

Barangay Complaint App: A Mobile System for Reporting and Tracking Barangay Issues

Abstract

This capstone project developed the Barangay Complaint App, a mobile and web-based system designed to improve the reporting, monitoring, and management of barangay complaints in Tumoy, Lower Landing, Dumingag, Zamboanga del Sur. The project addressed the limitations of the traditional complaint process, wherein residents commonly reported concerns personally or verbally at the barangay hall, resulting in delays, inadequate documentation, and difficulty in monitoring complaint status. The system was developed using the Waterfall Model, consisting of requirement gathering and analysis, system design, implementation, testing, deployment, and maintenance. The application was developed using TypeScript, React, Vite, and Supabase PostgreSQL. It provides separate functionalities for residents, the system administrator/Barangay Captain, and the Lupon. Residents can register, submit complaints with supporting files, and monitor complaint status, while barangay officials can manage complaints, update their status, transfer cases to the Lupon, schedule hearings, and generate reports. System testing was conducted with barangay officials and residents in January 2025 using a 20-item, five-point Likert-scale evaluation instrument. The reported results showed very high ratings for perceived usefulness ($M = 4.98$), perceived ease of use ($M = 4.91$), attitude toward use ($M = 4.93$), and behavioral intention to use ($M = 4.96$). The findings indicate that the developed system provided an accessible and organized mechanism for complaint reporting and tracking while supporting the administrative requirements of barangay officials.

Keywords: *barangay complaint system, mobile application, complaint management, e-governance, local governance, complaint tracking*

1. Introduction

Digital technology has increasingly become part of how communities communicate, access services, and address concerns. Despite this development, residents in some barangays continue to rely on traditional face-to-face or verbal processes when reporting community issues. In Tumoy, Lower Landing, Dumingag, Zamboanga del Sur, residents encountered difficulties in reporting complaints because complaints were commonly submitted personally or communicated verbally. The process was particularly inconvenient for residents living far from the barangay hall or those who needed to report concerns outside convenient office hours. These circumstances could contribute to delays, incomplete documentation, and difficulty in monitoring the progress of complaints.

The need for a more accessible complaint mechanism provided the context for the development of the Barangay Complaint App. The proposed system allows residents to submit complaints through a mobile device without necessarily going to the barangay hall. It also provides mechanisms for tracking complaint status and receiving updates. The application distinguishes between complaints classified as blotter cases and those requiring summons and further intervention through the Lupon.

The development of the system was also informed by previous studies on digital complaint management. Existing systems have demonstrated the potential of electronic complaint platforms to improve accessibility, centralized record keeping, monitoring,

communication, and transparency. However, the reviewed studies also indicated that complaint systems need to consider the specific context, requirements, and technological conditions of their intended users. The present project therefore focused on developing a complaint management system suited to the needs of Tumoy, Lower Landing.

The main objective of the project was to develop a mobile application that would allow residents to report and track barangay issues efficiently. Specifically, the project aimed to:

1. enable residents to register and submit complaints without personally going to the barangay hall;
2. provide updates regarding complaint status;
3. allow the system administrator to view and manage complaints;
4. provide the Lupon with an interface for managing complaints requiring its intervention; and
5. generate reports based on complaint summaries.

The system was designed primarily for residents of Tumoy, Lower Landing. It supports Android mobile devices and can also be accessed through a web browser, allowing users of computers and iOS devices to access the web version. However, its operation depends on an internet connection, while paper-based documents associated with complaints must still be submitted physically to the barangay office. The system also does not cover serious legal cases that must be referred to police or judicial authorities.

2. Methods

2.1 Research and Development Approach

The project employed a systems development approach using the Waterfall Model. The Waterfall Model was selected because it provides a structured sequence of development activities and emphasizes documentation and clearly defined requirements.

The development proceeded through the following stages:

1. Requirement Gathering and Analysis
2. System Design
3. Implementation
4. Testing
5. Deployment
6. Maintenance

The development process was guided by information obtained from barangay stakeholders and observation of the existing complaint-handling process.

2.2 Requirement Gathering and Analysis

The researchers interviewed key barangay officials, including the Barangay Secretary and Peace and Order Officer, to understand how complaints were received, documented,

processed, and resolved. The researchers also observed the existing manual complaint-handling process and reviewed complaint records.

The assessment identified several operational concerns, including delays in processing complaints, inadequate documentation, difficulty tracking complaint status, and the absence of a systematic mechanism for providing updates to complainants.

Based on these requirements, the system was designed to provide:

- resident registration;
- complaint submission;
- complaint categorization;
- supporting file uploads;
- complaint status monitoring;
- notifications and status updates;
- administrative complaint management;
- Lupon case management;
- hearing scheduling; and
- complaint summary reporting.

2.3 System Design and Architecture

The system was designed around three principal user roles:

Resident. Residents can register and log in, submit complaints, provide complaint details and supporting documents, and monitor the status of their complaints.

System Administrator/Barangay Captain. The administrator can verify resident registrations, manage residents, receive and review complaints, update complaint statuses, transfer cases to the Lupon, and generate reports.

Lupon. The Lupon can receive complaints transferred by the Barangay Captain, review cases, update complaint status, schedule hearings, and generate complaint reports.

The system incorporated use-case, sequence, and activity diagrams to describe user interactions and system processes. These included complaint submission, complaint status monitoring, administrative complaint management, status updating, report generation, Lupon case transfer, and hearing scheduling.

2.4 Software and Development Technologies

The frontend of the application was developed using TypeScript and JavaScript, with React v18.0.0 as the frontend framework. CSS and SCSS were used for interface styling, while HTML provided the structure of the web interface. Vite v4.3.1 was used as the build tool.

For backend and database services, the system used Supabase PostgreSQL, which handled user information, complaint records, and notifications. Docker and shell scripting were used to support deployment and containerization.

Security mechanisms included authentication and authorization, JSON Web Tokens (JWT), role-based access control, HTTPS, input validation and sanitization, row-level security, logging and monitoring, and automated database backups.

2.5 System Testing and Evaluation

The developed system was tested with barangay officials on January 6, 2025, and barangay residents on January 8, 2025.

A 20-item survey based on the objectives of the application was used to evaluate user acceptance and satisfaction. Responses were measured using a five-point Likert scale:

Scale	Interpretation
5	Strongly Agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

The reported interpretation of mean scores was:

Mean Range	Interpretation
1.00–1.80	Very Low
1.81–2.60	Low
2.61–3.40	Moderate
3.41–4.20	High
4.21–5.00	Very High

The evaluation covered four areas: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards Use (ATU), and Behavioral Intention to Use (BIU).

3. Results and Discussion

3.1 Developed Barangay Complaint App

The resulting Barangay Complaint App provided a centralized platform for managing barangay complaints. The system enabled residents to create accounts, submit complaints, attach supporting documents, and monitor complaint progress.

The system also provided administrative interfaces for the Barangay Captain and Lupon. The administrative dashboard allowed the Barangay Captain to manage complaints, resident registrations, and resident records. Complaint records could be searched, filtered, sorted, and monitored according to their current status.

Complaint statuses included Pending, In Process, Resolved, Dismissed, and cases requiring Lupon intervention. This functionality provided a structured mechanism for monitoring the complaint lifecycle.

3.2 Resident Functions

The resident interface provided registration and authentication functions. During registration, residents were required to provide personal information, including their name, Purok, address, email, and proof of residency.

Once registered and approved, residents could access the complaint filing interface. The system allowed them to specify the complaint type, case title, description, and Purok location. Supporting documents could also be attached in several file formats.

The My Complaints interface allowed residents to view their previously submitted complaints and monitor their current status. The Recent Updates feature provided a timeline of status changes, including the case number, updated status, and timestamp.

These features directly addressed the project's objective of allowing residents to report and monitor complaints without repeatedly visiting the barangay hall.

3.3 Administrative Functions

The Barangay Captain's interface provided tools for managing resident registrations, residents, complaints, and reports.

For resident registration, the administrator could review pending applications and approve or reject registrations. This function supported verification before residents were granted access to complaint submission.

For complaint management, the administrator could view submitted complaints and update their status. The system also allowed complaints requiring further intervention to be transferred to the Lupon.

The administrative report interface provided summary information, including total complaints, pending cases, resolved cases, resolution rate, status distribution, and monthly complaint trends. Reports could also be filtered and exported or printed for documentation.

3.4 Lupon Functions

The system provided a dedicated interface for the Lupon. Complaints transferred by the Barangay Captain could be viewed by authorized Lupon users.

The Lupon could monitor complaint information, update case status, schedule hearings, and generate reports. The hearing-scheduling function allowed the Lupon to record the date, time, and location of a hearing.

These functions reflected the project's objective of providing the Lupon with a dedicated interface for complaints requiring further intervention.

3.5 User Evaluation

The evaluation results showed consistently high ratings across all four dimensions.

Evaluation Dimension	Mean	Interpretation
Perceived Usefulness	4.98	Very High
Perceived Ease of Use	4.91	Very High
Attitude Towards Use	4.93	Very High
Behavioral Intention to Use	4.96	Very High

Perceived Usefulness

The system obtained an overall mean of 4.98 for perceived usefulness. The highest-rated aspect was the system's ability to improve communication between residents and barangay officials ($M = 5.00$, $SD = 0.00$). Complaint tracking also received a high rating ($M = 4.97$, $SD = 0.18$).

The result indicates that the users perceived the system as useful for facilitating complaint reporting and monitoring. The ability to submit complaints electronically and track their status addresses the project's primary objective of reducing dependence on physical visits to the barangay hall.

Perceived Ease of Use

Perceived ease of use obtained an overall mean of 4.91, interpreted as very high. Users rated the simplicity of submitting complaints at $M = 4.93$ ($SD = 0.25$), while the ability to use photo/video attachments received $M = 5.00$ ($SD = 0.00$).

The relatively lower rating for interface intuitiveness, $M = 4.67$ ($SD = 0.48$), suggests an area where future interface refinement may be considered. Nevertheless, the overall result indicates that users generally found the system easy to use.

Attitude Towards Use

The overall mean for attitude toward use was 4.93, also interpreted as very high. Users reported comfort in using the system ($M = 4.87$, $SD = 0.35$) and recognized its contribution to barangay issue resolution ($M = 5.00$, $SD = 0.00$).

The recommendation item also received $M = 5.00$ ($SD = 0.00$). These results indicate positive user perceptions toward the developed application.

Behavioral Intention to Use

Behavioral intention to use obtained an overall mean of 4.96. Users expressed a preference for using the application instead of traditional complaint reporting methods ($M = 4.90$, $SD = 0.31$) and interest in additional system features ($M = 5.00$, $SD = 0.00$).

The findings indicate a strong intention among the evaluated users to continue using the application and support further enhancement of the system.

3.6 Discussion

The results demonstrate that the developed Barangay Complaint App addressed the major requirements identified during the requirement-gathering stage. The system provided residents with a digital mechanism for filing complaints and monitoring their progress while providing barangay officials with centralized tools for managing cases and generating reports.

The system's very high ratings for usefulness, ease of use, attitude toward use, and behavioral intention are consistent with the project's intended outcomes. The findings also correspond with the related studies reviewed in the original capstone, which emphasized the value of digital complaint systems in improving accessibility, centralized record management, monitoring, transparency, and communication.

However, the results should be interpreted within the scope of the project. The application depends on internet connectivity, and some complaint-related documents must still be processed physically. The system is therefore a digital support mechanism for barangay complaint management rather than a complete replacement for all existing barangay procedures.

4. Conclusion

The Barangay Complaint App was successfully developed as a mobile and web-based system for reporting, monitoring, and managing barangay complaints in Tumoy, Lower Landing, Dumingag, Zamboanga del Sur.

The developed system provided the intended core functions for residents, the Barangay Captain/system administrator, and the Lupon. Residents could register, submit complaints, attach supporting files, and monitor complaint status. Barangay officials could manage registrations and complaints, update case statuses, transfer cases to the Lupon, schedule hearings, and generate complaint reports.

The system evaluation produced very high mean ratings for perceived usefulness (4.98), perceived ease of use (4.91), attitude toward use (4.93), and behavioral intention to use (4.96). These results indicate that the evaluated users perceived the application as useful and easy to use and expressed positive attitudes and intentions toward its continued use.

Overall, the developed system provided a structured digital mechanism for complaint reporting and tracking while supporting the administrative processes of the barangay.

5. Recommendations

Based on the results and identified limitations, the following enhancements are recommended:

1. **Develop an offline reporting feature.** An offline mode may be developed to allow residents to prepare and submit complaints even when internet connectivity is unavailable, with automatic synchronization once connectivity is restored.
2. **Develop a mobile-friendly dashboard for barangay officials.** A mobile administrative interface may allow officials to review, respond to, and update complaints while away from the barangay office.
3. **Explore integration with the municipal government.** The system may be expanded to support the referral or escalation of unresolved complaints that require action beyond the barangay level.

4. **Add a feedback and rating mechanism.** Residents may be given an opportunity to provide feedback after their complaints are resolved. This can provide additional information for evaluating the quality of complaint handling.
5. **Continue system maintenance and enhancement.** Regular maintenance, user training, security monitoring, and periodic improvement of system features should be undertaken to sustain the application's usefulness and reliability.