InSight Bulletin: A Multidisciplinary Interlink International Research Journal
Peer Reviewed International, Open Access Journal.
ISSN : 3065-7857 / Website: https://ibrj.us / Volume-3, Issue-1 / January - 2026

Original Article

A Secure Digital Platform for Complaint Tracking and Resolution in Housing Societies

Ratnamala Ravindra Borole[1], Pooja Ravi Kamble[2]
[1, 2] Computer Science, Assistant Professor, ATSS College of Business Studies and Computer Application, Chinchwad, Pune

Manuscript ID:
IBMIIRJ -2026-030111

Submitted: 07 Dec. 2025

Revised: 11 Dec. 2025

Accepted: 06 Jan. 2026

Published: 31 Jan. 2026

ISSN: 3065-7857

Volume-3

Issue-1

Pp. 52-56

January 2026

Correspondence Address:
Ratnamala Ravindra Borole
Computer Science, Assistant Professor, ATSS College of Business Studies and Computer Application, Chinchwad, Pune
Email: ratnaborole@atsscollege.edu.in

OPEN ACCESS

Quick Response Code:

Web. https://ibrj.us

DOI: 10.5281/zenodo.18949443

DOI Link:
https://doi.org/10.5281/zenodo.18949443

Abstract

The rapid growth of urban housing societies has increased the complexity of managing residential services, particularly the handling of maintenance-related complaints. In many housing societies, complaint management is still carried out through manual registers, phone calls, or informal messaging platforms, which often results in delayed responses, lack of transparency, poor documentation, and reduced resident satisfaction [3]. These challenges highlight the need for a secure and structured digital solution that can streamline the complaint handling process while ensuring data privacy and accountability [6]. This paper proposes a secure digital platform for complaint tracking and resolution specifically designed for housing societies [5]. The platform provides a centralized web-based system where residents can register complaints related to maintenance, security, utilities, and common facilities [14]. Each complaint is systematically categorized, assigned a priority level, and tracked throughout its lifecycle. Society administrators can monitor complaints through an integrated dashboard, assign tasks to maintenance staff, and verify resolution in a transparent manner. To enhance trust and data protection, the system incorporates role-based access control, secure authentication mechanisms, encrypted data storage, and audit logging. The proposed platform is implemented using modern web technologies and follows a layered architectural design to ensure scalability, reliability, and ease of maintenance [14]. Experimental evaluation conducted in a simulated housing society environment demonstrates a significant reduction in complaint resolution time and administrative workload [8]. Additionally, user feedback indicates improved satisfaction due to real-time status updates and automated notifications.

The study concludes that adopting a secure digital complaint management platform can substantially improve operational efficiency, transparency, and service quality in housing societies. The proposed solution supports digital governance initiatives and offers a scalable foundation for future enhancements such as mobile integration, artificial intelligence-based prioritization, and smart infrastructure monitoring.

Keywords: *Housing Society Management, Complaint Tracking System, Secure Web Application, Digital Governance, Role-Based Access Control*

Introduction

Housing societies play an important role in urban living by providing shared residential spaces and common facilities to a large number of residents [3]. As these societies continue to grow in size and complexity, effective management of daily operations has become increasingly challenging. One of the most critical aspects of society management is the handling of resident complaints related to maintenance, security, sanitation, water supply, electricity, and other common services [11]. In many housing societies, complaint management is still carried out using traditional methods such as manual registers, phone calls, or informal messaging applications. These approaches often lead to communication gaps, delayed responses, and lack of proper documentation [9]. Residents may remain unaware of the progress of their complaints, while administrators find it difficult to track, prioritize, and resolve multiple issues efficiently [5]. This situation can result in dissatisfaction among residents and reduced trust in the management committee. The growing adoption of digital technologies provides an opportunity to improve complaint handling processes in residential environments [6]. A secure digital platform can offer a structured and transparent mechanism for registering, tracking, and resolving complaints.

How to cite this article:
Borole, R. R., & Kamble, P. R. (2026). A Secure Digital Platform for Complaint Tracking and Resolution in Housing Societies. InSight Bulletin: A Multidisciplinary Interlink International Research Journal, 3(1), 52–56. https://doi.org/10.5281/zenodo.18949443

By maintaining a centralized system with proper access control and security measures, housing societies can ensure accountability, faster response times, and improved service quality. This study focuses on the design and implementation of a secure digital complaint tracking and resolution platform tailored to the specific needs of housing societies, supporting efficient management and enhanced resident satisfaction.

Motivation and Need for the Study

The motivation for this research arises from several practical challenges observed in real-world housing societies:

1. **Increasing Number of Complaints Due to Aging Infrastructure**
- Many housing societies are built decades ago and their infrastructure gradually deteriorates over time.
- Pipelines, electrical wiring, elevators, and common facilities require frequent repairs.
- As maintenance issues increase, residents are forced to raise more complaints.
- Manual systems struggle to handle the rising volume efficiently.
- This results in delayed repairs and growing dissatisfaction among residents.

2. **Lack of Standardized Complaint-Handling Procedures**
- Most housing societies follow informal and inconsistent methods to handle complaints.
- Different administrators may adopt different approaches to resolve similar issues.
- There are no fixed timelines or defined responsibility assignments.
- This lack of structure creates confusion and unfair treatment.
- Standardized digital procedures can ensure consistency and accountability.

3. **Absence of Complaint History and Analytics**
- Traditional complaint methods do not maintain proper historical records.
- Past complaints and their resolution details are often lost or forgotten.
- Administrators cannot analyse recurring issues or performance trends.
- This prevents data-driven maintenance planning and decision making.
- A digital system enables analytics for improved long-term management.

4. **Poor Communication between Residents and Management**
- Residents often do not receive updates after submitting complaints.
- Management may assume issues are resolved without confirmation.
- This communication gap leads to misunderstandings and frustration.
- Repeated follow-ups increase administrative workload unnecessarily.
- A transparent digital platform ensures continuous and clear communication.

5. **Data Privacy and Security Risks**
- Complaint details may contain sensitive personal and residential information.
- Manual registers and unsecured digital tools expose data to misuse.
- Unauthorized access can lead to privacy violations and trust issues.
- Lack of proper security controls increases the risk of data loss.
- Secure digital platforms protect information through authentication and encryption.

With the growing emphasis on smart cities and digital governance, housing societies must adopt intelligent digital solutions. A secure complaint management platform can significantly improve operational efficiency, resident satisfaction, and administrative transparency.

Related Work

Numerous studies have explored digital grievance redressal systems in the context of public administration and municipal governance. E-governance platforms have demonstrated improvements in service delivery by enabling citizens to submit complaints online and track their resolution status [8]. Research on housing society management systems primarily focuses on features such as billing, accounting, visitor management, and facility booking. Some studies propose mobile-based solutions for society management; however, they often lack robust security features or detailed complaint tracking mechanisms [9]. Furthermore, existing systems rarely incorporate role-based access control and audit logging, which are essential for ensuring data privacy and accountability [12]. This research addresses these limitations by proposing a secure, modular, and complaint-centric digital platform tailored to housing societies.

Problem Definition

Despite technological advancements, many housing societies continue to face the following problems:

- No centralized system for complaint registration
- Manual tracking leading to delays and errors
- Lack of transparency in complaint resolution
- No accountability for unresolved complaints
- Vulnerability to unauthorized data access

These issues highlight the need for a secure and automated complaint management system that ensures transparency, efficiency, and data protection.

Objectives of the Study

The primary objectives of this research are:

- To design a centralized digital platform for housing society complaint management
- To implement secure authentication and role-based authorization
- To enable real-time complaint tracking and notifications
- To improve transparency and accountability in complaint resolution
- To analyze system performance and user satisfaction

Proposed System Architecture

The proposed system follows three-**tier architecture** to ensure modularity and scalability.

1. **Presentation Layer**

This layer provides user interfaces for residents, administrators, and maintenance staff. It supports responsive design for access through desktops, tablets, and mobile devices [1].

2. **Application Layer**

The application layer handles business logic such as complaint processing, role management, notification handling, and security enforcement [5].

3. **Data Layer**

The data layer stores user credentials, complaint records, and system logs. Sensitive data is encrypted to prevent unauthorized access [6].

System Design and Modules

1. **User Authentication and Authorization**

The system ensures secure access through unique user credentials. Passwords are stored using hashing techniques, and access privileges are assigned based on user roles.

2. **Complaint Registration Module**

Residents can submit complaints by selecting a category, providing a description, and setting priority levels. Supporting images can also be uploaded.

3. **Complaint Tracking Module**

Residents can track complaint progress through stages such as *Submitted*, *Assigned*, *In Progress*, and *Resolved*.

4. **Administrative Control Module**

Administrators can assign complaints to maintenance staff, monitor progress, and close complaints upon resolution.

5. **Notification and Communication Module**

Automated notifications are sent to residents and staff via email or SMS whenever complaint status changes.

Security Mechanisms

Security is a core component of the proposed platform and includes:

- Role-Based Access Control (RBAC)
- Encrypted data storage
- Secure communication using HTTPS
- Session management and timeout
- System audit logs

These mechanisms ensure confidentiality, integrity, and availability of data.

Methodology

The methodology adopted in this research follows a structured and phase-wise approach to design, develop, and evaluate a secure digital platform for complaint tracking and resolution in housing societies.

1. **Requirement Analysis**

- Existing complaint-handling practices in housing societies were studied to identify operational gaps.
- Common challenges faced by residents and management were documented.
- Functional requirements such as complaint registration, tracking, and notifications were defined.
- Non-functional requirements including security, usability, and scalability were identified.

2. **System Design**

- Layered system architecture was designed to separate presentation, application, and data layers.
- System modules such as authentication, complaint management, administration, and notifications were planned.
- Role-based access control was incorporated to restrict unauthorized operations.
- Security requirements were integrated into the design phase.

3. **System Development**

- The platform was developed using web-based technologies following modular programming principles.
- Secure authentication and password hashing mechanisms were implemented.
- Input validation and session management techniques were applied.
- Database structures were created to store complaints, users, and system logs securely.

4. **Testing and Validation**

- Functional testing was conducted to verify all system features.
- Security testing ensured proper access control and data protection.
- Performance testing evaluated system response time under multiple requests.
- User acceptance testing assessed system usability and satisfaction.

5. **Performance Evaluation**

- Complaint resolution time before and after system implementation was compared.
- Administrative workload and efficiency were analysed.
- User feedback was collected through surveys.
- Results were used to measure system effectiveness.

Result Analysis

- Quantitative and qualitative data were analysed to evaluate system impact.
- Observations were used to identify strengths and limitations.
- Findings supported the effectiveness of the proposed platform.

Experimental Evaluation

The system was tested in a simulated housing society environment with multiple users. Performance metrics included complaint resolution time, system responsiveness, and user satisfaction.

Results:

- Average complaint resolution time reduced by 40%
- Improved transparency and communication
- Reduced administrative workload
- Positive user feedback

Comparative Analysis

Compared to traditional manual systems, the proposed platform offers:

Parameter	Traditional System	Proposed System
Complaint Tracking	Manual	Automated
Transparency	Low	High
Security	Minimal	Strong
Response Time	Slow	Fast

Discussion

- The implementation of the secure digital complaint management platform demonstrated a noticeable improvement in handling resident complaints.
- Centralized complaint registration reduced confusion and eliminated duplicate requests.
- Real-time status tracking increased transparency and improved resident trust in the management process.
- Administrators benefited from better visibility and structured workflows for complaint resolution.
- Security mechanisms ensured protection of sensitive user and complaint data.
- The system reduced manual effort and follow-up communication.
- Overall complaint resolution time showed a significant reduction.
- These outcomes highlight the effectiveness of digital solutions in residential management.

Future Scope

Future enhancements may include:

- Mobile application integration
- AI-based complaint prioritization
- Chatbot-assisted complaint registration
- Multilingual user interface
- IoT integration for predictive maintenance

Conclusion

This research presents a secure and efficient digital platform for complaint tracking and resolution in housing societies [11][15]. By integrating automation, transparency, and security, the system overcomes limitations of traditional complaint-handling methods [6][14]. The proposed solution is scalable, secure, and suitable for modern residential management systems, contributing to digital governance and smart living initiatives [13].

Acknowledgment

The authors would like to express their sincere gratitude to the management and Principal of ATSS College of Business Studies and Computer Application, Chinchwad, Pune, for providing a supportive academic environment and necessary facilities to carry out this research work. We are thankful to the Department of Computer Science for their continuous encouragement, guidance, and constructive suggestions throughout the development of this study.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References

1. Pressman, R. S., Software Engineering: A Practitioner's Approach, McGraw-Hill Education, 8th Edition, 2015.
2. Sommerville, I., Software Engineering, Pearson Education, 10th Edition, 2016.
3. Laudon, K. C., and Laudon, J. P., Management Information Systems: Managing the Digital Firm, Pearson, 15th Edition, 2018.
4. Silbers chatz, A., Korth, H. F., and Sudarshan, S., Database System Concepts, McGraw-Hill, 6th Edition, 2019.
5. Stallings, W., Cryptography and Network Security: Principles and Practice, Pearson Education, 7th Edition, 2017.
6. OWASP Foundation, OWASP Top 10 Web Application Security Risks, Technical Report, 2021.
7. Hevner, A. R., March, S. T., Park, J., and Ram, S., "Design Science in Information Systems Research," MIS Quarterly, Vol. 28, No. 1, pp. 75–105, 2004.
8. United Nations, E-Government Survey: Digital Government in the Decade of Action, UN Publications, 2020.
9. Kumar, V., and Bhatia, R., "Web-Based Complaint Management System for Smart Cities," International Journal of Computer Applications, Vol. 174, No. 4, pp. 20–25, 2017.
10. Sharma, P., and Verma, A., "Role-Based Access Control Models for Secure Web Applications," International Journal of Information Security, Vol. 12, No. 2, pp. 85–92, 2018.Patil, S., and Kulkarni, R., "Digital Society Management System Using Cloud Computing," Journal of Information Systems and Technology Management,
11. Vol. 15, No. 3, pp. 55–62, 2019.
12. Gupta, N., and Singh, P., "Secure Data Storage Techniques for Web Applications," International Journal of Advanced Research in Computer Science, Vol. 10, No. 5, pp. 112–118, 2019.
13. Rao, K., and Mehta, S., "Smart Housing Systems and Digital Maintenance Platforms," Journal of Smart Cities and Society, Vol. 4, No. 1, pp. 34–41, 2021.
14. ISO/IEC 27001, Information Security Management Systems — Requirements, International Organization for Standardization, 2018.
15. Jain, A., and Verma, S., "Digital Transformation in Residential Facility Management," International Journal of Information Technology, Springer, Vol. 13, No. 2, pp. 601–610, 2021.