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CharityMate: NGO Platform

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Abstract: This paper presents the development of a multi- functional digital platform tailored to the operational and communication needs of Non-Governmental Organizations (NGOs). Built using the Flutter framework, the platform serves as a centralized hub to streamline communication, event management, and community engagement, offering a seamless user experience for both administrators and members. The platform features an integrated communication module, enabling administrators to manage member groups efficiently, similar to mainstream messaging applications. This facilitates realtime interactions and effective collaboration. A comprehensive event management system allows administrators to schedule events, send notifications, and oversee logistics in an organized manner. Each event is supported by a dedicated page hosting multimedia content, ensuring accessible information to foster greater participation. The platform also supports long-term community engagement through an alumni network, encouraging contributions from former members and maintaining connections with the organization's activities. Additionally, the inclusion of a fee collection and management system simplifies financial operations, making the tracking of membership payments more efficient. By integrating these key features, this platform enhances administrative efficiency, strengthens community bonds, and offers NGOs a versatile digital solution to adapt to their evolving needs.

Keywords: NGO Management, Flutter, Event Scheduling, Communication Platform, Community Engagement

I. INTRODUCTION

Non-governmental organizations (NGOs) often engage in social welfare activities, aiming to foster community development and empower members through active participation. Traditionally, these activities have been coordinated through offline communication channels, which presents challenges in organizing events, tracking member participation, and maintaining effective communication within large groups. As more organizations adopt digital solutions to streamline their operations, the need for a centralized digital platform has become increasingly evident. This project introduces a Flutter-based mobile application designed to address these challenges by creating a comprehensive digital platform for NGO members and administrators. The application serves as a central hub for managing communications, organizing events, tracking activities, and fostering engagement among both current members and alumni. By integrating features such as group chats, event scheduling, fee collection, and multimedia sharing, the application aims to enhance the overall experience for NGO members and administrators, promoting a stronger sense of community and more efficient management of programs. The platform's design focuses on user-friendliness and efficiency, enabling NGOs to effectively manage their activities while fostering a sense of belonging and engagement among members. The application's tools and features provide a streamlined approach to handling the administrative aspects of NGO operations, ensuring that both new and returning members can easily access resources, stay informed about upcoming events, and actively participate in community initiatives.

II. LITERATURE SURVEY

Non-Governmental Organizations (NGOs) are legally established entities that operate independently of government control, typically focusing on social objectives [1]. Although their work may intersect with political issues, NGOs

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83



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remain distinct from political parties, shaping their roles in society. While NGOs may receive government funding, they maintain their independence by excluding government officials from their governance structures, which allows them to pursue their missions without external influence.

The term" NGO" lacks a universally accepted legal definition, resulting in varied recognition across different regions. In many countries, NGOs are referred to as" civil society organizations," reflecting the diverse roles they play in addressing social issues. Globally, around 40,000 NGOs are operational, with national figures even higher; for example, Russia has ap- proximately 277,000 NGOs, while India is home to around 3.3 million, underscoring their global significance [1]. Although NGOs may engage in politically relevant work, they are not political organizations, allowing them to advocate for social change without direct involvement in the political process.

Additionally, challenges faced by service personnel include difficulties in matching qualifications with job descriptions, in- adequate monitoring and supervision, logistical shortcomings, a lack of motivational incentives, insufficient evaluation of the scheme's effectiveness, and poor communication to the public regarding the scheme's importance [4]. In Zimbabwe, a study aimed to assess the extent to which NGOs implement internal controls in their operations. This included evaluating the control environment, control procedures, and the monitoring of activities to ensure that organizations achieve their set goals and objectives [7].

The literature on the Flutter framework outlines its application in creating hybrid mobile applications. It discusses the evolution from native to hybrid applications, emphasizing the demand for a single codebase capable of running on multiple platforms like Android and iOS. This shift is fuelled by the need for rapid development and deployment across various operating systems. Flutter is introduced as a modern frame- work developed by Google for building high-performance, cross-platform applications. The framework allows developers to create native-like applications using a single codebase, significantly reducing development time and effort.

The paper highlights the role of Dart, the programming language used in Flutter, detailing its features such as ahead-oftime compilation and object-oriented nature, which contribute to the performance and efficiency of applications [3]. A major focus is placed on Flutter's widget system, enabling developers to create complex user interfaces by composing simple widgets. This flexibility in UI design is illustrated through practical examples, including an application for purchasing and booking airplane tickets, which serves as a case study to demonstrate the capabilities and advantages of Flutter and Dart in hybrid app development. While the paper primarily focuses on Flutter, it also briefly compares it with other frameworks like Xamarin and React Native, highlighting Flutter's superior performance and ease of use for developers [2].

III. METHODOLOGY

The methodology of the Charity-Mate: NGO Platform focuses on creating a mobile application that integrates various functionalities to help NGOs manage their operations efficiently. The diagram provided showcases the architecture of the platform, illustrating the interaction between users, admins, volunteers, and the backend database.



Fig. Architecture

1. Platform Development: Technology Stack: The project uses Flutter for cross-platform mobile app development, providing a consistent experience on both Android and iOS. Dart is used as the primary programming language to write

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84



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International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 5, Issue 10, May 2025



the application logic. Database Management: The platform relies on Fire base for real-time database synchronization, allowing seamless updates for user roles (Admin, Volunteer, and User), events, and donation records.

2. User Roles and Access Control: The system distinguishes between three primary user types: Admin, Volunteer, and User. Admin: Responsible for man aging events, overseeing donations, and updating organizational data. Admins have access to the data management module, which interacts with the Firebase database. Volunteer and User: Volunteers can log in to participate in events and manage their contributions, while regular users can engage with the system to receive updates, view events, and make donations.

3. Login and Authentication: All users (Admin, Volunteer, and User) must authenticate via the Login module, which validates user credentials and grants access to the appropriate system functionality based on the user's role. The login system is secured using Firebase authentication services.

4. Event Management and Data Access: Admins can create, update, and manage events through the Data Management module. Event information, including multimedia content, is stored and retrieved from the Firebase database. Volunteers and users can view event details, participate in events, and access related multimedia through the Data Access module.

5. Donation Management: The Donation module is accessible to all authenticated users. It provides a secure interface for users to make donations, which are logged in the database and managed by the Admin through the Data Management module.

6. Database Synchronization: The Firebase Database handles all back-end operations, ensuring that changes in event details, user roles, and donations are reflected across the platform in real-time. The platform architecture ensures seamless interaction between users and the database for efficient data management.

By structuring the system around distinct user roles and leveraging Firebase for real-time updates, the platform ensures robust management of NGO activities, volunteer participation, and financial transactions. This design fosters an efficient and transparent operation for NGOs, simplifying communication and event organization for administrators, volunteers, and members.

IV. MODULES AND FUNCTIONALITIES

Charity-Mate is built around several core modules, each addressing essential operations for NGOs:

User Role Management

Roles: Admin, Volunteer, Alumni, Public

Features adapt dynamically based on user role.

Access to specific modules is restricted and handled via conditional rendering and Firebase Authentication.

Event Management

Admins can create, update, and manage events.

Volunteers can view and join events.

Events include title, date, description, location (via Google Maps), and images.

Geotagging of events helps track volunteer engagement.

Messaging System

Real-time chat-like messaging for internal communication between Admins and Volunteers.

Based on Firebase Cloud Fire store for quick synchronization and scalability.

Alumni Network

Enables past volunteers (alumni) to stay connected and contribute via mentorship or donations.

Alumni can register, view events, and share experiences.

Fee Collection and Donations

Secure payment integration via Razor pay API.

Used for collecting event fees, alumni donations, and public contributions.

Each transaction is recorded and associated with the user ID for traceability.

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Volunteer Requests (Public Interface)

This distinctive feature enables the public to submit requests for volunteers for community events. Administrators can evaluate and assign these requests to available volunteers.

V. IMPLEMENTATION DETAILS

The project aims to create a versatile digital platform for NGOs using the Flutter framework. It tackles issues related to communication, event management, and community involvement by providing functionalities such as real-time messaging, event scheduling, fee collection, and an alumni network. The goal of this platform is to optimize NGO operations, fostering better collaboration among members, volunteers, and administrators.

1. Flutter: Flutter is an open-source UI software development kit developed by Google. It allows developers to create natively compiled applications for mobile, web, and desktop from a single codebase. In this project, Flutter was selected for its capability to deliver a smooth, responsive user interface with rich widgets, ensuring a seamless experience on both Android and iOS platforms.

2. Dart: Dart is the programming language associated with Flutter. Its concise syntax and strong support for asynchronous programming make it well-suited for developing responsive applications. Features like null safety in Dart also enhance the application's reliability.

3. Firebase: Firebase is a comprehensive cloud-based platform offering various backend services. In this project, Firebase was used for: Authentication: To handle user sign-up, login, and account security. Cloud Fire store: For real-time database functionalities, allowing dynamic data storage and retrieval for user profiles, ride details, and feedback. Firebase Storage: To securely store media files, such as audio recordings related to ride tracking.

4. Provider: The Provider package was utilized for state management within the Flutter application. It supports a reactive programming model, enabling the app to efficiently update the user interface in response to changes in data or application state, ensuring a smooth and responsive user experience.

5. Version Control (Git): Git was used for version control throughout the development process. This tool facilitated collaborative coding, version tracking, and effective management of the project codebase, promoting seamless teamwork and minimizing conflicts.

6. Integrated Development Environment (IDE): Visual Studio Code: This lightweight IDE was employed for Flutter development, offering a robust set of tools, extensions, and features that streamline the coding process and enhance productivity. Android Studio: Primarily used for testing and debugging the app on Android devices, Android Studio provides a comprehensive suite of tools tailored for mobile app development.

VI. RESULTS AND DISCUSSION

The NGO platform greatly improves operational efficiency by centralizing event management, donations, and data handling. Its modular design ensures scalability and ease of feature integration. Role-based access control allows for secure user management, while effective data strategies enhance transparency and record-keeping, increasing stakeholder trust.



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Automated features such as attendance tracking, donation processing, and event documentation lessen the administrative burden, enabling NGOs to concentrate more on impactful initiatives. Integration with third-party services broadens the platform's capabilities for secure payments and real-time communication.

A. Key Findings

Charity-Mate, developed with Flutter and Firebase, offers real-time group chats, centralized event pages, and multimedia sharing. Razor pay integration supports secure transactions, and state management via Bloc/Cubit ensures smooth UI experiences across platforms.

B. Comparison to Other Solutions

Unlike general tools like WhatsApp or Slack, Charity-Mate combines communication, event, and financial tools into one platform. Its Flutter-based development ensures better cross-platform performance, and real-time updates provide an edge over traditional NGO systems.

C. Challenges and Limitations

Challenges include ensuring data privacy, managing scalability, and integrating third-party services. User adoption may require training, and maintaining data integrity in distributed systems remains complex.

VII. CONCLUSION

This project introduces a Flutter-based mobile application designed to streamline the management of NGO and NSS programs by centralizing communication, event management, activity tracking, and fee collection. The platform enhances operational efficiency and community engagement through features like an alumni network and multimedia sharing. With its user-friendly interface and comprehensive functionality, this solution addresses the challenges of traditional methods, offering a scalable and adaptable tool for NGOs and NSS to coordinate and manage activities more effectively. Future enhancements will focus on advanced analytics and security to meet evolving organizational needs.

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87



International Journal of Advanced Research in Science, Communication and Technology

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 5, Issue 10, May 2025



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