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A CLUSTER-BASED INFORMATION DISSEMINATION SYSTEM FOR RURAL AGRARIAN COMMUNITIES

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ABSTRACT: *The timely dissemination of agricultural information remains a significant challenge for rice farmers in rural and resource-constrained communities across sub-Saharan Africa. Limited access to extension services, inadequate communication infrastructure, and delays in information delivery often hinder farmers' ability to make informed decisions regarding crop production and management. This study developed an Information Dissemination Model (IDM) that leverages web and mobile technologies to facilitate the timely delivery of agricultural information to rice farmers. A mixed-method research approach was adopted, utilizing data collected from government and agricultural research websites, structured questionnaires, and interviews with extension workers and 67 rice farmers in Ede North Local Government Area of Osun State, Nigeria. Data collection was conducted using Open Data Kit (ODK), while quantitative data were analyzed using descriptive statistical techniques, including frequency counts, percentages, mean scores, and standard deviations. Qualitative responses were analyzed using thematic analysis to identify recurring themes and patterns in farmers' information needs and dissemination challenges. The proposed IDM integrated multiple agricultural data sources using Graph-Relational Object Queries (GROQ) and employed the K-Means clustering algorithm to categorize agricultural information into relevant production domains. The clustering approach grouped farmers based on similarities in farming practices, information requirements, and levels of technology adoption, enabling personalized and targeted dissemination of agricultural information. The model was implemented as an Android-based web application using Java, Next.js, and Tailwind CSS technologies and incorporated push-notification capabilities to support real-time communication between extension agents and farmers. Evaluation of the developed system revealed that the model achieved high levels of usability, stability, responsiveness, and assurance, with overall user satisfaction indicating strong acceptance among farmers and extension workers. Specifically, the system recorded a mean usability score of , stability score of 4.17, and assurance score of 4.86, while 4.65 of respondents indicated that the platform improved their access to timely agricultural information. The findings demonstrate that the proposed Information Dissemination Model effectively enhances the accessibility, relevance, and timeliness of agricultural information delivery, thereby supporting improved decision-making and productivity among rice farmers. The study concludes that the integration of clustering techniques and mobile-based dissemination platforms offers a viable solution for strengthening agricultural extension services in developing economies.*

KEYWORDS: Agricultural Administrators, Agricultural Community, Clustering Algorithm, Information Dissemination, and System Outreach Service.

INTRODUCTION

Emerging revolutions within the global information economy are opening new possibilities for addressing a plethora of problems limiting information symmetry in agriculture and other sectors (Okorie, 2022). Limited extension agent-to-farmer ratio, dysfunctional transportation systems, and declining public funding, among others, have made it impossible for timely delivery of information to a greater proportion of farmers in agrarian communities, especially in rural Nigeria (Nisansala, 2019; Okorie et al., 2019). The mutually reinforcing dimension of these problems results in lateness in farm decisions and operations, which collectively worsen the vulnerability of agrarian rural communities to vagaries of weather and other dynamics of climate change in Nigeria and similar contexts. The upsurge of innovations within Information Communication Technology (ICT) is, albeit, seen by experts as a game changer, especially for smallholder farmers in agrarian rural communities (Okorie, 2022; Demiryürek et al., 2008).

Recent studies underscore the persistent challenges in sub-Saharan Africa (SSA), where over 60% of the population relies on agriculture for livelihoods, yet food insecurity affects nearly 239 million people as of 2024 (Food and Agriculture Organization (FAO), 2024). Empirical evidence from scoping reviews has shown that digitalisation technologies such as mobile apps, SMS-based services, and digital extension have the potential to improve smallholder farmers' productivity and resilience to shocks (Choruma et al., 2024). There are also many factors responsible for digital agriculture technology adoption, and many research articles still point to factors such as poor internet connectivity, expensive data tariffs, and low digital skills as key barriers to technology adoption among farmers, especially those in rural areas (Khwidzhilli, 2025; Ayim et al., 2022). Unequal access to telecommunication infrastructure among farmers in Ghana is still moderated by socioeconomic factors and therefore has limited uptake of digital technology tools in farming (Oklikah et al., 2025). Similarly, in Sudan, mobile-based SMS has proven effective for disseminating farm information, but its success depends on tailored content and reliable networks (Mohamed et al., 2025).

Breakthroughs in ICT may herald the inception of a new regime of information flow among various stakeholders in the agricultural sector. The regime involves the production, conversion, transportation, consolidation, reception, and delivery of agricultural information and the dual transmission of information between research stations and farmers through the help of agricultural extension agents with the overall aim of improving farmers' standard of living (Nisansala, 2019). Radios, television, and newspapers, among others, have over the years guaranteed the sustenance of this two-way process. Growing innovations within ICT now create possibilities of substituting smartphones for radio and television just as text messages and email are readily replacing letters sent through post offices in social interaction between urban and rural geographies (Ohaka & Epkomi, 2020). These changes are driving interest in Web apps as important factors for reconfiguring agricultural information systems to bridge the gap between custodians of innovations and end-users, leveraging the increasing availability of Android phones in rural agrarian communities of Nigeria.

The benefits of this form of digital extension service delivery are quite enormous (Okorie, 2022; Qiang et al., 2012). The apps allow simultaneous dissemination of vital information from an extension agent to many farmers through their Android phones. In doing so, it addresses the problem of low extension agent-to-farmer ratio while ensuring the timely delivery of important information to catalyze the timeliness of farm decisions and operations.

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Its two-way communication system guarantees the flow of customized agricultural information between the sender and the receivers, just as the apps' synchronous and asynchronous designs allow farmers to learn at their own pace (Luu et al., 2017; Shuaib et al., 2020; Nwagwu, 2006). Recent systematic reviews emphasize the role of mobile agricultural services in SSA, where acceptance models show that perceived usefulness and ease of use drive adoption, leading to improved market access and decision-making (Muromba et al., 2025). Moreover, cluster-based approaches, such as those using K-Means algorithms for grouping similar farmer needs, have been shown to enhance knowledge transfer in rural settings (Farid et al., 2020). FAO projects across SSA demonstrate that integrating digital solutions like mobile apps and geospatial tools can reduce information asymmetries, though challenges like infrastructure gaps persist (FAO, 2023).

With the influx of Android phones and the advent of solar energy in rural agrarian communities of Africa, Nigeria inclusive, facilities to support the Web app agricultural information system are emerging. Therefore, this paper articulates the development of an information dissemination Web app for rural agrarian communities to ensure timely information delivery to smallholder rice farmers directly from the extension agent through their Android phones. This category of farmers is chosen because of the importance of rice to local and national economy. Besides, the success of this study would form the foundation for addressing other crops, since the Web app agricultural information system is still in its infancy in Nigeria and other sub-Saharan Africa. Addressing these gaps through cluster-based models could significantly boost agricultural productivity, as evidenced by recent field perspectives on SSA's agriculture crisis, which highlight the need for inclusive digital innovations to combat climate change and food insecurity (NextBillion, 2025).

LITERATURE REVIEW

The importance of timeliness of farm information and operation can never be overemphasized, and digital agricultural extension service holds the key to prompt information circulation, especially in difficult geographies like rural settings (Okorie, 2022). The availability of diverse forms of knowledge and information stands as a crucial factor in agricultural competitiveness spanning from individual households to the international arena (Pan, *et al*., 2018). A significant portion of the overall cost is attributed to agricultural information and the methods employed to acquire it. Nonetheless, the value of information is limited unless it reaches farmers at the opportune moment, a feat facilitated by the utilization of ICT tools in processing and disseminating agricultural information. These tools are mobile phones, computers, and the internet. Others include fax machines, email, and digital and non-digital libraries. For farmers to progress beyond their current production levels, a solid understanding of agricultural practices is essential. The seamless transmission of precise, understandable, and dependable information serves as a vital link between scientists and farmers. This information is disseminated through various channels, with the extension service playing a significant role (Adam, 2002).

Furthermore, it is consequently critical to determine the agricultural information sources used by farmers (Nisansala, 2019). Information dissemination in agriculture should be reviewed at least twice a week from information sources such as the government and extension workers who bring new information from research institutes to farmers. Their information sources should be trustworthy enough to help them and the general public produce a tangible farm yield. Several efforts have been made by researchers and scientists to achieve effective information

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dissemination systems.

Gambo, *et al.* (2020) developed a model to address the challenges associated with traditional methods of information dissemination within university communities. The newly designed system was implemented through a mobile-based Android application and tested with the aid of suitable devices. Qualitative information was obtained from 20 non-academics staff members, 55 students and 35 academics. Also, randomly selected eleven software developers from the Obafemi Awolowo University (OAU) provided qualitative information. Additionally, the performance of the app was evaluated by a random selection of one hundred prospective users who provided information for the said purpose. The pilot test results indicated ninety percent, ninety-six percent, and ninety-seven percent for the app stability, user-friendliness and speed, respectively. On data efficiency, reliability, and overall performance, the results recorded one hundred percent, one hundred percent and ninety percent apiece. The results demonstrated a strong acceptance rate for the mobile-based system as an effective tool for mitigating the spread of fake and unreliable news. Beyond addressing the inefficiencies of traditional dissemination methods, the study revealed that the app fosters stronger relationships between students and lecturers while enabling faster and easier communication among students, lecturers, and peers. Furthermore, the study indicates the excellent performance of the developed app for effective learning and relevant and timely information updates.

Jain *et al.* (2014) proposed a dynamic and hybrid system architecture designed to support diverse agricultural processes and operations based on the geographical location of the technological tool in use. The system employed a client-server model integrated with smartphone applications to deliver accurate agricultural information to agricultural extension clientele. Geographical data embedded in the mobile devices was utilized to further tailor the information to meet farmers' specific needs. The dissemination of information was guided by a dynamic decision-making process, which leveraged an enhanced rule promotion technique.

Soeparno *et al.* (2018) designed a model for an agricultural innovation delivery system that leverages a wealth of knowledge elicited from end-users and other stakeholders through a systematic literature review and sociological survey. Object-Oriented Analysis and Design technic was then employed to conduct system analysis and design. The research utilized case diagrams and class diagrams represented in Unified Modeling Language (UML) notations. Ultimately, the findings of the study led to the emergence of an all-inclusive and strong system model that could gather, manage, and broadcast innovative information to the end-users thereby enhancing best practices in farming operations.

In addition, Espinueva (2017) developed a high-efficiency information dissemination system that uses a touch-screen device to serve as an all-round information guide for the entire university community in the San Pablo City Campus of the Laguna State Polytechnic University. The first step in the study was to assess and evaluate the then-extant system. Both the assessment and evaluation focused on identifying challenges in disseminating and accessing information. It particularly specified the challenges in navigation processes, sorting transactions, and pinpointing buildings and offices, among other services. The information for this formative assessment and evaluation was integrated with the Software Development Life Cycle (SDLC) methodology to create an innovative and highly sophisticated mechanism for disseminating information. Through this system, useful and current information to ensure promptness and courtesy was generated. One of the crucial impacts of the study was seen in

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the efficiency and effectiveness of kiosks in the university in providing accurate information and services to members of the institution. The researcher recommends extending the system's accessibility by uploading it online, allowing users to access it via their smartphones.

Reddy and Ankaiah (2005) addressed some knowledge gaps in the flow of information within the agricultural sector by applying advancements in information technology. They introduced a low-cost model for the Agricultural Information Dissemination System (AgrIDS). The system was designed to provide end-users with expert solutions to farm problems, thereby enhancing crop productivity in recipient communities. AgrIDS can be scaled incrementally to various categories of farmers and crops at a lower cost. It empowers farmers with personalized information factoring diverse geographical locations, and timeliness of operation into the advisory service for profitable crop growth. The adoption of AgrIDS will enable the gap between innovation and implementation to be greatly shortened. In addition, it becomes even more relevant in the age of globalization, since it seeks to guide farmers on how to cultivate different crops based on international market requirements.

Building on these foundations, recent scholarship has shifted attention toward cluster-based and digital strategies designed specifically for Sub-Saharan African contexts. Farid et al. (2020) developed a cluster-based knowledge transfer model for smart farming that grouped farmers by demographics and shared interests. This approach improved training efficiency in rural communities and achieved strong adoption rates by combining formal accreditation with Train-the-Trainer methods. In a broader review, Choruma et al. (2024) examined the role of digitalisation in SSA agriculture. They found that mobile-based extension services and market linkages hold the most promise, though persistent infrastructure gaps continue to limit their reach. Ayim et al. (2022) similarly explored ICT adoption across the region, observing that mobile phones and SMS remain the most widely used tools for sharing agricultural information, while also cautioning that weak policy frameworks and low digital literacy still pose significant obstacles.

At the country level, Mohamed et al. (2025) evaluated SMS-based extension systems in Sudan and found them to be a cost-effective option for smallholder farmers, though their impact depended heavily on whether content was tailored to local contexts and languages. Complementing this, Begho & Ogisi (2025) conducted a systematic review of farmer networks in SSA, demonstrating that socially organized clusters meaningfully improve farmers' access to timely knowledge and shared resources. On a broader scale, the FAO (2023) reviewed digital agriculture initiatives across the region and pointed to mobile apps, SMS platforms, and geospatial tools as promising means of closing persistent information gaps — while stressing that sustained investment in infrastructure and digital skills training is essential for these gains to be inclusive. Taken together, these studies lend strong support to our cluster-based IDM, underscoring the value of integrated, technology-enabled approaches in addressing the longstanding limitations of traditional knowledge dissemination.

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METHODOLOGY

The study adopted a mixed-method approach, employing both quantitative and qualitative methods for information gathering. This includes data collection from government agency websites, research institute websites, structured questionnaires from farmers, and interviews with extension workers and software developers. The questionnaire was created after a thorough analysis of the literature on rice farmers' information demands, ICT use in agriculture, and the distribution of agricultural information. Sections on demographics, agricultural information sources, information access difficulties, and the usage of ICT methods for information dissemination made up the instrument. In a similar vein, the interview guide for software developers and extension workers was created to extract in-depth information on current dissemination strategies, difficulties, and technology needs for the suggested approach. Experts in information systems, research methodology, and agricultural extension evaluated the questionnaire and interview guide to guarantee content validity. The questions' phrasing, organization, and applicability were improved based on their suggestions and criticisms. This procedure made sure that the tools accurately reflected the study's objectives.

A pilot test was carried out with a small sample of stakeholders and rice farmers who shared traits with the target respondents but were excluded out of the final study. The pilot study's feedback was utilised to determine which questions was ambiguous, evaluate how clear the items were, and project the duration it would take to complete the task. Before the primary data collection exercise, the necessary adjustments were made to enhance the instruments' dependability and usefulness.

Sixty-seven (67) rice farmers in Osun State's Ede North Local Government Area were then given the validated questionnaire using Open Data Kit (ODK) forms. Five software developers and two extension agents also took part in the interviews, offering insights into how ICT might be used to address issues with information dissemination in the farming community. Additionally, software developers offered recommendations for appropriate ICT tools and development models for implementing the solution.

This study used a multi-stage sampling strategy. Since Ede North Local Government area in Osun State is highly engaged in rice growing, it was deliberately selected as the study region. Since they are the intended beneficiaries of the proposed ICT-based dissemination of information system, rice farmers constitute the main target demographic. Purposive sampling was used to choose the sixty-seven (67) rice farmers. Farmers who met the following criteria were included in the study: (i) they were actively cultivating rice in the study area; (ii) they had at least one farming season of experience; and (iii) they were willing to participate. By using these criteria, it was verified that the respondents had relevant expertise with agricultural information demands and dissemination challenges.

The two (2) extension agents were selected purposively based on their direct involvement in agricultural advisory services and their experience in disseminating agricultural information to farmers within the study area. Their inclusion provided expert insights into existing information dissemination practices, challenges, and opportunities for improvement. In a similar vein, five (5) software developers were specifically chosen due to their proficiency in information systems, mobile application development, software development, and ICT solution design. Their ability to provide technical insights on the design, implementation and operation of the proposed information dissemination platform, the developers were included.

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The sample size was considered adequate because the study aimed to elicit user requirements, identify dissemination of information challenges, and gather expert opinions for system development rather than drawing statistical generalisations about the total farming population. The participation of 67 farmers supplied a wide range of experiences and information needs, while extension agents and software developers contributed domain-specific and technical expertise. The combination of these stakeholder groups generated sufficient data to meet the study objectives and support the development of the proposed solution.

Facilitated Application Specification Technique (FAST)

The study employed the Facilitated Application Specification Technique (FAST) as its methodology. FAST promotes collaborative efforts between users and developers to identify existing system issues, propose potential solutions, decide on appropriate strategies and create the first set of specifications for the suggested solution. (Al-Saqqa et al., 2020).

Planning and Gathering Requirements

System development requirements for this research were derived through direct discussions and interviews with the target users rice farmers and extension workers. These users were extensively interviewed to ascertain system requirements and expected features. Additionally, information from research institutes and government parastatals was extracted using Webscraper.io. In accessing the browser menu, a sitemap was created, where the scraper was launched and the information on seeds, fertilizer application, chemical control, herbicide and more was downloaded from the websites.

Specification for System Design

At this stage, the application, network, user interfaces, and databases are designed using tools from the Unified Modeling Language (UML). The preliminary design is depicted in the web app architectures illustrated in Figure 1. This figure acts as the guide for the app's design. Architectural design structures were employed to illustrate the different components of the system and their interrelationships. Additionally, the architectural designs functioned as a channel of communication between the chosen end users and the development team. Also the use case and activity diagrams are displayed in Figures 2 and 3, respectively. The system was modeled using both diagrams, which also show the main features and the order of tasks that end users can perform. Three separate actors—users, extension agents, and administrators—are depicted in the use case diagram in Figure 3, which lists the necessary conditions for putting the mobile application into operation. The identified roles and functionalities include user authentication, login, and viewing farming information, making farm information requests, and receiving notifications for users. Extension agents can push, edit, and view posts, while administrators can publish, edit, or remove updates, manage user accounts, and register extension agents. These represent some of the elicited requirements for the system.

Considering the activity diagram shown in Figure 4, it shows the series of actions performed by users, extension agents, and administrators. For the initial login process, users can choose to view updates, interact with posts, and either continue with another activity or exit the application. Administrators who have logged into their account have the ability to manage notifications, users, comments, create, view, edit, and delete updates before exiting the app/logout. On the other hand, the software requirements used involved Visual Studio Code

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(VS Code) as the text editor for writing codes, while NextJs was responsible for handling the client-server application functionality. Meanwhile, Sanity offered a backends a service that provides API access and offers cloud storage, cloud functionality, Page 8 of 20 -AI Writing Submission Submission ID trn:oid:::1:3497563061Page 8 of 20 -AI Writing Submission Submission ID trn:oid:::1:3497563061First author's last name and (not &) Second author's last name (use et al. if more than two authors) Short Title up to 8 words(NOTE DO NOT INCLUDE AUTHOR NAME IN THE REVIEW VERSION – REVIEWS ARE BLIND)The African Journal of Information Systems, Volume X, Issue Y, Article Z (will be set by editors) 7authentication, hosting, and real-time database services. The Content Lake, which is the core of Sanity.io, acts as a schema-less cloud-based database platform running on Google Cloud.

System Implementation

Two key features of the system are the frontend and the backend. The front-end part of the system which involves the web application interface for the farmers was developed using NextJS together with Tailwind Cascading Style Sheet (CSS) used to design web pages and manage the functionalities of client-side navigation of the site. The user interface for the system administrators and extension workers was developed using Sanity Studio and modified using NextJS. The Sanity Studio offers a simple way to create content management interfaces that are flexible and can adapt to any changes to the system's requirements. NextJS enabled the connection between Sanity and the development of backend functions using Sanity's functionalities and APIs. In the creation of this project, NextJS JavaScript framework was used alongside the flexible Sanity.io CMS (Content Management System). The system was run on a Windows 10 64-bit machine with an Intel(R) Core(TM) i5-5200U CPU @ 2.20GHz with 8GB RAM. For the Frontend-Graphics User Interface (GUI), Figures 4, 5, and 6 showcase the farmers' web application user interface, featuring a login page, a registration page, and a dashboard that empowers farmers to navigate diverse sections providing a range of information.

The dashboard contains a sidebar that enables users to navigate through the organized information on the web application. The dashboard gives a brief description of the information in each section and serves as a guide for the user to navigate to the information faster and with ease. Figures 7, 8, and 9 show instances of the sections in the user interface depicting the information in the land and seedling information section and the storage processes section.

Conversely, the web app graphical user interface (GUI) designed for the system administrator encompasses a login/signup page, serving as an authentication gateway before accessing the system, as depicted in Figure 10. The system administrator can then monitor all system news and updates via the dashboard page, as shown in Figure 11. The administrator can manage posts, updates, and news in this section. Both the extension agent and the system administrator have the ability to add a new post to the system, as shown in Figure 11. Users on the mobile app are automatically synchronised with any additions made by the administrator here.

The system administrator is exclusively responsible for managing users and their roles. The system administrator can manage other users by modifying the responsibilities that are allocated to various user categories in the system, as shown in Figure 12. Erasing and updating user data is one of the duties of the system administrator. Additionally, Figure 12 showcases the system admin dashboard section dedicated to managing farming information

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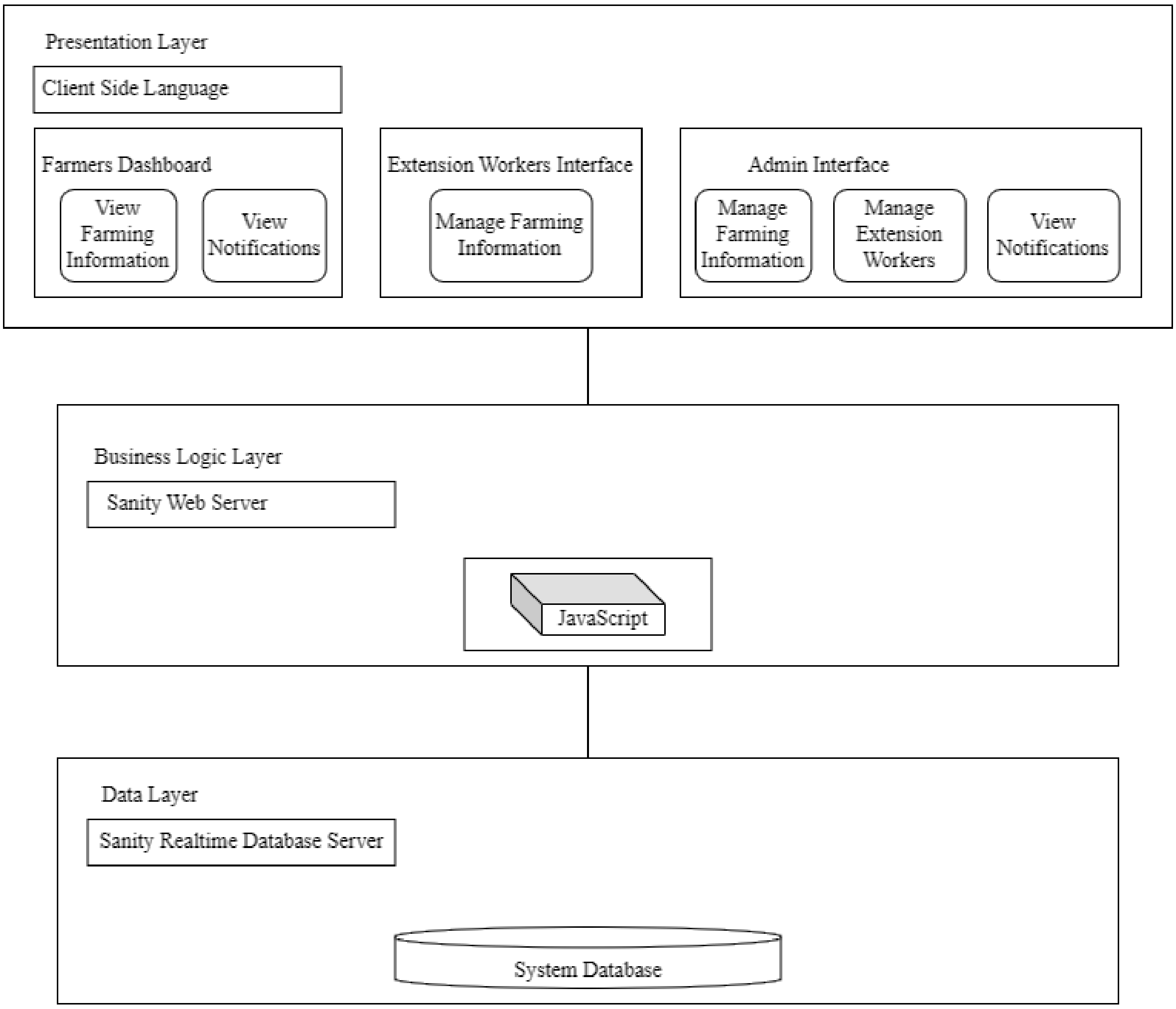
content.

The backend governs the system's routines and operations, as outlined by the system developer. Employing NextJs, the backend was crafted to integrate Sanity, implement backend services, and utilize specific functionalities and APIs provided by Sanity.io; a developer-friendly content management system (CMS); in conjunction with the JavaScript Framework NextJs.

Figure 1: *Web platform system architecture*



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SYSTEM TESTING RESULTS AND DISCUSSIONS

Alpha testing was performed rigorously at every stage of development to ensure that all module systematically function. Next, beta testing began, in which potential users were given access to the system and it was rated based on predetermined criteria. These criteria include: (i) App stability: testing the app's ability to avoid crashing on users' phones; (ii) User-friendliness: testing the ease of interaction with the app and understanding its functions; (iii) Speed: testing the back-end's ability to fetch data swiftly, especially in home and detail pages; (iv) Data consumption: testing the volume of traffic generated for every significant use of the app; (v) Performance: rating the overall app performance relative to the size of other applications, among others; and (vi)Assurance: testing the level of confidence users have about the credibility of the information generated by the app.

Ratings were collected using a Likert Scale Survey Questions measurement scale, ranging from "strongly agree" to "strongly disagree," through an online form. A concise questionnaire sought responses to specific questions related to the aforementioned criteria, aiming to ascertain if the system fulfilled its initial requirements. Farmers and extension agents were among the users chosen from the community using the random sample technique. The results obtained from the filled forms are presented in Table 1 and visually represented in Figure 14.

A total of 67 farmers were random chosen from the selected community. Results in Table 1 revealed that farmers strongly agreed with the following question, assurance (mean=4.86), and application stability (mean=4.72). Also, they agreed that data consumption (mean=4.26), user-friendly (mean=4.21), navigation (mean=4.00), and speed (mean=3.67) provide a real-time update. In addition, farmers were neutral on the performance (mean=3.45) of the application. This implies that the system was able to provide real-time updates from the administrators in a most comfortable manner for users of the system. This aligns with Vidanapathirana's (2019) assertion that a system that effectively and efficiently delivers necessary information and technology services plays a crucial role in assisting clients in making decisions that lead to better agricultural marketing, trading, processing, and production.

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Figure 2: *Use case diagram*

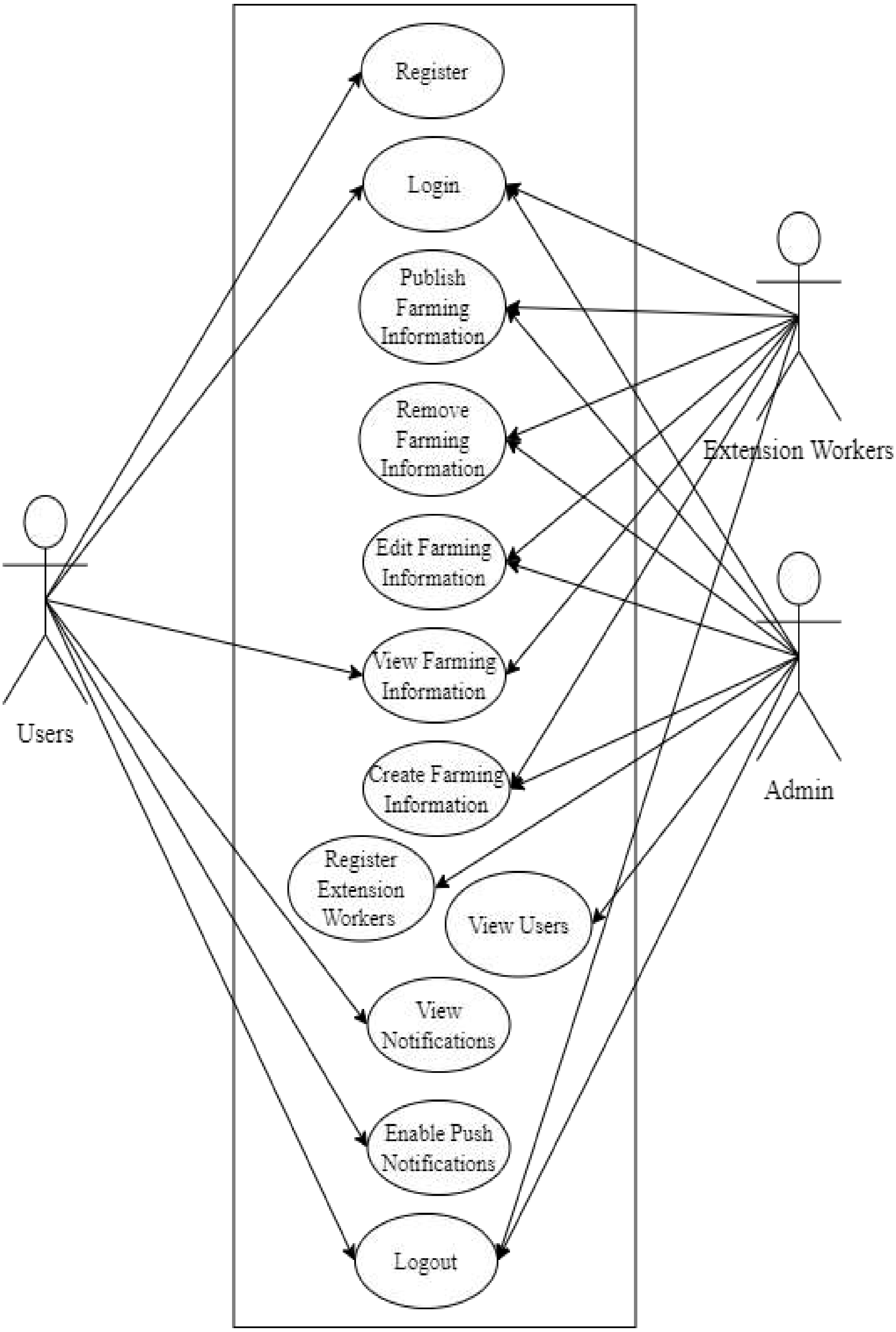

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Figure 3: *Activity diagram*

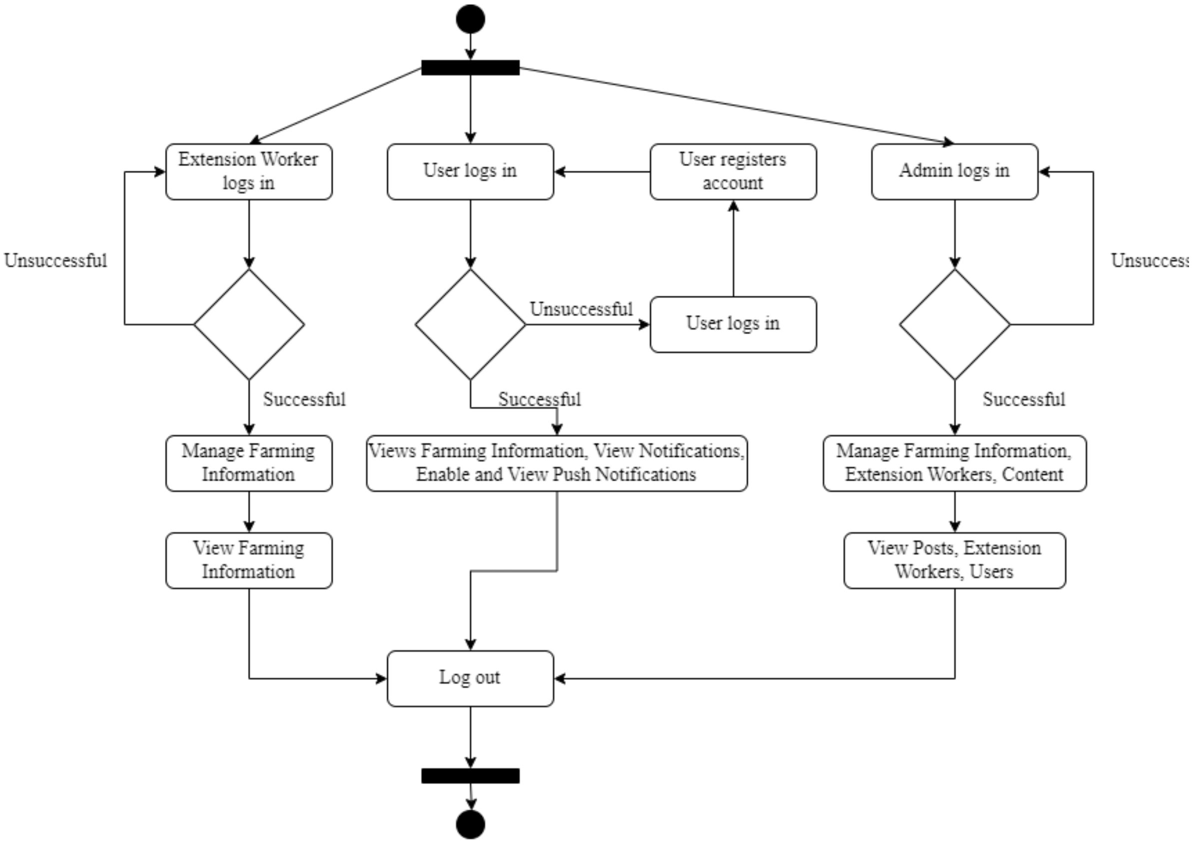

Figure 4: *Farmers login page*

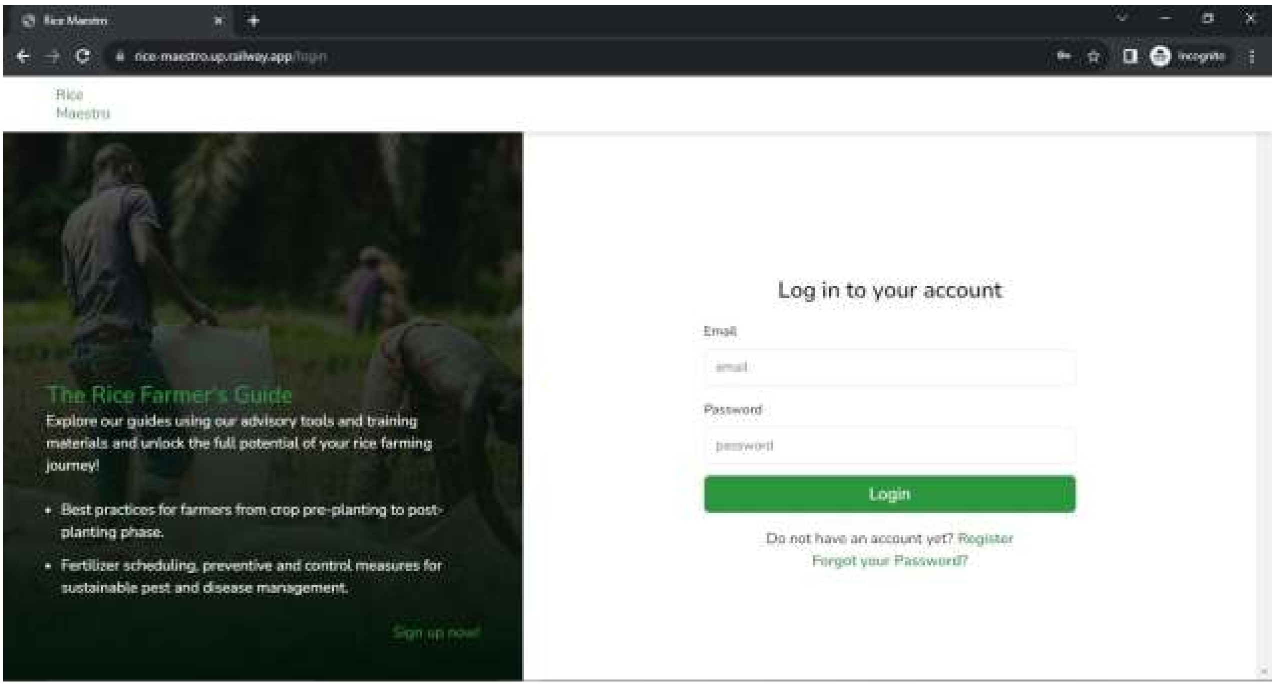

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Figure 5: *Farmers' registration page*

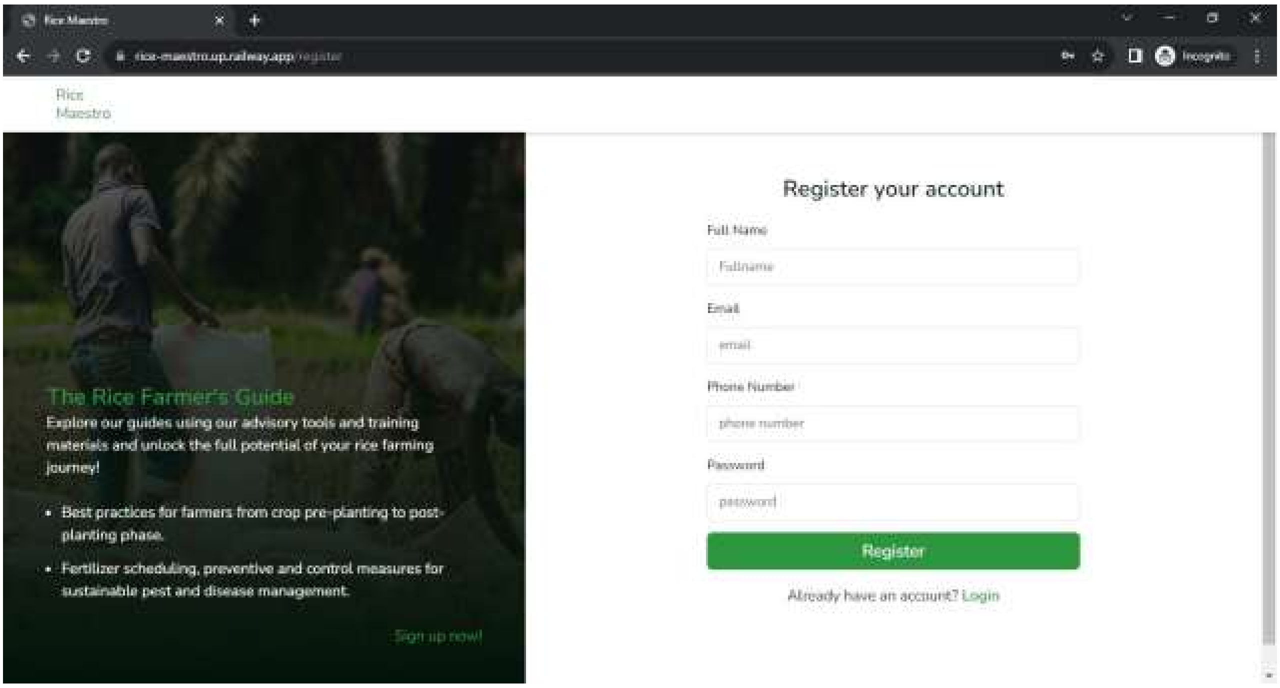

Figure 6: *Farmer's dashboard*

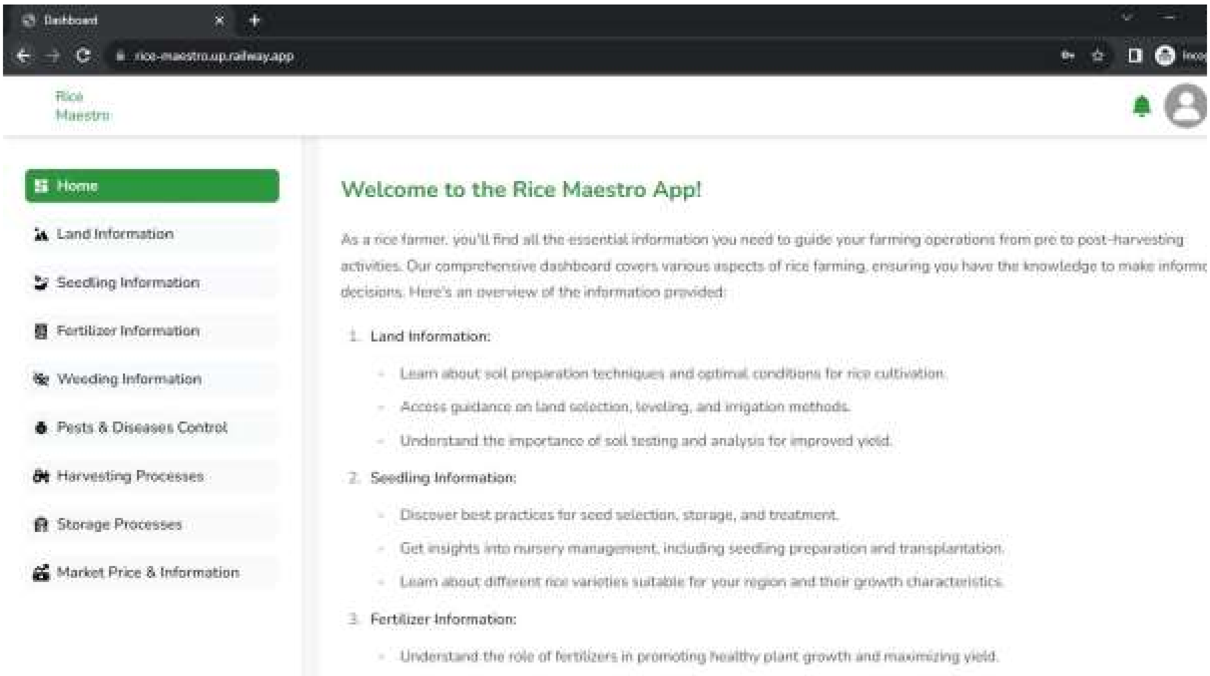

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Figure 7: *Farmer's land information section*

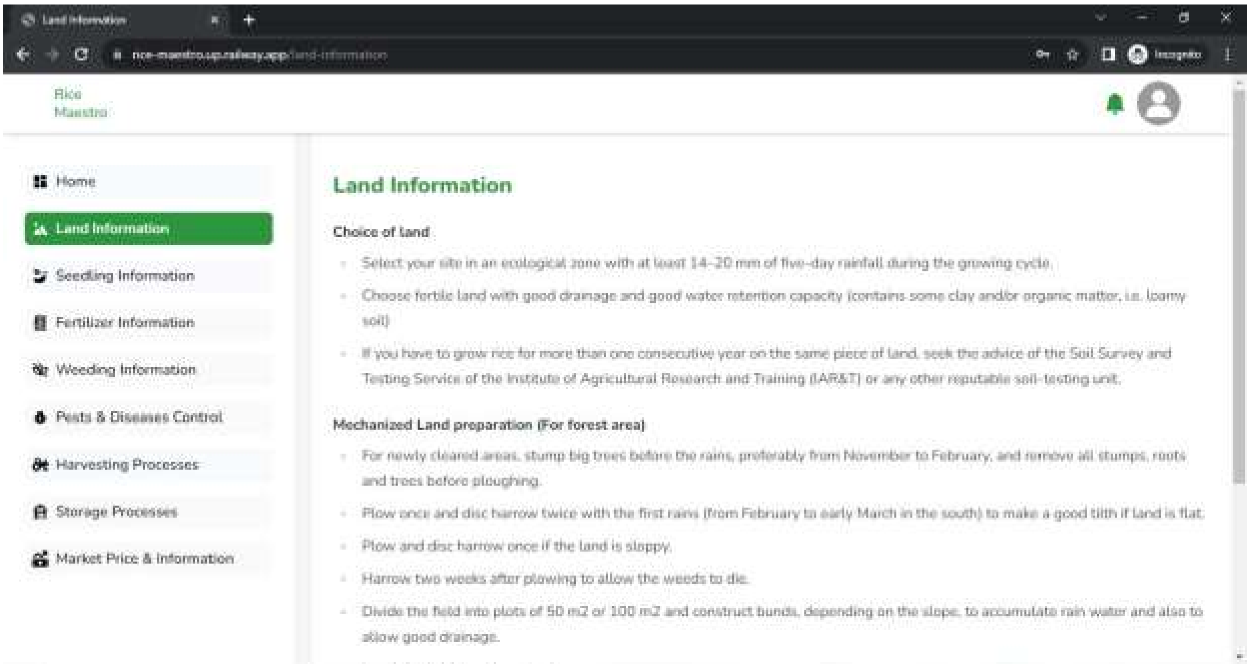

Figure 8: *Farmer's seedling information section*

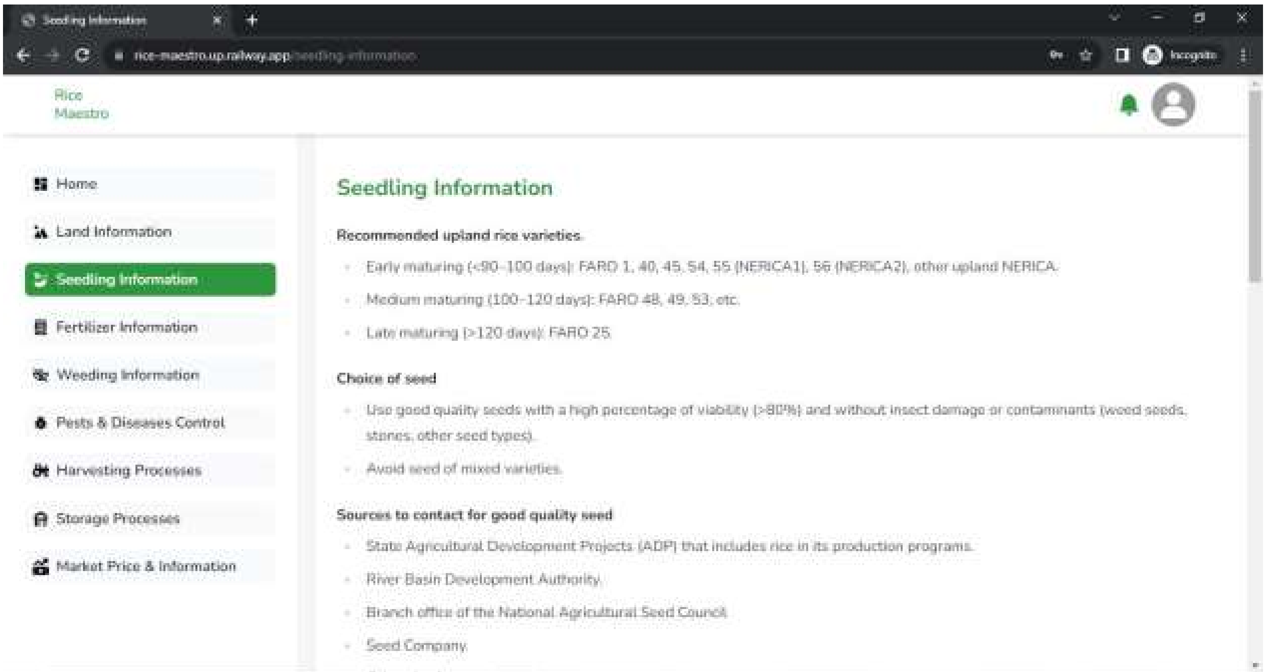

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Figure 9: *Farmer's storage processes information section*

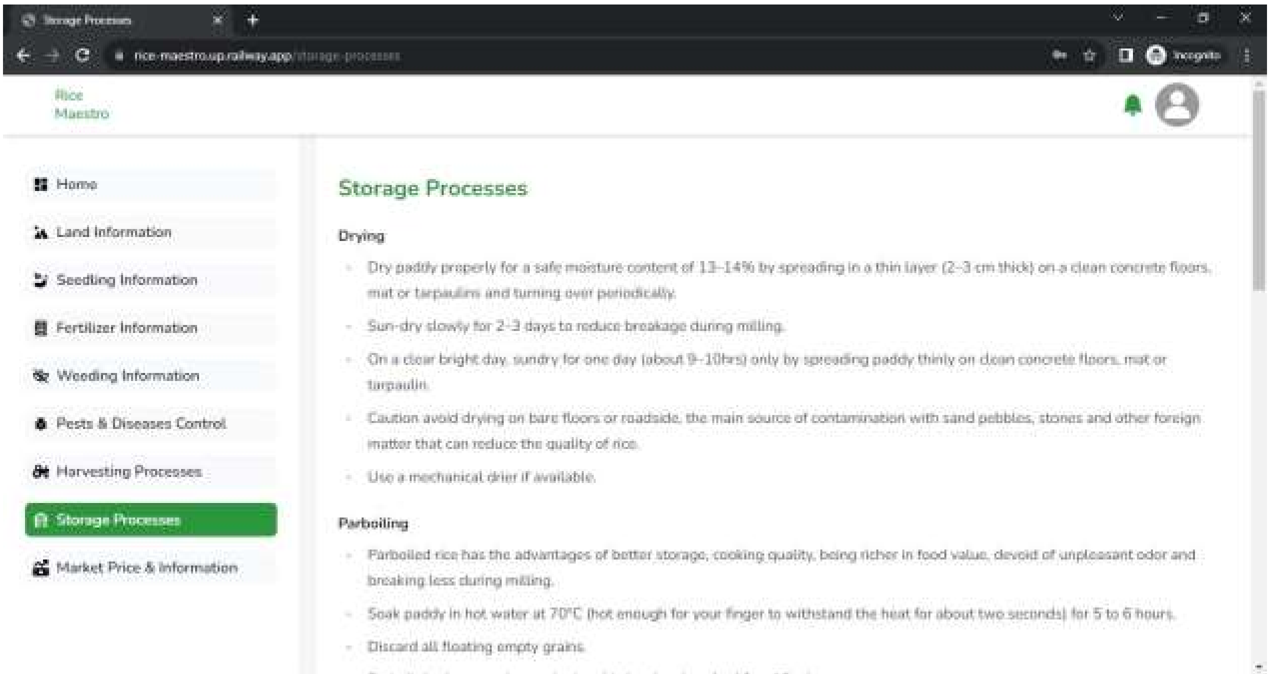

Figure 10: *System admin and extension workers' login page*

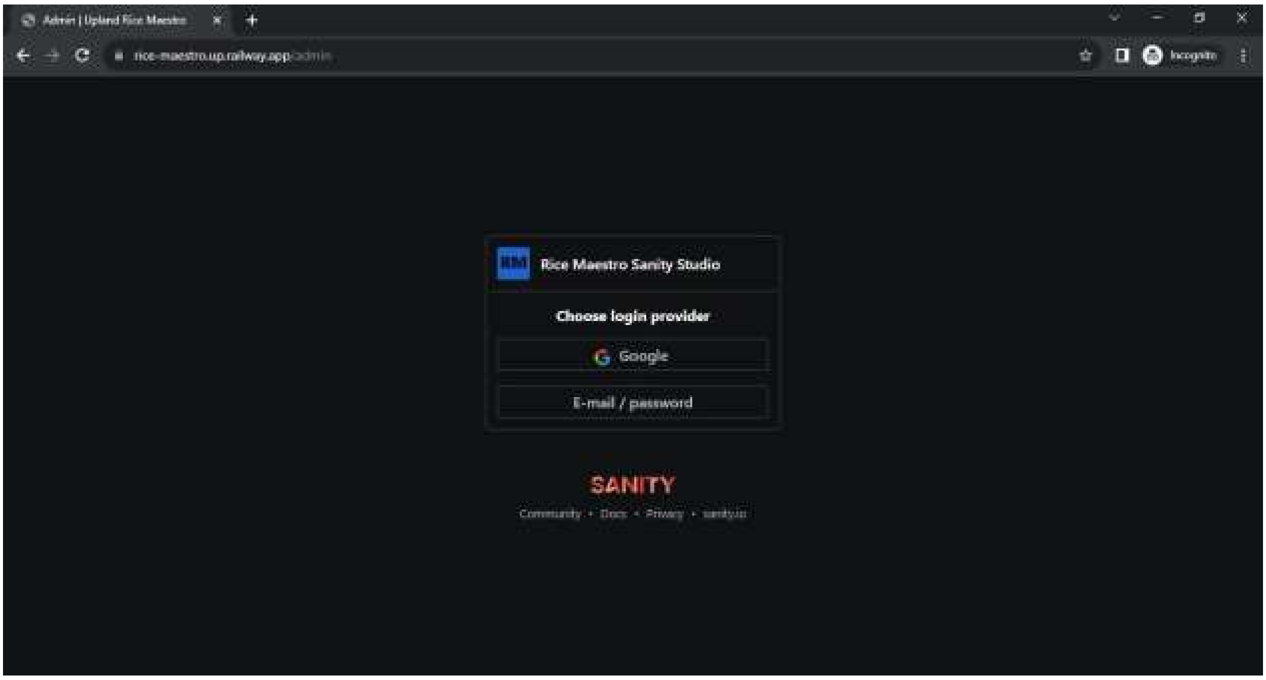

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Figure 11: *Extension workers' dashboard*

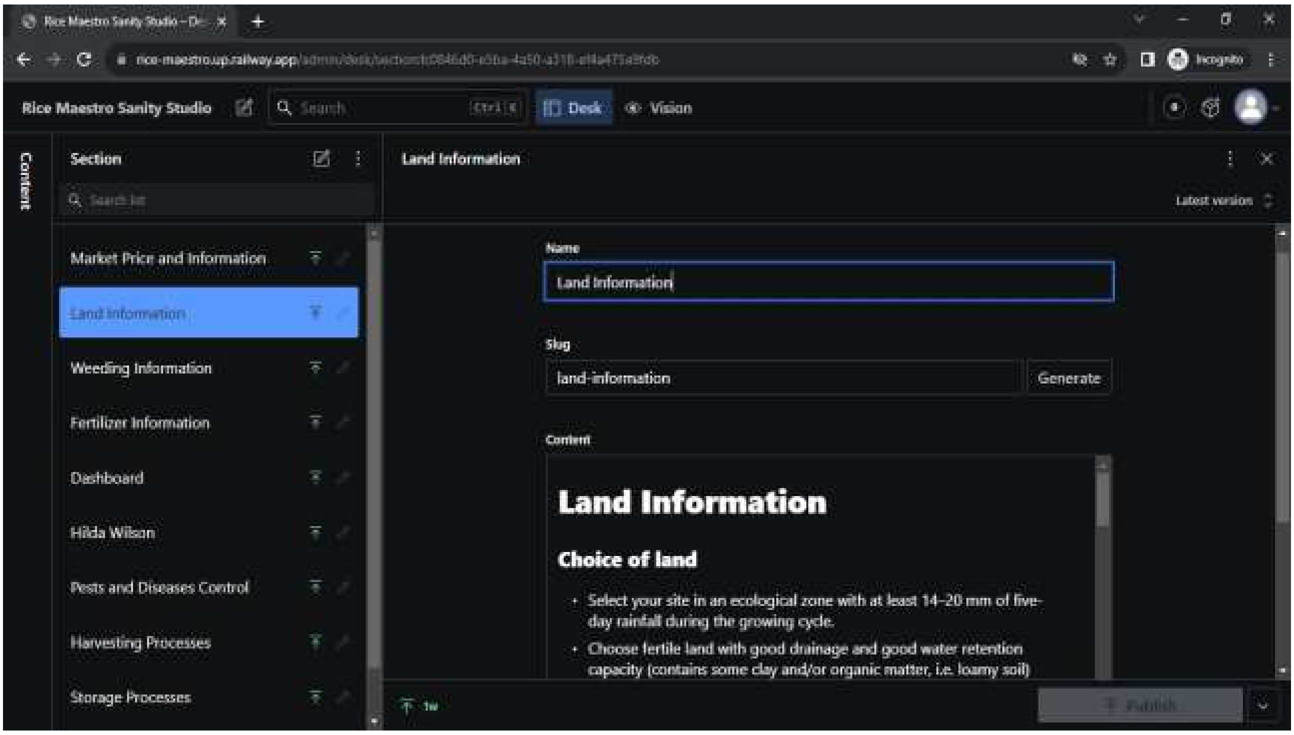

Figure 12: *System admin dashboard for managing farming information content*

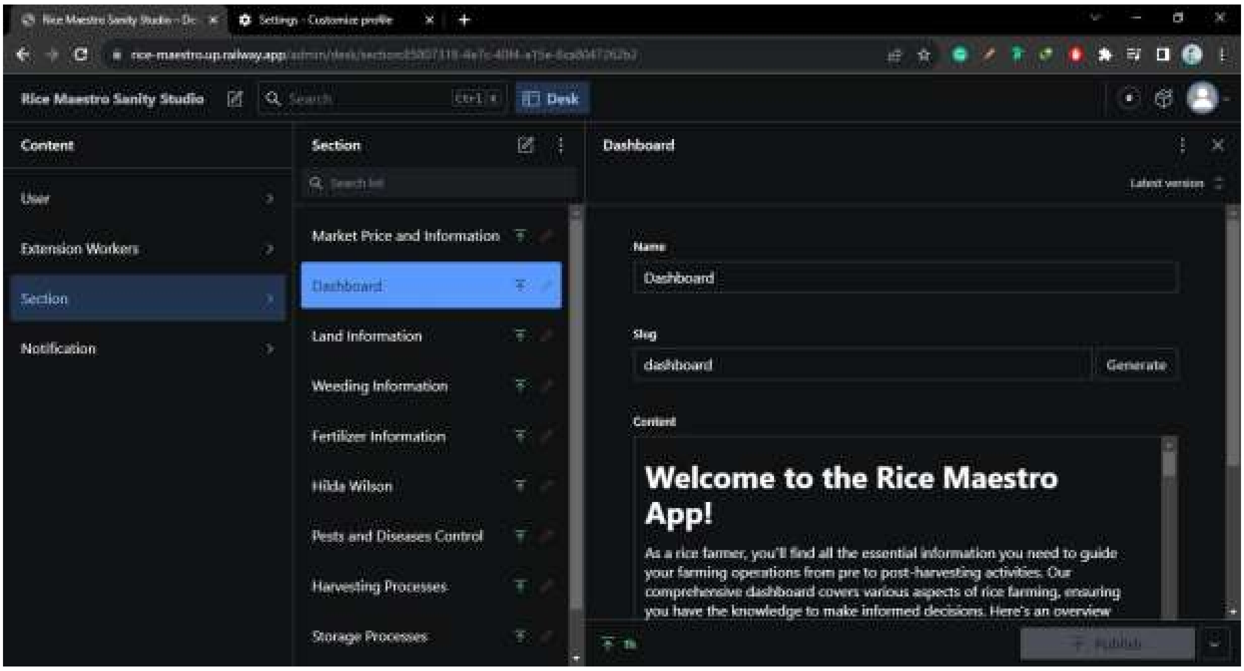

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Table 1: *Testing Result with Sixty-seven (67) Users*

	Strongly Agreed F (%)	Agreed F (%)	Neutral F (%)	Disagreed F (%)	Strongly Disagreed F (%)	Mean
Assurance	60(89.55)	7(10.45)	-	-	-	4.86
App Stability	57 (85.07)	10 (14.93)	-	-	-	4.72
Data Consumption	51(76.12)	16(23.88)	-	-	-	4.26
User Friendly	40 (59.70)	17(25.37)	10(14.93)	-	-	4.21
Navigation	40(59.70)	18(0.27)	4(0.06)	3(0.04)	2(0.03)	4.00
Speed	17(25.37)	45(67.16)	5(7.46)	-	-	3.67
Performance	15(22.39)	46(68.66)	6(8.96)	-	-	3.45

CONCLUSION

This paper centers on the development, testing, and deployment of a mobile app designed to facilitate easier and more accessible information dissemination within the farming community. The primary objective of this app is to serve as a reliable source of information, particularly for extension agents, administrators, and farmers. The successfully developed system instills confidence in users in the credibility of information delivered directly to their mobile devices. The Unified Modelling Language (UML) was used to implement the design techniques, while the execution involved both web app and backend technologies.

The project implementation and test result interpretation indicate a favourable reception of the mobile-based information dissemination system, with majority of the users expressing belief in its potential to counter untimely access to farming information. This conclusion stems from the fact that information that previously underwent multiple steps and intermediaries before reaching end users can now be delivered directly to them. Moreover, the integrated features of the mobile and web apps suggest that the application should be utilized by members of the farming community to enhance effective communication and stay updated on timely and relevant information.

For future endeavors, it is recommended to extend the study by making the user's app compatible with other mobile platforms, such as smaller phones utilizing USSD Codes and Windows phones, acknowledging the pivotal role mobile phones play in human development.

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