintaining real-time inventory data, they prevent shortages, reduce wastage, and ensure timely distribution of essential materials to farmers. These systems also track government schemes, subsidies, and deadlines, providing farmers with up-to-date information and helping them access benefits without delays. By automating record-keeping and notifications, inventory and scheme management systems increase transparency, reduce paperwork, and improve operational efficiency. Overall, such systems empower farmers and service centers by streamlining resource management, ensuring the availability of inputs, and facilitating smooth access to government schemes, thereby supporting better decision making and improving agricultural productivity.

1.1.5 Offline Accessibility

In rural areas, internet connectivity is often unreliable, which can hinder farmers from accessing essential services in real time. The KisanConnect platform is designed to provide offline access to key features, ensuring uninterrupted usability. Critical data such as crop information, market prices, and government scheme details are cached locally on the user's device. This allows farmers to view and interact with the system even when an internet connection is not available. Once connectivity is restored, the platform automatically synchronizes updates with the central server, maintaining data consistency and ensuring that all actions taken offline are accurately recorded. It is can be achieved using progressive web app The key benefits of it is Continuous availability of essential features regardless of network conditions. Local caching of critical information to support decision making. Automatic synchronization to ensure data accuracy and integrity. Enhanced usability for farmers in remote or connectivity challenged regions.

1.2 Motivation

The KisanConnect project is motivated by the need to bridge the communication gap between farmers and Rythu Seva Kendras (RSK). Farmers often struggle to access timely and accurate information about government schemes, subsidies, and essential agricultural inputs. There is no single platform that consolidates all these services, which leads to

delays, missed opportunities, and reduced efficiency in agricultural planning and decision-making. Many farmers also face challenges due to language barriers and varying literacy levels, making it difficult for them to understand official information or navigate existing systems. This creates a need for a user-friendly digital platform that is inclusive, supports local languages, and simplifies interaction for all farmers. The motivation behind this project is to empower farmers, improve operational efficiency, and promote inclusiveness in the agricultural ecosystem. By using technology, KisanConnect seeks to make essential services more accessible, help farmers make informed decisions, and strengthen rural communities through better agricultural support.

1.3   Problem Statement

Farmers in rural areas often face significant challenges in accessing timely and accurate information about government schemes, subsidies, and essential agricultural inputs. Traditional methods of obtaining this information, such as visiting Rythu Seva Kendras (RSKs) or relying on intermediaries, are time-consuming and inefficient. This results in missed opportunities for financial assistance, delayed Buying of inputs, and suboptimal crop management, ultimately affecting productivity and farmers' livelihoods. Moreover, many farmers encounter language barriers and limited digital literacy, which makes it difficult for them to understand complex scheme guidelines or navigate existing systems. The absence of a unified, inclusive, and accessible digital platform that directly connects farmers with RSKs raise these problems. KisanConnect aims to address this gap by providing a smart, centralized platform that delivers real-time updates on schemes, inventory, and advisory services. With support for local languages, offline access, and a simplified interface, the system empowers farmers to make informed decisions, ensures better utilization of government programs, and enhances operational efficiency at RSK.

1.4   Scope

The KisanConnect platform aims to provide a unified digital solution connecting farmers with Rythu Seva Kendras (RSK). The system scope includes:

1. The scope of this app covers requirements for the RSK in Porinki.

2. RSK staff can only monitor and manage stock and sales data of seeds, fertilizers, pesticides, and other agricultural inputs through the mobile app.

3. The platform provides offline access for farmers, ensuring critical information is available even in low-connectivity areas.

4. The system supports two languages, specifically English and Telugu, to ensure inclusiveness for local farmers.

1.5 Objectives

1. To design and implement a system that provides real-time updates on the availability of seeds, fertilizers, pesticides, and other agricultural inputs at RSK.

2. To support offline access, ensuring that farmers can obtain essential information even in areas with limited internet connectivity.

3. To enable direct communication between farmers and RSK staff for guidance on government schemes, subsidies, and advisory services.

4. To develop a unified digital platform that simplifies interactions between farmers and RSK, improving efficiency, transparency.

1.6 Advantages

- Provides a unified digital platform where farmers can access all RSK services such as seeds, fertilizers, pesticides, and advisory support in one place.

- Ensures faster and transparent service delivery through digital request tracking and real-time status updates.

- Enhances communication between farmers and Rythu Seva Kendrams through direct messaging.

- Supports data-driven decisions by maintaining digital records that help RSK officers to access demand and manage stock efficiently.

Chapter 2

LITERATURE REVIEW

2.1 Farmers Assistant Web Application

Journal: International Research Journal of Modernization in Engineering Technology and Science, Volume:07/Issue:03/March-2025[2]

Methodology:
Agriculture is the backbone of many economies, and technological advancements can significantly enhance farming efficiency and productivity. The Farmer Assistant Application is designed to empower farmers by providing critical insights and services tailored to their needs. One of its core features is crop prediction which leverages machine learning to help farmers make informed decisions about what to plant based on soil conditions, climate trends, and past yields. Additionally, the app delivers real-time weather updates, ensuring that farmers are prepared for changing climatic conditions that could impact their crops. To support financial sustainability, the application provides up-to-date information on government subsidies enabling farmers to access financial aid and schemes that can boost their agricultural activities. Another essential feature is labor finding which connects farmers with available agricultural workers, addressing labor shortages and ensuring smooth farm operations. By integrating technology into farming, the Farmer Assistant Application aims to reduce risks, increase productivity, and promote sustainable agriculture. It serves as a bridge between farmers and essential agricultural resources, ensuring that they have the right information at the right time. Through data-driven decision-making and accessibility to impor services, this application contributes to a smarter and more efficient farming ecosystem.

Advantages:

1. Automating and centralizing agricultural information saves time and reduces the cost of operations.

2. Keeps farmers informed about subsidies, and welfare programs, helping them to receive financial support easily.

Scope:

1. Many rural areas lack stable internet, limiting app accessibility and real-time data updates.

2. Developing and maintaining the platform, along with training farmers, may involve high initial costs.

2.2 SMART-AGRI CONNECT: An Integrated Platform for Farmers Utilizing ML-Driven Recommendations and Real-Time Tracking

Journal: 2025 International Conference on Knowledge Engineering and Communication Systems (ICKECS)Description[16]

Methodology:
The agricultural sector faces numerous challenges, including limited market access, inefficient supply chains, and inadequate platforms for farmers to showcase and sell their products. To address these issues, this paper explores the development of an integrated mobile application designed specifically for farmers. The app aims to combine the functionalities of e-commerce, social media, marketing, and news into a single platform, enabling farmers to build customizable profiles, manage inventory, and directly connect with consumers and businesses. It integrates tools such as an interactive map for locating nearby farmers and their products, Artificial Intelligence/Machine Learning- driven recommendations, and flexible selling options without traditional weight limitations.

Advantages:

1. Combines marketing, and news—offering farmers multiple services in one app.

2. Allows farmers to manage stock, track availability, and reduce waste caused by unsold produce.

Scope:

1. Rural areas may have poor internet access, limiting consistent app usage.

2. Farmers and staff might need training sessions to fully utilize all features of the app.

2.3 A Farmer Assistance Smartphone Application with Crop Planner, Crop Disease Help, Agri-expert Search, and Crop Suggestion Features

Journal: 2024 IEEE International Conference[5]

Methodology:

Farmers contribute significantly to a country's food security by producing fresh fruits and crops. Farmers are no longer profitable from crop cultivation due to a lack of funding, inadequate crop cultivation support from the government, rising crop cultivation costs, and frequent natural disasters. Previous farmer assistance papers did not include the development of an intelligent ICT-based smartphone application for farmers, which included an online crop selling feature, seed and fertilizer search, weather information, crop care alert, agri-expert search, agriculture training, farmer loan application, crop price listing, and crop seller store search feature. To eliminate the shortcomings, this work develops an intelligent smartphone application for farmer assistance with online crop sales, crop planner, seed and fertilizer seller search based on location, weather information, agri-expert search based on location and expertise, online loan application, question submission, agriculture training search based on location and topic, crop disease help, crop suggestion based on priority, fertilizer recommendation, and crop price listing features. The farmer evaluation-based app practicality and feature adequacy analysis displays that at least 56 percent of users dispatch impressive remarks on the merits of our proposed farmer assistance application.

Advantages:

1. Combines multiple farming services (crop selling, weather updates, training, etc.) in a single app, reducing the need for multiple tools.

2. Provides instant weather alerts, crop disease notifications, and fertilizer recommendations for better decision-making.

Scope:

1. Some features like live crop selling or real-time expert consultation require stable internet connectivity.

2. Farmers with limited smartphone or app knowledge may find it difficult to use advanced features initially.

2.4 Reflecting real-time monitoring of Agricultural equipment in Rythu Bharosa Kendra

Journal: IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation (IATMSI), 2024[9]

Methodology:

The Rythu Bharosa Kendra (RBK), an initiative by the Andhra Pradesh government, seeks to bolster farming communities by supplying quality seeds, fertilizers, and agricultural supplements while offering vital extension advisories at the village level. To modernize their operations, a proposed automated system will replace manual record-keeping by storing data directly into a database, facilitating seamless facility transactions, and generating comprehensive service reports. By outfitting RBK vehicles with GPS devices and integrating React technology for a user interface, administrators gain real-time insights into vehicle movements, optimize routes, and efficiently monitor the distribution of agricultural resources. This innovative approach not only streamlines RBK's processes but also ensures timely and effective support to farmers while minimizing paperwork and enhancing overall operational efficiency.

Advantages:

1. Manual paperwork is replaced with a centralized database, reducing errors and saving time.

2. Every transaction and distribution detail is digitally recorded, minimizing the chances of corruption or misuse of resources.

Scope:

1. Staff may require training to operate and maintain the automated system effectively.

2. Traditional workers may be reluctant to adopt new technology or shift from manual practices.

2.5 Mobile Application for Fertilizers Stock Sales Monitoring for RBK

Journal: Grenzer International Journal of Engineering and Technology,2023[10]

Methodology:

Rythu Bharosa Khendra(RBKs) are the places for assisting the farmers like provide seeds, fertilizers, pesticides and also maintain record on farmers. They also assist farmers in

locating markets for their goods. The government has previously planned to provide agriculture implements at RBKs for farmers to rent and use at a low cost. Village Officers at RBKs maintain a hard copy record of their field review reports and availability of fertilizers and quantity of crops. Having an app or a website to store their record and also finding a nearer RBK's for them would be beneficial, so that higher officials like agricultural Officers can get a detailed timely idea of how's the RBK sales are serving the farmers. A Mobile application so to store the record data we use firebase and using flutter as an interface between RBK officer and agricultural officer. This app helps RBK officers to keep track of the fertilizer stock in their center, sales details which comprises of fertilizers sold, payment details, Task remainder set by the Agricultural officer and finding the RBKs in the respective State.

Advantages:

1. They also assist farmers in locating markets for their goods.

2. Maintain stock like seeds, fertilizer, pesticide data in app.

Scope:

1. A high level of knowledge is required by farmers to understand every portion of the app.

2. Some of the data on mobile phones is complicated and so difficult to understand.

2.6 SMART KISAN: A Mobile App for Farmers Assistance in Agricultural Activities

Journal: 2023 International Conference on Smart Systems for applications in Electrica[1]

Methodology:
Farmers in India face various challenges during the crop cycle, including a lack of knowledge about the latest technologies, practices, and disease identification and management. Additionally, farmers often struggle to find appropriate storage facilities and determine fair market prices for their produce. To address these issues, a digital solution is proposed in the form of a mobile application for farmers. The application includes six features: a technology library, plant disease identification and diagnosis, an automated chatbot for answering questions, weather alert information, information on nearby warehouses and market prices for produce. The proposed application has been developed based on the results of a survey conducted with 50 farmers from Maharashtra and Madhya Pradesh states using a Google form. The app is designed to provide farmers with the necessary

tools to address their problems independently, including multilingual support.

Advantages:

1. Helps farmers from different regions overcome language barriers, increasing accessibility and usability.

2. Weather alerts help farmers make better decisions.

Scope:

1. Farmers without smartphones or internet access may not benefit from the application.

2. Some farmers may find it difficult to use digital features like chatbots or disease detection tools without proper training.

2.7 Mobile Applications Empowering Smallholder Farmers: A Review of the Impact on Agricultural Development

Journal: International Journal of Social Analytics 2023[4]

Methodology:
This research study examines the transformative role of mobile applications in empowering smallholder farmers through increased access to information, market linkages, financial inclusion, and improved resource management. The study explores how mobile apps have facilitated real-time access to relevant agricultural information, including weather updates, crop prices, best farming practices, and pest management techniques. The availability of reliable information enables farmers to make informed decisions, leading to enhanced productivity and better crop yields. Furthermore, the study investigates how mobile apps have revolutionized market linkages by facilitating direct connections between farmers and buyers, reducing the dependence on intermediaries, and lowering transaction costs. Additionally, these apps provide price transparency, allowing farmers to negotiate better prices for their produce, leading to improved income and capturing a larger share of the market value for their products. The research also highlights the financial services offered by mobile applications in developing countries, such as mobile banking and digital payment solutions. These services enable smallholder farmers to access formal financial systems more efficiently, receive payments promptly, and access credit for essential agricultural inputs and equipment. By leveraging appbased credit

services, farmers can invest in their farms, which subsequently boosts productivity and overall agricultural development. Moreover, the study delves into the contribution of mobile apps in promoting improved resource management among smallholder farmers. These apps often include tools for farm management and resource tracking, enabling farmers to monitor water usage, fertilizer application, and other inputs, leading to increased efficiency and reduced waste. Consequently, this optimizes resource allocation, contributing to higher productivity and income for smallholder farmers. Finally, the research explores how mobile apps have facilitated the delivery of extension services to farmers in remote areas. Extension officers can disseminate information and knowledge through text messages, audio, and video content, aiding farmers in adopting modern agricultural practices and technologies.

Advantages:

1. Optimizing Resource Management to Improve Efficiency, Reduce Wastage, and Maximize Output.

2. Enhancing Financial Inclusion to Empower Individuals and Strengthen Economic Participation.

Scope:

1. Restricted availability of reliable and high-speed internet connectivity.

2. Language barrier due to the unavailability of content in the local language.

2.8 Android App to Connect Farmers to Retailers and Food Processing Industry

Journal: 2018 3rd International Conference on Inventive Computation Technologies (ICICT)[8]

Methodology:
Mobile internet will help the farmers to sell their products directly to consumers and food processing industries. This paper provides market information to a farmer using its easy interface on the mobile application. The mobile application is intended to be used for fast and updated information delivering system for farmers. Also, it has native language support to make the transaction easy for farmers. The mobile application treats farmers as a seller and a buyer. The intention behind this paper is to help farmers so they buy or sell their agriculture goods and products. Market prices provided by data.gov.in lets the system to keep the selling and buying prices in control. As the

products are to be browsed and there may be plenty of products for the user. To make browsing easy many filters can provide. Farmers face many problems while selling their goods and products, this system promises to provide an easy and recreational way to sell the products. The system lets the farmers to sell goods at a reasonable price and makes business even fair and transparent. Consumers are the opposite side of the same coin. This system lets consumer to choose from a wide variety of products, select the product as per their requirement and also to apply price filters. Location is a one of parameter for consumer and producer while selling or buying their product it will helps the user to get the product nearby their location. The basic objective of the system is to considers every one need and full fills their requirement with fair and transparent agriculture business.

Advantages:

1. Market prices are updated online, helping farmers make smart decisions.

2. The app is easy to use and supports local languages.

Scope:

1. Poor internet connection in villages can limit use.

2. Prices and data must be updated regularly to stay accurate.

2.9 Summary of Reviewed Research Papers

Paper Title	Journal / Year	Advantages	Scope
FARMERS ASSISTANT WEB APPLICATION	International Research Journal of Modernization in Engineering Technology	Automating and centralizing agricultural information saves time, reduces costs.	Many rural areas lack stable internet, limiting app accessibility and real-time data updates.
SMART-AGRI CONNECT	2025 International Conference	Combines marketing, and news—offering farmers multiple services in one app.	Rural areas may have poor internet access.
A Farmer Assistance Smartphone Application with Crop Planner, Crop Disease Help, Agri-expert Search	2024 IEEE International Conference	Combines marketing, news, and multiple services in one app.	Farmers with limited smartphone or app knowledge may find it difficult to use.
Reflecting Real-Time Monitoring of Agricultural Equipment in Rythu Bharosa Kendra	2024 IEEE International Conference	Digitally records all transactions and distributions, ensuring transparency.	Staff may need training to efficiently operate and maintain the system.
Mobile Application for Fertilizers Stock Sales Monitoring for RBK	Grenzer Int. J. of Engg. and Tech., 2023	Maintains stock like seeds, fertilizers, pesticides in app.	High level of knowledge required by farmers to understand every portion of the app.
SMART KISAN: A Mobile App for Farmers Assistance in Agricultural Activities	2023 International Conference on Smart Systems for Applications in Electrical	Provides weather alerts to help farmers make informed agricultural decisions.	Farmers without smartphones or internet access may be unable to use the application.
Mobile Applications Empowering Smallholder Farmers: A Review of the Impact on Agricultural Development	International Journal of Social Analytics, 2023	Enhances financial inclusion.	Language barrier: local language is not available.
Android App to Connect Farmers to Retailers and Food Processing Industry	2018 3rd International Conference on Inventive Computation Technologies	Provides market info, native language support, location-based services, and product browsing filters.	Limited by poor internet; Prices and data must be updated regularly.

Table 2.1: Summary of key aspects of reviewed research papers on farmer-centric mobile applications.

Chapter 3

DESIGN THINKING

3.1 Problem Statement

Farmers in rural areas often struggle to access timely information about government schemes, subsidies, and agricultural inputs. Many are unaware of programs like seed distribution, fertilizer subsidies, or crop insurance. Limited internet access, language barriers, and lack of digital literacy make traditional methods of communication ineffective. A digital platform like KisanConnect can bridge this gap by providing personalized information, real-time stock updates, scheme notifications, and guidance on application processes. Accessible on basic mobile devices and in local languages, it ensures inclusivity for all farmers. This solution empowers farmers to access resources efficiently, improve crop productivity, and enhance their socioeconomic well-being.

3.2 Primary Research

We surveyed several farmers regarding the use of a digital agricultural support platform. The questions included:

1. What is your primary source of information for agricultural schemes and subsidies?

2. Are you aware of any government schemes related to seeds, fertilizers, or crop insurance?

3. Have you ever applied for a scheme or subsidy before?

4. Do you find it difficult to track availability of agricultural inputs like seeds, fertilizers, and pesticides?

5. How would you prefer to receive information about schemes, stock availability, and agricultural guidance?

3.3 Secondary Research

In the secondary research, we reviewed multiple journals, articles, and reports related to agricultural information systems and digital platforms for farmers.

Existing agricultural information systems are primarily designed for use by agricultural officials rather than farmers. They focus mainly on managing stock details such as fertilizers, seeds, and pesticides, as well as tracking distribution and supply. While these systems are useful for administrative purposes, they often overlook the practical needs of farmers in the field.

Several key challenges have been identified in existing systems:

1. **Complex Interfaces:** Most platforms have complicated designs that are difficult for farmers, especially those with limited digital literacy, to navigate.

2. **Limited Farmer Engagement:** The systems are designed for officials, meaning farmers have limited interaction or control over the information relevant to them.

3. **Dependence on Internet Connectivity:** Many platforms require continuous internet access, which is a major issue in rural areas with poor network coverage.

4. **Lack of Local Language Support:** Content is often provided only in English or official languages, creating barriers for farmers who speak regional languages.

5. **Focus on Stock Management Only:** Existing systems mainly track inventory of agricultural inputs and do not provide guidance on crop planning, market prices, or scheme eligibility.

6. **Limited Offline Functionality:** Without offline support, farmers cannot access important information when internet connectivity is very low.

3.4   Ideation Phase

In the Ideate Phase, we focused on generating creative and practical solutions to address the challenges identified in the Define Phase and fulfill the core needs of our target users are farmers and Rythu Seva Kendra (RSK) officials. Our goal is to design a system that is scalable, time-saving, consistent, accessible, and user-friendly for all stakeholders.

3.4.1   Key Ideas Considered

- **Digital Service Platform:** Creation of a unified digital platform to connect farmers with RSK services for agricultural inputs, scheme information, and advisory support.

- **Real-time Inventory Tracking:** System for farmers to view availability of seeds, fertilizers, and pesticides at RSK in real time.

- **Government Scheme Integration:** Centralized access to scheme details, eligibility checks, and application tracking to ensure transparency.

- **Farmer Request Handling:** Online submission of requests for agricultural inputs, soil testing, and expert guidance, with status tracking.

3.4.2 Final Concept

Based on the ideas generated, the final concept focuses on:

- Providing a user-friendly mobile app for farmers to access RSK services easily.

- Enabling real-time inventory visibility for agricultural inputs at RSK.

- Designing a simple, intuitive interface suitable for users with limited digital literacy.

- Empowering RSK operators with a centralized dashboard for request processing, inventory updates, and communication with farmers.

This concept ensures that farmers can access resources efficiently, stay informed about schemes, and interact seamlessly with RSK, while operators can manage services effectively and transparently.

3.5 Solution and Prototype Phase

Our solution involves the development of a mobile application for farmers, where this app connects farmers with the officials of Rythu Seva Kendra (RSK). The application includes features such as real-time inventory tracking of agricultural inputs, scheme information, request submission.

The interactive system is designed to provide timely and relevant information to farmers, including giving updates about government schemes, availability of seeds, fertilizers, and pesticides, as well as.

The mobile application is developed using Progressive Web App(PWA) Builder with react as fronted framework, which ensures cross platform compatibility and smooth performance on a wide range of devices. The backend integrates with MongoDb cloud to manage inventory data, scheme details, and communication between farmers and RSK operators, providing an efficient and user-friendly experience for all users.

3.6 Prototyping

The KisanConnect prototype is focused on addressing the needs of agriculture, farmers, and Rythu Seva Kendram (RSK) operations. The system includes local language support

and offline functionality, which are critical for ensuring accessibility in rural areas with limited connectivity. Additionally, the prototype emphasizes real-time inventory updates for agricultural inputs and incorporates practical usability testing to ensure that both farmers and RSK operators can interact with the platform efficiently and effectively.

3.7 Final Solution

The final solution for KisanConnect is a unified, service centric digital platform designed to support both farmer through agricultural support services and make stock motoring tasks of officials easy. This improve communication between farmers and Rythu Seva Kendram (RSK).

The system includes the following key features:

- **Real-time stock Tracking:** Displays the current stock of agricultural inputs at nearby RSK, helping farmers plan and procure resources efficiently.

- **Farmer Request Management:** Allows farmers to submit requests for inputs. RSK operators can track and manage these requests through a centralized dashboard.

- **Government Scheme :** Provides comprehensive information on agricultural schemes, including eligibility checks, application guidelines, and real-time status updates.

- **Mobile Application Interface:** A user-friendly app developed using Flutter ensures smooth performance on a variety of devices, making it accessible to all farmers.

3.8 Challenges

Implementing KisanConnect faces several challenges across technical, operational domains. Another critical challenge is effective request handling. Farmers submit requests for seeds, fertilizers, pesticides, the application should accurately capture the user voice and send the request to the officials. Limited internet connectivity in rural areas and low digital literacy among farmers further complicate implementation, requiring offline support and a highly intuitive user interface. Addressing these challenges is key to creating a scalable, inclusive, and user-friendly platform that empowers farmers and enables RSK operators to manage resources and services efficiently.

Chapter 4

SOFTWARE REQUIREMENTS ANALYSIS

Requirements analysis is a very critical process that enables the success of a system or software project to be assessed. Requirements are generally split into two types: functional and non-functional requirements.

4.1   Functional Requirements

Functional requirements specify the functions a system must perform to meet user needs or achieve business goals. These requirements define the tasks, operations, and processes that the system should execute. Functional requirement analysis involves several steps to describe how the system behaves under specific conditions and how it interacts with users. It clearly defines the intended behavior of the system and explains the outcomes produced when the system operates. Functional requirements also help identify the necessary features that must be included to ensure user satisfaction. They can range from general, high-level requirements to detailed functional specifications. Functional requirements are necessary to identify for their implementation of the final user product. The possible outcome of the software system, which includes effects due to the operation of the program, is fully explained.

Table 4.1: Functional requirements of app

Requirement ID	Requirement Statement	Must/Want	Comments
FR001	Role-Based Access Control for Different User Type	Want	It is necessary to build a respective interfaces for farmers and RSK staff.
FR002	User Authentication	Must	In order to verify whether the user is a valid user or not and prevent unauthorized user to access the data.
FR003	Data Entry and Validation for Forms	Must	The data must be entered correctly and submitted without fail. It is essential to ensure that all information is accurate before submission.
FR004	voice assistant	Want	It is required for capturing farmer requests efficiently and their local language. It make the user to feel easy to use.
FR005	Offline accessibility	Want	It helps to access the data in offline mode make it easy for farmers to use in remote areas also.
FR006	Multiple languages	Must	It helps users access the app in both English and Telugu. This makes it easy for them to use the application in their preferred language and switch between languages whenever needed.

4.2 Non-Functional Requirements

Non-Functional Requirement (NFR) describes how a system must behave and set constraints on its functionality. These requirements specify how well the system should perform and how compatible it must be with the operating environment. It define some quality attributes. Non-functional requirements define system attributes such as security, reliability, performance, maintainability, scalability, and usability.

Table 4.2: Non-Functional requirements of app

Requirement ID	Requirement Statement	Must/Want	Comments
NF001	Security	Must	The access to app should be secure in order to prevent the data loss.
NF002	Usability	Want	The user interface should be very simple and easly understandable. So, naive user can also use the app easly.
NF003	Portability	Must	It is necessary for any mobile user can access app without any technical issue.
NF004	Reliability	Must	Vital for uninterrupted service and consistent user engagement, especially for a user information sharing system.
NF005	Maintainability	Must	The system is designed to be easy to debug and enhance, allowing developers to identify issues quickly and implement improvements efficiently.

Non-functional requirements (NFRs) serve as constraints or restrictions on the system design across different development backlogs. An NFR is a set of specifications that describe the system's operational qualities and limitations, aiming to improve its overall performance and user experience. These requirements define how well the system should operate, covering aspects such as speed, security, reliability, usability, and data integrity. The major no functional requirement is for this work is Reliability which is essential for our users. Table 4.2 represents the non-functional requirements of the Kisan Connect App.

4.3 System Requirements

System requirements encompass the hardware, software, and operational specifications necessary for a system to perform effectively. These requirements define factors such as processing power, memory, storage capacity, operating system compatibility, network connectivity, and any other prerequisites for the system's functionality. System requirements serve as guidelines for system design, deployment, and maintenance, ensuring that the system meets the necessary criteria to meet user needs and perform its intended tasks efficiently and reliably.

4.3.1 Software Requirements

The system requires specific libraries and Frameworks for its implementation. For user interface the system is developed using react and its associated libraries. The operating system required to run the system is Windows. As for the development environment, Visual Studio Code (VS Code) is used. For connecting the backend used node.js and express.js. To store the data of the app used MongoDB. These specifications ensure compatibility and provide the necessary tools and resources for the successful execution and development of the system.

4.3.1.1 NPM

Node Package Manager is the default package manager that comes with Node.js. It have a javascript runtime environment. It is used to install and update JavaScript libraries and tools.

4.3.2 Node.js

Node.js is an open-source, server-side JavaScript runtime environment that enables developers to run JavaScript outside the web browser. It is widely used for backend development, APIs, and development tools.

4.3.2.1 Features

- **react-speech-recognition:** Enables voice input and speech-to-text functionalities.

- **react-i18next:**Integrates i18next with React for seamless localization.

- **google-translate-api-x:** An updated and more stable alternative for translation APIs.

- **mongoose:** A powerful library used to model and manage MongoDB data with schemas and validation.

- **Cheerio:** Cheerio is a fast, lightweight npm library. It is used for performing web scraping the market data from official websites.

4.3.2.2 MongoDB Atlas

MongoDB Atlas is a fully managed cloud database service provided by MongoDB. It allows developers to create and deploy MongoDB databases without worrying about server setup, scaling. The Cloud platform automatically handles backups, security and monitoring.

4.3.2.3 VScode

Visual Studio Code (VS Code) is a free, lightweight, and open-source code editor developed by Microsoft. It is widely used by developers for writing, editing, and debugging code across multiple programming languages such as JavaScript, Python, C++, and more.

4.3.3 Hardware Requirements

The hardware requirements that are necessary to effectively run the proposed segmentation model are:

- **Modern Operating System:** Windows 10 / Mac OS X 10.11 or higher

- **CPU::** 64-bit processor

- **Disk Space:** Minimum 4 GB SSD

Chapter 5

SOFTWARE DESIGN

5.1 Software Development Lifecycle

Figure 5.1 describes the lifecycle model used for the proposed model. Scrum is a popular framework used in agile project management. It's designed to help teams collaborate and adapt quickly to change, particularly in software development, but it's also utilized in various other industries. Scrum is based on iterative and incremental principles, aiming to deliver high-value products iteratively while allowing for flexibility and continuous improvement.
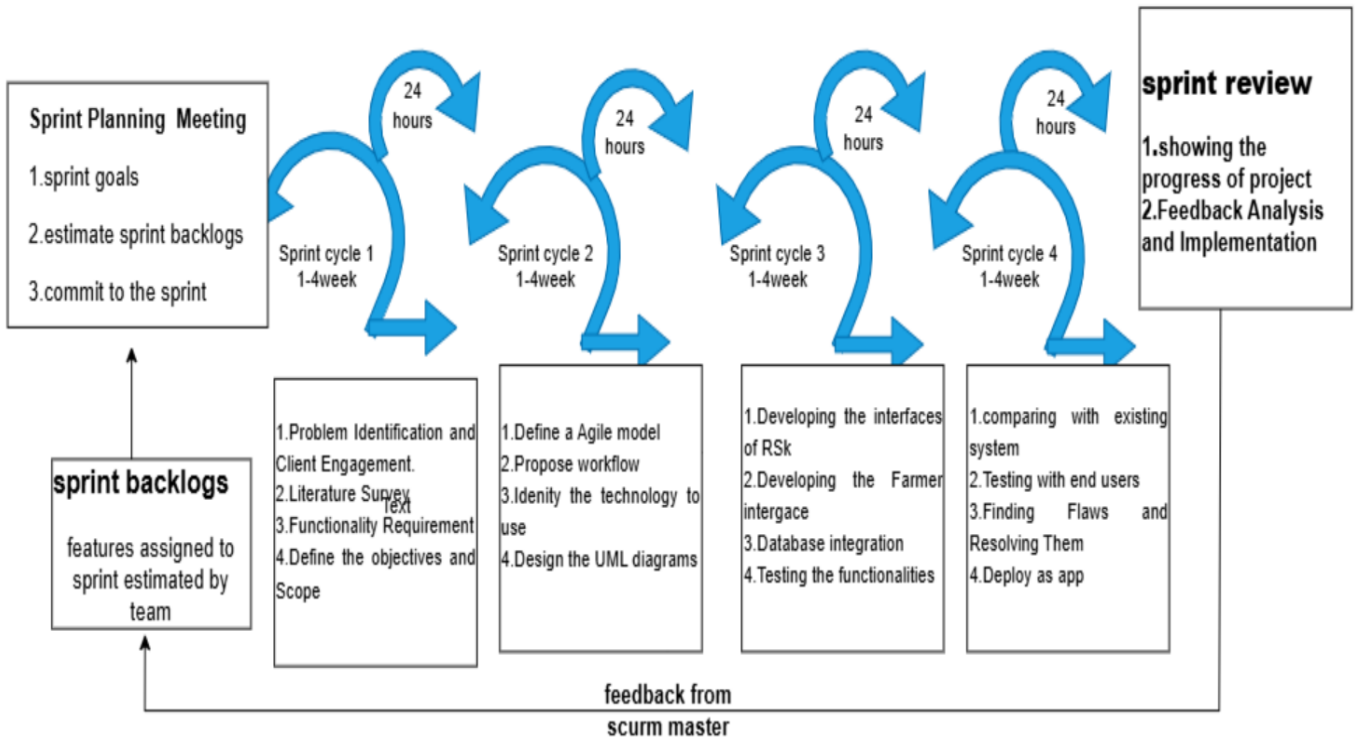
Figure 5.1: Software Development Lifecycle (SCRUM) for KisanConnect

The process begins with a Sprint Planning Meeting, where the team defines sprint goals, estimates sprint backlogs, and commits to completing the sprint. The sprint backlogs contain features assigned to the sprint, estimated by the team. The workflow progresses through four sprint cycles, each lasting 1–4 weeks, with daily 24-hour updates.
Sprint Cycle 1 focuses on problem identification and client engagement, conducting literature surveys, gathering functional requirements, and defining objectives and scope. Sprint Cycle 2 involves defining the Agile model, proposing workflows, identifying suitable tech-

nologies, and designing UML diagrams. Sprint Cycle 3 is dedicated to developing system interfaces, including the RSK interfaces and farmer interface, integrating the database, and testing functionalities. Sprint Cycle 4 emphasizes comparing the system with existing solutions, testing with end users, identifying and resolving flaws, and deploying the application. Throughout the process, continuous feedback is provided by the Scrum Master, ensuring iterative improvements. Finally, a Sprint Review is conducted to showcase project progress, analyze feedback, and implement necessary adjustments, completing the Agile development cycle.

5.2   UML Diagrams

The Unified Modeling Language (UML) is a modeling language used by software developers. UML can be used to develop diagrams and provide users or programmers with ready-to-use, expressive modeling examples. It is a way to visually represent the architecture, design, and implementation of complex software systems.

5.2.1   Use-Case Diagram

A Use Case diagram is a type of behavioral diagram in UML that represents the interactions between a system and its users or external systems. It shows the various use cases or functionalities of a system and how they are connected to actors or stakeholders who interact with the system. The Use Case diagram typically includes use case ovals, actors represented by stick figures, and lines connecting them to show the interactions. Figure 5.2 depicts the Use Case diagram. There are services like user role selection and login, stock management, sales management, request handling.
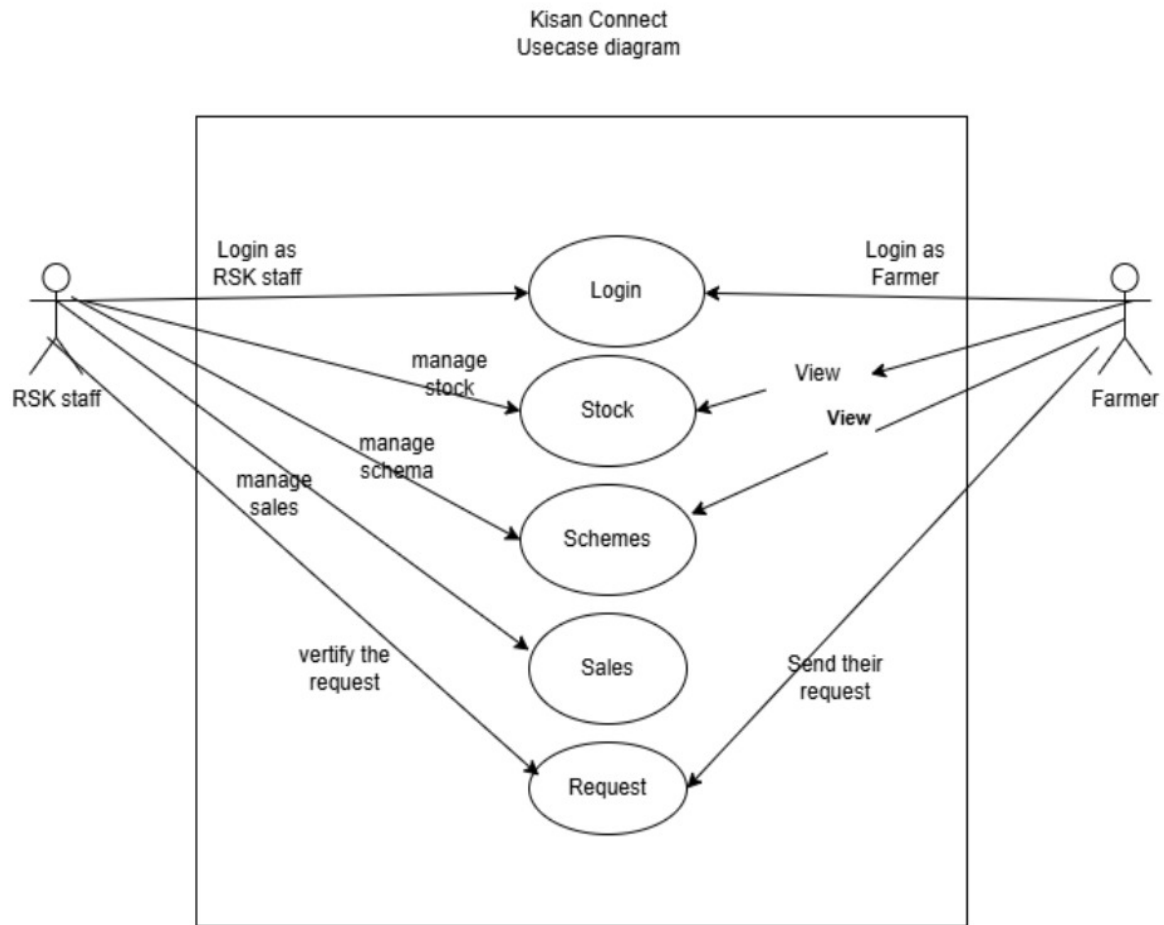
Figure 5.2: Use Case diagram of Kisanconnect

Use Case diagram for KisanConnect also explains the application of the system. In the application, the user can perform activities such as selecting a user role and logging in with their credentials. After that, the user can access various services like scheme, sales, stock. The Use Case diagram shown in Figure 5.3 describes the activities that can be performed by users.

A Use Case diagram serves as a visual representation in software engineering, depicting how users (actors) interact with a system to achieve specific goals. Actors, represented as stick figures, denote RSk staff and Farmers interacting with the system. Use cases, depicted as ovals, outline distinct functionalities or actions the system can perform to fulfill particular user needs. The connections or lines between actors and use cases illustrate relationships and interactions, detailing which functionalities each actor engages within the system. The diagram delineates the system's scope and its interactions with Actor are RSK staff and farmers. Overall, use case diagrams provide a holistic overview of system functionalities and user-system interactions, aiding in system design.

5.2.2 Activity Diagram

An Activity diagram is a type of behavioral diagram in the UML that models the flow of activities in a system. It is a visual representation of the steps and decisions involved in a process, workflow, or use case and is commonly used in software development, business process modeling, and project management. It shows what is the basic flow of system in single diagram. The user selects the user role then Sign up/Sign in into the app. Then the user can access their respected modules.
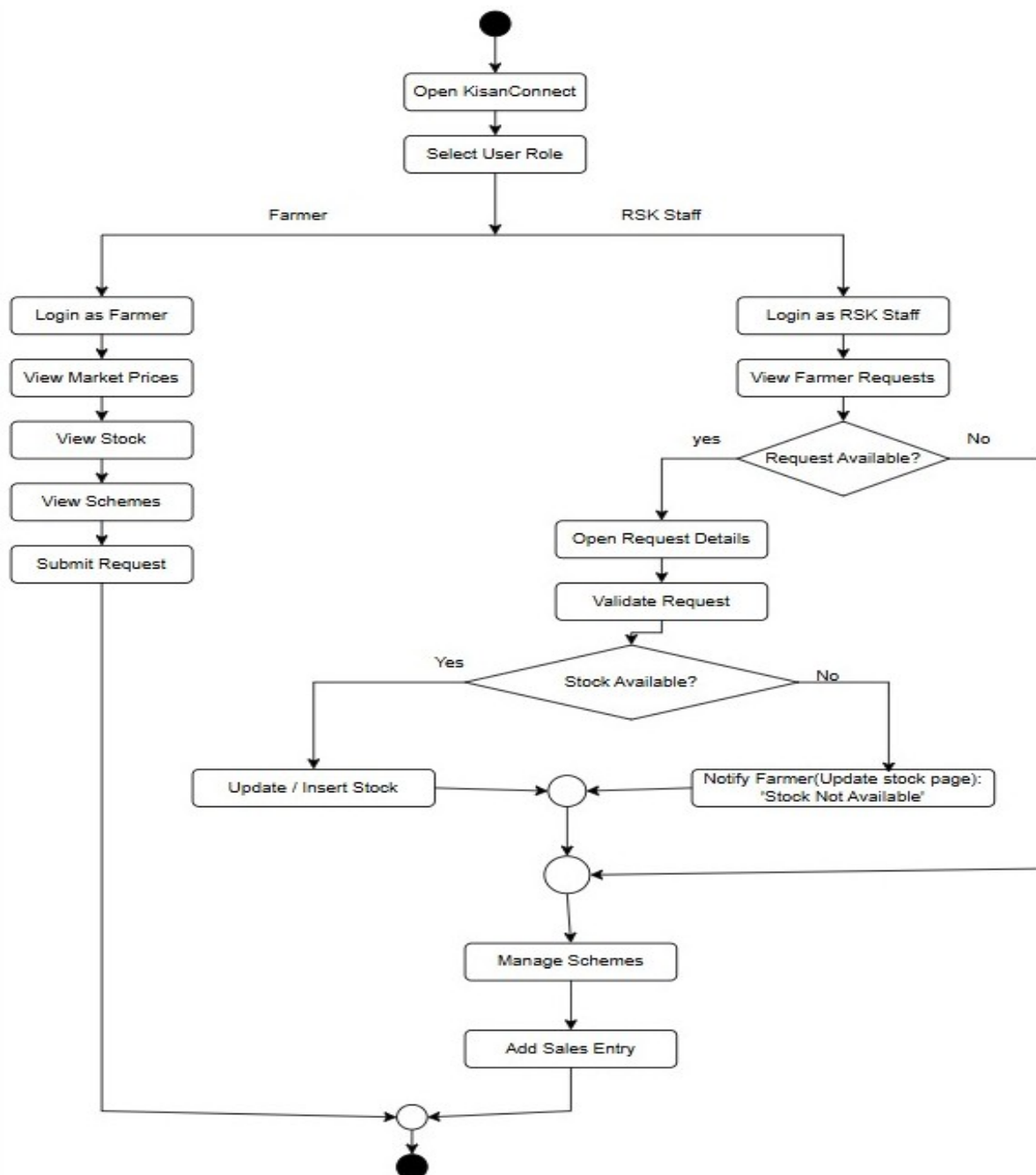

Figure 5.3: Activity diagram of KisanConnect

An Activity diagram details the entire flow of the app's operation. The user is either a Farmer or an RSK Officer and first enters their respective home page. The Farmer can view stock details, market prices, stock information, and scheme information. Farmers can also make requests to officials through the app. The Officials receive the requests and can update the stock accordingly. The Farmers can check the updated stock details. The Officials can manage the sales information regarding the products sold to farmers. Officials can also manage stock details and scheme details. They can easily monitor the stock and sales information.

5.2.3   Sequence diagram

A Sequence diagram in UML is a dynamic diagram that illustrates interactions between objects or components in a system over time. It represents the flow of messages, actions, and interactions among different elements, showcasing the sequence of events as they occur chronologically. It consists of text processing, model selection, training, and testing. The activities performed by the user are directly linked to a Web server, which is responsible for any page irresponsive errors. The operation of the activity is performed by an user and database. Figure 5.7 represents the Sequence diagram of the Farmer Information. A Sequence diagram, within software engineering, serves as a visual representation detailing the step-by-step interactions and message exchanges between various system components or actors to achieve a specific task or scenario. When focused on user activities, these diagrams showcase the sequence of actions initiated by users and the system's corresponding responses.

By using vertical lines to depict participants (such as users or system components) and arrows to signify message exchanges, these diagrams map out the chronological order of activities, revealing how users trigger actions within the system, how the system reacts, and the subsequent flow of interactions. By delineating the dynamic communication and timing of events between users and the system, sequence diagrams offer a comprehensive view of user-system interactions and aid in understanding the system's behavior during specific user-driven processes.
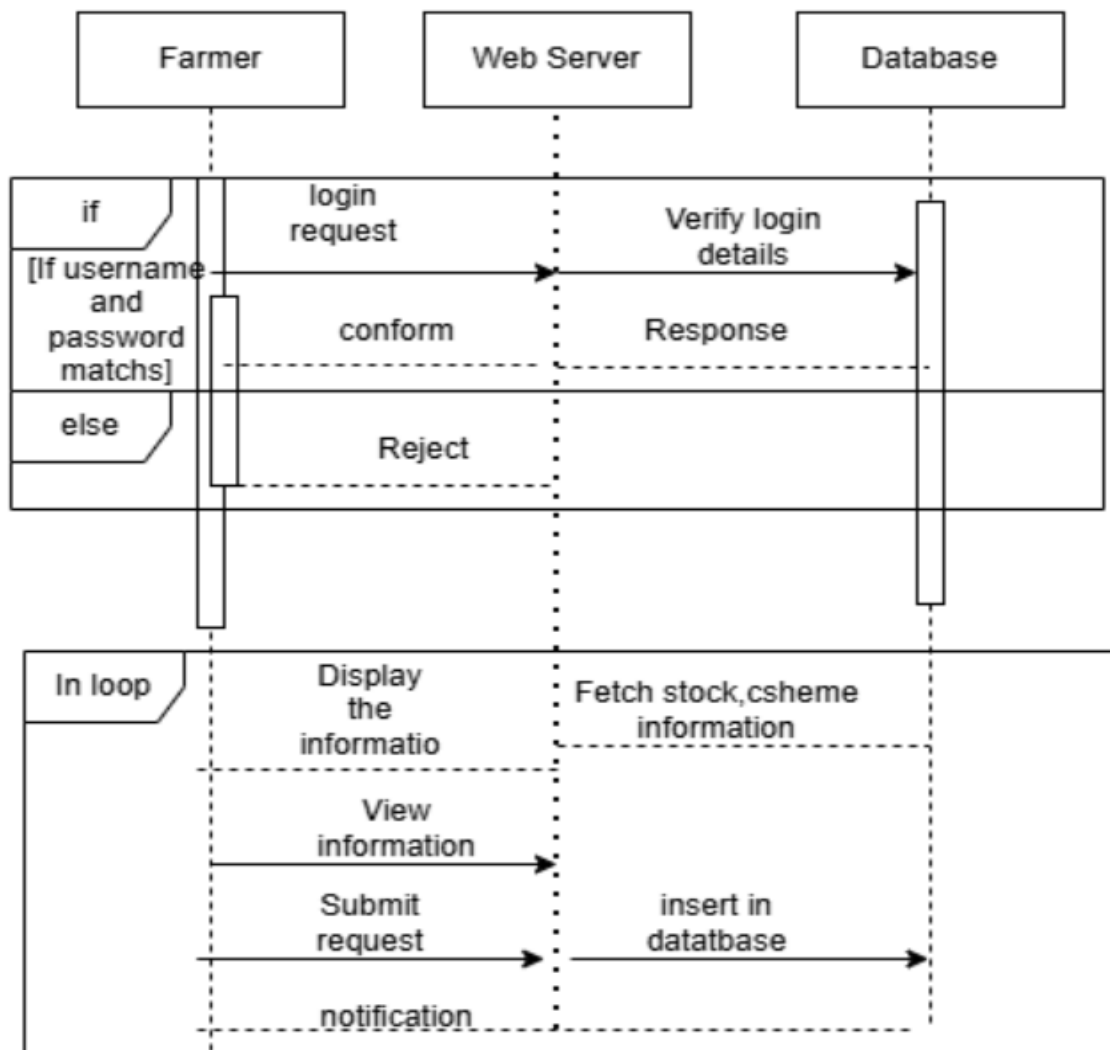
Figure 5.4: Sequence diagram of of KisanConnect Farmer interface

Here sequence diagram are design to show how the system flow works for each interface. The login phase is common for interfaces. The farmer interface describe how the farmer is interacting with the system. It shows the backend and web sever is responding. Similarly for RSK interface is describe the way they interact with system what feature are there for them.
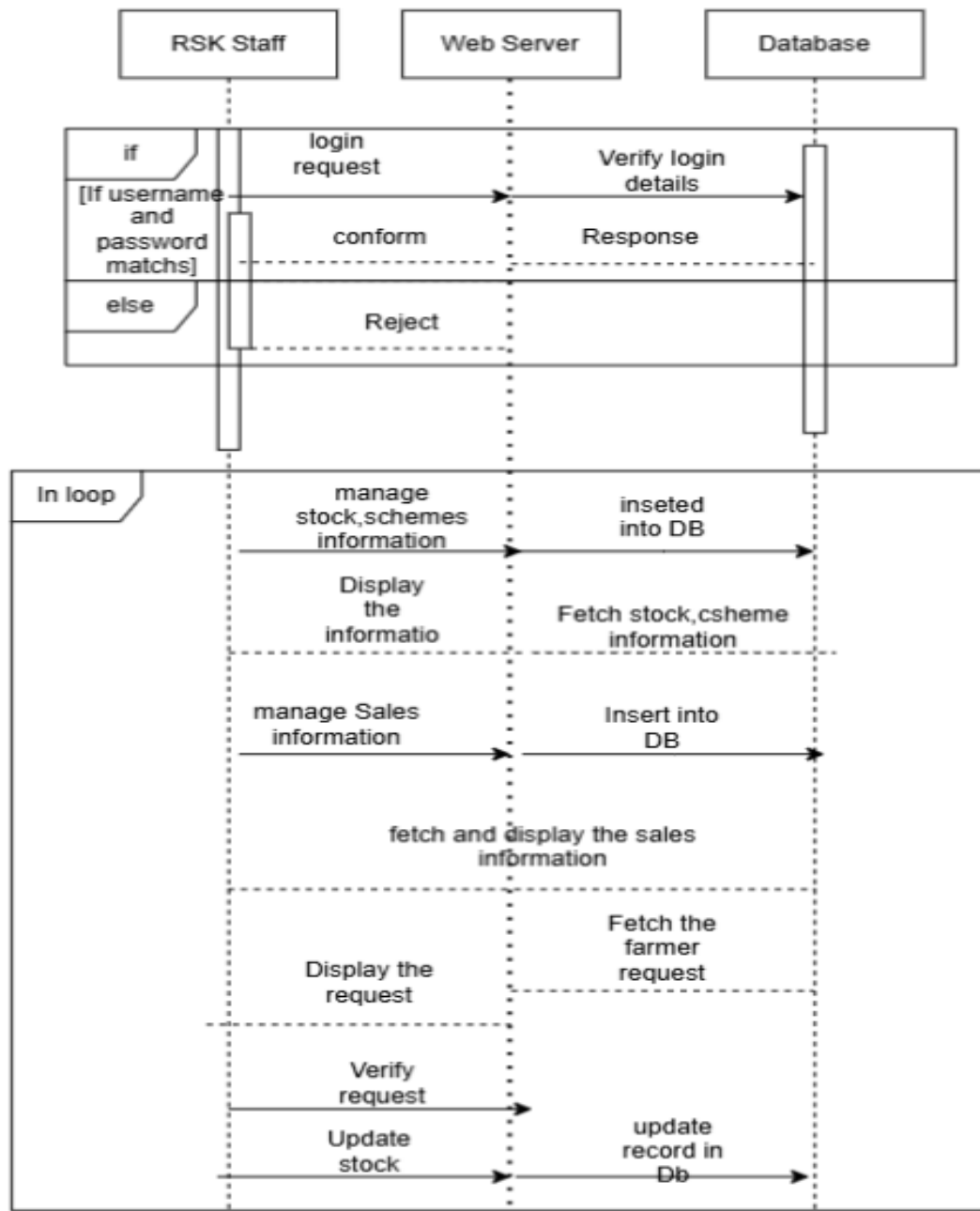
Figure 5.5: Sequence diagram of of KisanConnect RSK interface

Chapter 6

PROPOSED SYSTEM

6.1 Proposed System Architecture

The primary objective of the proposed system architecture is to provide a robust and efficient structure that ensures the project's success. It places emphasis on scalability, adaptability, and security, leveraging modern technologies and industry best practices to meet the project's goals. The Architecture Diagram, depicted in Figure 6.1, visually represents the sequential steps involved in the system's operation, facilitating a clear understanding of the overall process.
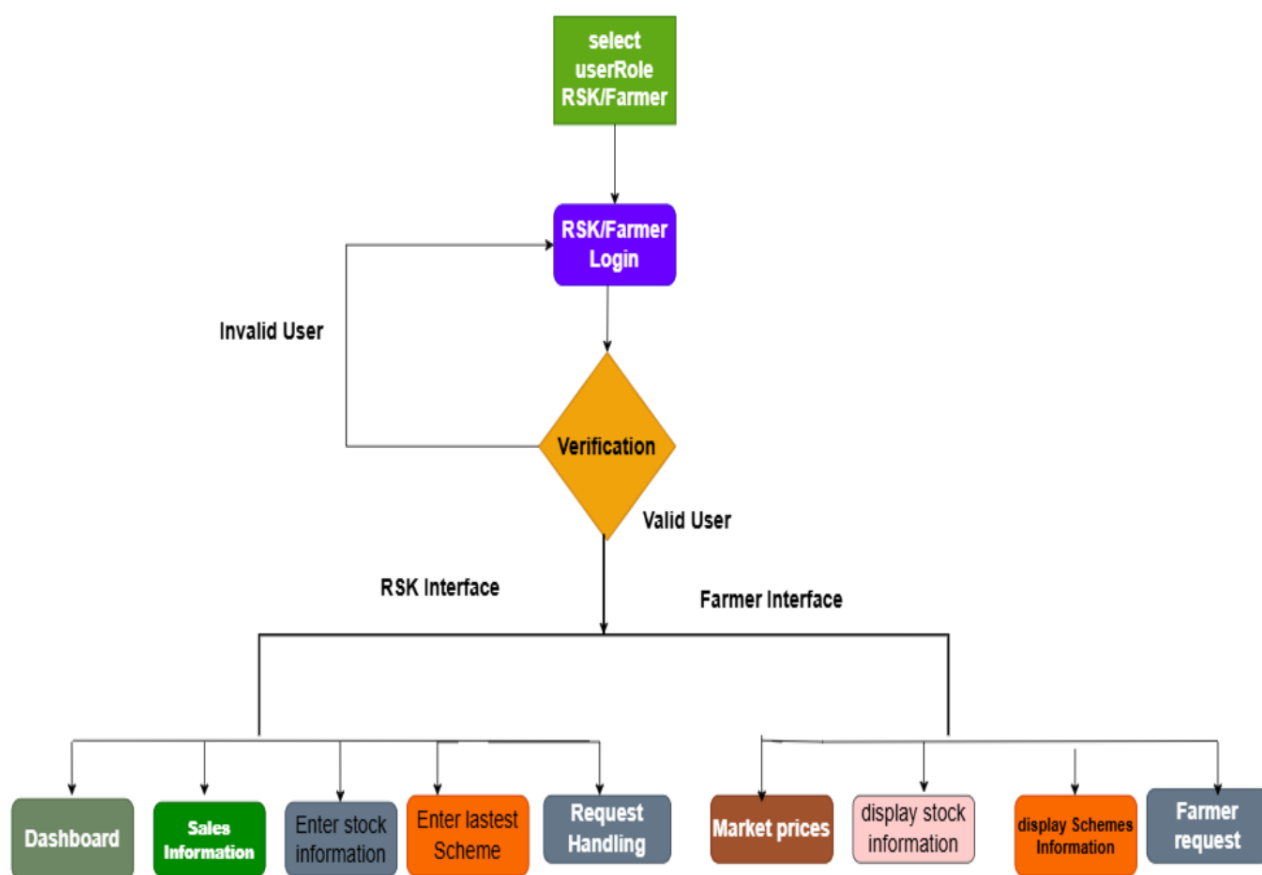
Figure 6.1: Proposed System Architecture diagram of KisanConnect.

The architecture depicted in Figure 6.1 outlines the structure of the project app, which is designed to provide a unified platform where farmers and Rythu Seva Kendram officials can communicate easily. The primary function is to bridge the gap between the farmers and the RSK staff. The project aims to cater to all farmers, ensuring that potential

applicants can easily find valuable information and assistance through this user-friendly interface. This app serves as a digital tool that allows farmers to access information related to the Rythu Seva Kendram. It helps in saving the time by avoiding regular visits to site. The Farmers can also make request through this app, by giving their voice as their input instead of typing.

The officials can monitor the stock and sales details through this app. The farmers' requests can also be easily tracked. The officials can make their work easier using it. They can manage the stock details, and these details can be updated only by them, and only for the stock that is currently available. The latest scheme information can also be updated. Instead of informing each person individually, they can easily send the information to everyone. The requests from farmers can be viewed by the officials, who can also identify which farmer sent the request by referring to their details. The requests made by farmers allow them to obtain the necessary products from the godowns. The user data is stored in database. The Farmer can view the data. The RSK Staff can manage the data. The entire system process is easy to understand any kind of user. The final output is to easy provide the necessary information to farmers. The officers can monitor and track their stock and sales details.

6.2 Methodology

To develop an application that bridges the gap between farmers and RSK, a system with the following features is proposed:

6.2.1 Stock Management

Main function this module is to add new fertilizer/pesticide stock. View current stock levels, and track usage history for better planning and timely replenishment. They fill the stock data which are at low quantity. It helps in monitoring the stock. It replace manual paper work. The data is sent to the farmers, the they can access the real time data. The officials can update or delete the details of the data if they wanted. This represents the stock information that is currently available at the office. Here only currently available stock at the RSK is updated. It include the product name, specifying the category as seeds, fertilizer, pesticides, the price for one kilograms and quantity of stock available at RSKs. They can add the details by clicking on add button and drop down form is appears and upload the data.

Farmers can view the fertilizer, pesticides and seeds options on the screen. They can click on any option and access the information. Farmers only have permission to view the data. They are not given permission to update or delete it. They can select any option to view details such as quantity and price. This information about the currently

available stock at RSK by the officials. So farmers get the up to date information about the stock at RSK.

6.2.2 Schemes Information

The officials will upload the latest scheme information released by the government into the app, which will be available to the farmers. This enables officials to effectively communicate the latest information to all farmers. They give information above the schemes with required documents required documents, eligibility details and benefits of the schemes are uploaded. so farmers can come with required document to apply. Along with application starting and ending date also mentioned. So that farmers can plan accordingly. The schemes information can upload through the add button at the corner of the screen. It display the a pop. The data can updated or delete by the officials. The schemes details can be uploaded according to the it's type whether it is a central or state level scheme. It helps them to easily classify the schemes. This reduces the time to spread the information of latest schemes to all farmers.

It helps farmers quickly find eligibility criteria, benefits, and application which are required for the applying scheme. It is categorized into Central and State schemes, enabling farmers to easily identify whether a scheme belongs to the central or state level. They can easily switch between central ans state to access the latest schemes. Farmers get access to both kind of schemes. Here all latest government schemes information is provided to farmers by RSK staff. Farmer can check check details if it meets the eligibility criteria can get the required documents can go office for application. To get more details of the scheme, click on more details and shows entire scheme information about it. Since the data is given by the officials, farmers cannot update or delete the details of the schemes.

6.2.3 Sales Management

The details of products sold to farmers are updated in the app. This helps officials keep track of the quantity of products sold. This module is available for RSK staff only. This data is only accessed by the RSK officials only and farmers does not have access to this information. Enable them to add the sales data in the mobile app which allow them to access information at any time. Allow RSK staff to keep track the sales information. Displays available data in statistical form (summaries), making it easy for RSK staff to access and understand such as sales of products at RSK. They can update or delete the sales data of the app. It helps them to communicate sales information to their officials of RSK staff. It include fields name of the product, name of the farmers, the price and the quantity of the product they sold. This help the officials to easily track their work in just few clicks.

6.2.4 Farmers Request Handling

The Officials can view the requests from farmers. The requests made by farmers can be identified by the RSK staff, allowing them to prepare the requested fertilizers and pesticides in advance. They receive the message along with farmer details such as their Phone number. The officials can update the stock in stock module. So the farmer can check for requested stock. If the stock is not available then can update in stock module itself that is not available or can contact the farmers also. Upon completing the work can delete from farmer request page. Total number request can be seen in dashboard itself.

It is one way communication where farmers can send the request. Allows farmers to digitally request fertilizers/pesticides instead of manual visits. Requests are stored in the database and ensures transparency between Farmers and RSK staff, reducing delays. Farmers can request in their local language also. They record their message and send to officials by clicking on the send button. No need to write the message, Farmers can easily send their request through their voice input and check their stock page for requested resource. This basically simplifies their task and allow them to easily use the feature. The required instruction regarding using the form is also provided starting of the page. So farmers may not feel difficult to use the feature. They can easily adopt it.

6.2.5 Market Access

This is homepage of the farmers interface. This screen provides farmers with up-to-date market details of agricultural products. To achieve this, web scraping techniques are used to automatically extract real-time market price data from officials websites. Farmers can make informed decisions about when and where to sell their produce to get the best value for their products. In this screen can also view the information when RSK office is closed in advance without contacting any one and they can plan their visit to RSK accordingly. It reduce the farmer visit to the RSK and save the time of the farmers.

6.2.6 Dashboard/Home Page

Acts as the main interface for RSK. It take information from sales, scheme, request, stock module for displaying. Displays available data in statistical form (summaries), those are Total amount of stock, Total Sales, no of schemes, no of request received. In this screen can also upload their leaves and holidays information for. The status list also available where contains the details of the status uploaded. They can update and delete the status information.

6.2.7 Other Features

Change Language: The application provides multilingual support by allowing users to switch between Telugu and English languages as per their preference. Telugu is configured as the default language to cater primarily to farmers, ensuring that the information displayed on the interface is easily understandable and user-friendly. This feature helps overcome language barriers and enhances the overall usability of the application for a wider audience.

Voice Assistance: The application incorporates a voice assistance feature that enables farmers to submit their requests and interact with the system using voice commands. Support for both Telugu and English languages ensures inclusivity and ease of access for diverse users. This functionality is particularly helpful for farmers who may face difficulties with typing or reading, thereby improving accessibility and promoting efficient user interaction.

Offline Accessibility: The application supports offline accessibility, allowing users to access essential information and retrieve important data even when an internet connection is unavailable. This feature is highly advantageous in rural and remote agricultural regions where network connectivity is often inconsistent. By enabling offline access, the application ensures uninterrupted availability of critical information, thereby improving reliability and usability under real-world conditions.

Chapter 7

RESULTS AND DISCUSSION

7.1 RSK Interface
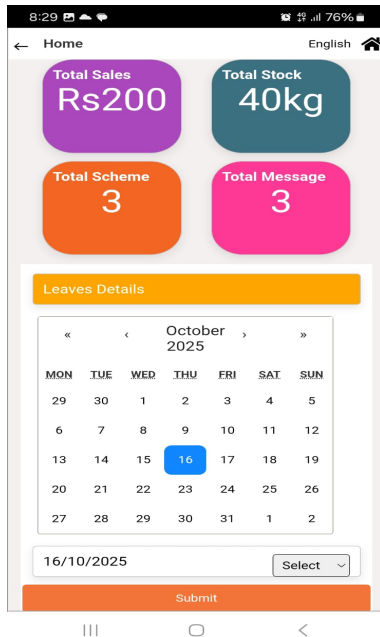
Figure 7.1: Dashboard/Home page
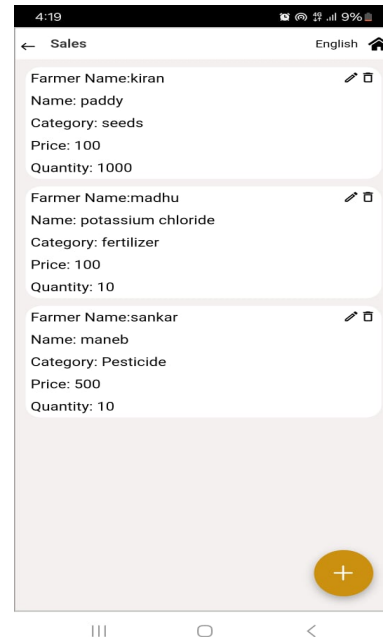
Figure 7.2: Sales Management
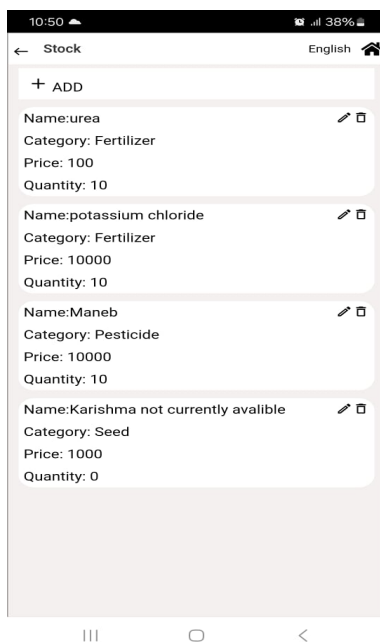
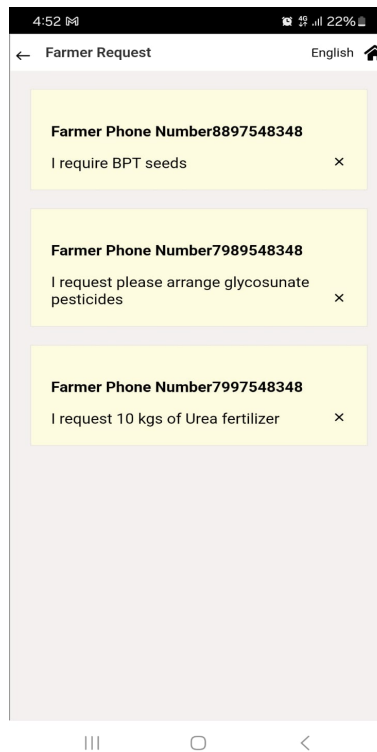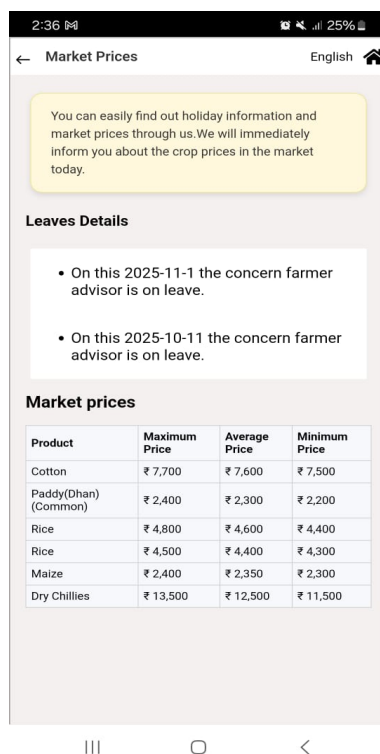Figure 7.3: Stock Management
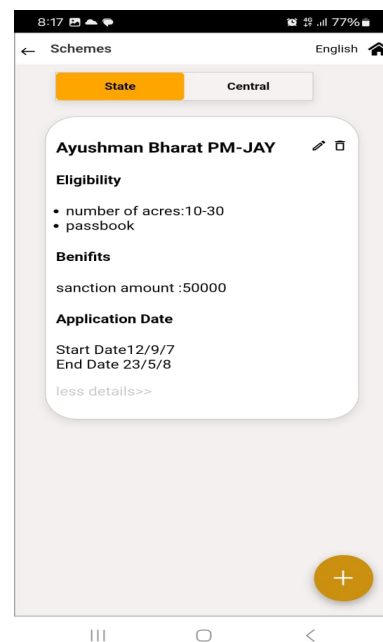
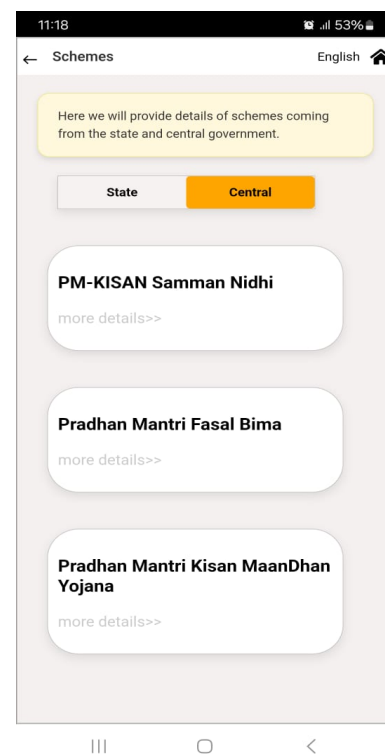Figure 7.4: Scheme Information

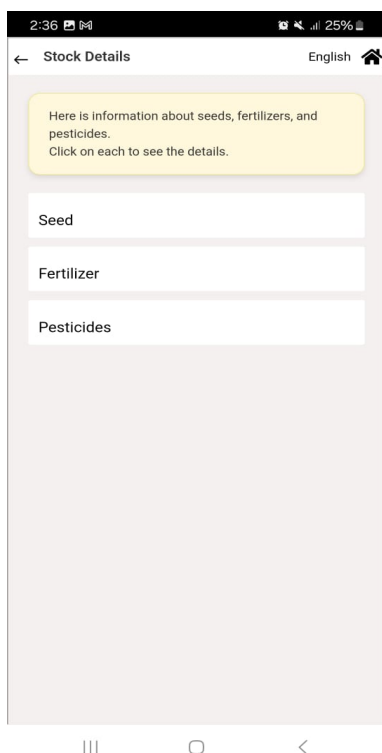Figure 7.5: Farmers Request Handling Module
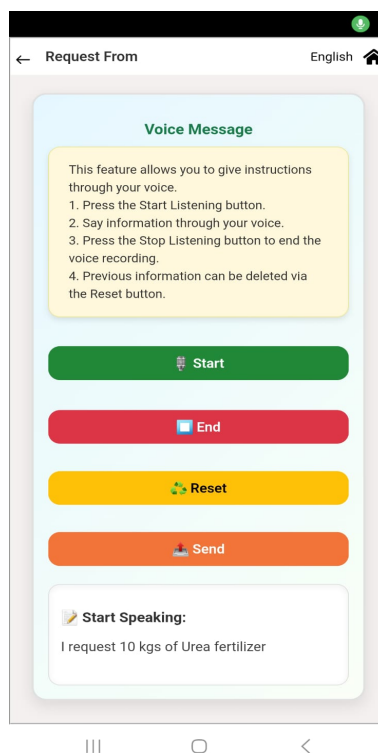
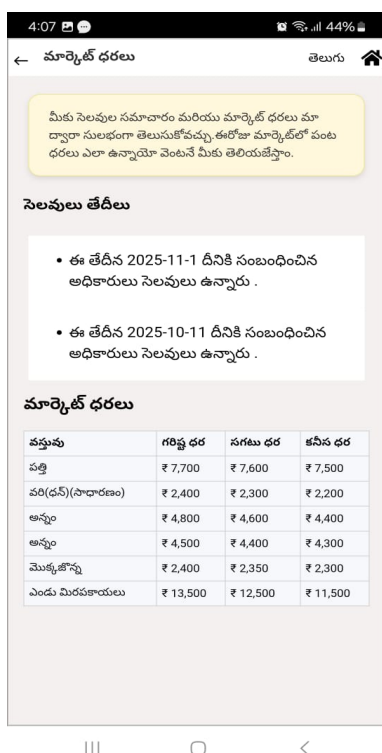## 7.2 Farmers Interface

(a) Market Access Module
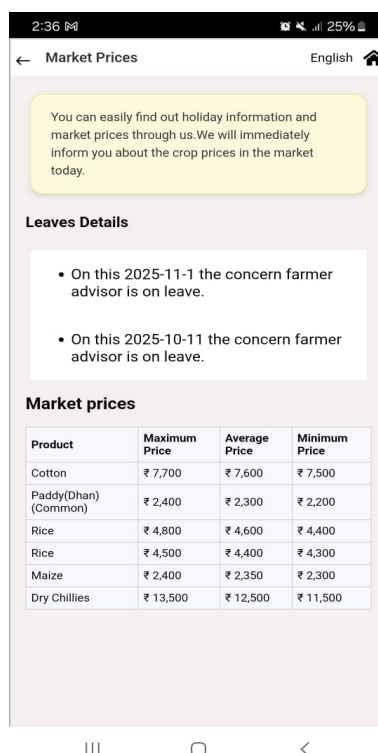

(b) Schemes Information Module

(a) Farmers Stock Module

(b) Request Form of Farmers

(c) Market Access Module (Telugu)

(d) Market Access Module (English)

Chapter 8

CONCLUSION AND FUTURE WORK

KisanConnect serves as a unified mobile application that bridges farmers and Rythu Seva Kendras (RSKs) by offering easy and direct access to agricultural support, input purchase, and government schemes. The system efficiently manages farmer profiles, crop details, and transactions, ensuring all information is organized and easily available. It also handles the real updates of seeds, fertilizers, and pesticides, helping farmers know what products are available at any moment. In addition, KisanConnect delivers timely updates about government schemes, important announcements, and advisory services that guide farmers throughout their farming activities. By reducing delays, minimizing manual paperwork, and increasing transparency, the application helps farmers access services very easily. It enables them to get up-to-date information from RSK.

In addition, KisanConnect delivers timely information which assist farmers throughout various stages of their farming activities. By reducing delays, minimizing manual paperwork, and improving transparency, the application significantly simplifies access to essential agricultural services. Furthermore, it enables farmers to receive up-to-date and reliable information directly from RSKs officials through a single platform.

In the future, we plan to integrate map-based navigation to help farmers easily locate the nearest RSK. Additionally, SMS-based alert notifications will be introduced to ensure important updates and information reach farmers. We also include image-based searching to allow farmers to upload images and quickly retrieve relevant information. The existing app can be scaled to be implemented and deployed for usage of farmers of any region in Andhra Pradesh and also include farmer assistance through chat bot without involving officials.

REFERENCES

[1] Tejal Yadav, Pooja Sable, Dhananjay Kalbande, "SMART KISAN: A Mobile App for Farmers' Assistance in Agricultural Activities," 2023 International Conference on Smart Systems for Applications in Electrical Sciences, 2023.

[2] Lam, K. N., Nguy, L. H., & Kalita, J. (2023). A Vibha Srivastava, Vrishi Raj Kesarwani, Shruti Saumya, "Farming Portal: Web Based Agriculture Assistance Services," 2024 IEEE 11th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering, 2024.

[3] Lukito Edi Nugroho, Andreas Gandhi Hendra Pratama, I Wayan Mustika, Ridi Ferdiana, "Development of Monitoring System for Smart Farming Using Progressive Web App," IEEE Conference Publication, 2017.

[4] M. Chowdhury, M. O. Rahman, and S. Alam, "Proprietor: A Farmer Assistance Smartphone Application with Crop Planner, Crop Disease Help, Agri-expert Search, and Crop Suggestion Features," in Proceedings of the 15th International Conference on Computing Communication and Networking Technologies (ICCCNT), 2024. [Online].

[5]] P. Lagade, V. M. Mane, and A. P. Shinde, "FARMERS ASSISTANT WEB APPLICATION," International Research Journal of Modernization in Engineering Technology and Science, vol. 7.

[6] Divya Sawant, Anchal Jaiswal, Jyoti Singh, Payal Shah, "Agri Bot - An Intelligent Interactive Interface to Assist Farmers in Agricultural Activities," 2019 IEEE Bombay Section Signature Conference, 2019.

[7] Darapaneni, N., Tiwari, R., Paduri, A. R., Saurav, S., & Chaoji, R. (2022). Farmerbot: An interactive bot for farmers.

[8] P. Shriram and S. Mhamane, "Android App to Connect Farmers to Retailers and Food Processing Industry," in 2018 3rd International Conference on Inventive Computation Technologies (ICICT), 2018,

[9] S. Vasavi, B. Mupparisetty, N. R. Vemula, and A. Nageswara Rao, "Reflecting real-time monitoring of agricultural equipment in Rythu Bharosa Kendra," IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation (IATMSI), 2024.

[10] G. O. Shree, G. H. Raj, J. D. Swathi, and N. C. Naik, "Title of the Paper," Grenze International Journal of Engineering & Technology (GIJET), 2023.

[11] "Daily Market Prices – Tiruvuru, Krishna District, Andhra Pradesh," Napanta

[12] M. Bhende, M. S. Avatade, S. Patil, P. Mishra, P. Prasad, and S. Shewalkar, "Digital Market: E-Commerce Application for Farmers," in 2018 Fourth International Conference on Computing Communication Control and Automation (ICCUBEA), 2018.

[13] "D-Krishi cation App– Official Mobile Appli from Andhra Pradesh Government, Google Play Store. https://play.google.com /store/ apps/details?id=com.org.nic.dkrishi.biohl=en IN

[14] R. K. Lomotey, Y. Chai, S. Jamal, and R. Deters, "MobiCrop: Supporting Crop Farmers with a Cloud-Enabled Mobile App," in 2013 IEEE 6th International Conference on Service-Oriented Computing and Applications, 2013.

[15] S. Ponnuchamy, S. Vinish, N. Sowrerajan, and K. A. Jagadishwaran, "Warehousing and Distribution of Agricultural Products Using Blockchain," in 2024 International Conference on Communication, Computing and Internet of Things (IC3IoT)

[16] S. Deshmukh, P. Sahane, A. Bagri, S. Padvi, and P. Bhise, "SMART-AGRI CONNECT: An integrated plat form for farmers," in 2025 International Conference on Knowledge Engineering and Communication Systems (ICKECS), 2025

[17] "Rythu Seva Kendralu– A Digital and Integrated Model for Knowledge and Service Delivery to Farmers, Agri Conferences.

[18] "AgriApp–Smart Farming Google Play Store. App," Available:

https://play.google.com/store/apps/details?id=com.criyagen

Appendix A

REPORT PLAGIARISM

16% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Crossref database
- Crossref posted content database

Match Groups

79 Not Cited or Quoted 16%
Matches with neither in-text citation nor quotation marks

0 Missing Quotations 0%
Matches that are still very similar to source material

2 Missing Citation 1%
Matches that have quotation marks, but no in-text citation

0 Cited and Quoted 0%
Matches with in-text citation present, but no quotation marks

Top Sources

16% 🌐 Internet sources

2% 📖 Publications

0% 👤 Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

Appendix B

PHOTO WITH CLIENT

Figure B.1: Photo with client

Contact Information

Name: Mrs.V.Anusha
Profession: Village agriculture assistant
Location: Porinki
Phno: 8333084233

Appendix C

CLIENT SATISFACTION REPORT

Certificate of Satisfaction

This is to certify that **Inala Jaswanth Naidu (238W1A0520), TVNG.Swetha (238W1A0559), Mamidi Tuhi (248W5A0505)** has successfully completed the Engineering Projects In Community Service (EPICS) project titled **"KisanConnect: A Unified Smart Service Platform for Farmers and Rythu Seva Kendram"** during the period **25th July, 2025 to 24th November, 2025**. The problem statement is provided by **Rythu Seva Kendram.**

The student's dedication, professional conduct, and valuable contributions to addressing the needs of the **Rythu Seva Kendram** have been highly appreciated. Their efforts have positively impacted the project goals and objectives.

I hereby acknowledge the student's satisfactory performance and extend my best wishes for their future endeavours.

Date: 26|12|2025

Authorized Signatory

Client Name: Veerla, Anusha

Designation: village Agriculture Assistant

Rythu Seva Kendram,

Kanuru, Vijayawada-520007

Figure C.1: Client satisfaction report

Appendix D

CLIENT APPRECIATION REPORT

Certificate of Appreciation

Dear **Mrs.K.Sree Vijayalakshmi, M.Tech, (Ph.D.),**

I would like to express my sincere appreciation for your invaluable guidance and unwavering support throughout the EPICS project titled **"KisanConnect: A Unified Smart Service Platform for Farmers and Rythu Seva Kendram"**. Your expert advice, patience, and encouragement have greatly contributed to the successful planning and execution of this project.

Your dedication to mentoring and fostering the students' learning experience is truly commendable. I appreciate the time and effort you have invested in ensuring the project's objectives were met with quality and professionalism.

Thank you for being an essential part of this initiative and for your continued commitment to excellence.

Date: 26|12|2025

Authorized Signatory

Client Name: Vmodagayini la Sachin

Designation: village Agriculture Assistant

Rythu Seva Kendram,

Kanuru, Vijayawada-520007

Figure D.1: Client appreciation report