### A

**Project Report**

on

**KRISHI KOM**

submitted as partial fulfillment for the award of

BACHELOR OF TECHNOLOGY

# DEGREE

In



**COMPUTER SCIENCE**

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**DECLARATION**

We hereby declare that this submission is our own work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

Signature:

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Date

**CERTIFICATE**

This is to certify that Project Report entitled "KRISHIKOM" which is submitted by “Shivam Nautiyal and Shivam Sharma” in partial fulfillment of the requirement for the award of degree B. Tech. in Department of Computer Science of Dr. A.P.J. Abdul Kalam Technical University, Lucknow is a record of the candidates own work carried out by them under my supervision. The matter embodied in this report is original and has not been submitted for the award of any other degree.

### Mr. Rahul Kumar

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**ACKNOWLEDGEMENT**

It gives us a great sense of pleasure to present the report of the B. Tech Project undertaken during B. Tech. Final Year. We owe special debt of gratitude to Mr. Rahul Kumar Assistant Professor, Department of Computer Science, KIET Group of Institutions, Ghaziabad, for constant support and guidance throughout the course of our work. His sincerity, thoroughness and perseverance have been a constant source of inspiration for us. It is only his cognizant efforts that our endeavors have seen light of the day.

We also take the opportunity to acknowledge the contribution of Dr. Ajay Kumar Shrivastava HoD, Computer Science and Department, KIET Group of Institutions, Ghaziabad, for his full support and assistance during the development of the project. We also do not like to miss the opportunity to acknowledge the contribution of all the faculty members of the department for their kind assistance and cooperation during the development of our project. Last but not the least, we acknowledge our friends for their contribution in the completion of the project.

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**ABSTRACT**

The "KRISHIKOM" project is a mobile application designed to empower small-scale farmers in the agricultural sector. It provides real-time information, expert guidance, and collaboration opportunities. The project aims to address challenges faced by farmers, such as limited resources and lack of technological solutions. It includes initiatives like weather monitoring, sustainable agriculture advocacy, community building, shared farming equipment promotion, market trend analysis, financial inclusion, and partnerships with technology startups. The project uses advanced tools and platforms for efficient data handling, cross-platform accessibility, and effective communication.

The project's objectives are wide-ranging and practical, encompassing initiatives such as weather monitoring, sustainable agriculture advocacy, community building, shared farming equipment promotion, market trend analysis, financial inclusion, and partnerships with technology startups. Central to its success is the amalgamation of advanced tools and platforms, leveraging technologies like Node.js, React Native Expo, Firebase, Twilio, and more for efficient data handling, cross-platform accessibility, real-time synchronization, and effective communication.The project aims to become a beacon of hope, fostering resilience and progress in the face of agricultural challenges.

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## LIST OF ABBREVIATIONS

|  |  |
| --- | --- |
| ICT | Information and Computer Technology |
| AR | Augmented Reality |
| SMS | Short Message Service |
| UI | User Interface |
| DFD | Data flow Diagram |
| API | Application Programming Interface |
| NoSQL | Not only SQL |
| SDLC | Software Development Life Cycle |

**CHAPTER 1 INTRODUCTION**

# INTRODUCTION

# In the realm of agriculture, small-scale and marginalized farmers grapple with an array of challenges that impede their progress and sustainability. Issues such as limited access to crucial information, inadequate resources, and a lack of technology-driven solutions serve as formidable barriers to their economic growth and the adoption of eco-friendly practices. To bridge these gaps and usher in a new era of agricultural empowerment, the "KRISHIKOM" project emerges as a groundbreaking initiative.

# This project stands poised to revolutionize the way small-scale farmers engage with the agricultural industry. At its core, "KRISHIKOM" seeks to empower farmers by equipping them with the necessary tools, information, and opportunities essential for enhancing their livelihoods. Central to its approach is the development of a user-friendly mobile application acting as a beacon of support, providing real-time information, expert guidance, and collaborative avenues for farmers.

# However, the "KRISHIKOM" initiative emerges as a beacon of hope within this landscape. It stands as a testament to the potential of technological solutions in revolutionizing the agricultural paradigm. By amalgamating cutting-edge technology with an unwavering commitment to community empowerment, the project endeavors to reshape the narrative for small-scale farmers.

# At the heart of this initiative lies a comprehensive mobile application meticulously crafted to cater to the unique needs of farmers. Beyond just a technological tool, this application serves as a gateway to empowerment, offering real-time insights, expert advice, and collaboration opportunities crucial for the advancement of farming communities.

# Through strategic partnerships and a multifaceted approach encompassing weather monitoring, sustainable agricultural practices, community building, and financial inclusion, "KRISHIKOM" seeks to create a robust ecosystem that uplifts farmers and fosters sustainable agricultural practice

# PROJECT DESCRIPTION

**KRISHIKOM** is a mobile application designed to revolutionize the agricultural sector by empowering farmers with a comprehensive suite of features. Built using React Native technology, KRISHIKOM offers a user-friendly interface to address common challenges faced by farmers and promote sustainable practices.

**Key Features:**

* **Real-time weather monitoring:** Get up-to-date weather information to make informed decisions about crops and irrigation.
* **Expert crop advice:** Connect with agricultural experts for personalized guidance on crop selection, pest management, and more.
* **AR-based irrigation guidance:** Utilize augmented reality to optimize water usage and ensure efficient irrigation practices.
* **Sustainable agriculture education:** Learn about eco-friendly farming methods to promote long-term soil health and crop yields.
* **Community building:** Connect with other farmers to share knowledge, experiences, and best practices.
* **Shared farming equipment:** Facilitate resource sharing within the farming community to reduce costs.
* **Global market trend analysis:** Gain insights into global market trends to make informed decisions about crops and pricing.
* **Financial inclusion:** Access financial services through partnerships with financial institutions, promoting financial well-being.
* **Startup collaborations:** Explore collaboration opportunities with startups in the agricultural technology sector.

**Addressing the Technological Gap:**

KRISHIKOM prioritizes ease of use for individuals with varying literacy levels. The application offers a user-friendly interface and leverages SMS services for effective communication.

**Technology Stack:**

* **Application Development:** React Native with Expo
* **Server Infrastructure:** Node.js
* **SMS Services:** Twilio
* **Database:** Firebase

**Overall Impact:**

KRISHIKOM aims to address critical challenges faced by farmers, ultimately leading to improved financial well-being, promoting sustainable agricultural practices, and bridging the technological gap in the agricultural sector.

**CHAPTER 2 LITERATURE REVIEW**

**2.1 Literature Review**

The agricultural sector plays a pivotal role in ensuring global food security and economic development. However, small-scale and marginalized farmers often face challenges accessing essential information and resources to enhance their agricultural productivity. This section delves into a comprehensive exploration of the existing technological landscape in agricultural solutions by reviewing academic sources and real-world applications.

Santosh G. Karkhile and Sudarshan G. Ghuge presented a paper titled "A Modern Farming Techniques using Android Application." This paper elucidates the development of a mobile phone-based solution aimed at supporting farm management to improve agricultural yield. The authors emphasize that traditional farming methods entail substantial labor and numerous activities, whereas modern farming streamlines the process with the assistance of mobile devices, machinery, and advanced technology. They proposed a system architecture for a farming application encompassing operations such as farmer registration, weather forecasting, news updates, multilingual support, and market trading.

Suporn Pongnumkul, Pimwadee Chaovalit, and Navaporn Surasvadi contributed to a systematic review titled "Applications of Smartphone-Based Sensors in Agriculture." Their research focuses on smartphone applications utilizing built-in sensors to provide diverse agricultural solutions. Categorized by specific agricultural functions, these applications cater to different areas including disease detection and diagnosis, soil study, crop water needs estimation, HR management, and extension service applications. GPS and cameras emerge as the most commonly employed sensors in these smartphone applications for farming.

In their paper titled "New Technologies for Disseminating and Communicating Agriculture Knowledge and Information: Challenges for Agricultural Research Institutes in Tanzania," Barakabitze and Kitindi thoroughly explore the extensive array of Information and Communication Technologies (ICTs) employed within Agricultural Research Institutes (ARIs). They underscore the multifaceted utility of ICT tools across diverse realms of agriculture, encompassing aspects such as dissemination of information on crop varieties, optimization of land use practices, efficient irrigation strategies, access to real-time weather reports, effective pest and disease control measures, promotion of crop awareness and education, implementation of pollution control initiatives, and adoption of novel farming techniques. Through their comprehensive analysis, the authors shed light on the pivotal role played by ICTs in enhancing productivity, sustainability, and resilience within Tanzania's agricultural landscape, while also addressing the challenges encountered by ARIs in effectively harnessing these technological advancements to maximize their impact on agricultural development.

The research paper "Smart Agriculture Applications Using Deep Learning Technologies: A Survey" by Maha Altalak et al. presents a thorough examination of recent advancements in applying deep learning techniques, including convolutional neural networks (CNN) and recurrent neural networks (RNN), in agriculture. The paper highlights the significance of smart agriculture in addressing the food demands of a growing population and emphasizes the role of deep learning in optimizing agricultural processes. Through a systematic literature review spanning five years, the paper analyzes various research articles, discussing their contributions and the challenges they address. It explores how deep learning facilitates decision-making for farmers by leveraging data from IoT devices and other sources. Additionally, the paper proposes a novel hybrid deep learning model combining CNN and support vector machine (SVM) to enhance the early detection and classification of plant leaf diseases, addressing a key limitation in existing smart agriculture systems. Overall, the paper provides valuable insights into the applications of deep learning in agriculture and offers a promising direction for future research in the field.

**CHAPTER 3 PROPOSED SYSTEM**

1. **Requirement Analysis:**

At the onset of the research project, a comprehensive understanding of farmers' needs and challenges is pursued. Stakeholder engagement, surveys, and interviews with farmers, agricultural experts, and other relevant parties aid in identifying critical requirements for the mobile application's development

1. **Prototyping:**

During the initial phase of development, the team focuses on creating detailed wireframes and prototypes that accurately depict the user interface and functionalities of the KRISHIKOM application. These visual representations serve as blueprints for the development process, ensuring that the final product aligns closely with user needs and expectations. By meticulously crafting wireframes and prototypes, the team can iteratively refine and enhance the application's design to maximize usability and user satisfaction.

1. **Technology Selection:**

The selection of an appropriate technology stack is paramount for ensuring the success of the project. Following a meticulous assessment of the project's objectives and requirements, technologies such as React Native for app development. Node.js for server infrastructure, and Twilio for SMS services are chosen due to their compatibility and proven effectiveness in aligning with project goals and facilitating seamless development and functionality.

1. **Development Phase:**
2. Front-end Development: In the front-end development phase, the primary objective is to craft a visually appealing and intuitive user interface for the mobile application. This involves not only creating an aesthetically pleasing design but also ensuring that the interface is easy to navigate and interact with. Key functionalities such as weather monitoring, crop advice, AR-based irrigation support, and community building are seamlessly integrated into the front-end to enrich the user experience and foster engagement. By prioritizing user-centric design principles and incorporating these essential features, the front-end development team aims to enhance usability, accessibility, and overall satisfaction for KRISHIKOM users.
3. Back-end Development: Meanwhile, in the back-end development phase, the focus shifts towards establishing a robust and scalable server infrastructure to support the functionality of KRISHIKOM. This involves setting up servers, configuring databases and integrating application programming interfaces (APIs) to enable features such as real-time weather updates and market trend analysis. The back-end serves as the backbone of the application, facilitating seamless communication and data management between the front-end interface and external data sources. By meticulously addressing these crucial components, the back-end development team ensures that KRISHIKOM operates smoothly and efficiently, delivering reliable access to essential information and services for its users
4. **Testing Phase:**

Thorough testing is crucial to guarantee that KRISHIKOM operates effectively, efficiently, and reliably. This process involves systematically evaluating each aspect of the application to identify and resolve any potential issues or bugs. Functionality testing ensures that all features perform as expected, usability testing assesses the user experience, and reliability testing verifies the stability and consistency of the application. Through rigorous testing, KRISHIKOM can deliver a seamless and reliable experience to its users.

1. **Deployment:**

Once testing is successfully completed and all necessary refinements are implemented, the KRISHIKOM application undergoes the deployment process. This entails making the application available for farmers' use through various distribution channels, such as the Google Play Store or other relevant platforms. The deployment process involves ensuring compatibility with different devices and operating systems to maximize accessibility for users. Additionally, thorough documentation and user support resources are provided to assist farmers in seamlessly accessing and utilizing the application to optimize their farming practices.

1. **Evaluation:**

Continuous monitoring of the application's performance, gathering feedback from users, and analyzing user analytics are essential components of the evaluation process to gauge the effectiveness of the KRISHIKOM application. This iterative approach allows for ongoing assessment of how well the application meets user needs and expectations. By continuously gathering feedback and analyzing user interactions, developers gain valuable insights into areas for improvement and refinement. These insights inform iterative updates and enhancements to the application, ensuring that it remains relevant, competitive, and aligned with evolving user preferences and technological advancements. Through this iterative process of improvement, KRISHIKOM can continuously enhance its functionality, usability, and overall user satisfaction, thereby maximizing its impact and effectiveness within the agricultural community.

**CHAPTER 4 REQUIREMENT ANALYSIS AND SYSTEM SPECIFICATION**

**4.1 Feasibility Study:**

The feasibility study evaluates the technical, operational, and economic aspects of the proposed system.

1.Technical Feasibility: The KRISHIKOM application utilizes readily available technologies such as React Native and Firebase, making it technically feasible.

Users require basic hardware components such as a smartphone with internet connectivity, which are widely accessible.

2. Operational Feasibility: The system is designed to be user-friendly and accessible to individuals of all age groups and technical backgrounds. It does not require specialized skills to operate, catering to a broad user base.

3. Economic Feasibility: The main costs associated with the system include development and maintenance, which are reasonable and justifiable given the potential benefits. Users already possess the necessary hardware, minimizing additional costs.

**4.2 Software Requirement Specification:**

**4.2.1 Data Requirement:**

(a) The system should manage user data such as preferences, settings, and interaction history efficiently.

(b) Data related to weather forecasts, crop advice, and market trends should be sourced from reliable external sources.

**4.2.2 Functional Requirements:**

(a) User Interface: The application should have an intuitive user interface for easy navigation and interaction.

(b) Data Processing: The system should process real-time weather data and crop-related information to provide timely advice to users.

(c) Communication:Users should be able to communicate with each other and with agricultural experts through chat forums or messaging features.

**4.2.3 Performance Requirements:**

(a) Responsiveness: The application should respond promptly to user inputs, ensuring a smooth user experience.

(b) Reliability: Reliable access to weather forecasts, market trends, and other data sources is essential for the system's functionality.

(c) Scalability: The system should be scalable to accommodate a growing user base.

**4.2.4 Maintainability Requirements:**

(a) Modularity: The system architecture should be modular to facilitate updates, enhancements, and maintenance.

(b) Documentation: Comprehensive documentation should be provided to assist developers and administrators in understanding and maintaining the system.

(c) Error Handling: Robust error-handling mechanisms should be implemented to detect and resolve issues, ensuring system reliability.

**4.2.5 Security Requirements:**

(a) Data Security:User data, including personal information and communication records, should be encrypted and protected from unauthorized access.

(b) Authentication: Secure authentication mechanisms should be implemented to verify the identity of users and protect against unauthorized access.

(c) Data Integrity: Measures should be in place to ensure the integrity of data transmitted and stored within the system.

**4.3 SDLC Model:** Iterative Model:The Iterative model involves incremental development, feedback loop, flexible planning, progressive refinement, continuous validation, and parallel development.

**4.4 System Design:**

4.4.1 System design using DFD:

A diagram of a user

Description automatically generated

Fig 4.1 DFD Level-0

A diagram of a mobile application

Description automatically generated

Fig 4.2 DFD Level-1

A diagram of a network

Description automatically generated with medium confidence

Fig 4.3 DFD Level-2

**4.4.2 Use Case Diagram:**

A diagram of a diagram

Description automatically generated

Fig 4.4 Use Case Diagram

**4.4.3 Flowchart:**

A diagram of a flowchart

Description automatically generated

Fig 4.5 Flowchart Diagram

**4.4.5 Class Diagram:**

A diagram of a computer

Description automatically generated

Fig 4.6 Class Diagram

**4.4.6 Activity Diagram:**

A diagram of a diagram

Description automatically generated

Fig 4.7 Activity diagram Diagram

**4.4.7 Sequence Diagram:**

A screenshot of a computer

Description automatically generated

Fig 4.8 Sequence Diagram

**CHAPTER 5: IMPLEMENTATION**

**5.1 Introduction to Languages, Tools & Technologies**

**5.1.1 React Native with Expo:**

Utilized as the primary framework for developing the KRISHIKOM mobile application, React Native with Expo offers a versatile and efficient platform for cross-platform app development. Its component-based architecture and extensive library support expedite the development process while ensuring a smooth user experience across different devices.

**5.1.2 Node.js:**

Node.js serves as the backbone for the server infrastructure of the KRISHIKOM application, facilitating seamless communication between the client-side app and backend services. Its event-driven, non-blocking I/O model ensures optimal performance and scalability, crucial for handling concurrent requests and real-time data processing.

**5.1.3 Twilio:**

Integrated with the KRISHIKOM application for SMS services, Twilio enables efficient communication between the platform and users, particularly beneficial for individuals with limited internet connectivity. Its reliable messaging API ensures prompt delivery of notifications, alerts, and updates to farmers, enhancing user engagement and accessibility.

**5.1.4 Firebase:**

Utilized as the database solution for KRISHIKOM, Firebase offers a scalable, real-time NoSQL database, essential for storing and retrieving dynamic data generated by users and the application. Its seamless integration with React Native simplifies data management and synchronization, facilitating collaborative features such as community building and resource sharing.

**5.2 Implementation of Key Features**

**5.2.1 Real-time Weather Monitoring:**

Implemented using weather APIs integrated into the KRISHIKOM application, enabling farmers to access up-to-date weather information relevant to their location. Utilizes geolocation services to fetch localized weather forecasts, empowering farmers to make informed decisions about crop management and irrigation scheduling.

**5.2.2 Expert Crop Advice:**

Facilitated through a dedicated interface within the KRISHIKOM app, allowing farmers to connect with agricultural experts for personalized guidance on crop selection, pest management, and other agronomic queries. Utilizes chat functionalities and video conferencing tools to enable.

**5.2.3 AR-based Irrigation Guidance:**

Leverages augmented reality (AR) technology to provide farmers with visual guidance on optimizing water usage and implementing efficient irrigation practices. Integrates AR overlays and interactive tutorials within the KRISHIKOM app, enabling users to visualize irrigation techniques and infrastructure layouts in real-world settings.

**5.2.4 Sustainable Agriculture Education:**

Incorporated educational resources and tutorials within the KRISHIKOM app to educate farmers about eco-friendly farming methods and sustainable agricultural practices. Utilizes multimedia content, interactive quizzes, and gamified learning modules to engage users and promote long-term soil health and crop yields.

**5.2.5 Community Building:**

Facilitated through social networking features embedded within the KRISHIKOM app, allowing farmers to connect, collaborate, and share knowledge and experiences. Implements chat forums, discussion groups, and community events to foster a supportive online community conducive to peer learning and collaboration.

**5.2.6 Shared Farming Equipment:**

Enabled through a dedicated marketplace or resource-sharing platform within the KRISHIKOM app, allowing farmers to lend, rent, or share farming equipment and machinery. Implements peer-to-peer transactional features, scheduling functionalities, and rating systems to facilitate seamless resource sharing and cost reduction within the farming community.

**5.2.7 Global Market Trend Analysis:**

Integrated market analysis tools and APIs within the KRISHIKOM app to provide farmers with insights into global market trends, crop prices, and demand forecasts. Utilizes data visualization techniques, interactive dashboards, and push notifications to keep users informed about market fluctuations and pricing dynamics.

**5.2.8 Financial Inclusion:**

Facilitated through partnerships with financial institutions and fintech startups, enabling farmers to access financial services such as loans, insurance, and digital banking solutions directly through the KRISHIKOM app. Implements secure payment gateways, KYC verification processes, and personalized financial planning tools to promote financial well-being and inclusion among farmers.

**5.2.9 Startup Collaborations:**

Explores collaboration opportunities with startups in the agricultural technology sector through dedicated partnership portals or incubator programs within the KRISHIKOM app. Facilitates networking, matchmaking, and knowledge exchange between farmers and agricultural innovators, fostering a culture of innovation and entrepreneurship within the farming community.

**5.3 Addressing the Technological Gap**

**5.3.1 User-Friendly Interface:**

Prioritizes ease of use and accessibility for individuals with varying literacy levels, ensuring that the KRISHIKOM app features an intuitive and user-friendly interface. Employs user-centered design principles, visual cues, and contextual help features to guide users through the app's functionalities seamlessly.

**5.3.2 SMS Services Integration:**

Integrates SMS services as a fallback communication channel within the KRISHIKOM app, enabling users with limited internet connectivity to receive important notifications, alerts, and updates via text messages. Implements SMS gateways, message queuing systems, and delivery status tracking mechanisms to ensure reliable and timely communication with users.

**5.4 Overall Impact**

**5.4.1 Improved Financial Well-being:**

By providing farmers with access to real-time information, expert advice, and financial services, KRISHIKOM aims to improve their financial well-being and resilience to economic uncertainties. Empowers farmers to make informed decisions, optimize resource utilization, and maximize profitability in their agricultural endeavors.

**5.4.2 Sustainable Agricultural Practices:**

Promotes eco-friendly farming methods, sustainable land management, and conservation practices through educational resources, expert guidance, and technology-driven solutions embedded within the KRISHIKOM app. Facilitates the adoption of regenerative agriculture principles, soil health management, and climate-smart farming techniques to enhance long-term sustainability and resilience in agriculture.

**5.4.3 Bridging the Technological Gap:**

Addresses the technological disparity within the agricultural sector by providing farmers with access to cutting-edge technologies, digital tools, and online platforms through the KRISHIKOM app. Bridges the digital divide by offering user-friendly interfaces, offline capabilities, and SMS-based communication channels tailored to the needs of rural farming communities.

**5.4.4 Empowering Farming Communities:**

Empowers farming communities to collaborate, share knowledge, and collectively address common challenges through the social networking and community-building features embedded within the KRISHIKOM app. Fosters a sense of belonging, mutual support, and solidarity among farmers, strengthening social capital and resilience in rural areas.

**5.4.5 Promoting Inclusive Growth:**

Promotes inclusive growth and economic development by creating opportunities for small-scale farmers to access markets, financial services, and technology-driven solutions through strategic partnerships and collaborations facilitated by the KRISHIKOM app. Reduces barriers to entry, fosters entrepreneurship, and catalyzes innovation within the agricultural ecosystem.

**CHAPTER 6 TESTING AND MAINTENANCE**

**6.1 Testing Techniques & Test Cases Used**

In the testing phase of the KrishiKom application, an iterative approach is adopted to ensure the robustness and reliability of the software. Testing is carried out incrementally, starting with individual modules and gradually integrating them to evaluate their collective functionality.

**6.1.1 Unit Testing**

Unit testing involves testing individual components or modules of the KrishiKom application in isolation to verify their correctness and functionality

**Table 6.1 Unit Testing**

|  |  |
| --- | --- |
| Module Name | Test Cases |
| Plant Disease Detection | 1. Image format verification  2. Disease recognition and identification |
| Emi Calculator | Expected vs Actual Output Comparison |
| Login Module | Decision table testing |

**6.1.2 Integration Testing**

Integration testing focuses on verifying the interactions and interfaces between different components or modules of the KrishiKom application.

**Table 6.2 Integration Testing**

|  |  |  |  |
| --- | --- | --- | --- |
| Test Case | Scenario | Step | Expected Result |
| Community portal integration | Verify community discussions creation and participation | 1. Create a discussion thread  2. Post comments and replies  3. Check notification | Smooth community interactions ,timely notification |
| Weather Module Integration | Ensure accurate  Weather updates displayed within the app | 1. Access weather module 2. Verify real time weather data 3. Compare with external source | Accurate and consistent weather information |

**6.1.3 Functional Testing**

Functional testing ensures that the KrishiKom application accurately responds to user commands and meets functional requirements.

**Table 6.3 Functional Testing**

|  |  |  |  |
| --- | --- | --- | --- |
| Test Case | Scenario | Step | Expected Result |
| Crop Selection in Structure Chart Module | Validate crop selection and addition to the structure chart | 1. Access structure chart module  2. Select crop  3. Add to chart | Selected crop added to chart without errors |
| Market Trend Analysis | Verify accuracy of market trend analysis data | 1. Access market module  2. Review displayed trends  3. Compare with external sources | Relevant and consistent market analysis data |

**6.1.4 Usability Testing**

Usability testing evaluates the user interface and interaction design of the KrishiKom application to ensure it is intuitive and user-friendly.

**Table 6.4 Usability Testing**

|  |  |  |  |
| --- | --- | --- | --- |
| Test Case | Scenario | Step | Expected |
| Navigation and Menu Structure | Evaluate navigational flow and menu organization | 1. Navigate through app sections  2. Assess menu layout | Smooth navigation with clear menu organization |
| Language Switching | Test functionality of language switching | 1. Switch between supported languages  2. Verify translation consistency | Seamless language switching with accurate translations |

**6.1.5 Performance Testing**

Performance testing evaluates the responsiveness and scalability of the KrishiKom application under different conditions.

**Fig 6.5 Performance Testing**

|  |  |  |  |
| --- | --- | --- | --- |
| Test Case | Test Case | Step | Expected |
| Load Testing | Assess app performance under heavy user loads | 1. Simulate large user interactions  2. Monitor response times | Acceptable performance with minimal slowdowns |
| Network Connectivity | Evaluate app performance under different network conditions | 1. Test app on various network speeds  2. Monitor response times | Responsive and functional app across different network conditions |

**6.2 Test Environment**

The minimum hardware and software requirements for testing the KrishiKom application are as follows:

- Android 10 or above / IOS 13 or above

- Minimum 2GB RAM

-Minimum 100 Mb space

**CHAPTER 7 RESULTS AND DISCUSSIONS**

**7.1 Brief Description of Various Modules**

* + 1. **Crop Information Module:**

The crop information module gathers and presents essential data about various crops, including cultivation practices, pest management techniques, and market trends. It serves as a comprehensive resource for farmers to make informed decisions about crop selection and management.

* + 1. **Community Engagement Module:**

The community engagement module facilitates interaction and knowledge-sharing among farmers. It provides a platform for farmers to connect, share experiences, seek advice, and collaborate on agricultural practices. This module fosters a sense of community and support within the farming ecosystem.

* + 1. **Weather Forecasting Module:**

The weather forecasting module delivers real-time weather updates and forecasts to farmers, enabling them to plan their agricultural activities effectively. It provides crucial information on rainfall, temperature, humidity, and other meteorological factors, helping farmers mitigate risks and optimize crop yields.

* + 1. **Financial Management Module:**

The financial management module offers tools and resources to help farmers manage their finances efficiently. It includes features such as expense tracking, budgeting tools, loan management, and access to financial services, empowering farmers to make sound financial decisions and improve their economic well-being.

* + 1. **Government Schemes Module:**

The government schemes module provides information about various agricultural schemes and initiatives offered by the government. It educates farmers about available subsidies, grants, and support programs, enabling them to leverage government resources to enhance their farming operations.

**Result and Discussion:**

The structured description of Krishi Kom's modules offers insights into its functionality and potential impact on the agricultural community. By integrating modules focused on crop information, community engagement, weather forecasting, financial management, and government schemes, Krishi Kom aims to address key challenges faced by farmers and empower them with valuable resources and support.

This modular approach ensures that Krishi Kom caters to diverse needs within the agricultural sector, promoting sustainable practices, economic growth, and community development. The platform's user-centric design and comprehensive features have the potential to revolutionize farming practices and improve livelihoods for small-scale farmers.

Through strategic partnerships and continuous innovation, Krishi Kom can further enhance its capabilities and expand its reach, driving positive change in the agricultural landscape. Overall, the systematic description of Krishi Kom's modules sets the stage for a detailed understanding of its functionality and implications for the farming community. notification settings.

15. Profile Editing: Users can edit their profile information, likely including personal details or preferences.

16. Language Change: Users can change the language of the application interface.

17. Password Change: Users can change their password for security purposes.

18. Sign Out: Users can log out of the application.

**Snapshots of System Features**:

**HomeScreen:**

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**Login Module:**

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**Community Portal:**

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**EMI Calculation:**  
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**Rain Alert Module:**A screenshot of a computer screen

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**Weather Portal:**A screenshot of a computer screen

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**Main App.js:**A screen shot of a computer

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A computer screen shot of a computer program

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**Suggestion Portal**:A screen shot of a computer

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A screenshot of a chat

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Figure 7.1 Application UI

**CHAPTER 8 CONCLUSION & FUTURE SCOPE**

**8.1 Conclusion**

The KRISHIKOM mobile application stands as a transformative tool poised to revolutionize agricultural practices and empower farmers. Developed on the React Native platform and leveraging Firebase for database setup and messaging services, KRISHIKOM offers a comprehensive suite of features tailored to the diverse needs of farmers. From real-time weather monitoring and rain prediction to community chat forums, crop disease detection, and access to government-provided farmer schemes, KRISHIKOM provides a holistic solution to enhance agricultural productivity and financial well-being. The app's intuitive interface and user-friendly design facilitate seamless navigation, while its integration of Firebase ensures secure and efficient data management. Looking ahead, future enhancements will focus on enhancing AI and machine learning integration for predictive weather analysis, further localization and customization options, and continued collaboration with Agri-tech startups and government agencies. Through ongoing innovation and partnership, KRISHIKOM remains committed to empowering farmers, promoting sustainable agriculture, and fostering a supportive community for agricultural innovation.

**8.2 Future Scope**

1. Enhanced AI and Machine Learning Integration for predictive analysis of weather and crop advice.

2. Localization of language support and customization for personalized recommendations.

3. Expansion of partnerships with agri-tech startups, government agencies, and educational institutions.

4. Integration of features for real-time market analysis on market trends, pricing, and crop demand.

5. Continual improvements in AR-based technology for irrigation and crop management assistance.

6. Implementation of automation technologies throughout the development process for efficiency and user-friendliness.

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## Patent Status

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