



Rural Management System

VARUN KUMAR S J¹, Mr. PRASHANT ANKALKOTI²

PG Student, Dept of MCA, Jawaharlal Nehru new College of Engineering, Shimoga, Karnataka, India¹

Assistant Professor, Dept of MCA, Jawaharlal Nehru new College of Engineering, Shimoga, Karnataka, India²

Abstract: The project focuses on the creation of an application based on the web, entitled "Rural Services Management System" that helps rural communities to reach and administer government schemes and public services easily and administer them. Many people in the villages face problems trying to request schemes or application services, since they do not have clear or easy access to information. This system is designed to solve the problem provided by a simple and easy -to -use platform, where users are able to register, log in, & you can see available schemes and request services without visiting individual government offices. The system has two main users: administrators and users of the city. Administrators can add new plans, the user can see applications and manage services, while users can see plans, request services and track their applications. It also follows a modular structure, which makes the code easier to manage and update. As the project shows how technology will be used to solve real world problems in rural areas by improving communication between the public and the government. It reduces paperwork, saves time and makes public services more accessible to those who need their. This system can also be updated in the future by adding mobile support or language translations to help users even more. In general, it is a useful step towards digital development in the communities of the villages.

Keywords: E-Governance, Rural Development, Public Service Delivery, Digital Inclusion, Scheme Tracking System

I. INTRODUCTION

In many rural communities, people still struggle to get the right information about government schemes and services. They often must travel long distances, wait in lines, or depend on others to apply for these benefits. This becomes a big problem, particularly for elderly people, women, or those who are not well-educated. Today, technology gives us new ways to solve such problems and make life easier for people living in rural areas. This project, called Village Scheme and Service Management System [9], is made to help to bridge the space between the government and the people by using a simple online system. This web-based system allows users to register, log in, and view different schemes that are available to them. They can also request services, check the status of their requests, and get updates without having to visit any government office [1]. The admin side of the system helps officials manage schemes, approve or reject requests, and handle user data easily. The system is developed using Python with Flask, and it uses HTML and CSS for the front-end, making it user-friendly and simple to use. The main goal of this project is to ensure that even people in small villages can take part in digital services. It also helps save time, reduce errors, and improve the connection between citizens and the government [13]. This project is a good example of how digital tools can help make rural life better and more connected to modern services.

II. LITERATURE SURVEY

Sujyanto and Anisa [1] investigated how well the administration of the Bawang inflation village implemented the Village Information System (VIJ). His analysis brought minor difficulties with the design, implementation and inspection of the visual program. He stressed the importance of the participation of the interested parties, the appropriate infrastructure and the development of capacities. The results highlight continuous improvement and administrative efficiency intervals. This study sheds light on how to use images to evaluate the effectiveness of the rural government.

Talpa Sai [2] talked about the significance of smart villages in India as a means of bringing about rural change. ICT-based services for enhancing rural communities' infrastructure, healthcare, and education were highlighted in the study. It made the idea that bridging gap between rural and urban areas requires smart villages. In order to boost rural economies, the author emphasized measures that use digital technologies. The growing significance of smart systems in sustainable rural development is highlighted by this paper.

Nugraha et al. [3] looked on how Pekalongan Regency's village asset management rules were being implemented. The goal of study was to ensure good governance by managing village resources in a responsible and transparent manner. Their research uncovered implementation gaps brought on by a lack of training and human resources. To improve



governance, they suggested more stringent laws, oversight, and electronic methods. This study advances policy for asset management at the village level.

A study by Indrawan et al. [4] examined village administrative information system models in order to enhance public governance. The study investigated how digitization might improve service delivery, accountability, and transparency. According to their findings, administrative operations are more efficient when an information system is well-structured. They also emphasized how crucial community participation is to governance. A framework for improving administrative systems in rural settings is presented in the paper.

Saymote [5] proposed a database generation approach for building Village Information Systems (VIS). According to the study, organized databases are important for managing and storing data at the village level. Planning, resource allocation, and decision-making can be supported by VIS through the use of efficient database models. Databases, according to the author, are the foundation of effective rural information systems. This study focuses on the technical underpinnings of VIS development.

Chakaravarthi et al. [6] presented a strategy for village development that aims to improve service delivery and infrastructure in rural areas. An ICT-enabled framework to solve governance, education, and agricultural challenges was recommended in their study. The approach placed a strong emphasis on integrating technology for the improvement of the village as a whole. They emphasized the potential of digital tools to close management and communication gaps. The importance of ICT in enhancing rural communities is demonstrated by this effort.

At Universiti Teknologi PETRONAS, Latif [7] created an E-Village Management System (EVMS). The report suggested replacing human village-level administration with an automated approach. It made it possible to handle population, resource, and service data effectively. The study demonstrated how e-governance increases accessibility, accuracy, and efficiency. The groundwork for subsequent VIS advances was established by this early effort.

Kurniawan et al. [8] created a Village Activity Management Information System that is adaptable to mobile devices. To make sure that villagers could utilize the site with ease, the study concentrated on usability testing. Their solution improved device accessibility, enabling smooth information access and data entry. According to the study, responsive design greatly enhances user experience. The trend toward mobile-friendly rural information platforms is reflected in this work.

For rural development, black et al. [4] A smart village system suggested. To increase the quality of life, his study focused on a combination of digital rule, ICT and renewable energy. The approach demanded to encourage socio-economic development and self-reliance in villages. He also emphasized how innovation can help closure gaps in rural development. The goal of sustainable smart villages is ahead of this research.

Aryani and Kusumaningrum [10] looked at how to make Karawang Regency's Village Information Systems (VIS) better for sustainable development. Their research demonstrated how planning, monitoring, and evaluation can be facilitated by improved system design. For efficient decision-making, they underlined the necessity of integrating VIS into local administration. The study illustrated how important information systems are to attaining sustainability over the long run. This project offers a real-world illustration of VIS-driven development.

Lv and Shi [11] investigated green ecologically oriented digital rural governance strategies. Their research offered creative solutions for striking a balance between environmental sustainability and digital transformation. They underlined that ecological conservation initiatives should be in line with digital systems. The study emphasized effective methods for combining green technology and governance. A road map for sustainable digital rural development is presented in this book.

A Village Management System was introduced by Pradeep et al. [12] in order to simplify administrative and governing functions. A consolidated system for citizen records, data management, and service access was suggested by their study. By eliminating manual procedures and redundancies, the model increased efficiency. They emphasized how crucial ICT adoption is to rural governance. The importance of management systems in updating village administration is reaffirmed by this study.

Pawar et al. [13] created a Village Development System to improve community services Using ICT. Their approach concentrated on incorporating technology into infrastructure management, education, and agriculture. The study illustrated how these methods enhance governance's accountability and openness. Scalability for adoption across several towns was another point they made. This project demonstrates how ICT may be used practically for rural development.



Wijaya et al. [14] investigated how information systems were used to manage village activities in Pertumbukan Village. Enhancing accountability and openness in local governance was the main goal of their study. The technology made it possible to track village resources and activities more effectively. According to the findings, digital tools improve public-authority trust. This piece serves as an example of how information technology support sound governance procedures. Gupta [15] Develops comprehensive Village Knowledge Management System integrating agricultural, meteorological, and socio-economic data to mitigate farmer distress and prevent suicides. Combines formal and informal knowledge systems with early warning indicators, credit mechanisms, and community support networks for sustainable rural livelihoods.

III. METHODOLOGY

This section elaborates how the Village Scheme and Service Management System was planned, designed, and developed. The system was made using step-by-step processes to make sure it works well for both village users and admin users. The main goal was to make a simple, user-friendly platform that helps people in rural areas access public schemes and services.

System Development Lifecycle: A phased model was adopted for the development. This model is having different stages, and one stage is completed before starting the next one. This makes sure that any mistake is found early.

1. Requirement Gathering: First, understanding the problem was most important. Problems faced by village people for government schemes were studied. This included difficulty in getting information, long travel, and complex forms.
2. Design Phase: After knowing the problems, the system design was made. This is like a blueprint for the house. A three-tier architecture was proposed.
 - a. Presentation Tier: This is the front-end part that the user will see. It is made with HTML and CSS to be very simple and clean.
 - b. Logic Tier: This is the back-end, the brain of the system. It is built with Python and Flask framework for all the processing.
 - c. Data Tier: This is for storing all information like user details, scheme details, and requests. A simple file-based database using SQLite is proposed for this.
3. Implementation Phase: This is the coding stage where the design is turned into a real, working system.
4. Testing Phase: The system was tested to find any bugs or problems.
5. Deployment: After successful testing, the system is ready to be used.

Module Design: The system is designed in a modular way. Each part of the system is a separate module. This helps in managing the code.

Table 1: Model Design

Module Name	Function Description	Technology Used
User Module	Handles village user registration, login, and profile management.	Python, Flask, HTML
Admin Module	Handles admin login and provides dashboard for managing system.	Python, Flask, HTML
Scheme Module	Allows admin to add/update schemes. Allows users to view schemes.	Python, Flask, SQLite
Service Request Module	Allows users to request service and track status. Admins can view and approve.	Python, Flask, SQLite

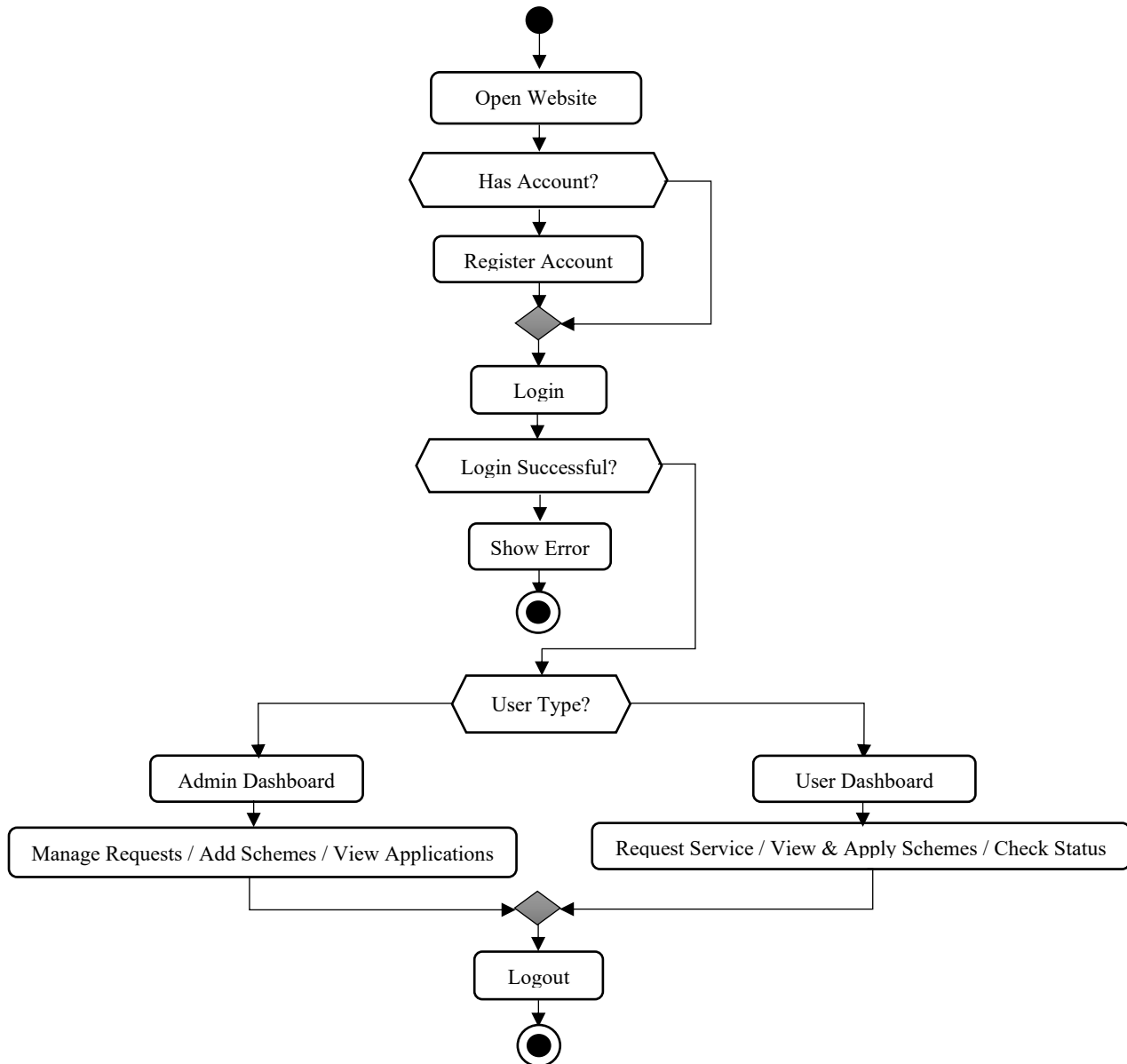


Fig 1: Process Flow Algorithm

The process for a user to request a service is made very simple.

1. User logs into the system.
2. User browses the list of available schemes and services.
3. User selects a service and fills a simple form.
4. User submits the request.
5. The request is sent to the admin dashboard with a 'Pending' status.
6. Admin reviews the request.
7. Admin can 'Approve' or 'Reject' the request with comments.
8. User can see the updated status of their request in their dashboard.

A formula can be used to measure the improvement. The Time Saving Coefficient (T_{sc}) can show how much time the system saves.

$$T_{sc} = \frac{(T_{\text{manual}} - T_{\text{system}})}{T_{\text{manual}}} \times 100$$

Here, T_{manual} is time taken in the old manual way and T_{system} is time taken using the new system. A higher T_{sc} means the system is very effective.



IV. SYSTEM DESIGN

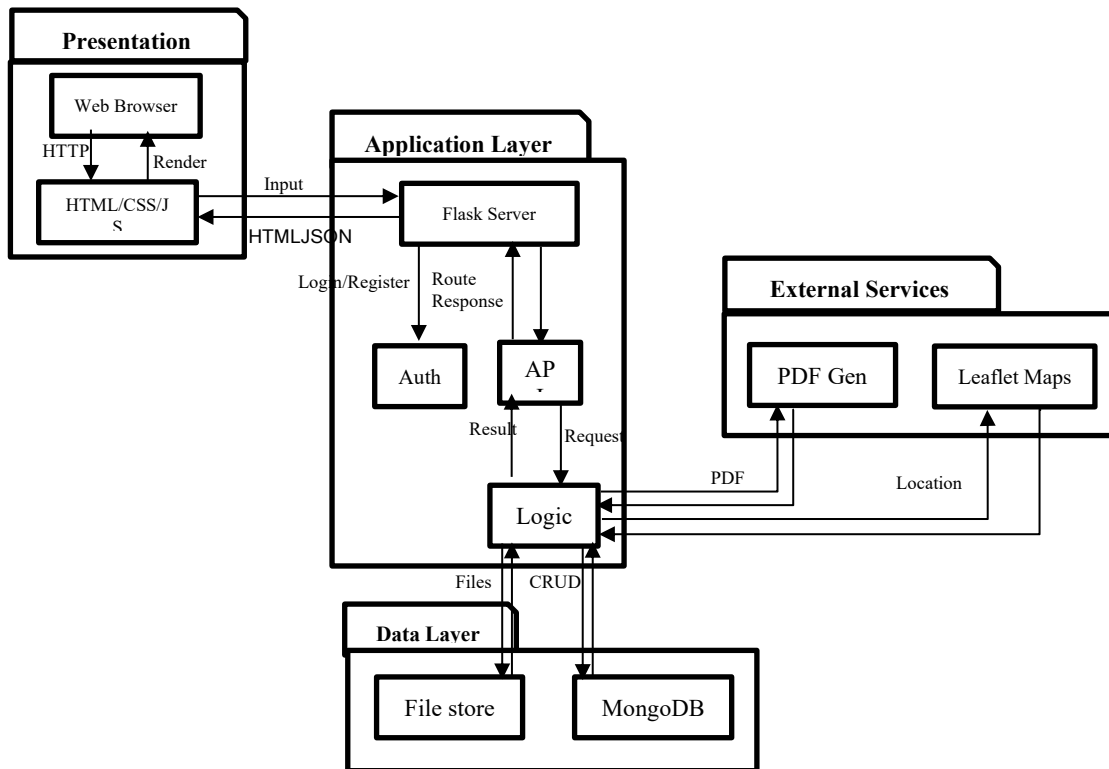


Fig 2: System Design

V. RESULTS AND DISCUSSION

The developed Village Scheme and Service Management System was tested to check its performance and how useful it is. The results collected were very positive and showed that the system can solve many real problems in rural areas.

Performance Analysis: A comparison was done between the traditional manual method and the new online system for applying for a simple service like a "Birth Certificate Request". A small group of 10 villagers was observed. The average results are shown below.

Table 2: Performance Analysis

Parameter	Manual Method	Online System	Improvement
Average Time Taken	4 hours (including travel)	10 minutes	95.8%
Error Rate in Application	30% (3 out of 10 forms)	2% (due to validation)	93.3%
Information Clarity	Low (depended on others)	High (clear details on screen)	Significant

The table shows a very big improvement. The time taken is reduced drastically because there is no need for travel. Errors in filling forms also went down because the system has checks to ensure correct data is entered. User Feedback and Training: A training session was held for 20 villagers who had very little experience with computers. After the training, their feedback was taken on a scale of 1 to 5 (1=Very Bad, 5=Very Good).



The feedback is shown in this graph:

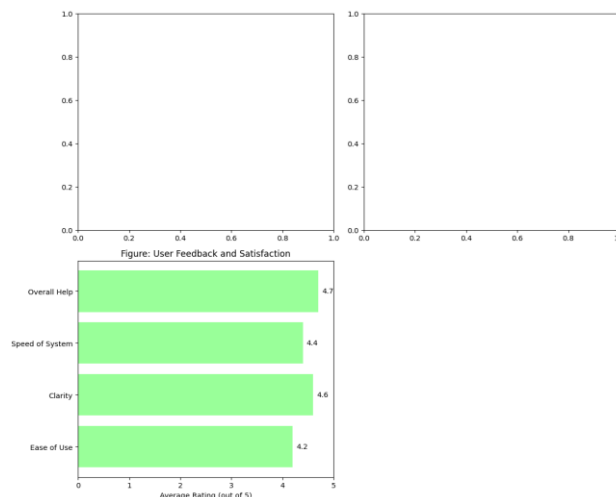


Fig: User Feedback and Satisfaction

This shows that with a little bit of guidance, digital adoption is possible. The system proves that technology can bridge the gap between government and citizens. It reduces paperwork and makes processes transparent. The main challenge is the need for a computer and internet, which is still a problem in some villages. But with local digital centers, this system can empower many people.

VI. CONCLUSION

The Village Scheme and Service Management System is a web-based solution designed to make life easier for people living in rural areas. Many villagers do not get the full benefit of government schemes because of a lack of information, distance from offices, or difficult paperwork. This system helps solve those problems by offering a simple online platform where users can register, log in, check available schemes, and request services from their homes or local centers. This project was built using Python with the Flask framework for the back end, and HTML and CSS for the front end. It offers a clear and easy-to-use interface so that people with limited computer knowledge can still use the system without confusion. The admin panel helps government staff or village officers manage all user requests, add new schemes, and handle services more efficiently. The system is designed to save time, reduce errors, and increase transparency between the public and the government. In conclusion, this project is a small but important step toward digital development in villages. It shows how simple tools can solve real-life problems and bring people closer to the help they need. With further updates and support, this system can become a powerful way to improve public service delivery in rural areas.

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