



Gimong: A Church Management Platform with AI Chatbot-Driven Digital Assistant for La Trinidad Community of Believers Church

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Abstract- The rapid advancement of digital technology has transformed the operational practices of organizations, including faith-based institutions. Churches today require efficient systems for membership administration, financial transparency, communication management, and community engagement. However, many local churches continue to depend on manual and paper-based processes that are often slow, error-prone, and difficult to sustain as membership grows. This study developed Gimong, a web-based church management platform integrated with an AI chatbot-driven digital assistant for the La Trinidad Community of Believers Church (LTCB). The system was designed to modernize church administration by centralizing membership records, donation tracking, announcements, resources, and user inquiries into one platform. The study utilized the Rapid Application Development (RAD) methodology, which involved the phases of Requirements Planning, User Design, Construction, and Cutover. Data gathering was conducted through interviews with church leaders, document review of membership and financial records, and iterative feedback during prototype testing. The platform was developed using Next.js for the frontend, Firebase for backend database and authentication, Vercel for hosting, and Chatbase for the chatbot integration. Evaluation was conducted using Google Lighthouse, Chrome DevTools, and the System Usability Scale (SUS). Findings indicated that the system achieved strong results in usability, responsiveness, accessibility, and performance. The developed platform successfully reduced dependence on manual systems, improved communication efficiency, enhanced transparency in financial records, and increased accessibility of church information to members and visitors. The study concludes that Gimong is an effective digital solution for modern church administration and demonstrates the value of integrating artificial intelligence into faith-based organizational management.

Keywords - Church Management System, AI Chatbot, Digital Ministry, Web-Based Information System, Church Administration, Firebase

INTRODUCTION

The rapid growth of digital technology has significantly changed how organizations operate, communicate, and manage information. Religious institutions such as churches are no exception. Modern churches are no longer limited to worship services alone; they also perform administrative, financial, educational, and community-building functions that require effective

management systems. As congregations expand, traditional methods such as paper-based records, handwritten ledgers, bulletin board announcements, and face-to-face inquiries become less efficient and more difficult to sustain (Laudon & Laudon, 2020; Awuku-Gyampoh & Asare, 2019).

Many churches continue to rely on manual systems for membership registration, financial monitoring, ministry coordination, and communication. While these methods may work in smaller settings, they often lead to delays in retrieving information, duplication of records, inaccurate reporting, limited transparency, and poor accessibility for members who cannot physically attend church activities. Nieuwhof (2019) emphasized that communication gaps and delayed information sharing may weaken engagement and reduce opportunities for outreach. Likewise, Letamora (2019) highlighted the importance of organized financial systems in maintaining trust, stewardship, and accountability within religious organizations.

Globally, churches have increasingly adopted digital solutions such as livestream worship, websites, mobile applications, online giving systems, and church management platforms. These systems centralize operations, improve communication, and provide convenient access to ministry resources. According to Barna Group (2021), digital tools have become essential for maintaining church engagement, especially among younger and technologically active generations. In addition, AI-powered chatbots have emerged as innovative tools capable of providing real-time responses, guiding users through websites, and answering frequently asked questions using natural language processing (Nwokonkwo et al., 2023).

The La Trinidad Community of Believers Church (LTCB) in Benguet experiences several challenges common to many growing congregations. Membership records are stored physically, financial donations are manually recorded through ledgers and spreadsheets, and announcements are often delivered verbally or through social media posts. These processes are time-consuming, vulnerable to human error, and lack centralized accessibility.

To address these concerns, this study developed Gimong, a church management platform integrated with an AI chatbot-driven digital assistant. The platform was designed to streamline church administration, improve access to information, centralize membership and financial records, and strengthen communication between the church, members, and visitors. The study demonstrates how technology and ministry can work together in promoting operational excellence while preserving spiritual mission and community values.

The general objective of the study was to design, develop, test, and deploy a church management platform with an AI chatbot-driven digital assistant for LTCB. Specifically, the study sought to identify the functional and non-functional requirements of the system, design the system architecture, modules, and user interface, develop the web platform with integrated chatbot features, evaluate the system using usability and technical performance metrics, and deploy the completed platform for actual use within the church community. Through these objectives, the researchers aimed to provide a practical and sustainable digital solution capable of supporting church growth, administrative efficiency, and stronger community engagement.

METHODS

Research Design



Figure 1: *Adapted from Rapid Application Development*

This study employed a developmental-descriptive research design utilizing the Rapid Application Development (RAD) model in the design and implementation of the Gimong platform. A



developmental approach was appropriate because the primary goal of the study was to create a functional church management system that addresses the operational needs of the La Trinidad Community of Believers Church (LTCB), while the descriptive aspect focused on documenting the requirements, processes, testing outcomes, and user responses during system development. The RAD model was selected because it emphasizes rapid prototyping, continuous stakeholder involvement, frequent revisions, and faster delivery of practical software solutions. This methodology was particularly suitable for the project since it allowed the researchers to gather immediate feedback from church leaders and users, make iterative improvements, and gradually transform requirements into a working digital platform.

Table 1. RAD Phases Used

Phase	Activities	Output
Requirements Planning	Interviews, document review	Requirements list
User Design	Prototype creation, UML diagrams	System models
Construction	Coding, database setup	Functional system
Cutover	Testing, deployment	Live platform

The development of Gimong followed the four major phases of the RAD model. The Requirements Planning phase involved conducting interviews and reviewing church documents to determine the system’s functional and non-functional requirements, resulting in a clear list of features needed by LTCB. The User Design phase focused on creating initial prototypes, user interfaces, and Unified Modeling Language (UML) diagrams that served as visual representations of the system architecture and workflows. In the Construction phase, the approved designs were converted into an operational web-based platform through coding,

database setup, and chatbot integration. Finally, the Cutover phase involved testing, deployment, refinement, and launching the live platform for actual use. These phases ensured a structured yet flexible development process that aligned closely with the needs of the church community.

Table 2. Respondents

Respondent Type	Purpose
Pastor	Operational requirements
Church Staff	Workflow inputs
Finance Team	Donation management needs
Members	Usability testing

The respondents of the study consisted of individuals directly involved in the operations and intended use of the church platform. The Pastor served as the primary source of operational requirements, policy directions, and leadership expectations for the system. Church staff provided valuable workflow inputs related to announcements, ministry coordination, communication practices, and daily administrative tasks. Members of the finance team contributed requirements concerning donation recording, financial summaries, and reporting procedures. Meanwhile, selected church members participated in usability testing to determine the ease of use, accessibility, and overall acceptability of the system. The inclusion of these respondents ensured that the platform reflected both administrative and user-centered perspectives.

Table 3. Software and Hardware Used

Component	Technology
Frontend	Next.js
Backend	Firebase
Hosting	Vercel



Component	Technology
Chatbot	Chatbase
UI Design	Figma
Browser Testing	Chrome DevTools

The Gimong platform was developed using modern web technologies suitable for scalable and responsive deployment. The front end of the system was built using Next.js, which enabled dynamic page rendering and smooth user interaction. The backend infrastructure utilized Firebase for database management, authentication, and cloud storage services. Deployment and hosting were managed through Vercel, allowing efficient publishing and live updates of the website. The AI chatbot was powered by Chatbase, which enabled automated responses to church-related inquiries. For interface planning and prototyping, the researchers used Figma, while browser testing and technical inspections were conducted using Chrome DevTools. These tools collectively supported the creation of a secure, user-friendly, and reliable church management system.

RESULTS AND DISCUSSION

This chapter presents the findings of the study based on the design, development, testing, and deployment of Gimong: A Church Management Platform with AI Chatbot-Driven Digital Assistant for La Trinidad Community of Believers Church (LTCB). The discussion focuses on how the developed system addressed the operational problems identified during the requirements gathering phase. Specifically, the chapter discusses the results related to the functional and non-functional requirements, system outputs, and the overall effectiveness of the platform in improving church administration, communication, financial transparency, and accessibility of ministry resources.

Functional Requirements of Gimong

The first objective of the study was to identify the functional requirements necessary for the development of the system. Based on interviews with the pastor, church staff, finance personnel, and selected members, the researchers identified several major system requirements. These included membership management, announcements and events management, AI-powered chatbot assistance, financial management, resource management, communication and contact services, news management, and role-based user access.

Table 4. Functional Requirements of Gimong

Requirement	Description
Membership Management	First, allow administrators to register, update, and archive member profiles. Second, store detailed member information. Lastly, enable searching and viewing of member records efficiently.
Announcements and Events Management	First, allow administrators to create, edit, pin, delete and publish announcements and events. Second, display events and announcements. Lastly, provide users with quick access to updates about church activities.
AI-Powered Chatbot	Respond automatically to frequently asked questions about the church, events & announcements, and contact details.
Financial Management	Record and monitor monetary donations, non-monetary donations, and church expenses.



		Generate financial reports for transparency and accountability.
Resource Management		Allow administrators to create, delete and upload sermons and devotionals.
Communication and Contact Module		Provide a “Contact Us” form for inquiries, feedback, or prayer requests.
News Management		Allows administrators to create, edit, publish, archive, and delete news articles. This feature helps keep church members informed about the things happening in the church.
User Access Levels		Define access privileges for different users. Restrict sensitive functions to authorized personnel only.

As presented in Table 4, the developed platform successfully implemented these functional requirements. The Membership Management Module allowed administrators to register new members, update records, archive inactive profiles, and search information efficiently. This feature replaced the previous manual filing system and improved data retrieval speed. The Announcements and Events Module enabled the church to publish schedules and notices in a centralized location, reducing dependence on verbal announcements and fragmented social media communication.

Likewise, the Financial Management Module provided digital recording of monetary and non-monetary donations, allowing more organized summaries and transparent reporting. The AI Chatbot Module became one of the most innovative features, as

it provided real-time responses to common questions such as worship schedules, church location, ministry information, and announcements. These findings indicate that the functional requirements were successfully translated into practical modules that directly addressed the daily operational needs of LTCB.

Non-Functional Requirements of Gimong

The second objective of the study focused on the non-functional requirements of the platform. These included usability, performance, reliability, security, accessibility, scalability, maintainability, and compatibility. These requirements were essential in ensuring that the system would not only function properly but would also remain sustainable and effective in actual church use.

Table 5. Non-functional Requirements of Gimong

Requirement	Description
Usability	The AI chatbot must respond clearly and help users access announcements, events, and other church information easily.
Performance	Pages and chatbot responses should load within a few seconds. The system must handle multiple users at once.
Reliability	The system should function consistently and store accurate data. The AI chatbot’s responses must stay updated and correct.
Security	User data must be protected with secure login. Only authorized users should have access to sensitive information.

Accessibility	The platform should work smoothly on desktops, tablets, and mobile devices.
Scalability	The system should allow easy updates and feature expansions in the future without major redesigns.
Maintainability	The code should be well-documented and organized, allowing quick updates, fixes, and improvements when needed.
Compatibility	The system must run properly on major browsers such as Chrome, Edge, and Firefox, as well as on mobile devices.



Figure 2: Home Page

The Home Page served as the main entry point of the platform. It displayed welcome messages, worship schedules, quick links, featured announcements, and access to the chatbot. This page significantly improved the digital presence of the church and gave visitors immediate access to relevant information.

As shown in Table 5, the system achieved these quality requirements. The platform was designed with a user-friendly interface, making it easy to navigate even for users with limited technical knowledge. Its cloud-based infrastructure through Firebase and Vercel enabled stable performance, fast loading time, and reliable storage of records. Security was strengthened through authentication features and role-based access controls that limited sensitive modules to authorized users only.

The system also demonstrated compatibility across desktops, tablets, and mobile devices, which was important because church members use different devices to access information. These findings show that Gimong was developed according to acceptable professional standards and is capable of supporting long-term church operations.

Public Website Interface

One of the major outputs of the study was the development of a responsive public website for LTCB. The website included the Home Page, About Us Page, Announcements Page, Resources Page, Finance Page, and Contact Us Page.



Figure 3: *About Us Page Overview*

The About Us Page provides an overview of the church’s identity, presenting its mission, vision, and core values. It helps members and visitors understand the church’s purpose and guiding principles

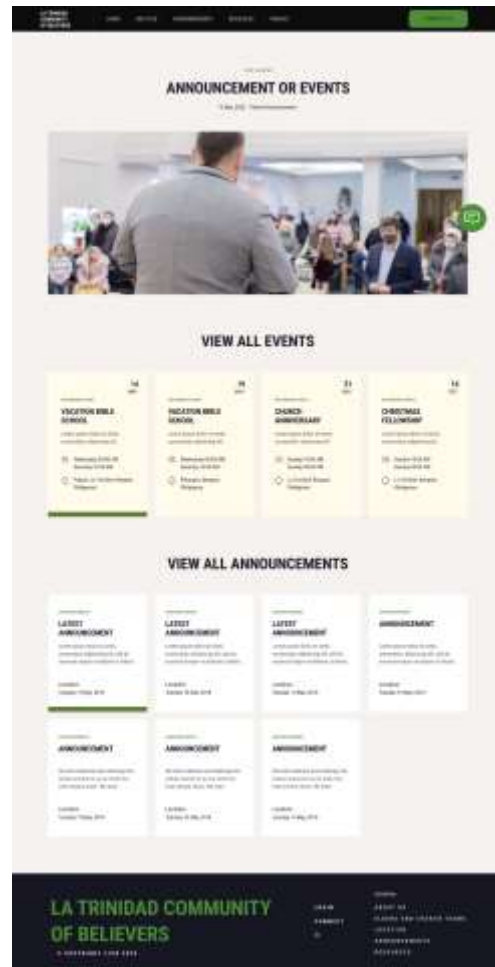


Figure 4: *Announcements Page*

The Announcements and Events Page centralized official notices, worship schedules, and ministry updates, solving the previous problem of fragmented communication.



Figure 5: Resources Page

Meanwhile, the Resources Page served as a digital ministry library containing sermons, devotionals, downloadable files, and livestream links. These outputs demonstrate that the website successfully strengthened communication, engagement, and accessibility of church resources.

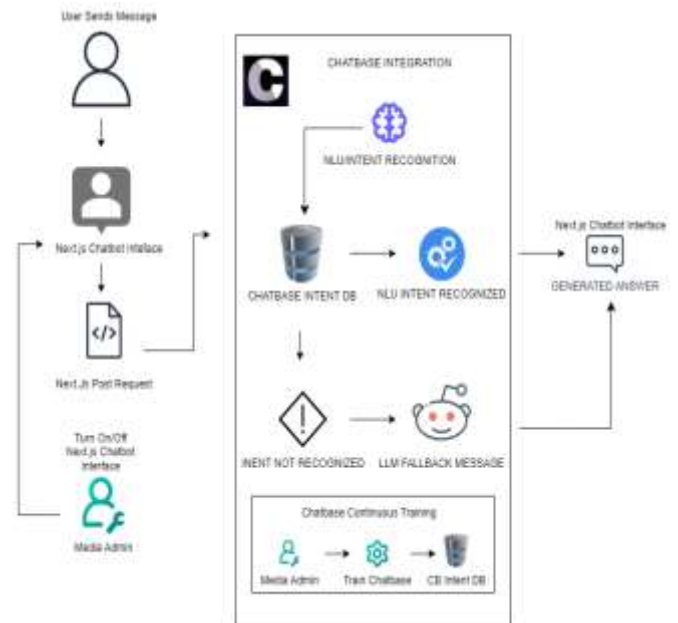


Figure 6: System Architecture Diagram of Chatbot

A major innovation of the study was the integration of an AI chatbot into the platform. As shown in Figure 2: System Architecture Diagram of Chatbot, the system begins when a user sends a message through the website chatbot interface developed using Next.js. The inquiry is transmitted through a POST request to the backend system and processed by the Chatbase module.

Within the Chatbase environment, the chatbot performs Natural Language Understanding (NLU) and intent recognition by analyzing the user's message and comparing it with the stored knowledge base or intent database. If the user's question matches known church-related information, the chatbot immediately generates an appropriate response and sends it back to the user through the website interface.

However, if the chatbot cannot confidently determine the intent of the inquiry, the system activates a fallback mechanism through a Large Language Model engine. This allows the chatbot to generate a more contextual and conversational response for broader questions.

The system architecture also includes administrative control by the Media Admin, who is responsible for updating chatbot responses, managing frequently asked questions, improving training data, and enabling or disabling chatbot access when needed.

The findings revealed that this chatbot architecture significantly improved communication efficiency. Members and visitors were able to receive instant responses regarding worship schedules, church location, ministry details, announcements, and navigation assistance without waiting for church personnel. This reduced repetitive inquiries and improved user satisfaction. The result further demonstrates that artificial intelligence can be responsibly integrated into faith-based organizations as a support mechanism that enhances ministry services without replacing human interaction.



Figure 7: *Admin Dashboard*

The system also developed secure dashboards for church administrators. The Main Admin Dashboard provided summaries of membership, finances, announcements, resources, and chatbot settings. This allowed administrators to monitor church operations through one centralized interface.

The Membership Dashboard enabled organized management of active, inactive, and archived members.

Church leaders could use these records for communication, follow-up, and ministry planning.

The Finance Admin Dashboard digitized donation records, expense monitoring, and financial reporting. This reduced dependence on handwritten ledgers and spreadsheets while improving transparency and accountability.

These dashboard modules demonstrate that Gimong successfully modernized the internal management processes of LTCB through centralized and secure information systems.

The overall findings of the study indicate that Gimong effectively solved the administrative and communication challenges previously faced by the church. Membership records became organized and searchable, financial data became transparent and easier to manage, announcements became centralized, and church resources became more accessible through the web platform.

The system also strengthened the church's digital presence and enabled members and visitors to interact with LTCB anytime using desktop or mobile devices. Most importantly, the integration of the AI chatbot proved that modern technology can support ministry work while preserving spiritual mission and church values.

Therefore, the results confirm that Gimong is a practical, sustainable, and innovative solution for modern church administration. It may also serve as a model for other churches and faith-based organizations seeking digital transformation through web technologies and artificial intelligence.

RECOMMENDATION

Based on the findings of the study, it is recommended that the La Trinidad Community of Believers Church continuously utilize and maintain the Gimong platform to maximize its benefits in church



administration, communication, and member engagement. Regular updating of announcements, events, sermons, devotionals, and membership records should be prioritized to ensure that the information available in the system remains accurate, timely, and relevant to the congregation. Church administrators may also assign dedicated personnel or a ministry team responsible for content management, technical monitoring, and user support to sustain the long-term effectiveness of the platform.

To further improve financial stewardship and transparency, future enhancement of the system may include integration with secure online payment gateways such as GCash, bank transfer APIs, or card-based donation systems. This would allow members to conveniently give offerings and donations through digital channels while automatically recording transactions in the financial management module. Automated receipt generation, downloadable giving statements, and scheduled financial summary reports may also be incorporated to strengthen accountability and improve trust among members.

The church may also expand the communication capabilities of the platform by integrating SMS, email notifications, and mobile push alerts for worship schedules, urgent announcements, ministry meetings, and special events. Such enhancements would ensure broader reach, especially for members who are less active on social media platforms. In addition, integrating livestream schedules and archived worship services can further strengthen digital ministry outreach, particularly for elderly members, overseas supporters, or individuals unable to attend physical gatherings.

For the AI chatbot component, future developers are encouraged to continuously train and improve the chatbot knowledge base so that responses remain accurate, context-aware, and aligned with church teachings. Multilingual support, particularly English, Filipino, and local dialects such as Kankanaey, may also be considered to serve diverse users more effectively.

Advanced chatbot functions such as prayer request routing, event registration assistance, volunteer sign-up guidance, and follow-up support for new visitors may significantly improve user experience and pastoral engagement.

From a technical standpoint, future versions of Gimong may include dedicated mobile applications for Android and iOS devices, offline viewing for selected resources, analytics dashboards, attendance monitoring through QR codes, and stronger backup and disaster recovery mechanisms. Continuous cybersecurity reviews, regular password updates, and compliance with the Data Privacy Act of 2012 are likewise recommended to safeguard member information and financial data.

Finally, other churches and faith-based organizations may consider adopting or customizing a similar platform according to their own ministry needs. The successful implementation of Gimong demonstrates that digital transformation can support religious institutions without compromising their spiritual mission. Future researchers are encouraged to conduct comparative studies on user satisfaction, church growth impact, member retention, digital discipleship effectiveness, and the role of artificial intelligence in faith-based organizations to expand the body of knowledge in this emerging field.

CONCLUSION

The study successfully designed, developed, tested, and deployed Gimong, a church management platform with an AI chatbot-driven digital assistant for the La Trinidad Community of Believers Church. The development of the system was guided by the need to address the church's long-standing administrative challenges associated with traditional manual processes. Prior to the implementation of the platform, membership records were handled through physical forms and manual filing systems, financial transactions were recorded through handwritten ledgers and spreadsheets, announcements were delivered through verbal communication or limited social media posts, and



church resources were not centrally organized for easy public access. These methods, while functional in the past, had become increasingly inefficient, time-consuming, and difficult to sustain as the church continued to grow. Through the implementation of Gimong, these limitations were effectively addressed by transforming key church operations into a centralized and accessible digital system.

Using the Rapid Application Development (RAD) methodology, the researchers were able to follow a structured yet flexible process that emphasized continuous user participation, rapid prototyping, iterative revisions, and practical deployment. This methodology proved highly effective for the project because it enabled the developers to gather direct feedback from church leaders, staff, and users during each stage of development. As a result, the final system was responsive to actual church needs and operational workflows. The completed platform was designed as a responsive, user-friendly, secure, and scalable web-based solution capable of functioning across multiple devices such as desktop computers, tablets, and mobile phones. This adaptability ensures that both administrators and members can conveniently use the system regardless of location or device preference.

The findings of the study confirmed that Gimong significantly improved the efficiency of church administration. Membership records became easier to encode, update, search, and archive. Financial recording processes became more organized, transparent, and less prone to human error through the use of digital ledgers and summaries. Communication channels were strengthened by centralizing announcements, events, ministry updates, and public information into one official platform. Members and visitors gained easier access to sermons, devotionals, livestream links, schedules, and contact information. These improvements indicate that the system not only solved administrative problems but also enhanced the overall experience of interacting with the church community.

A major innovation of the study was the successful integration of an AI chatbot-driven digital assistant. The chatbot provided instant responses to common user inquiries such as worship schedules, church location, ministries, upcoming events, and website navigation concerns. This feature demonstrated that artificial intelligence can be effectively and responsibly applied in faith-based environments as a supportive communication tool. Rather than replacing human interaction or ministry functions, the chatbot served as a complementary service that reduced repetitive inquiries, improved accessibility, and extended assistance beyond regular office hours. This is particularly valuable in a modern digital environment where users expect immediate access to information.

Furthermore, the study showed that digital transformation can be implemented in religious institutions without compromising their spiritual mission, organizational values, or sense of community. Gimong illustrates how technology can strengthen ministry operations by reducing administrative burden, increasing transparency, improving outreach, and supporting better engagement among members and visitors. The platform created opportunities for LTCB to expand its online presence and adapt to the changing expectations of a technology-driven society.

In conclusion, the study established that Gimong is a sustainable, innovative, and practical solution for modern church management. It successfully bridged the gap between traditional ministry operations and contemporary digital systems. The platform may serve as a valuable model for other churches and faith-based organizations seeking to modernize their administrative processes, improve communication, and embrace responsible technological innovation for long-term growth and community service.



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