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NGONexus

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ABSTRACT

Non-Governmental Organizations (NGOs) are essential in delivering social support and community services, but many existing management systems still face issues such as limited transparency, delayed donation processing, and inefficient resource coordination. To address these challenges, this paper presents **NGONexus**, a web-based NGO management platform designed to streamline donation handling, event coordination, and reporting. The proposed system supports both monetary and material donations, including food, clothes, and books, through a centralized and user-friendly interface. It integrates secure online payment through Razorpay API, automated digital receipt generation using jsPDF, and location-based NGO discovery with Google Maps API. The system is developed using ReactJS for the frontend, Node.js/JSP-Servlets for backend services, and MySQL for secure data storage. By enabling real-time donation tracking, faster transaction processing, and transparent reporting, NGONexus improves operational efficiency and strengthens trust between donors and NGOs.

Keywords: NGO Management System, Donation Tracking, Web-Based Platform, Real-Time Monitoring, Resource Management, Transparency, Event Management

1. INTRODUCTION

Non-Governmental Organizations (NGOs) play a vital role in supporting social welfare, disaster relief, education, healthcare, and community development. However, many NGOs still depend on manual or partially digital systems to manage donations, resources, and events. These traditional approaches often result in poor record maintenance, delayed communication, lack of transparency, and inefficient resource distribution. Donors frequently face difficulties in knowing how their contributions are used, while NGO administrators struggle to maintain proper records of monetary and material donations. In addition, the absence of a centralized system makes event coordination, inventory management, and reporting more time-consuming and less reliable. To overcome these issues, this paper proposes **NGONexus**, a web-based NGO management platform that improves transparency, efficiency, and accessibility. The system provides a unified interface for donors, volunteers, and administrators to manage donations, monitor activities, and coordinate events.

The major features of NGONexus include:

- secure user registration and authentication,
- support for monetary and material donations,
- real-time donation status tracking,
- secure payment integration using Razorpay API,
- automated receipt generation using jsPDF,
- event booking and management,
- location-based NGO search using Google Maps API,
- centralized reporting and dashboard monitoring.

By integrating modern web technologies with real-time tracking and secure transaction support, NGONexus offers a reliable and scalable solution for digital NGO management. The proposed system enhances accountability, simplifies operational tasks, and improves trust between donors and organizations.

2. LITERATURE SURVEY

Several digital platforms and research works have attempted to improve NGO operations through online donation systems, resource management

tools, and community service applications. However, many existing solutions focus only on limited functionalities and fail to provide a complete, transparent, and real-time management system. Earlier donation platforms mainly supported basic monetary transactions but lacked proper tracking of how donated resources were distributed. This reduced donor confidence and created accountability issues. Some systems introduced inventory management features, but they were not integrated with live donation updates or event coordination modules.

Table 1: Comparative Analysis of Existing Voting Systems and Proposed VoteChain Improvements

Sr. No.	Author & Year	Title / Approach	Limitations	Improvement in VoteChain
1	R. Sharma et al., 2024	Online Voting with OTP Authentication	Weak identity verification; OTP can be shared leading to impersonation	Uses AI-based facial recognition for strong and real-time identity verification
2	A. Kumar & S. Jain, 2023	Blockchain-Based Voting System	High computational cost; not suitable for small-scale institutional use	Uses lightweight blockchain-inspired ledger for efficiency and scalability
3	M. Gupta et al., 2025	Web-based Campus Voting Portal	Login credentials can be misused; allows multiple voting	Ensures one-student-one-vote using facial + ID validation
4	S. Patel & D. Singh, 2024	ML-based Election Data Analysis	Fraud detection performed only after voting ends	Implements real-time anomaly detection during voting
5	L. Thomas et al., 2023	Cloud-Based Voting Application	Risk of data tampering and limited transparency	Provides encrypted and immutable vote storage for enhanced trust

3. PROBLEM STATEMENT

In many Non-Governmental Organizations (NGOs), donation and event management are still carried out using traditional or partially digital systems, which leads to inefficiency and lack of transparency. These systems often fail to maintain proper records of donations, including both monetary and material contributions such as food, clothes, and books. As a result, it becomes difficult for NGOs to manage resources effectively and for donors to track how their contributions are utilized.

Another major issue is the absence of real-time tracking and secure payment integration. Many existing platforms do not provide instant payment processing, which can delay transactions and reduce user trust. Additionally, without proper tracking mechanisms, donors are unable to verify the status of their donations, leading to a lack of accountability.

Furthermore, most systems do not include location-based services, making it difficult for users to find nearby NGOs or track the delivery of donated items. Event management is also often handled manually, resulting in poor coordination and inefficiencies. The absence of automated receipt generation and reporting features further complicates record-keeping and transparency.

Therefore, there is a need for an efficient and centralized system that integrates real-time payment processing, donation tracking, event management, and location-based services. Such a system will improve transparency, enhance user

trust, and provide a reliable platform for managing NGO activities effectively.

4. OBJECTIVES OF THE PROPOSED

The primary goal of the NGONexus system is to develop a transparent and efficient web-based platform that overcomes the limitations of traditional NGO management and donation systems. The specific objectives of the proposed system are as follows:

1. Secure User Authentication

To implement a secure login and registration system that ensures only authorized users (donors and NGO administrators) can access the platform and perform activities safely.

2. Efficient Donation Management

To provide a centralized system for managing multiple types of donations such as money, food, clothes, and books, ensuring proper organization and utilization of resources.

3. Ensuring Data Security and Integrity

To use secure database mechanisms and validation techniques to protect user data, transaction details, and donation records, ensuring confidentiality and accuracy.

4. Real-Time Donation Tracking

To enable users and NGOs to track donations and deliveries in real time, improving transparency and trust in the system.

5. Automated Payment and Receipt Generation

To integrate secure online payment systems like Razorpay and automatically generate digital receipts using jsPDF for every successful transaction.

6. Event Booking and Management

To provide a feature that allows users to book social events such as birthdays and community activities within NGOs through an organized online system.

7. User-Friendly Interface

To design a responsive and easy-to-use web interface that allows users to navigate, donate, and track activities efficiently.

8. Transparency and Accountability

To maintain complete records of all donations, transactions, and activities, ensuring accountability and building trust between donors and NGOs.

5. PROPOSED SYSTEM & METHODOLOGY

The proposed system, NGONexus, is a web-based platform designed to improve the management of NGO donations and events by ensuring transparency, efficiency, and secure data handling. The system overcomes the limitations of traditional manual processes by providing a centralized platform for managing both monetary and material donations.

NGONexus follows a multi-layered architecture consisting of presentation, business logic, and data layers. This structure ensures smooth communication between users and the system while maintaining data security and integrity. The platform enables donors to register, make donations (money, food, clothes, and books), book events, and track their contributions in real time. At the same time, NGO administrators can manage donations, monitor activities, and generate reports through an interactive dashboard.

The system uses ReactJS for building a responsive and user-friendly interface, while Node.js/JSP-Servlets handle backend processing. MySQL is used for secure storage of user data, donations, transactions, and event details. For additional functionality, Razorpay API is integrated for secure online payments, jsPDF is used for automatic receipt generation, and Google Maps API helps users locate nearby NGOs and track donation deliveries.

The methodology includes four main phases: requirement analysis, system design, implementation, and testing. The workflow begins with user registration, followed by donation selection, payment processing, receipt generation, event booking, and real-time tracking. This structured approach ensures that NGONexus provides a reliable, scalable, and transparent solution for modern NGO management.

5.1 SYSTEM ARCHITECTURE

The NGONexus architecture is designed as a layered framework in which multiple functional modules work together to ensure secure, transparent, and efficient NGO operations. As illustrated in Fig. 1, the system adopts a modular structure to manage donations, event activities, user interactions, and data processing in an organized and reliable manner.

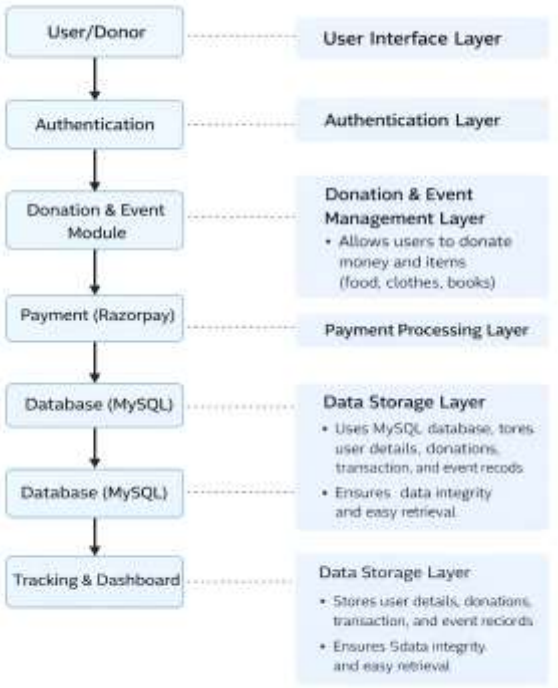

Fig. 1: System Architecture (NGONexus)

Main Layers of Architecture:

- **User Interface Layer**
- Provides interaction between users (donors and NGO administrators) and the system
- Includes user dashboard, donation forms, event booking pages, and admin panel
- **Authentication Layer**
- Handles user registration and login
- Ensures only authorized users can access the system
- **Donation & Event Management Layer**
- Allows users to donate money and items such as food, clothes, and books
- Supports event booking and management within NGOs
- **Payment Processing Layer**
- Processes online payments securely using Razorpay API
- Ensures safe and reliable financial transactions
- **Data Storage Layer**
- Stores user details, donation records, transactions, and event information in MySQL
- Maintains data integrity and enables easy retrieval
- **Tracking & Reporting Layer**
- Provides real-time tracking of donations and deliveries
- Displays reports and uses Google Maps API for location-based NGO tracking

This layered architecture ensures transparency, security, and scalability in managing NGO operations.

5.2 SYSTEM WORKFLOW

The NGONexus system follows a structured sequence of operations to manage donations and events efficiently and transparently.

Step 1: User Registration

- Users (donors and NGO administrators) register by providing basic details
- User information is securely stored in the system database

Step 2: User Authentication

- Users log in using their credentials
- The system verifies identity and grants access only to authorized users

Step 3: Access to Dashboard

- After successful login, users are redirected to the dashboard
- Donors can view NGOs, donation options, and events

Step 4: Donation Selection

- Users choose the type of donation:
- Monetary donation
- Material donation (food, clothes, books)
- Required details are entered before proceeding

Step 5: Payment Processing (for Monetary Donation)

- The system redirects users to the Razorpay payment gateway
- Secure transaction is completed in real time

Step 6: Receipt Generation

- After successful payment, a receipt is generated using jsPDF
- Users can download or view the receipt

Step 7: Event Booking

- Users can book events such as birthdays or social activities
- Booking details are stored and managed by the systemMultiple login attempts

Step 8: Data Storage

- All user details, donations, transactions, and event records are stored in MySQL
- Ensures data integrity and easy retrieval

Step 9: Tracking and Monitoring

- Users can track donation status in real time
- Google Maps API is used for location-based NGO tracking
- Admin dashboard displays reports and activity status

Step 10: Report Generation

- The system generates reports on donations and events
- Admins can view total donations, transactions, and participation details

5.3 KEY FEATURES OF THE SYSTEM

- **Secure User Authentication →** Ensures only registered donors and NGO admins can access the system
- **Multi-Type Donation Support →** Allows users to donate money, food, clothes, books, and other essentials
- **Real-Time Donation Tracking →** Enables donors and NGOs to track donations and deliveries instantly
- **Online Payment Integration →** Provides secure and fast transactions using Razorpay API
- **Automated Receipt Generation →** Generates digital receipts using jsPDF for transparency and record-keeping
- **Event Booking System →** Allows users to book events like birthdays and social activities in NGOs
- **Location-Based NGO Search →** Uses Google Maps API to find nearby NGOs easily
- **Centralized Data Management →** Stores all data (users, donations, transactions, events) in MySQL
- **Reporting & Dashboard** → Provides reports and insights for NGO administrators
- **User-Friendly Interface →** Ensures easy navigation with a responsive ReactJS frontend

5.4 FUNCTIONAL OBJECTIVES

The system is designed to achieve the following functional goals:

- Ensure **one-student-one-vote** policy
- Maintain **vote privacy and anonymity**
- Detect and prevent **fraudulent activities**
- Provide **real-time monitoring and analytics**
- Deliver **accurate and transparent results**

6. MATERIALS & IMPLEMENTATION

The NGONexus system is implemented as a web-based platform to simplify NGO operations such as donation management, resource tracking, event coordination, and reporting. The system is developed using a client-server architecture to ensure smooth communication between users and the platform. On the frontend, ReactJS is used to create a responsive and user-friendly interface that allows donors, volunteers, and administrators to interact with the system easily. The backend is developed using Node.js and JSP/Servlet technologies to process user requests, manage donations, and handle system logic. MySQL is used as the database to securely store user profiles, donation records, event details, and transaction history.

To improve system functionality, Razorpay API is integrated for secure online payments and real-time transaction processing. The jsPDF library is used to automatically generate digital receipts after

successful donations. Google Maps API is also included to help users locate nearby NGOs and support location-based tracking. The implementation process begins with user registration and login. After authentication, users can access the dashboard to choose donation types such as money, food, clothes, or books. For monetary donations, the payment is processed securely through Razorpay. Once the donation is completed, the system updates the database and generates a receipt. Users can also book NGO-related events and monitor the status of their donations in real time. Administrators can access a separate dashboard to verify donations, manage resources, monitor activities, and generate reports. This implementation ensures better transparency, reduced manual effort, faster processing, and improved coordination between donors and NGOs.

6.1 Hardware Requirements

Table 2: Hardware Components Used in NGO System

Hardware Component	Specification / Purpose
Laptop / Desktop System	Used for system development, testing, and NGO/admin access
Processor	Intel i3 / Ryzen 3 or above
RAM	Minimum 4 GB (8 GB recommended)
Storage	256 GB SSD / HDD for system and database storage
Internet Connection	Required for online donations, tracking, and system access
Mobile Device / Browser	Used by donors and volunteers to access the platform

The NGONexus system requires basic hardware components to ensure smooth development, deployment, and user access. A laptop or desktop with a minimum Intel i3/Ryzen 3 processor, 4 GB RAM, and sufficient storage is adequate for running the application and managing the database. A stable internet connection is necessary for online donations, real-time tracking, and event updates. Additionally, users can access the platform through mobile devices or web browsers for convenient interaction.

6.2 SOFTWARE REQUIREMENTS

Table 3: Software Tools and Technologies Used in NGO System

Software / Tool	Purpose
ReactJS	Frontend development for user interface
HTML, CSS, JavaScript	Designing responsive web pages
Node.js / JSP-Servlets	Backend logic and request handling
MySQL	Database management and secure data storage
Razorpay API	Secure online payment integration
jsPDF	Automatic digital receipt generation
Google Maps API	NGO location search and tracking
Visual Studio Code	Code development and debugging
Web Browser	Running and testing the platform

The software stack of NGONexus includes ReactJS, HTML, CSS, and JavaScript for developing a responsive frontend interface, while Node.js or JSP-Servlets are used for backend processing and business logic. MySQL is used for secure data storage and management. Razorpay API enables safe online payment transactions, jsPDF supports automated receipt generation, and Google Maps API provides location-based NGO services. Development and testing are carried out using tools such as Visual Studio Code and standard web browsers.

6.3 SYSTEM MODULES

Fig. 1: Welcome Interface of NGO Nexus

The NGO Nexus system is divided into multiple modules, each responsible for a specific function within NGO operations and donation management.

1. User Registration Module

Fig. 2: Donation Options Page

- Stores user details (donors, volunteers, admins) in the database.
- Prepares user profiles for system access

2. Authentication Module

- Verifies user login credentials
- Ensures secure access to the system

3. Donation Management Module

Fig. 3: Donation Form Interface (Food/Clothes/Books/Money)

- Allows users to donate food, clothes, books, money, and other resources
- Maintains donation records and history

4. Inventory Management Module

- Tracks available resources and stock levels
- Updates inventory after donations and distributions

5. Tracking Module

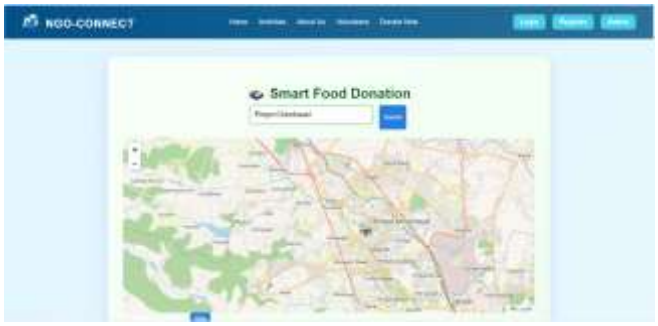

Fig. 4: Tracking and Status Monitoring Page

- Tracks donations from donors to beneficiaries
- Ensures transparency and accountability

6. Volunteer Management Module

Fig. 5: Admin Dashboard for Managing Donations and Reports

- Manages volunteer registration and participation
- Assigns volunteers to different activities

7. Admin & Dashboard Module

- Provides overall system control to administrators
- Displays reports, donation statistics, and activity details

These modules work together to ensure an efficient, transparent, and reliable NGO management system.

6.4 IMPLEMENTATION DETAILS

The NGO Nexus system is implemented as a web-based application using a client-server architecture. The frontend provides an interactive interface for

users, while the backend handles data processing, donation management, and storage.

The main dashboard provides access to donation options, activities, tracking features, and user profiles.

These interfaces demonstrate the user-friendly and efficient design of the system. The donation pages allow users to easily contribute resources, while the tracking module ensures transparency. The admin dashboard enables monitoring and management of all activities.

Implementation Flow:

- User accesses the system through a web browser
- User registers or logs into the system
- User selects donation type and submits details
- System stores and updates donation records
- Admin monitors and manages resources
- Users can track donation status in real-time

The implementation ensures smooth operation with secure and efficient data handling.

7. RESULTS AND DISCUSSION

The NGO Nexus system was evaluated based on parameters such as data accuracy, system efficiency, transparency, and usability. The results show that the system provides a reliable and efficient solution for NGO management.

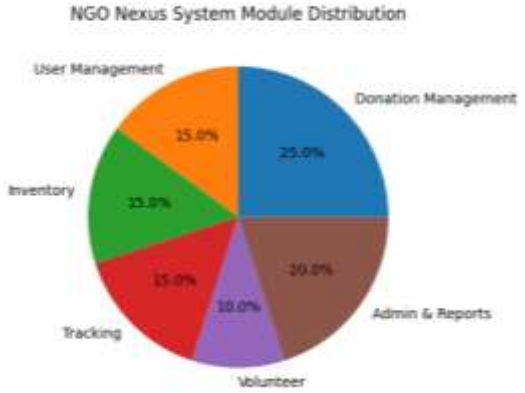

Fig. 6: Module-wise Functional Distribution of the NGONexus System

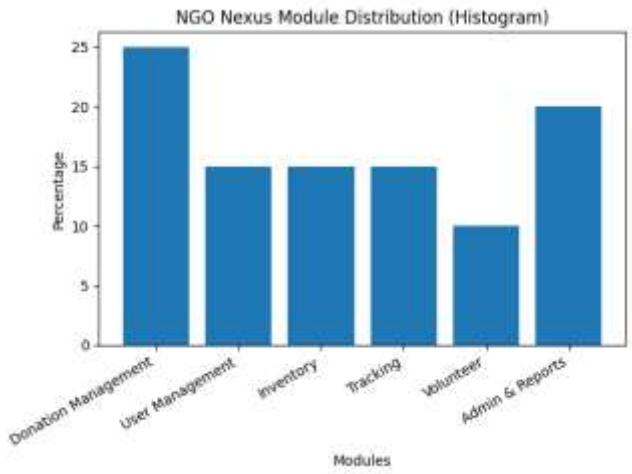

Fig. 7: Histogram Showing Percentage Distribution of NGONexus System Modules

7.1 DATA MANAGEMENT PERFORMANCE

The system was tested under normal conditions with multiple users.

- Accurate tracking of donations and resources
- Prevention of duplicate data entries
- Reliable performance during multi-user access

This ensures proper data handling and system reliability.

7.2 TRANSPARENCY AND SECURITY

The system ensures that all donation data is securely stored and properly tracked.

- Secure storage of user and donation data
- Transparent tracking from donor to beneficiary
- No unauthorized modification of records

This increases trust and accountability in the system.

7.3 SYSTEM EFFICIENCY

The system efficiently handles operations with minimal delays.

- Fast data processing and updates
- Quick report generation
- Reduced manual work

This improves overall operational performance.

7.4 SYSTEM USABILITY

The interface is simple and easy to use.

- Easy login and navigation
- Clear donation process
- Quick response time

This enhances user experience and engagement.

7.5 RESPONSE TIME AND EFFICIENCY

The system performs efficiently with minimal delays.

- Fast data access and updates
- Real-time tracking of donations
- Instant report generation

This reduces processing time and improves workflow efficiency.

7.6 DISCUSSION

The results indicate that NGO Nexus effectively solves the limitations of traditional NGO systems such as lack of transparency, manual errors, and poor coordination.

Compared to conventional systems, NGO Nexus offers:

- Real-time donation tracking
- Improved resource management
- Better coordination among users
- Faster and automated report generation

The system minimizes manual effort and errors, improving reliability and trust. Overall, it provides a scalable, efficient, and modern solution for NGO management.

8. CONCLUSION & FUTURE SCOPE

8.1 Conclusion

In this paper, a web-based and centralized NGO management system named NGO Nexus has been presented to address the limitations of traditional NGO operations. Conventional systems often suffer from issues such as lack of transparency, inefficient donation tracking, poor coordination among stakeholders, and manual errors in data handling. These challenges reduce trust among donors and affect the effective utilization of resources. To overcome these problems, the proposed system integrates modern web technologies and a centralized database to provide a reliable and efficient solution. The system enables proper management of donations, inventory, and distribution activities while ensuring real-time tracking from donors to beneficiaries. This improves accountability and transparency within NGO operations. Additionally, the system reduces manual work by automating processes such as donation recording, report generation, and resource tracking. The user-friendly interface ensures easy access for donors, volunteers, and administrators, enhancing overall usability and participation. The experimental results demonstrate that NGO Nexus improves operational efficiency, reduces delays, and enhances transparency and trust. Overall, the proposed system successfully transforms traditional NGO management into a modern, secure, and efficient digital solution suitable for real-world applications.

8.2 Future Scope

1. **Blockchain-Based Transparency:** Future versions can use blockchain to maintain secure and tamper-resistant donation records, improving trust and accountability.
2. **Mobile Application Support:** A dedicated mobile app can be developed to provide easy access for donors, volunteers, and administrators.
3. **Enhanced Security Features:** Multi-factor authentication such as OTP and biometric verification can be added to improve user security.
4. **Cloud Deployment:** Hosting the system on cloud platforms can improve scalability, availability, and performance.
5. **Advanced Analytics Dashboard:** Smart reporting and visualization tools can help analyze donation trends and resource usage more effectively.
6. **AI-Based Resource Prediction:** Machine learning models can be integrated to forecast resource needs and optimize donation distribution.

7. **Scalability for Large NGOs:** The platform can be expanded to support multi-branch NGOs and large-scale operations.
8. **Offline / Hybrid Functionality:** Future upgrades may include offline support for remote or low-connectivity areas.
9. **Government System Integration:** The platform can be connected with government databases for better coordination and compliance.
10. **Improved Volunteer Management:** Advanced features for volunteer scheduling, task assignment, and performance tracking can be introduced.

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