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Online Case Filing Management System for Violence against Women and their Children

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ABSTRACT

Barangays remain obstructed from proper management of Violence Against Women and Child (VAWC) cases because the majority of documentation remains non-digital. Retrieving crucial case information becomes increasingly difficult since traditional document management systems result in misplaced documentation, broken confidentiality protocols and compliance within government agencies are crucial documentation.

To solve these problems the research presents an Online Case Filing and Management System for Violence Against Women and their Children (VAWC) which operates as a digital tool to streamline case records and secure data and elevate service performance. Through a centralized digital platform the system for barangay officers when storing, managing and tracking VAWC case information and a mobile application enables and encourages victims to file online complaints and send supporting documents as well as direct calls to emergency hotlines thereby expediting response times.

The innovative system helps barangays to effectively protect confidentiality and offer quicker service and empowers women and children to get help using a safer and more convenient system.

Key words: Violence Against Women and their Children (VAWC), online case filing, digital case management, mobile reporting application, emergency hotline system, data confidentiality, barangay management system.

1. INTRODUCTION

The worldwide problem of male directed assault exists at a dangerous level because it affects high numbers of people through physical injuries and psychological distress which may end fatally. Filipino women suffer from abuse in the same way as other females of the world despite official equal rights safeguards. The absence of respect for women by both husbands and parents and occasionally employers leads to ongoing abuses despite constitutional gender equality protections. The LGU's Violence Against Women and their Children (VAWC) Desk Officers acts as a major role model for empowering and facilitating the supports for the victims, identifying various forms of violence including physical, emotional, psychological, sexual, and economic abuse and demonstrate a highly effective in fulfilling their mandates that contributes in prevention, combating and prosecution of Violence Against Women and their Children (VAWC) incidents within the LGU[1][2].

In the Philippines, violence against women remains widespread. About one in five women aged 15 to 49 has faced physical violence, while 14.4% of married women have been abused by their husbands. Among separated or widowed women, 37% reported experiencing physical violence, suggesting that abuse may contribute to marital separation or annulment (PCW, 2014) [3].

Despite the presence of existing laws and support programs, many Filipino women still struggle to seek justice due to fear, stigma, and limited access to safe reporting channels. (Caban,2022) found that although many women are aware of their rights under RA 9262, a significant number still choose not to file complaints because they fear retaliation, social judgment, and the emotional difficulty of reliving the abuse. This reveals a critical gap between legal protection and practical access to help especially for victims who live with their abusers or those who lack support from family and community [4].

Digital tools play an increasingly important role in bridging this gap by offering victims discreet and accessible ways to seek help. In a study in Laguna, (Balahadia, et al, 2022) demonstrated that a mobile based VAWC reporting system can empower victims by providing a safer, more convenient method for filing complaints and documenting evidence. Their findings show that victims value privacy, protection from monitoring by abusers, and immediate access to

assistance features that traditional reporting methods often fail to provide. When paired with trained VAWC Desk Officers and community support, technology can significantly strengthen how cases are reported, managed, and responded to [5].

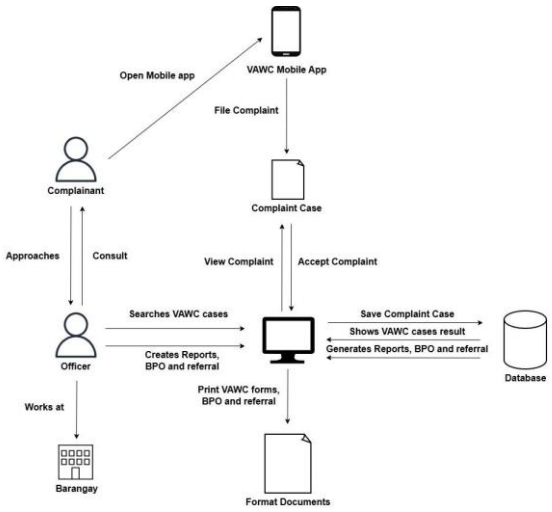

Figure 1: Product Perspective

Figure 1 shows that the victims can submit a case physically or online which will enable the officer to keep a quick determination as to pursue a complaint against the respondent. The VAWC Desk officer may access case records that already exist, maintain cases, and record data with the software which allows to display case outcomes, produce reports, BPOs, and referrals that may be printed in the form of formal documents. The system gives them an opportunity to act fast and respond as soon as necessary.

2. METHODOLOGY

The project utilized the Waterfall model, a conventional software development approach known for its organized, step-by-step sequence of phases. In this model, each phase depends on the outputs of the preceding phase, and development does not proceed to the next stage until the current one is fully completed. The Waterfall approach does not allow revisiting or modifying earlier phases once they have been finalized. Because of its structured nature and limited flexibility, this model is typically suitable for small-scale projects with well-defined and stable requirements [6].

The development process followed the standard Waterfall phases, namely: system requirements specification, software requirements analysis, program design, coding, testing, and deployment/operations. Each phase was carefully planned and executed to ensure efficient utilization of program resources and to maximize the overall quality of the final product [7].

3. RESULTS

According to the systematic strategy outlined in the Methodology section, the results of every stage of development are as follows.

3.1 Requirements Specification

During the initial phase, the team did data collection by consulting with the main stakeholders, project advisors, Barangay officers and women. Surveys and interviews were used to determine the functionalities required in the case filing and management system of violence against women and children. The development phase came after the information collected based on the schedules and budget considerations.

3.2 Planning

In this phase, the groundwork for the VAWC System was established by clearly defining the project's goals, scope, and key deliverables. A detailed project roadmap was created to guide development and ensure timely progress. Responsibilities were assigned to team members based on their skills and availability to enhance efficiency. Additionally, a resource management plan was developed, addressing manpower, scheduling, and budget considerations. This careful planning helped keep the project within financial constraints, improved team productivity, and provided a structured approach to developing a secure, accessible, and effective platform for reporting and managing cases of violence against women and their children.

3.3 Designing

The design phase of this study was meticulously planned to translate the initial requirements and user stories into detailed system specifications and visual models. Drawing on the Agile model's iterative approach and leveraging the Scrum framework, the design activities focused on creating comprehensive and adaptable design outputs. These outputs, including use-case diagrams, Entity-Relationship Diagrams (ERDs), Class Diagrams, UML Activity Diagrams, and Data Dictionaries, served as foundational tools to guide the development process. The design phase ensured that the web application's architecture was robust, user-centered, and capable of evolving with the project's dynamic needs.

a. Technical Specification

The VAWC Case Filing and Management System is built around two primary components that work together to support efficient case handling and secure communication. The first component is the Software application system, which serves as the main platform for VAWC Desk Officers. Through this system, officers can manage case records, review submitted complaints, update case progress, and monitor user activity using a structured and organized interface.

The second component is the mobile application, developed using Kotlin, which enables users to conveniently file complaints and track updates using their mobile devices. It provides a simple and accessible way for victims to connect with the VAWC Desk Officers and receive timely information regarding their cases.

Both components are supported by Firebase, which handles real-time data syncing, secure authentication, and database management, ensuring accuracy, efficiency, and reliability across the entire system. Together, these technologies form a cohesive and scalable platform designed to improve case processing and provide accessible support for users.

The following tech serves as the foundation of the platform:

- C#
- Kotlin
- Firebase
- Visual Studio 2022
- Android Studio

b. Use-Case Diagram

A use case diagram is a diagram that illustrates the key functionality of the system and its interaction with the users. It assists in the definition of the scope of the system and is easier in the perception of what the system needs to do from the user perspective, which is important throughout the planning and design phases.

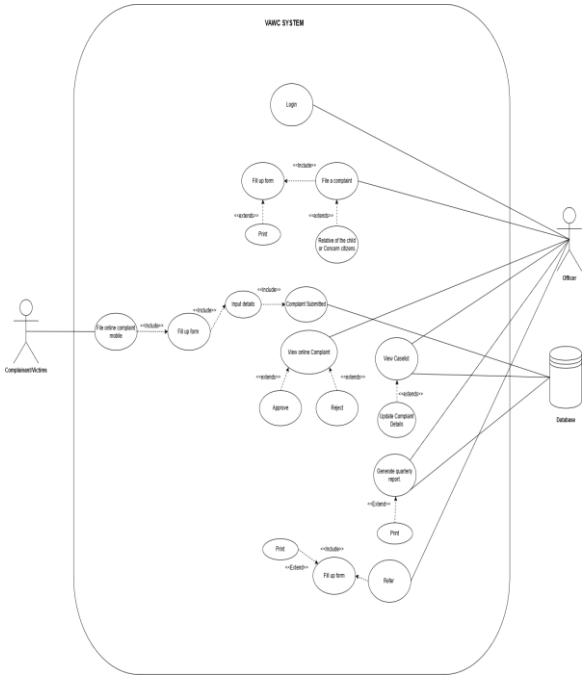

Figure 2: Use Case Diagram

Figure 2 specifies the use case model of this system, which indicates the way the two main users engage with the system. It identifies some of the key functions that include online complaint filing in which complainants are able to file their reports securely. All these complaints are then saved in the database, and barangay officers can consider cases on the Web, managing and updating the records of cases along with the production of reports that can be saved and tracked. On the whole, the model highlights how the system simplifies the process of processing the cases and increases their accessibility to both the users.

c. Interface Design

The Interface Design is aimed at producing easy to use design, where the functions of the system are well displayed such as the navigation buttons, text fields, and dropdown menus. Its main purpose is to provide an easy and seamless experience to the user of the site- enabling women to complain easily and comfortably and enable administrators to process cases easily with less complexity. Such design favors ease of accessibility, understandability, and easy interface to every feature within the system.

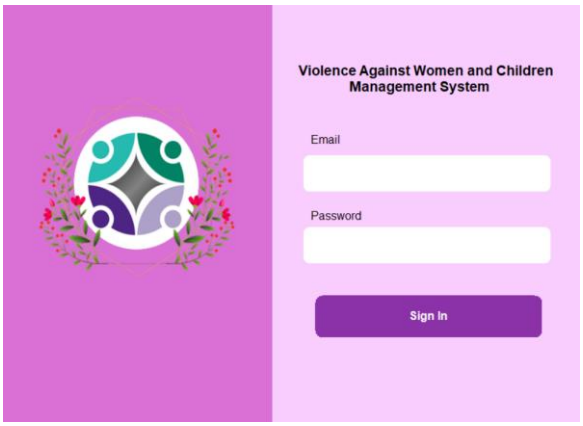

Figure 3: System Login

Figure 3 shows the Login Page that is the secure access to the Case Management System of VAWC. It enables the authorized system users to access confidential case records and system features. Security is therefore enforced so that all sensitive information and in particular those concerning victims is kept secure at all times.

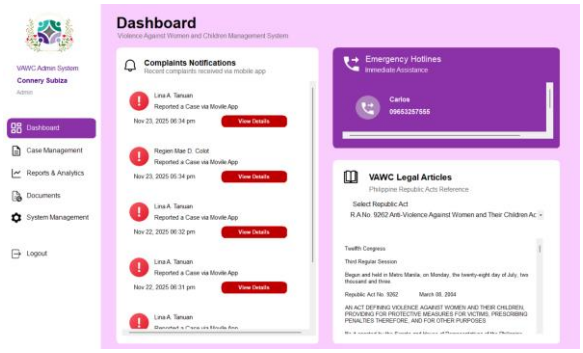

Figure 4: System Dashboard

Figure 4 shows the Dashboard of the Admin section where authorized individuals will also be able to comfortably modify features of the core system. On this page, they would have an opportunity to see the complaints posted online by victims,

VAWC-related legal articles, as well as other modules such as case management, reports and analytics, documents, and system management. Dashboard rendering is designed to react quick and work on cases as precise as possible in order to offer assistance to the victims as promptly as possible.

Figure 5: Create New Case

Figure 5 presents the Case Filing Form of walk-in complainants at the barangay. This feature offers other options through which victims can be able to report such instances when they feel like seeking help in person. The Industrial officer or the administrative is entrusted with completion of all the fields in order to guarantee proper complete records of the case. This will make sure that all complaints raised both online and those made face-to-face are adequately documented and solved in a system.

Figure 6: Mobile App Login

Figure 6 shows the Mobile App Login Page which has been used to allow the complainants to access their accounts in a secure way, with the use of the credentials given to the complainants by the barangay. This will make sure that any report is checked and aids in avoiding anonymous or false reporting, making the system to be more responsible and safer to use by a victim in need of help.

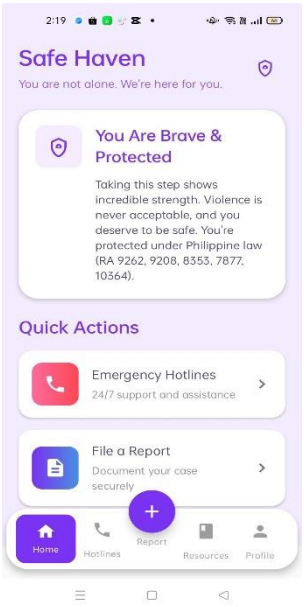

Figure 7: Home

Figure 7 is the Home Screen of the mobile application in which the complainant can navigate easily in the features provided. Once logged in the user is presented with the basic options needed like File a Complaint and that gives the victims an opportunity to report on the abuse anytime they find it necessary. The interface is also supposed to be simple, intuitive, and easy to use so that the user, who has a case to complain or not, can reach the support and file a case without any problems, particularly in emergency cases.

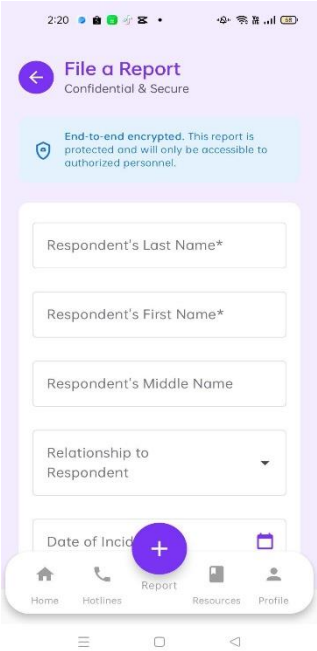

Figure 8: File a Complaint

Figure 8 shows the interface to file a complaint in which the complainant can include all the details required in case she is abused by her partner.

3.4 Development Implementation

The development phase of the VAWC System focused on creating a secure and user-friendly mobile platform for filing complaints. The process began with building the core application using C# for backend logic and Kotlin for the mobile frontend, chosen for their performance, scalability, and seamless integration. Firebase was utilized for database management, user authentication, and real time data storage to ensure reliable case tracking and secure handling of sensitive information.

The system was designed to streamline complaint filing and improve access to support services, enabling victims to report cases safely while allowing VAWC Desk Officers to efficiently manage and monitor complaints. The development process included continuous testing and debugging to ensure the platform was secure, responsive, and easy to navigate. By implementing the system on mobile devices, the VAWC System provides victims with a discreet, accessible, and effective tool for seeking help and managing cases of violence against women and children.

3.5 Testing

The testing phase of the VAWC System focused on ensuring accurate, secure, and reliable platform performance. Various testing methods were applied to verify both backend logic and mobile user experience.

Unit testing was performed on key backend functions, including complaint submission, user authentication, and database interactions, using Firebase mock data to validate functionality. Integration testing verified the complete system workflow, including case management by VAWC Desk Officers, data storage, and user authentication processes.

Manual testing on multiple mobile devices assessed usability, interface consistency, and input behavior. Issues such as slow response times, navigation errors, and interface inconsistencies were addressed.

User acceptance testing (UAT) involved feedback from potential users and VAWC Desk Officers, helping identify usability issues and guide final refinements. Overall, the testing phase confirmed that the VAWC System met functional requirements, provided a secure and accessible user experience, and remained stable, preparing it for deployment.

3.6 Deployment

The deployment phase involved making the VAWC System fully operational and accessible to its intended users. The mobile application was published and configured on target devices, ensuring seamless installation and compatibility across Android platforms using Kotlin for the frontend and C# for backend integration. Firebase was set up to handle secure data storage, user authentication, and real time case management.

Prior to full release, system access was provided to a select group of VAWC Desk Officers and test users to monitor performance, identify potential issues, and confirm the effectiveness of complaint filing and case management features. Training was conducted for Desk Officers to familiarize them with administrative functions, workflow management, and data security protocols.

The deployment phase ensured that the VAWC System was fully functional, user-friendly, and ready for real-world use, providing victims with a secure, accessible, and efficient platform for reporting and managing cases of violence against women and children.

3.7 System Evaluation and Maintenance Considerations

The VAWC System was carefully evaluated to ensure it meets the needs of both victims and VAWC Desk Officers. The testing showed that the system performs reliably, with functional suitability and reliability each scoring 90%. Security testing confirmed that sensitive data is well-protected, earning a score of 96.67%, while the system's flexibility achieved a perfect score of 100%, reflecting its adaptability to different user scenarios. Interaction capability also performed strongly at 95%, allowing smooth and efficient communication between users and the platform. Safety scored 90%, performance efficiency 83.33%, and maintainability 80%, highlighting areas that can be enhanced in future updates. Overall, these results confirm that the system is ready for deployment and capable of providing a secure, reliable, and user-friendly platform.

The VAWC System was designed with scalability and long-term sustainability in mind. Its modular architecture, combined with C#, Kotlin, and Firebase, allows for easy updates, bug fixes, and feature enhancements. Firebase ensures real-time database updates and simplified backend management. A structured maintenance protocol is in place to monitor performance, implement security updates, and respond promptly to user feedback, ensuring the system remains effective, secure, and responsive to the needs of its users over time.

4. CONCLUSION

The development and implementation of the Violence Against Women and Children (VAWC) Case Filing and Management System represent a significant step toward addressing long-standing challenges faced by barangay VAWC desks, particularly issues related to paper-based records, data security, and accessibility for victims. The system integrates a desktop application for officers and a mobile application for complainants, providing a secure and user-friendly platform for case filing, monitoring, and management.

Guided by the ISO/IEC 25010 software quality standards, the system underwent comprehensive functional and non-functional testing. The results demonstrated high levels of functional suitability and reliability, each achieving a rating

of 90%. Security emerged as one of the system's strongest attributes, earning a score of 96.67%, ensuring the protection of sensitive and confidential case information. Flexibility achieved a perfect score of 100%, reflecting the system's ability to adapt to varying user needs and operational scenarios. Interaction capability also performed strongly at 95%, enabling smooth communication between complainants and officers. While safety, performance efficiency, and maintainability yielded favorable results, these areas present opportunities for further enhancement in future iterations.

The testing and deployment phases confirmed the system's readiness for real-world use, providing a reliable and secure environment for handling VAWC cases. Built using C#, Kotlin, and Firebase, the system's modular architecture supports scalability, efficient maintenance, and seamless updates. Firebase facilitates real-time data synchronization and simplifies backend management, contributing to overall system stability and responsiveness.

In conclusion, the VAWC Case Filing and Management System significantly contributes to improving confidentiality, accessibility, and efficiency in handling VAWC cases at the barangay level. By leveraging modern technologies and a user-centered design approach, the system empowers women to report incidents safely while enabling officers to manage cases effectively. With continued maintenance and future enhancements, the system is well-positioned to support the evolving needs of communities and strengthen the protection of women and children.

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