Event Management and Attendance Monitoring Using QR Code System For Sta Ana Shrine Parish

An Information System Presented to the Faculty of the

College of Computer and Information Science

Mapúa Malayan Colleges Mindanao

Gen. Douglas Mac Arthur Highway

Talomo, Davao City

In Partial Fulfillment of the

Academic Requirements for the Subject

SYSTEMS ANALYSIS AND DESIGN

Andoy, Jervin

Sollano, Nepthali

Tupaz, Francis Elixer

July 2025

Part I

SYSTEMS ANALYSIS REPORT

Introduction

In the past, a growing number of businesses began adopting electronic devices to streamline and automate their operations—and churches gradually started doing the same (Kuo, 2011). Despite this shift, Sta. Ana Parish Church continued to record time-ins and event schedules manually, either in a logbook or occasionally using a printed document for organizing events. This manual method proved to be inefficient and often led to problems such as missing names or illegible handwriting. As a result, it became increasingly difficult to monitor attendance and identify who had served during major church events. These challenges negatively affected the church's ability to accurately track attendance and effectively evaluate the performance of its volunteers (Brynjolfsson & McAfee, 2014).

To address these issues, the church had the option to implement a digital event and attendance management system. Such a system would have enabled users to log in, record their time-ins, and access upcoming event calendars. It

would have allowed for the real-time tracking of attendance, volunteer participation, and task assignments. This would have simplified planning and duty allocation for church leaders. Similar systems, including QR code scanners and mobile applications, had already been employed by other organizations to monitor attendance and manage volunteers more efficiently and with fewer errors (Almomani et al., 2014).

Despite the fact that Sta. Ana Parish Church has enjoyed some success over the past years in its manual operations, there would have been lots of benefits of transitioning into a digital system in the future. This would have been more efficient in time, more accurate and easier to assess the work of the servers after every event. Above all it would have helped the church to spend less time on administrative roles and more on actualising its mission. This project aimed to analyze the existing challenges, propose a viable solution, and demonstrate how technology could assist the church in executing its daily responsibilities more effectively.

The Organization

The developers had also been tasked with researching

various organizations, and Sta. Ana Parish Church in Davao City had been selected. The church had served the community for many years by conducting daily masses, sacraments, and church activities through the efforts of volunteer altar servers and other volunteers. It had been chosen because, even at that time, it continued to utilize manual processes for monitoring time ins, managing event schedules, and evaluating server performance. These tasks had proven more difficult to manage during large-scale events or those involving numerous participants, especially when records were incomplete or unclear. By observing how the church had handled these responsibilities, the developers aimed to identify areas that could be streamlined through a simple digital system. Such a system would have enabled church leaders to monitor attendance more effectively, manage schedules more efficiently, and evaluate altar server performance more objectively, thereby making the processes smoother and more manageable.

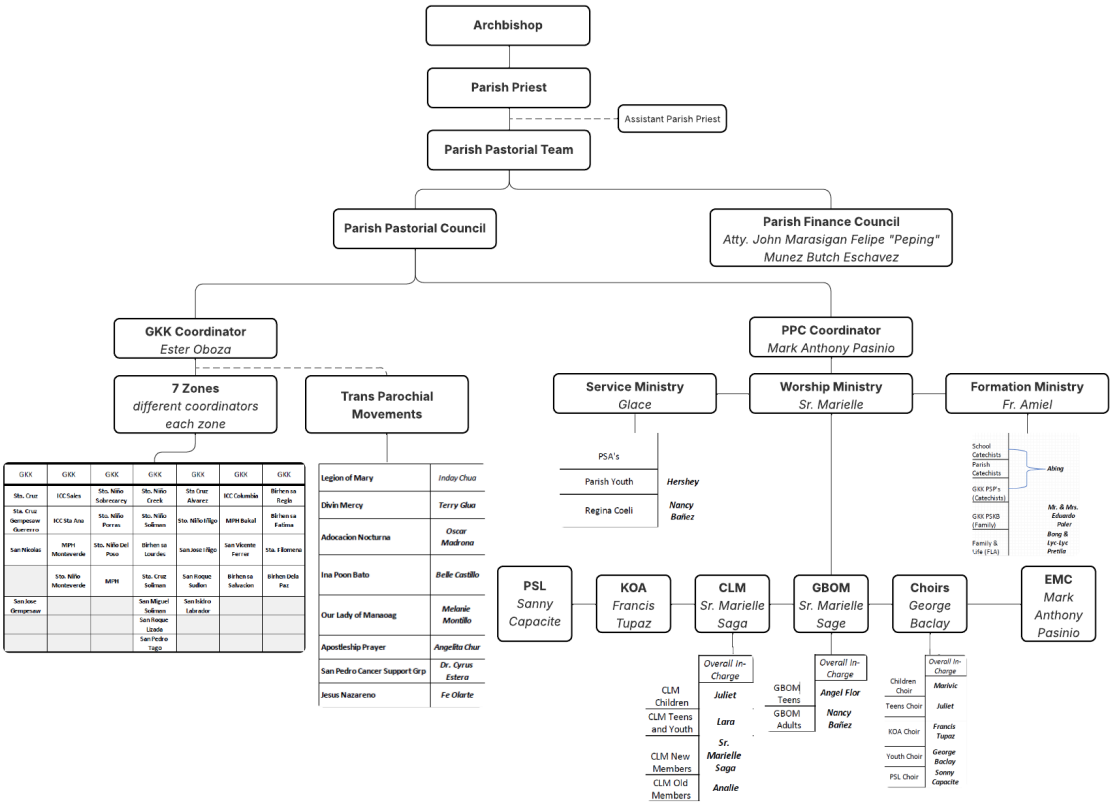


Figure 1.1

Organizational Structure

Figure 1.1 illustrated the organizational structure of Santa Ana Shrine Parish. At the top of the diagram was the Archbishop, followed by the Parish Priest, and subsequently the Parish Pastoral Team, which comprised the Parish Pastoral Council and the Parish Finance Council—namely, Atty. John Marasigan, Felipe "Peping" Munez, and Butch Eschavez. Under the Parish Pastoral Council were the GKK Coordinator, Ester Oboza, and the PPC Coordinator, Mark Anthony Pasinio. The parish had a total of seven zones, each with its respective GKK Coordinator, as well as

various Trans-Parochial Movements, each led by different coordinators. Under the PPC Coordinator were three ministries: the Service Ministry, Worship Ministry, and Formation Ministry, each overseen by a designated individual. The Worship Ministry, in particular, was composed of six divisions—PSL, KOA, CLM, GBOM, CHOIRS, and EMC—with each division having its own overall in-charge.

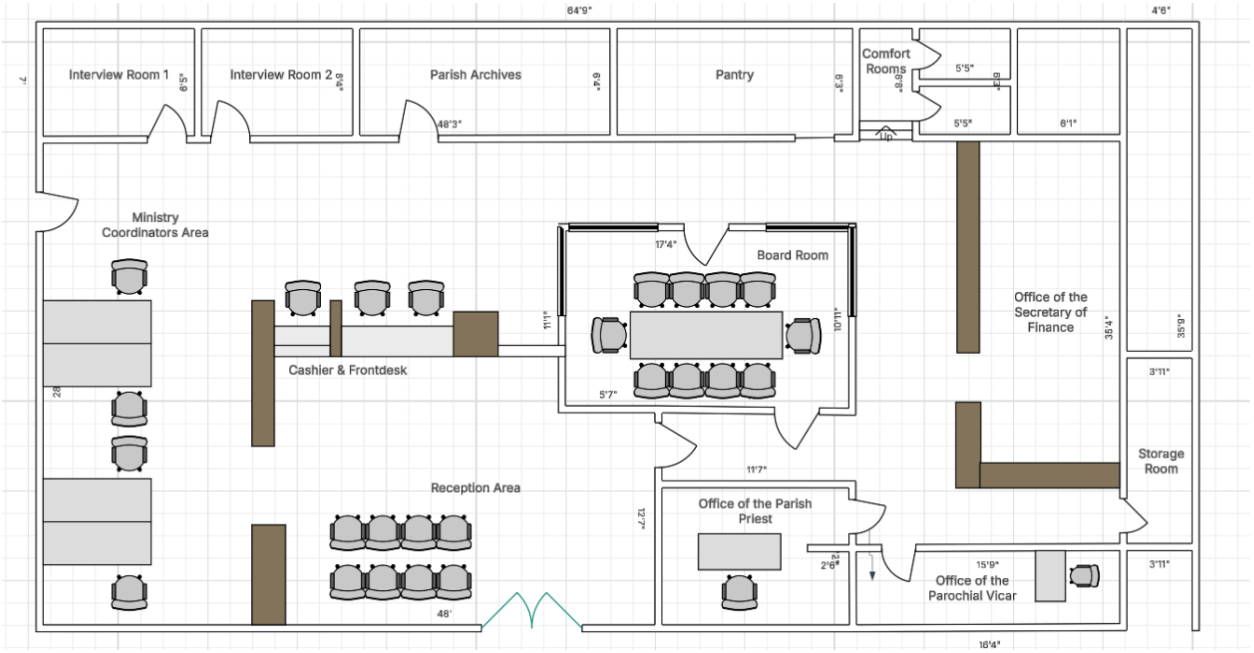


Figure 1.2

Floor Plan

This floor plan illustrated a well-organized office layout designed for a parish or church administrative building. It featured a central reception area connected to a cashier and front desk, surrounded by essential functional spaces including interview rooms, a parish

archives room, a pantry, comfort rooms, and a boardroom. Dedicated offices for the Parish Priest, Parochial Vicar, and Secretary of Finance were included, along with a spacious Ministry Coordinators Area and a Storage Room. The layout had been designed to ensure smooth flow and accessibility for both staff and visitors.

Vision

"To be a community of faith, rooted in the love and teachings of Christ, guided by the example of the Blessed Virgin Mary and her mother, St. Anne, where every member is called to live the Gospel through humility, service, and love."

Mission

Evangelization Inspired by Mary and St. Anne: To share the Gospel with the same humility and dedication exemplified by the Blessed Virgin Mary and her mother, St. Anne, leading others to a deeper relationship with Christ.

Business Environment

Sta. Ana Parish Church was located in a quiet area of Davao City and served as a central place of worship and community gathering for local residents. The church

compound included a large main chapel, a parish office, and several multi-purpose rooms designated for gatherings, activities, and ministry-related tasks. The parish office had been responsible for various administrative functions such as attendance monitoring, scheduling, and record-keeping. Although most procedures had remained manual—particularly those related to volunteer coordination—the church had implemented a basic digital payment system used solely for processing document requests, such as baptismal or marriage certificates. The environment had generally been orderly but tended to become disorganized during weekends or special church events due to the influx of volunteers and parishioners.

In terms of ICT infrastructure, Sta. Ana Parish Church maintained a modest setup. While it lacked a formal Management Information System (MIS) department or a complex network infrastructure, it had operated a functional payment system for handling document request fees. However, other operational aspects—such as altar server time-ins, event scheduling, and volunteer performance monitoring—had continued to be managed manually through paper logbooks and printed schedules.

The existing system had only addressed a limited portion of the church's administrative requirements, and there had been no centralized database or client-server architecture to support broader needs. As parish activities had continued to grow, the church had the potential to expand its use of digital tools to enhance operational efficiency and accuracy.

Critical Success Factors

Sta. Ana Parish Church has thrived over the years because of its solid community support, committed volunteers, and competent leadership that consistently provide meaningful religious services and well-organized activities. What makes the church distinct is its capability to stay true and relevant in the midst of contemporary challenges through its personalized practice and gradual innovation in technology, as evident from their use of digital payment and document request systems. These qualities—resilience, dedication, and flexibility—are the decisive factors for their sustained success, and any ICT solution must support these strengths to be able to contribute to growth without diluting the values that make them distinct.

The Current System

Sta. Ana Parish Church does not employ any information systems like an Accounting Information System (AIS), Enterprise Resource Planning (ERP), or Material Requirements Planning (MRP). All from attendance records, event scheduling, up to volunteer coordination are manually performed. There is no computerized fund management system, donation recording, or event coordination, thus rendering these processes error-prone and inefficient.

A. Attendance Tracking – This is recorded manually during activities at church. Volunteers sign the logbook or on paper when they report to the church, and this is verified by church staff afterwards.

B. Event Scheduling – Church activities are also organized and tracked by hand, often with paper calendars or written files. This includes scheduling services, volunteer workdays, and other church activities.

C. Payments – The church does have a payment processing and donation system, but otherwise, they use conventional

methods for tracking and managing other operations.

Despite all these years of operation, the church has never implemented any formal information systems. This has led to problems with efficiency, accuracy, and management of events and volunteers. The possibility of installing a more efficient electronic system is raised in later sections of this paper.

Description of Operations

The existing processes at Sta. Ana Parish Church involved numerous manual steps essential to daily operations, including event planning, attendance tracking, and donation processing. In these activities, employees manually recorded attendance using logbooks, organized events, and processed donations through physical records. Volunteer work and event schedules were also tracked manually. For example, when a guest attended an event, they would sign in, and an employee would document the attendance in a logbook. After the event, the logbook would be reviewed to verify participation. Similarly, donations were recorded by hand, and event schedules were managed without any form of automation. While these procedures had been functional, they resulted

in inefficiencies and potential inaccuracies, highlighting the need for modernization and the adoption of digital solutions to improve operational effectiveness and data reliability.

Current Attendance System

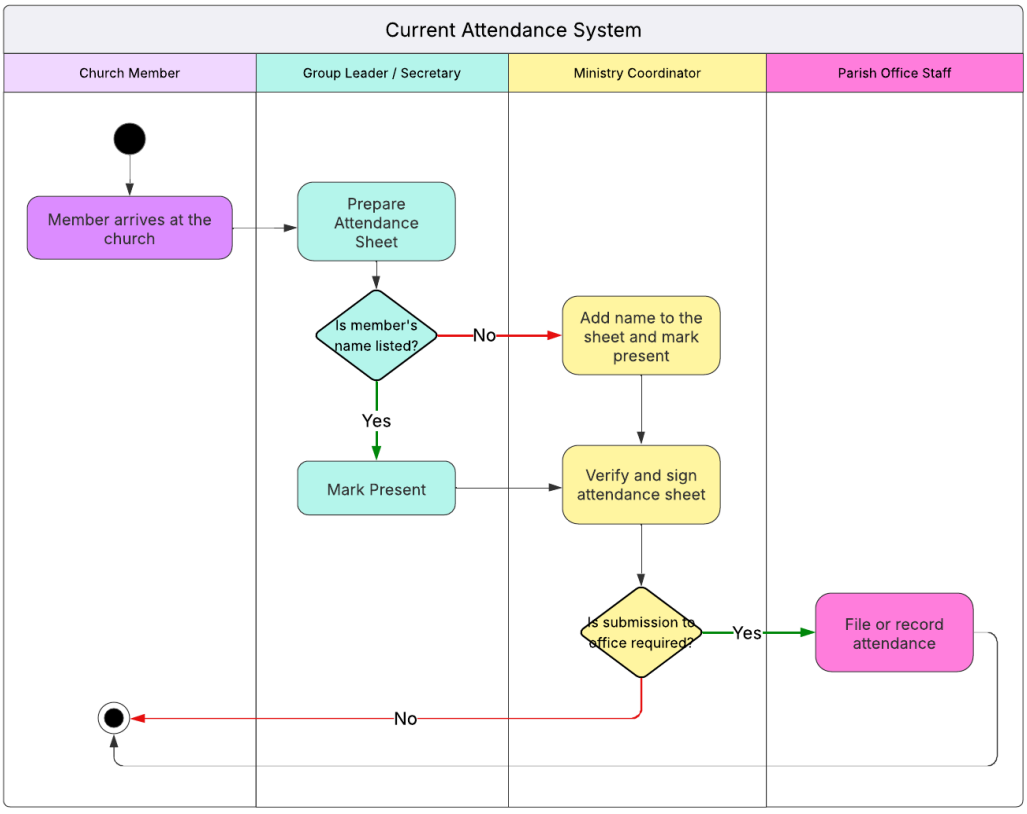


Figure 1.3

Activity Diagram of the Current Systems

Discussed in this section was the diagram presented above (see Figure 1.3), which illustrated the current attendance system implemented in the church. The process

began when a church member arrived at the premises. The Group Leader or Secretary had prepared the attendance sheet in advance, typically listing the names of all expected attendees. Upon arrival, the member's name was checked. If the name was already on the list, the individual was marked as present; if not, the Group Leader manually added the member's name before marking them present. After the liturgical activity concluded, the Group Leader or Secretary reviewed the attendance sheet and forwarded it to the Ministry Coordinator. The coordinator then verified the accuracy of the entries and signed the sheet to confirm attendance. A decision point followed: if parish policy required submission of attendance records to the parish office, the sheet was delivered accordingly. Otherwise, the process concluded within the ministry group. If submitted, the Parish Office Staff filed or recorded the attendance sheet for official documentation purposes.

Current Event System

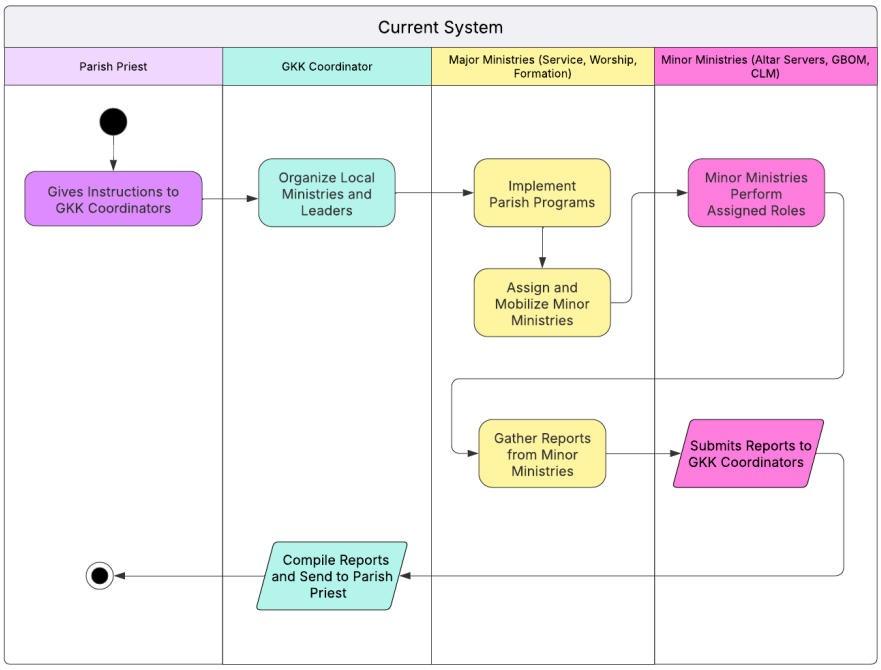


Figure 1.4

Activity Diagram of the Current Systems

Discussed in this section was the diagram presented above (see Figure 1.4), which illustrated the current event operations within the church. The process began with the Parish Priest issuing instructions to the GKK Coordinators. The GKK Coordinators subsequently organized the local ministries—namely, service, worship, and formation—based on the specific program requirements. Following this, the major ministries implemented the parish programs and assigned responsibilities to the minor ministries. The minor ministries, such as altar servers

and choirs, then carried out their designated roles during the event. After the program concluded, the major ministries collected reports regarding the execution of the activities. These reports were submitted by the minor ministries to the GKK Coordinators, who then compiled the information and forwarded it to the Parish Priest for review.

Current Attendance System

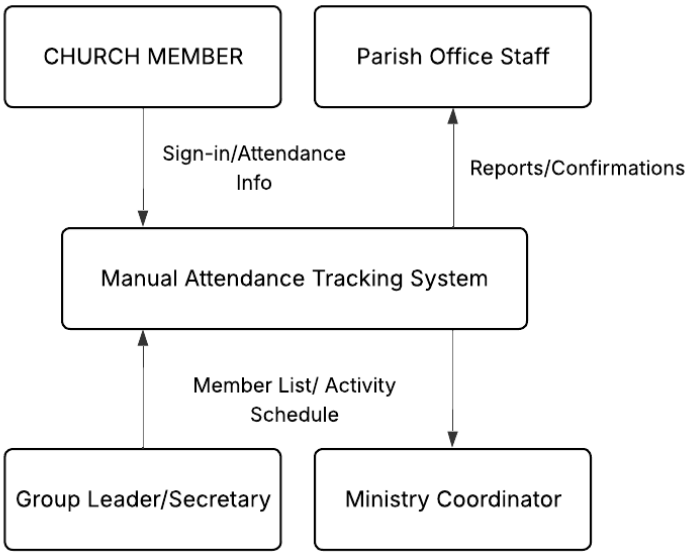


Figure 1.5

Context Level Data Flow Diagram of the Current Systems

Figure 1.5 presented the current context-level data flow diagram of the manual attendance system used by Sta. Ana Shrine Parish. It provided an overview of how the

system interacted with its primary external entities. These entities included church members (such as altar servers or choir members), the group leader or secretary, the ministry coordinator, and, optionally, the parish office staff. At this level, only one core process—Manual Attendance Tracking System—was depicted, which received attendance data from church members and transmitted confirmations or records to the coordinator and the parish office. This diagram offered a simplified representation of the system, focusing solely on the data flow between the process and its external participants.

Event System

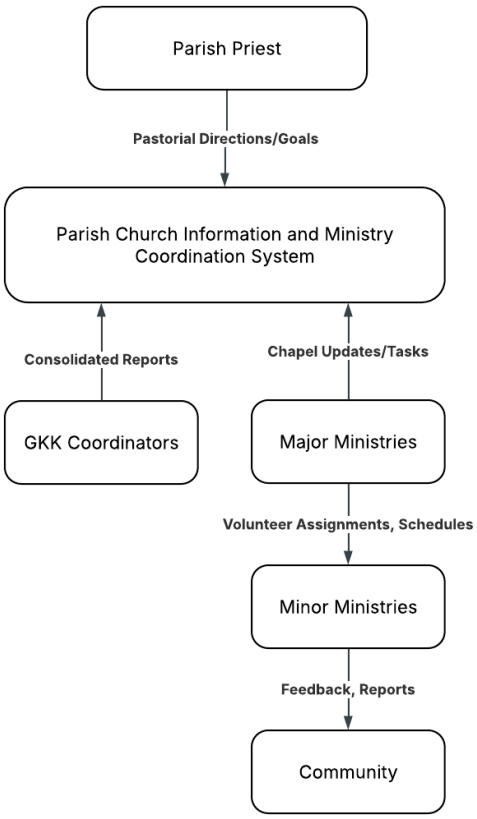


Figure 1.6

Context Level Data Flow Diagram of the Current Systems

Figure 1.6 showed the Context Level Data Flow Diagram for the Parish Church Information and Ministry Coordination System. It provided an overview of the system, where the Parish Priest set the goals and distributed them to GKK Coordinators. The Major Ministries (Worship, Service, Formation) coordinated activities based on these goals, and the Minor Ministries (altar servers, choirs, catechists,

etc.) were mobilized. Community Members provided feedback and participated, which was collected and stored in a Reports Archive. The data was then reviewed by the Parish Priest for future planning and improvement.

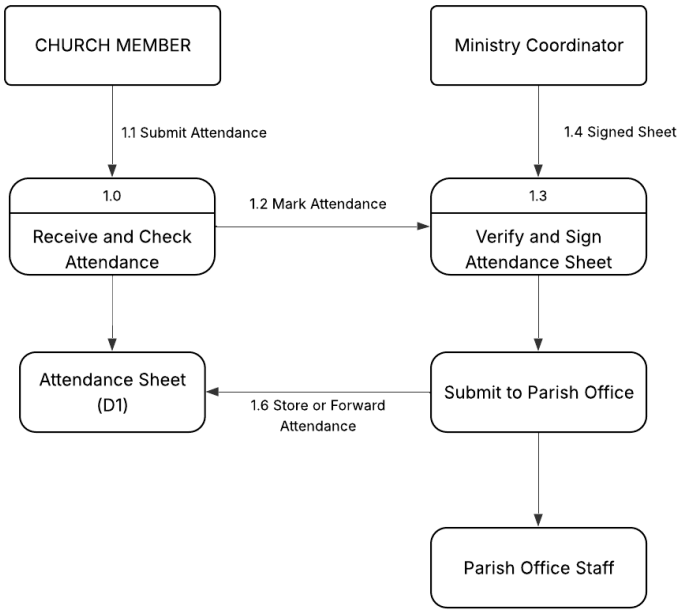


Figure 1.7

Level 0 Data Flow Diagram of the Current System

Figure 1.7 illustrated the current Level 0 Data Flow Diagram of the organization, offering a more detailed and comprehensive view of the previously presented context-level model. This diagram provided greater specificity regarding the operational flow of data during church activities. Through the numbered processes, it

became evident what actions typically occurred first and how data moved throughout the system. The process began when a church member submitted their attendance, which was received and checked by the Group Leader or Secretary. The attendance sheet was then verified and signed by the Ministry Coordinator. Depending on the group's protocol, the signed sheet was either stored internally or submitted to the Parish Office. All attendance data were recorded or archived for future reference. The diagram effectively depicted the sequence of tasks and emphasized that physical attendance sheets served as the primary data carriers within the manual system.

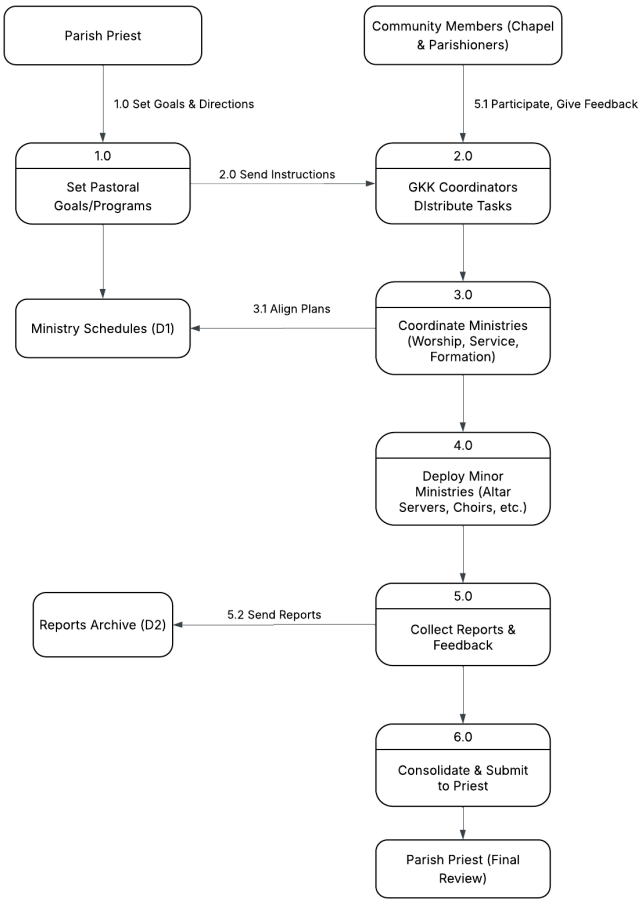


Figure 1.8

Level 0 Data Flow Diagram of the Current System

Shown on Figure 1.8 is the Level 0 Data Flow Diagram, which expands on the processes in the system. It starts with the Parish Priest, who sets the pastoral goals and shares them with the GKK Coordinators (Process 2.0). The GKK Coordinators ensure that the Major Ministries (Worship, Service, Formation) are aligned with these goals (Process 3.0). The Minor Ministries (altar servers, choirs,

catechists, etc.) are then deployed to handle specific tasks (Process 4.0). Throughout these activities, Community Members provide feedback and participate, which is logged and stored in the Reports Archive (D2) (Process 5.0). These reports are consolidated and sent to the Parish Priest for final review (Process 6.0). Additionally, Ministry Schedules are managed and stored in the Ministry Schedules (D1) data store.

Problem/Opportunity Definition

Illustrated below were the daily operations of Sta. Ana Church. Donations, religious item sales (such as candles), attendance, and other relevant data were all monitored using manual logbooks. Office staff utilized pens, payment receipt papers, and various documents like bond paper to print church announcements and calendars. No computer system was employed for managing inventory or tracking funds, making processing and record-keeping both time-consuming and inefficient. In the absence of a digital solution, there had been risks of lost donations and sales, delays in reporting, and potential errors in managing church resources.

Table 1.1

Detailed Budget Computations for the Current System

ITEMS	QUANTITY	PRICE/UNIT	TOTAL PRICE
Bond Paper (Ream)	5	120.00	600.00
Ballpoint Pens	20	10.00	200.00
Manual Logbooks	3	70	210.00
Miscellaneous (Tapes, Markers, Folders)	1 bundle	500	500
Total			**1,510.00**

Table 1.2

Problem-Opportunity Definition Matrix

	Problem	**Opportunities**	**Cause(s)**	**Effect(s)**
Performance	Inefficient utilization of manual inventory tracking in Sta. Ana Church.	Implement a digital system of religious material and supply management.	Manual tracking in the church causes delays, errors, and lack of transparen	Greater chance of being short of church services or overstocking, which is a waste of space.

			cy on religious product quantities.	
	There is no effective system to track the attendance and performance of church members or servers during events, making it difficult to monitor participation and accountability.	Implement an automated system to record attendance and track the performance status of members and servers during church activities.	Attendance and performance records are managed manually, often with paper logs or informal notes, leading to incomplete or inaccurate data.	This results in uncertainty about member availability, untracked absences and challenges in organizing volunteers or assigning duties effectively.
Information	Inaccurate or outdated information about parishioners.	Implement a system to allow real-time updating of parishioner data to enable greater engagement and communication.	Parishioner information is recorded and maintained manually using paper forms or basic spreadshee	Risk of incorrect or outdated contact information, leading to inability to receive messages regarding church activities, masses, and

			ts, which makes the process prone to delays and errors in keeping information accurate.	community events.
	No centralized or organized system for managing mass and activity schedules, leading to uncoordinated events.	Implement a digital scheduling system for managing masses and events.	Schedules are recorded manually using a pen and paper, making it difficult to organize and update event details effectively.	This results in double bookings, missed services, and confusion among parishioners regarding event schedules.
Economics	Dependence on one source of revenue (donations).	Investigate other sources of revenue, including fundraising events or online donations.	The church relies mostly on physical donations from members, so it is susceptible to changes in attendance or giving.	Possible financial uncertainty during slow-attendance seasons or economic slumps.

	There is no consistent or organized system for tracking donations, making financial oversight difficult.	Establish a donation management system to track and predict financial requirements.	Donation records are logged manually using physical logs or basic tools, which increases the risk of incomplete or inaccurate data.	This leads to difficulty in identifying donation trends and planning budgets for future church projects and community initiatives.
Control	Insufficient control over church finances and donations.	Conduct routine audits and financial tracking systems to improve transparency and accountability.	Absence of organized financial management and manual transaction recording.	Higher risk of financial mismanagement or discrepancies in tracking donations.
	Ineffective tracking of volunteer donations and church operations.	Implement a volunteer management system for monitoring participation and church contribution.	Volunteer participation and activity records are maintained manually, which causes inefficiency and a	It is challenging to plan volunteer schedules, acknowledge contributions, or manage volunteer-led events.

			lack of coordination.	
Efficiency	Manually tracking masses and event attendances.	Track attendance and event participation using an automated system.	Attendance is being recorded manually, causing delays and errors in recording who attended events and services.	Complexity in handling event logistics and reporting attendance, particularly for events involving large groups like festivals or special masses.
	There is no system in place for efficiently handling parishioner complaints and inquiries, leading to delayed responses.	Install a Customer Relationship Management (CRM) system to organize, track, and respond to parishioner feedback and inquiries.	All concerns and inquiries are recorded and addressed manually using notebooks or verbal communication, without a proper tracking method.	This results in slow response times, unresolved concerns, and decreased parishioner satisfaction with church services.

Service	Excessive wait times for parishioners during peak hours (e.g., Sunday Mass).	Implement a queue management system or hire additional volunteers to work in service.	Insufficient personnel coverage during peak usage periods, for example, Sunday masses or special events.	Lengthy waiting time for parishioners to access services or take part in activities, which contributes to annoyance.
	Limited payment options make it difficult for parishioners to donate conveniently, especially outside church services.	Provide more payment channels such as online donation portals and mobile payment systems.	The church currently relies solely on in-person, physical donations during masses, with no digital or remote options available.	This leads to missed donation opportunities from parishioners who are unable to attend services or prefer cashless transactions.

By applying the digital systems and automated solutions proposed in the Problem-Opportunity Definition Matrix, Sta. Ana Church was able to increase operational efficiency, accuracy, and quality of service significantly. Inventory, attendance, and donation tracking processes were automated to minimize errors and delays associated with

manual operations, as well as improve resource utilization and financial transparency. Real-time updating of parishioner information and electronic scheduling improved communication and coordination of church events, reducing misunderstanding and oversights. Implementing a CRM system for grievances and several giving options improved parishioner satisfaction and participation through faster feedback and more convenient giving methods. Overall, these enhancements created a more streamlined, open, and responsive church environment that better addressed its community's spiritual and functional needs.

Functional Requirements

Attendance Tracking System

I. QR Code-Based Registration

a. The system enabled users (servers and attendees) to register using a QR code, streamlining the attendance process. The admin was required to approve server registrations before QR codes were activated.

b. The following data are necessary:

i. Server’s Name

ii. QR Code

iii. Registration Date

iv. Admin Approval Status

II. Attendance Logging

a. Once registered, users could check in for events and services using their QR code. The system automatically logged the time of check-in and check-out for accurate attendance tracking.

b. The following data are necessary:

i. QR Code

ii. Check-In Time

iii. Check-Out Time

iv. Event Name

v. Event Date

Event Scheduling System

I. Event Creation and Management

a. The admin was able to create and schedule events, including specifying details like date, time, location, and description. Events were visible to all users after creation.

b. The Following Data are Necessary:

i. Event Name

ii. Event Date

iii. Event Time

iv. Event Location

v. Event Description

II. Event Registration

a. Attendees were able to register for events directly through the system. Once registered, the event was added to the user's calendar.

b. The Following Data are Necessary:

i. User's Name

ii. Event Registered For

iii. Registration Date

III. Event Cancellation/Update

a. If the admin needs to cancel or modify an event, the system should notify all registered users of any changes made.

b. The Following Data are Necessary:

i. Event ID

ii. Updated Event Details

iii. Cancellation Notice

Server Evaluation System

I. Server Registration and Approval

a. Servers must register in the system, but their registration requires admin approval before being activated.

b. The following data are necessary:

i. Server’s Name

ii. Server’s Contact Information

iii. Registration Date

iv. Admin Approval Status

II. Performance Tracking

a. The system should track server attendance, task completion, and participation in events. It will evaluate server performance based on the collected data.

b. The following data are necessary:

i. Server’s Attendance

ii. Number of Events Attended

iii. Tasks Completed

III. Performance Review and Feedback

a. The admin should be able to provide performance reviews and feedback for each server. This will influence their future assignments or registration status.

b. The following data are necessary:

i. Performance Score

ii. Feedback Comments

iii. Evaluation Date

IV. Renewal or Deactivation

a. Based on the performance evaluation, servers may be renewed for their role or deactivated if performance criteria are not met.

b. The following data are necessary:

i. Server's Performance Status

ii. Renewal Status

iii. Deactivation Date

User Management System

I. User Role Management

a. The system should allow the admin to manage user roles (server, attendee, etc.) and their respective permissions.

b. The following data are necessary:

i. User’s Role

ii. Role Permissions

iii. Registration Status

II. Account Deactivation/Activation

a. The admin can deactivate or activate user accounts as needed, particularly for servers who are no longer active or do not meet performance standards.

b. The following data are necessary:

i. User’s Account Status

ii. Deactivation Reason

iii. Reactivation Date

III. Audit Logs

a. The system should maintain audit logs of all user activities for transparency and security.

b. The following data are necessary:

i. User’s Name

ii. Activity Description

iii. Timestamp

Use Cases

The following use case glossary and diagram illustrated the in-depth description of users' interactions and the system. These were an initial reference used by developers to determine and set up the needed system operations. In addition, they served as the basis of establishing the system's functional requirements, which were explained in the following sections of this research.

Table 1.3

Use Case Glossary

Use-Case Glossary		
Use-Case Name	**Use-Case Description**	**Participating Actors and Roles**
Attendance Tracking System		
Generate QR Code	Generates a unique QR code for each approved user.	Admin
Scan QR for Attendance	Scans and records a user’s attendance to an event.	User/Attendee Admin

View Attendance Logs	Displays the attendance history of all or specific users.	Admin
Filter Attendance Logs	Filter logs by user, date, or event type.	Admin
Confirm Attendance	Confirms and finalizes attendance records for a specific event.	Admin

Event Scheduling System		
Schedule Event	Admin schedules a new church event.	Admin
Edit Event Details	Modify the details (date, title, time) of an existing event.	Admin
Delete Event	Remove a canceled or outdated event.	Admin

View Upcoming Events	Allows users to view all scheduled upcoming church events.	User
Mark Event as Completed	Marks an event as done after execution for record tracking.	Admin

The Event Scheduling System enabled efficient management of church events. Administrators were able to schedule new events, edit event details such as date and time, and delete outdated or canceled entries. Users were given access to view all upcoming events. After an event was held, administrators could mark it as completed to support proper record tracking and documentation.

Server Evaluation System		
Evaluate Server Performance	Records evaluation per server based on attendance and participation.	Admin

Submit Evaluation Reports	Finalizes and submits evaluation after an event or set period.	Admin
View Evaluation History	Displays historical evaluations of individual servers.	Admin
Update Evaluation Criteria	Admin can modify evaluation standards or metrics.	User

The Server Evaluation System was used to assess the performance of individual church servers. Administrators recorded evaluations based on attendance and participation, submitted final evaluation reports after each event or designated period, and reviewed historical evaluation data. Users were also allowed to update the evaluation criteria to ensure that the assessment standards remained relevant and effective.

User Management System		
Register New User	Allows a user to apply for a new account.	User
Approve/Reject User	Admin validates and approves or rejects a user registration request.	Admin
Deactivate User Accoun t	Disables a user account due to inactivity or administrative reasons.	Admin
Edit User Information	Allows updates to user profile or account information.	Admin/User
Assign Role to User	Assigns role as Server, Parishioner, or Admin during approval.	Admin

The User Management System facilitated the administration of user accounts within the church system. Users were able to register for new accounts, while

administrators reviewed and either approved or rejected these requests. Admins could also deactivate accounts due to inactivity or policy violations. Both admins and users were permitted to edit user information, and administrators were responsible for assigning appropriate roles such as Server, Parishioner, or Admin during the approval process.

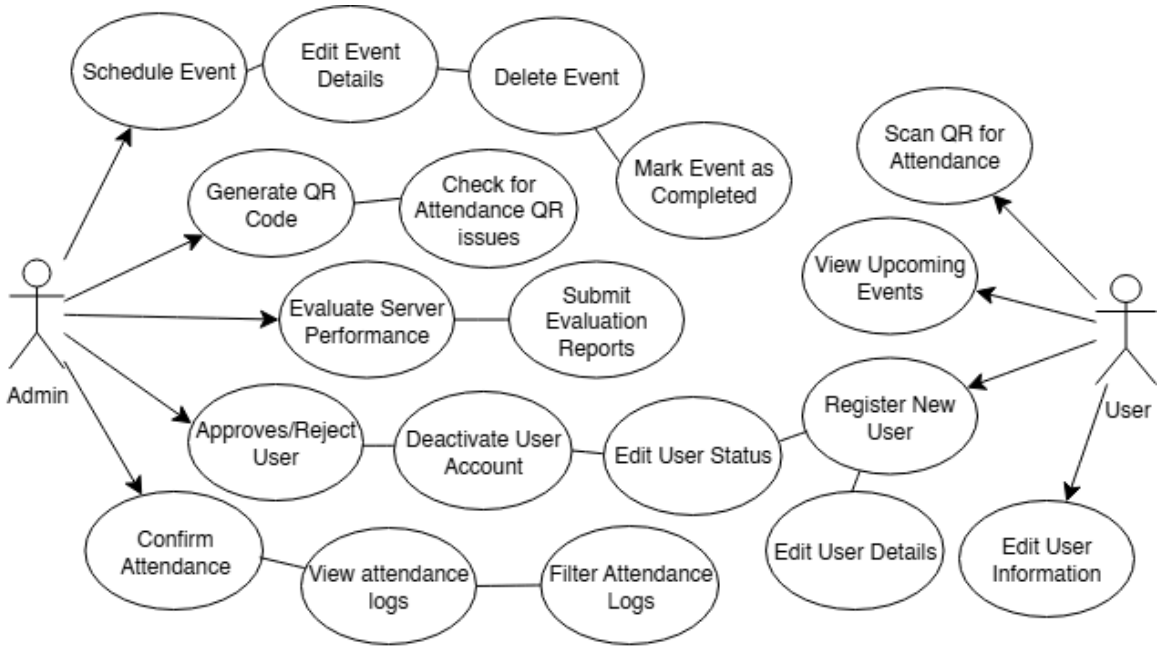


Figure 1.9

Use Case Diagram

Feasible Alternatives

The problems identified in Sta. Ana Church were primarily in the areas of manual tracking, disorganized scheduling, and restricted access to evaluation and attendance data. These problems resulted in delays,

misinformation, an inability to monitor server performance, and inefficiency in planning church-related activities. If not addressed, these issues could result in long-term inefficiencies and prevent the church from running smoothly.

The initial viable solution was to automate all operations completely through the creation of a web-based custom information system that incorporated a QR-based attendance tracking system, event scheduling module, server assessment, reporting dashboard, and user management. The second was to maintain manual tracking through logbooks and hardcopy schedules while using external applications like Google Sheets or Forms for assessments and scheduling. Finally, the hybrid model could also be considered—having had a primitive attendance monitoring app and applying spreadsheet software for server and event monitoring, which had limited automation but fell short of complete integration.

Alternative Solution

Candidate 1 (Web-Based Church Information System)

A complete web-based information system was implemented at Sta. Ana Church that consisted of a QR-based

attendance logging system, event scheduling system, server evaluation and feedback module, reporting and analytics dashboard, and user management. This integrated system simplified procedures, automated log-in of attendees, tracked servers' performance, and facilitated administrative decisions with immediate reports and information. It enabled centralized data access and enhanced organizational efficiency.

Table 1.4

Detailed Budget Computations for Candidate 1

ITEMS	QUANTITY	PRICE/UNIT	TOTAL PRICE
Laptop	1	25,500.00	25,500.00
Server Hosting(per month)	1	409.00	409.00
Mouse and Keyboard	1	1,200.00	1,200.00
TOTAL			27,109.00

This solution offered a centralized and consolidated platform for all church activities, facilitating improved communication, record-keeping, and accountability. The price came with server hosting for web access, allowing the system to be accessed by various users and roles.

Candidate 2 (Manual Input using Spreadsheet or Logbooks)

This method emphasized the use of spreadsheet software such as Microsoft Excel or Google Sheets to capture and track attendance, plan events, and grade servers. Though still somewhat manual, this process digitized, diminished errors made by handwritten records, made information easier to read, and facilitated simple reporting. It was an affordable solution ideal for small churches with minimal technical demands.

Table 1.5

Detailed Budget Computations for Candidate 2

ITEMS	QUANTITY	PRICE/UNIT	TOTAL PRICE
Laptop	1	25,500.00	25,500.00
Microsoft 365 Family Plan (Yearly)	1	6,099.00	6,099.00
Mouse and Keyboard	1	1,200.00	1,200.00
TOTAL			32.799.00

This solution provided data storage and retrieval in a structured digital format. It was perfect for churches that wanted a low-cost replacement from manual logs but did not offer the automation and centralization of an integrated

solution.

Candidate 3 (Hybrid System: Basic QR Attendance + Spreadsheet Reporting)

This hybrid system was a combination of a simple QR-based attendance management system with spreadsheet reporting and event scheduling. It brought in semi-automation for attendance logging and still utilized spreadsheets for the remaining features such as evaluation and event planning. This solution balanced functionality with cost, appropriate for a phased digital transformation.

Table 1.6

Detailed Budget Computations for Candidate 3

ITEMS	QUANTITY	PRICE/UNIT	TOTAL PRICE
Laptop	1	25,500.00	25,500.00
Microsoft 365 Family Plan (Yearly)	1	6,099.00	6,099.00
Server Hosting(per month)	1	409.00	409.00
Mouse and Keyboard	1	1,200.00	1,200.00
TOTAL			33,208.00

This solution would have been more expensive since one

would have needed to buy both a spreadsheet software license and server hosting, as well as the required hardware. It provided a better attendance system and a fairly structured means of handling other church operations while still being scalable for future expansion.

Feasibility Analysis

Operational Feasibility

This section discusses the various possibilities available to address the issue with the current system.

Candidate 1

This solution consolidated several church activities into a single unified platform, making it easier for staff and volunteers to work. QR-based attendance, event booking, server assessments, and reporting modules were all contained in a single easy-to-use web interface. It saved the time spent on maintaining multiple tools and reduced manual logging. Since it could be accessed online, church staff could easily update information from various devices and locations, enhancing organizational effectiveness.

Candidate 2

This system still entailed hand-entry of data but employed a digital format, thus minimizing problems due to

illegible handwriting or misplaced documents. It was easier to handle than handwritten records, and training was minimal. Yet, users needed to switch between several spreadsheets for various operations, which might have been inefficient and prone to error in large-scale church activities.

Candidate 3

The hybrid configuration brought a semi-automatic attendance process with the retention of manual planning and reporting. Although it provided better accuracy and accessibility compared to fully manual systems, it still required users to toggle between tools. Operational complexity could be introduced by having to deal with both the QR scanner interface and the spreadsheet database, which could heighten the risk of workflow interruptions if not properly coordinated.

Technological Feasibility

This section evaluates the required technology and its compatibility, performance, and limitations.

Candidate 1

This system was to be created using HTML, CSS, and JavaScript—a set of broadly used and low-cost technologies.

Minimal hosting was ₱409/month, and the system was compatible with any contemporary browser, making minimal hardware requirements such as a laptop and internet connectivity. The greatest advantage was its ability to scale, have cross-platform compatibility, and centralization. Security could be added through authentication protocols and periodic data backup.

Candidate 2

Spreadsheet programs such as Microsoft Excel or Google Sheets were supported on most platforms and had minimal technical requirements. They could be operated offline and across multiple devices. Nevertheless, it was not powerful in automation, central user access control, or real-time syncing of data. Technologically speaking, it was basic but could fail to adapt to increasing church needs or advanced features such as feedback analysis and role-based access.

Candidate 3

This setup employed simple QR attendance via a minimal web application and kept other information in spreadsheets. Though possible, it involved server hosting and familiarity with effectively using both applications. Data integration between the QR system and spreadsheets could be challenging. Proper training and error-checking procedures

would be necessary to prevent inaccuracies.

Economic Feasibility

This section discusses the financial implications of each solution, including development, hardware, and recurring costs.

Candidate 1

At a total estimated cost of ₱27,109.00, this was the most cost-saving in the long run. It had basic hardware and server-hosting initial cost. There was no periodic payment for software licensing fees, and the modular one could be built up later on. HTML/CSS/JavaScript development was absolutely free of any licensing fees and server charges remained minimal. Value-wise, relative to its magnitude and reach, it was one of the best.

Candidate 2

This option cost ₱32,799.00, which came with a Microsoft 365 subscription. While more costly initially, its ease of use made it suitable for small churches. Nevertheless, the absence of automation could lead to underlying labor expenses. When operations were scaled up, it could become inefficient. Upgrades in the future could mean shelling out for a more sophisticated system.

Candidate 3

The most costly at ₱33,208.00, this was for hosting the server along with Microsoft 365 fees. Though it offered automation for attendance and formatted reporting, having two systems could put additional work on the administrator. The fee might not have been worth it if the features were not integrated at all or were not used well.

Schedule Feasibility

This section assesses the time required to implement each solution and their expected learning curves.

Candidate 1

Implementation for this system involved custom development with web technologies, testing, and training of personnel. A phased rollout was recommended, beginning with attendance logging and progressively introducing other modules. Complete deployment could take weeks, but could be sped up with well-defined milestones. Once deployed, the system supported quick feature additions and maintenance.

Candidate 2

This solution had the minimum implementation duration. Setup was possible in a few days, with some rudimentary orientation sessions afterwards. Because most users already had knowledge of spreadsheet tools, the adjustment phase was very low. However, adopting structured logging formats

might require a slight adjustment for repetitive use.

Candidate 3

This would take the longest because of the dual implementation. Installation of the QR system and its hosting had to be synchronized with spreadsheet preparation. Both platforms needed to be trained on. In the absence of careful planning, this duality had the potential to create confusion and schedule delays. A comprehensive integration plan and support material were needed to facilitate a seamless adoption.

Feasibility Analysis Matrix

Table 1.7

Weighted Scoring Model for the Different Candidates

Feasibility Criteria	**Weight**	**Candidate 1**	**Candidate 2**	**Candidate 3**
Operational Feasibility	**30%**	Completely supports all suggested church features: attendance, scheduling, feedback,	Facilitates core operations such as logging and planning but does not offer automation	Facilitates semi-automated attendance and electronic records. Viable transition

		analytics, and user roles. Would most likely be welcomed for modernizing church processes.	and integration. Familiar equipment, probably widely accepted, but minimal innovation.	solution; also needs two-platform usage.
		SCORE: 100	**SCORE: 70**	**SCORE: 85**
Technical Feasibility	**30%**	Founded on well-supported and open web technologies (HTML, CSS, JS). Needs web dev experience but within grasp; can scale to accommodate future requirements.	Leverages known tools (Excel/Sheets) with low barrier to entry. Expertise: Minimal training required; low technical requirements.	Combination of web-based QR system and spreadsheet brings moderate complexity. Trained skill to handle both platforms.

		SCORE: 95	**SCORE: 85**	**SCORE: 80**
Economic Feasibility	**30%**	Cost: ₱27,109.00 – lowest of all. Sustainable with low recurring expenses. Payback/Value: High productivity and efficiency in the long run.	Cost: ₱32,799.00 – moderate but with periodic Microsoft subscription. Payback/Value: Lower long-term returns because it has limited function.	Cost: ₱33,208.00 – most expensive initial investment. Payback/Value: Reasonable returns; semi-automating saves time but increases complexity.
		SCORE: 95	**Score: 80**	**SCORE:85**
Schedule Feasibility	**10%**	Can take 2–3 months because of development and testing, but the wait is worth it. Rollout can be phased.	Can take 1–2 weeks to set up; less configuration and training required.	Can take 1–2 months because of having to integrate QR and spreadsheets and double training.

		SCORE: 90	**SCORE: 100**	**SCORE: 85**
RANKING	**100%**	**95**	**83.75**	**84.75**

As indicated in Table 1.7, the total scoring of the three solutions encapsulated their operational, technical, economic, and schedule viability. Of the three, the first solution—the Web-Based Church Information System—proved to be the most viable solution, having a combined weighted score of 96.5%. This was due to its robust functionality, affordability, and compliance with contemporary technologies.

The Hybrid QR + Spreadsheet System was the third solution with a score of 84.5%, providing a semi-automated option but with increased complexity. The second ranking solution was Spreadsheet/Manual Logs with the lowest score at 83.5%, the simplest to implement but with no long-term efficiency and scalability. The ranking clearly showed that the first solution had a large margin over the others in terms of feasibility.

Project Scope

This project involved the conception and deployment of

a Web-Based Church Information System to facilitate the automation of church operations, especially member records, attendance, and event scheduling.

1) Member Information Management – The system enabled registration, editing, and viewing of member profiles to have accurate and necessary records for everyday church operations.

2) Attendance Tracking via QR Code – Attendance for worship services and events was tracked through QR code scanning to achieve accuracy and efficiency in a post-pandemic environment.

3) Event Scheduling and Management – Church events were scheduled using a calendar-based system to simplify scheduling and keep members well-informed.

4) User Roles and Access Control – Role-based access was used for admins and volunteers to improve security and ensure accountability.

5) Basic Reporting – The system provided reports on attendance and membership statistics to facilitate transparent and informed decision-making.

Project Limitations

Whereas the system would achieve its fundamental goals, several aspects and issues were left out or scaled

down in this initial phase as a result of practical limitations:

1) Online monetary transactions were excluded because of high security needs and regulatory restrictions outside the project's present scope.

2) The system would work using mobile browsers, but a fully responsive mobile version or native application was not included due to time and resource restrictions.

3) Automated email reminders or SMS reminders were excluded since they demanded third-party services and extra development time.

4) The project did not include hardware such as QR scanners and presumed to be compatible with current devices.

5) Training of the user was restricted to documentation only, with no intention of in-person or online training sessions.

The Proposed System

The system to be implemented was a Web-Based Church Information System that would efficiently manage basic church operations like member data management, QR code attendance tracking, scheduling of events, and simple reporting. It was chosen as the solution based on the

results of the feasibility analysis, wherein it acquired the highest marks for operational, technical, economic, and schedule feasibility, and thus was the most practical and valuable solution for the church's short-term requirements.

General Objective

This proposal outlined the development of a comprehensive digital solution for Sta. Ana Parish. Our primary goal was to launch an official, publicly accessible website to provide a transparent and up-to-date resource for all church events and announcements. Complementing this, we introduced a C#-based management system designed to significantly simplify internal church administration. This system centralized member records, automated attendance tracking, facilitated event scheduling, and generated essential reports, thereby enhancing efficiency and organization.

Specific Objectives

The proposed system aimed to:

- Collected and digitized church member records and event details through an organized data entry system. This system stored personal details, event schedules, and ministry involvement, ensuring organized and accessible

storage.

- Made attendance tracking more convenient and consistent by implementing QR code scanning. It also managed event schedules and incorporated role-based access, which streamlined volunteer and administrator tasks within the system.
- Generated comprehensive reports on member attendance, member evaluation, event participation, and overall church event schedules. These reports were viewable by authorized users.

Scope of Automation

The scope of automation for the proposed Web-Based Church Information System encompassed the computer processing of member registration, attendance tracking through the scanning of QR codes, event scheduling, user role management, and the generation of simple reports. These activities were automated to the maximum degree through the system interface, thereby facilitating efficient operation and enhanced precision.

Nevertheless, there were some manual tasks that were not eliminated, including physical QR code scanning from external devices and manual inputting of member data for initial signing up. Additionally, functionalities like

online giving, automated reminders, and complete integration with mobile applications were not automated in this release due to technical and capacity constraints.

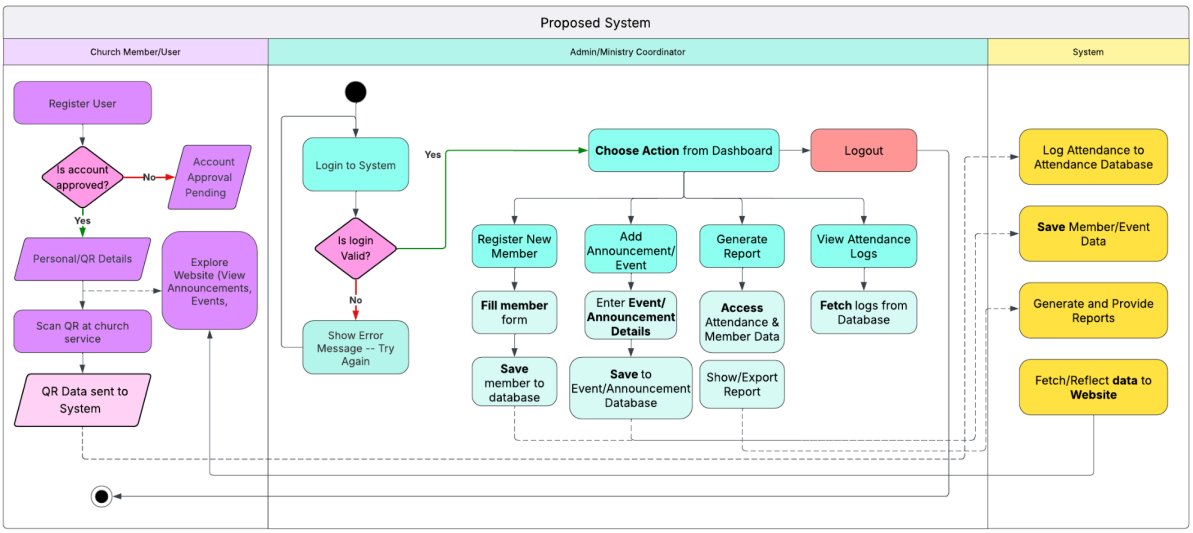


Figure 2.0

Activity Diagram of the Proposed System

Figure 2.0 illustrated the activity diagram for the proposed system, delineating the interconnected workflows for both Church Members/Users and Admins/Ministry Coordinators. The user journey commenced with a registration process that required administrative approval, after which users were granted access to their personal details and a unique QR code for scanning during church services to record attendance. Users were also able to navigate the website to view public announcements and upcoming events. Meanwhile, the Admin/Ministry

Coordinator’s role began with a secure login to a central dashboard, from which they managed essential functions such as registering new members, adding announcements or events, viewing attendance logs, and generating reports. The system supported these activities by authenticating users, storing all member, event, and attendance data in a centralized database, processing QR code information, and retrieving data as needed to populate reports for administrators and display relevant content on the website for users. This integrated workflow established a clear division of roles and responsibilities, thereby ensuring the efficient and organized management of church information and member activities.

Data Flow Diagram

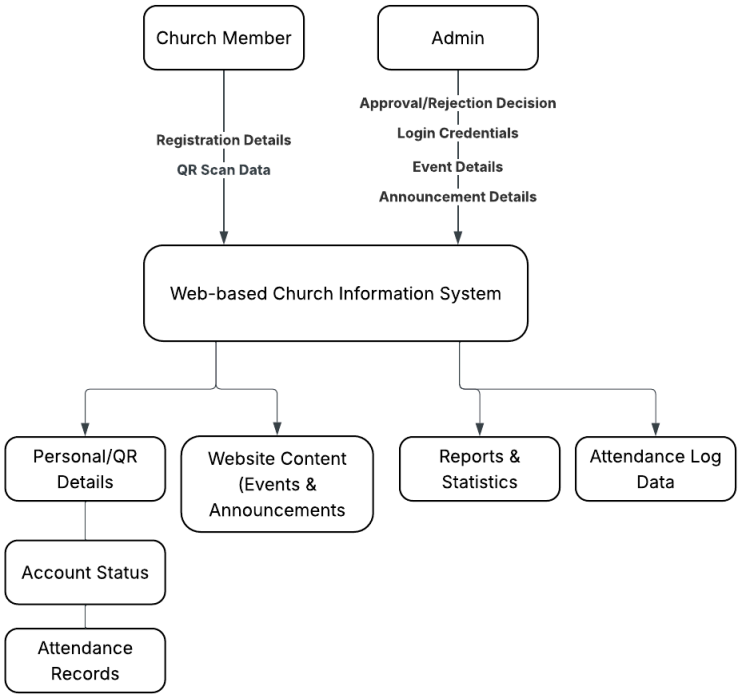


Figure 2.1

Context Level Data Flow Diagram of the Proposed System

Figure 2.1 illustrated the Context Level Data Flow Diagram for the Web-Based Church Information System, clearly showing the primary data exchanges between the system and its external entities: the Church Member and the Admin. The Church Member initiated interaction with the system by providing Registration Details to create an account, and submitted QR Scan Data to log their attendance. The Admin, on the other hand, interacted with the system by submitting Login Credentials for secure access, providing Event Details and Announcement Details to

be published, and submitting an Approval Decision for new member accounts.

In response, the system delivered specific outputs to each entity. It provided the Church Member with their Account Status, Personal/QR Details, and dynamic Website Content, including event schedules and announcements. For the Admin, the system generated and provided comprehensive Reports & Statistics as well as direct access to Attendance Log Data. This diagram effectively defined the system's boundaries, positioning it as the central hub that processed all inputs and distributed organized information back to its users.

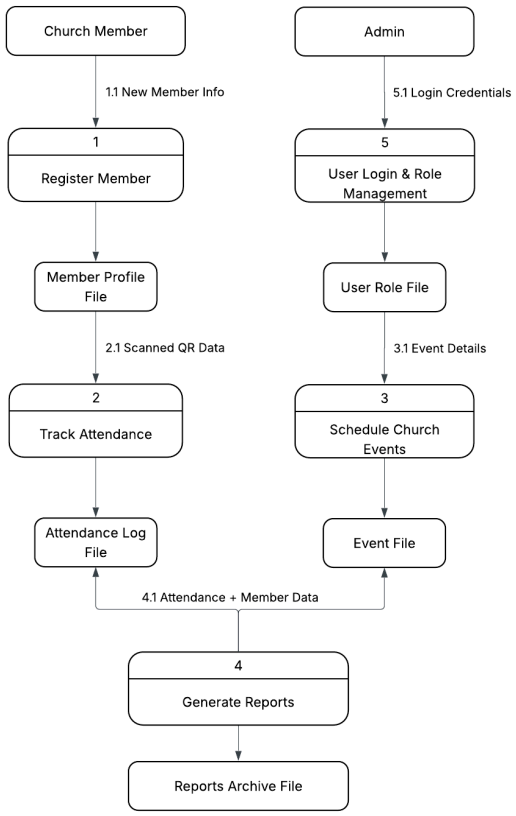


Figure 2.2

Level 0 Data Flow Diagram of the Proposed System

Figure 2.2 illustrated the Level 0 Data Flow Diagram of the proposed Church Information System. It outlined the main processes and how data flowed between external entities, the system, and data stores.

Church members interacted with the system through the "Manage Member" process, which handled registration, login, and QR code scanning during events. Attendance data was processed through the "Log Attendance" function and saved

into the Attendance Database. Admins or coordinators could access the system via secure login to perform tasks such as managing member records, updating announcements and events through the "Manage Events and Announcements" process, and viewing logs. All related data was stored in the Member, Event, and Announcement databases.

Additionally, the system allowed admins to generate reports through the "Generate Reports" process, which compiled data from multiple sources to create summaries of church activities. The "Fetch and View Data" process reflected updates on the public-facing website or dashboard, allowing members to stay informed about church events and announcements. This structure supported a streamlined, centralized, and secure approach to managing church operations digitally.

Entity Relationship Diagrams

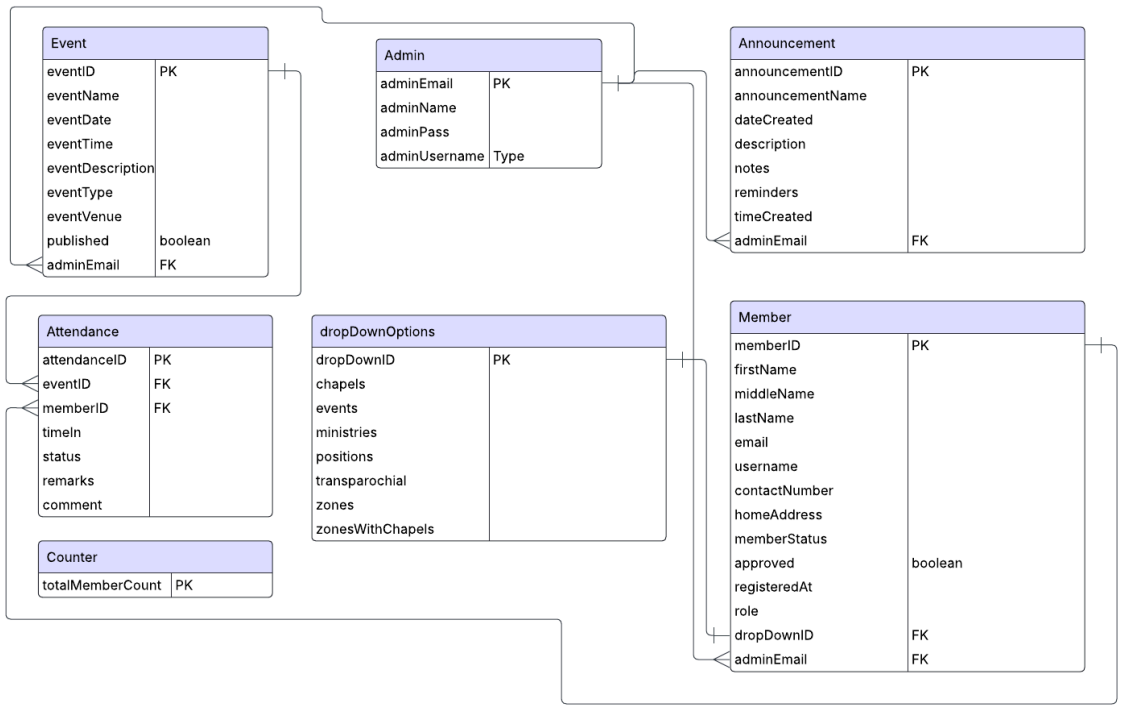


Figure 2.3

Entity Relationship Diagram of the Proposed System

Data Dictionary

This includes two types: Data Dictionary for the Data Flow Diagram, and the Data Dictionary for the Entity Relationship Diagram.

I. Data Dictionary for the Data Flow Diagram

PROCESSES

1. Member Registration

Description: A process where a church member inputs their personal data into the system for membership tracking and approval.

Process #: 1

Input Flows: New-Member-Information

Output Flows: Member-Record

2. Track Attendance via QR Code

Description: Logs attendance by scanning a member's QR code and linking it to the event.

Process #: 2

Input Flows: Scanned-QR-Data

Output Flows: Attendance-Record

3. Schedule and Publish Events

Description: Allows admin users to create, update, and publish church events.

Process #: 3

Input Flows: Event-Details

Output Flows: Event-Data

4. Post Announcements

Description: Enables admin users to write and share church announcements.

Process #: 4

Input Flows: Announcement-Details

Output Flows: Announcement-Board

5. Generate Reports

Description: Summarizes member registrations and attendance logs into reports.

Process #: 5

Input Flows: Attendance-Record, Member-Record

Output Flows: Member-Statistics, Attendance-Report

6. User Login and Role Access

Description: Checks login credentials and grants access depending on user type.

Process #: 6

Input Flows: Login-Credentials

Output Flows: Access-Session

0. Web-Based Church Information System

Description: Central system that manages events, attendance, announcements, users, and reports.

Input Flows: New-Member-Information, Scanned-QR-Data, Event-Details, Announcement-Details, Login-Credentials

Output Flows: Member-Record, Attendance-Record, Event-Data, Announcement-Board, Access-Session, Reports

1. Data Dictionary for the Entity Relationship Diagram

ENTITY	Business Definition
Member	An individual officially registered in the church and part of its congregation.
Admin	A church staff member with full access and control over the system functions.
Attendance	A record of a member's presence during worship services or church-related events.
Event	An organized activity or gathering scheduled by the church.
Announcement	A public post by admins to inform members about events, reminders, or updates.
QR Code	A unique identifier scanned to log a member's attendance quickly and accurately.
dropDownOptions	Stores selectable lists such as chapels, zones, events, ministries, and positions.
Counter	Tracks the total number of members in the system.

Part II

PROJECT DESCRIPTION

Project Team Logo

Project Title

The study, "Web-Based Attendance and Event Scheduling Management System for Sta. Ana Parish Church," effectively captured the project's main purpose and scope. The title clearly showed that the study focused on creating an online platform to solve specific problems at Sta. Ana Parish Church related to attendance tracking and event scheduling. Previously, the church used manual logbooks for recording attendance and events, which was time-consuming and often resulted in inconsistencies like missing names and hard-to-read handwriting, especially during large events. These problems made it difficult to accurately track attendance and assess how well servers performed their duties.

By creating a web-based system, the title highlighted

how the project would use modern technology to offer a more accessible and reliable solution. This digital approach allowed users to log in from anywhere, record attendance in real time, and view upcoming events, making planning and assigning duties easier. Including both attendance and event scheduling in the title showed the complete nature of the system, which aimed to improve both record-keeping and organization within the church community.

Project Organization

Figure 2.4

Team Composition and Roles

The chart showed the designated roles of each project team member based on their strengths. Jervin Andoy acted as the Document In-Charge and System Designer, handling documentation and assisting in system design. Nepthali Sollano served as the System Designer and Project Manager, overseeing both design and team coordination. Francis

Elixer Tupaz was the Programmer, responsible for developing the system. While roles were assigned, the team did not follow a strict hierarchy; instead, members supported each other and took on additional tasks as needed to ensure the project's success.

Project Methodology

The project implemented the Waterfall model as its development methodology. This sequential approach was appropriate for the Web-Based Attendance and Event Scheduling Management System for Sta. Ana Parish Church due to its well-defined requirements and clear project scope. The following phases were executed in sequence:

1. Requirements Analysis

- Conducted interviews with church administrators and staff to gather specific needs
- Documented functional requirements (attendance tracking, event scheduling, reporting)
- Identified system constraints and boundaries

2. System Design

- Developed system architecture based on requirements

- Created user interface mockups for web application
- Documented technical specifications and data flow diagrams

3. Implementation

- Developed front-end interface using HTML, CSS, and JavaScript
- Coded back-end functionality using appropriate programming language
- Implemented database according to design specifications

4. Testing

- Executed system testing to verify all requirements were met
- Performed user acceptance testing with church staff
- Documented and addressed identified defects

5. Deployment

- Installed the system on the production server
- Migrated existing data if applicable

- Released system documentation and user manuals

6. Maintenance

- Monitored system performance
- Addressed any post-deployment issues
- Implemented minor enhancements as needed
- Provided technical support to users

Each phase was required to be completed and approved before moving to the next phase, ensuring thorough validation of project deliverables at each stage of development.

Project Schedule

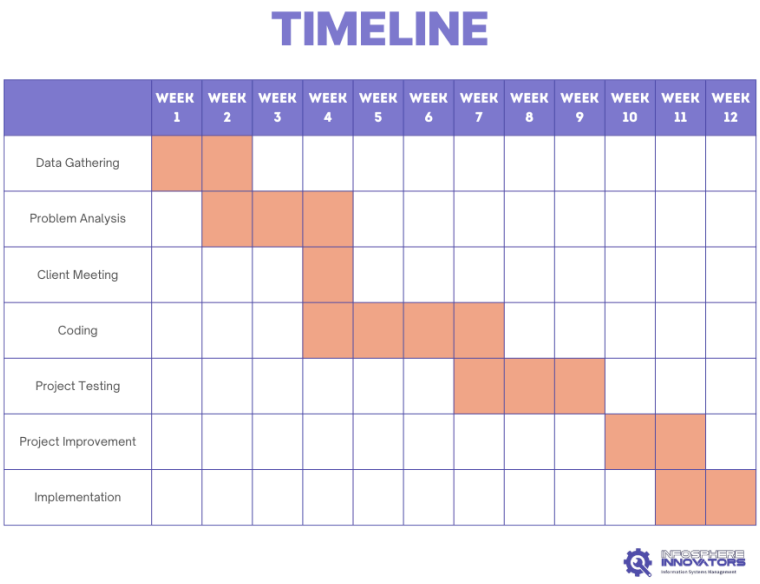


Figure 2.5

This project followed a 12-week structured, phase-based development schedule. However, the timeline could adjust depending on the actual pacing and progress during development.

Technology

The proposed system was developed using modern web technologies to ensure accessibility, responsiveness, and ease of use. The primary programming languages used were HTML, CSS, and JavaScript, which handled the structure, design, and interactive behavior of the web interface. For data storage and management, the system utilized MySQL as the relational database, allowing secure and organized handling of user information, attendance logs, and event details. Development was carried out using Visual Studio as the integrated development environment (IDE), providing a comprehensive platform for writing, testing, and debugging the code. The main equipment required for this project was a laptop, which was used for both development and testing purposes throughout the system implementation process.

Part III

USER ACCEPTANCE AND TRAINING

User Acceptance Testing

The User Acceptance Testing (UAT) for the Event Management and Attendance Monitoring Using QR Code System, developed for Sta. Ana Parish Church, was systematically conducted to ensure its functionality, alignment with church operations, and overall usability for its intended users. This process involved distinct phases designed to thoroughly evaluate the system's performance in a real-world context.

The testing process primarily involved key stakeholders from Sta. Ana Parish Church, including church administrators, who manage events and users, and servers, who utilize the system for attendance tracking and performance monitoring. Their direct involvement was crucial as they are the primary end-users affected by the system's implementation in their daily church activities.

The first phase, Preliminary Testing, was conducted internally by the project developers. This phase focused on validating the core functionalities of the system. Developers executed various test cases simulating daily church operations, specifically by generating and scanning

QR codes for attendance logging, creating, modifying, and canceling events, managing user accounts and roles (admins, servers, attendees), tracking server time-ins and event participation, and generating attendance reports and server performance summaries. The objective of this phase was to ensure that each feature performed as designed, that data capture was accurate, and that the system operated smoothly without technical glitches. This allowed for the identification and rectification of any errors or inconsistencies before user involvement.

Upon successful completion of the internal preliminary tests and confirmation of system stability, a comprehensive training session was provided to the church administrators and servers. The training covered essential aspects of the system's operation, detailing how to navigate the system interface, register and manage user accounts, create and schedule new events, utilize the QR code scanning feature for attendance, access and interpret attendance records and server evaluation reports, and adjust system settings as needed.

The final phase, Parallel Testing, was then initiated, with the church administrators and servers independently utilizing the newly developed system alongside their existing manual processes. This phase was vital for

assessing the system's practical applicability and user-friendliness in a live environment. Users input actual event data and tracked attendance, applying what they had learned during the training without direct developer assistance. This stage allowed the project team to evaluate the accuracy of attendance records and generated reports, the efficiency and ease of data entry using the QR code system, the system's seamless integration with their operational workflow, and the overall confidence of users in operating the system independently.

The successful culmination of both the Preliminary and Parallel Testing phases confirmed that the QR Code-based Event and Attendance Management System was ready for full adoption by Sta. Ana Parish Church. The system demonstrated its capability to reliably support event management, accurate attendance monitoring, and effective server evaluation, thereby addressing the challenges identified in the church's previous manual processes.

Preliminary Testing Results

Functional Requirement	**Test Cases**
1. User Registration and Role Assignment	A. Verify that users can successfully register using a

		valid email and input necessary details such as name, role (Member, Leader, Server), Trans-parochial status, chapel, and zone.
		B. Confirm that registration requires admin approval before access is granted.
		C. Verify that a confirmation email is sent to the user's provided email once the admin approves the account.
		D. Confirm that only approved users can log in and view their dashboard.
		E. Ensure that unregistered users are redirected to a guest mode interface with access only to upcoming events, announcements, and calendar.
2. Login and Personal		A. Verify that registered users

Dashboard Access	can successfully log in using valid credentials. B. Test Case 2.2: Confirm that users are redirected to their personal dashboard after login. C. Test Case 2.3: Ensure that the dashboard displays the user's personal details, attended events, and attendance status. D. Test Case 2.4: Verify that upcoming events, public announcements, and the calendar are visible on the user’s dashboard.
3. QR Code-Based Attendance Logging	A. Confirm that the system generates unique QR codes for each registered user. B. Verify that the admin’s QR scanner interface can scan member QR codes and retrieve

	user details. C. Confirm that attendance is recorded accurately upon successful scan, including time-in and event name. D. Ensure that duplicate scans within a restricted time frame are prevented or flagged. E. Verify that attendance logs are linked to each specific event and can be filtered by user role.
4. Event and Announcement Management (Admin)	A. Verify that admins can create new events with full details (name, description, date, time, type). B. Confirm that admins can edit and update event details. C. Verify that admins can delete or archive past events. D. Confirm that admins can

	filter events by date, type, or assigned roles. E. Verify that admins can create and update announcements. F. Ensure announcements and event schedules are visible to both logged-in users and guests.
5. Attendance History and Server Evaluation (Admin)	A. Verify that admins can view attendance history for each event. B. Confirm that attendance data includes QR scan timestamps and user information. C. Ensure that server performance (punctuality, participation) can be reviewed per event. D. Verify that admins can enter evaluation comments and assign tasks per server. E. Confirm that reports can be

	generated based on server activity and attendance logs.
6. User Account Management (Admin)	A. Verify that admins can view the full list of registered users with filters for role, chapel, or zone. B. Confirm that admins can approve or reject user registration requests. C. Verify that an email is automatically sent to users upon approval or rejection. D. Ensure that admins can update user details (name, role, status). E. Confirm that admins can activate, deactivate, or delete user accounts. F. Verify that the system logs administrative actions for accountability.
7. Guest Access Mode	A. Confirm that unregistered or

non-logged-in users are placed in guest mode.

B. Ensure that guest users can view public content such as upcoming events, announcements, and the calendar.

C. Verify that guest users are prompted to register to access personal dashboards or attendance tracking features.

Every single one of the highly specified requirements in terms of functions including the user registration, log in, QR code attendance log with attendance history, management of events as well as announcements and user account management and user account management in the mode of guest access were all systematically handled. Each of the test cases to be conducted as per each individual functional requirement was examined in detail including being run. Such a broad-based testing strategy provided assurance that all the features of the system, including the means to onboard users, log in to a personalized

dashboard, and advanced options affecting the events, attendance, and users were taken through a rigorous testing process.

The outcomes of such test checks were observed and recorded in detail of each separate testing case. This documentation of events ensured that there was complete confirmation that the Event Management and Attendance Monitoring Using QR Code System at Sta. Ana Parish Church was able to deliver what was planned regarding all the set functions. The case with successfully fulfilling all of the test scenarios proved that the system can be expected to prove to have the reliable management of user roles, the event management processes, the maintenance of relevant attendance information based on QR code scanning, and the set of tools that will be presented to the administration to allow running a successful overview and inspection. Table 3.1 shows the actual results of the UAT.

Table 3.1

User Acceptance Testing Results

Test Case #	**Tested By**	**Tested Date**	**Expected Outcome**	**Actual Outcome**	**Remarks**
1a	Neptha	June	Users can	Registratio	Working

	li Sollano	19, 2025	register with full details including role, chapel, and zone	n form accepted all input fields	as expected
1b		June 19, 2025	Admin receives request and can approve or reject	Admin dashboard displayed pending approvals	Function -al
1c		June 19, 2025	Approved user receives email notification	Email sent successfully upon approval	Verified
2a		June 19, 2025	Approved users can log in and see dashboard	Dashboard loaded with correct user details	As expected
2b		June 19, 2025	Personal status displays past events attended	Attended events shown with correct labels and timestamps	Fully function -al
2c		June 19, 2025	Calendar and announcements visible to all users	Displayed correctly in both guest and logged-in modes	Working
3a		June 19, 2025	QR codes generated for registered users	QR codes were unique and linked to user profiles	Passed
3b		June 19, 2025	Admin QR scanner reads code and logs attendance	QR scan recorded accurate time-in	Function -al

				details	
3c		June 19, 2025	Duplicate scans within time limits are restricted	System prevented multiple time-ins within short intervals	Working as intended
4a		June 19, 2025	Admin can create and edit events and announcements	Event and announcement forms saved changes correctly	Verified
4b		June 19, 2025	Admin can delete or archive past events	Removed events no longer displayed in public interface	Clean removal
4c		June 19, 2025	Admin can view full attendance history by event	Event history displayed complete with time-in and user details	Accurate output
5a		June 19, 2025	Admin can approve users and modify their roles	Role switching worked; approval list updated	Working as expected
5b		June 12, 2025	Admin can activate, deactivate, or delete user accounts	Status updates reflected in user management interface	Confirmed

5c		June 19, 2025	Admin can send email notifications from user panel	Email composed and sent successfully via built-in mail tool	Functional
6a		June 19, 2025	System generates QR for new users upon approval	QR automatically displayed in user dashboard	Confirmed
6b		June 19, 2025	Server evaluation accessible via admin interface	Performance feedback and attendance data linked per server	Working well
6c		June 19, 2025	System generates printable server performance reports	Reports generated with correct data and format	Output verified

Table 3.1 outlines the results of the preliminary testing phase conducted for the Event Management and Attendance Monitoring Using QR Code System developed for Sta. Ana Parish Church. This phase was executed solely by the system developer, *Nepthali Sollano*, on June 19, 2025, prior to the formal release of the system to actual church personnel. Each functional requirement was tested by simulating real scenarios based on Sta. Ana's existing

event workflows, attendance procedures, and administrative tasks to ensure system accuracy, performance, and reliability.

The test cases addressed major modules such as User Registration and Role Assignment, Attendance Logging via QR Code, Event and Announcement Management, Server Evaluation, and Admin Account Management. Each module was rigorously tested with realistic data and expected user behaviors to identify potential issues or misbehaviors.

In this phase, specific functionalities such as user role selection (Member, Leader, Server), admin approval and email notification, QR scanning for attendance, and calendar visibility in guest mode were validated. Additionally, attention was given to verifying that administrators could create, filter, and manage events, generate reports, evaluate servers, and communicate through email. As detailed in the table, all test cases passed, confirming that the system is functionally stable and prepared for deployment in a live setting with real users.

Training Results

The user training session was planned to take place on

June 19, 2025, right after the initial testing activities are completed successfully. In such a way, the church administrators and the chosen representatives of the servers worked with an already functional and approved version of the system. The on-site training was held at Sta. Ana Parish Church, taught on the important functional areas that are marked in six sections based on the real-life implementation structure and flow of the web-based system:

1. User Registration and Role Assignment
2. Admin Approval and Email Notification
3. QR Code Attendance Logging
4. Event and Announcement Management
5. Server Monitoring and Evaluation
6. Public Access: Upcoming Events, and Announcements

All the sections were presented in step-by-step-based form and users were shown how to use them in real life, such as registering a new member, scanning a QR code in an event and viewing announcements and schedules. The participants were also asked to interact with the system themselves to have an idea of logging attendance as well as read through their dashboard. It was also a practical way through which the users would learn about the full

functions of the system and get quick responses on the usability of the system.

The training was focused on learning their system, the correct entry of data, understanding reports, as well as making sure that even non-specialized people could cope with their tasks by themselves. After the session, the users were confident about using the system and willing to have its full implementation. Support materials and documentation were available in future reference by the developer. The results are shown in Table 3.2.

Table 3.2

Training Results

Date	Module	User	Results
June 19, 2025	User Registration and Role Assignment	Esther Oboza - GKK Coordinator	The training was done successfully
	Admin Approval and Email Notification	Sr. Francine Caecuerva - Formation in-charge	The training was done successfully
	QR Code Attendance Logging	Christian Jay Portrias - Office Staff	The training was done successfully
	Event and Announcement	Esther Oboza - GKK Coordinator	The training was done

	Management		successfully
	Server Monitoring and Evaluation	Sr. Francine Caecuerva - Formation in-charge	The training was done successfully
	Public Access to Events, Announcements, and Calendar	Christian Jay Portrias - Office Staff	The training was done successfully

Parallel Testing Results

The parallel testing session was done a day after the user training session which is on June 20, 2025. With the help of this phase, the actual users and intended beneficiaries of the system, Esther Oboza, Sr. Francine Caecuerva, and Christian Jay Portrias were able to manage the system without the help of the facilitator, and by using actual data that is presented by the real church events and attendance DJs. Compared with the previous preliminary testing conducted by developers, which involved tests of small parts of the system, this one was carried out in operational conditions, and was aimed to test the level of performance, usability, and reliability of the system.

At this phase, the users implemented the training attained skills and conducted these actions including

addition of new members, authorization of user accounts, QR scanning to log attendance, creation of events and announcements as well as the tracking of server attendance and performance. The use of the system in the live scenario aided in validating how well the system could be used in the parish core operational requirements as well as its usability by the users without the need of developers.

The comments collected at this stage affirmed that the system was both complete in terms of functionality and usable and effective to the daily work. Some other random tests were also carried out to test some of the work such as synchronization of calendars, filtering of attendance records, and email messages and all of this was tested successfully and without any major problems. The formal test cases undertaken by the parallel testing phase are summarized as in table 3.3 below.

Table 3.3

User Acceptance Testing Results

Test Case #	Tested By	Tested Date	Expected Outcome	Actual Outcome	Remarks
1a	Esther Oboza	June 20, 2025	Register a new user with full role and chapel details	Successfully registered and submitted for admin	Test Case was Successful

				approval	
1b	Sr. Francine Caecuerva	June 20, 2025	Admin approves user and system sends email notification	Email sent upon approval and user was able to log in	Test Case was Successful
1c	Christian Jay Portrias	June 20, 2025	View dashboard with personal event attendance and details	Dashboard displayed accurate user data and status	Test Case was Successful
2a	Christian Jay Portrias	June 20, 2025	Member scans their own QR code on the standalone scanner to time in	Attendance successfully logged with timestamp	Test Case was Successful
2b	Esther Oboza	June 20, 2025	Admin views user details after scanning QR code	QR scan displayed member/server information and confirmed time-in	Test Case was Successful
2c	Sr. Francine Caecuerva	June 20, 2025	Prevent duplicate time-in within short time span	System restricted rapid duplicate entries	Test Case was Successful
3a	Sr. Francine Caecuerva	June 20, 2025	Admin creates a new church event	New event added and visible to users and guests	Test Case was Successful

3b	Esther Oboza	June 20, 2025	Admin edits member details (status, chapel, zone, trans-parochial status)	Changes saved and reflected on member profile	Test Case was Successful
3c	Christian Jay Portrias	June 20, 2025	View upcoming events, announcements, and calendar as a guest	Guest mode displayed correct schedule and posts	Test Case was Successful
4a	Sr. Francine Caecuerva	June 20, 2025	Admin views attendance history and generates server report	Attendance logs displayed per event with export options	Test Case was Successful
4b	Esther Oboza	June 20, 2025	Admin leaves server evaluation comment per event	Comment saved and linked to server performance record	Test Case was Successful
4c	Christian Jay Portrias	June 20, 2025	Admin filters event logs by role, date, or event	Filters returned correct attendance subsets	Test Case was Successful
5a	Esther Oboza	June 20, 2025	Admin modifies member role from "Member" to "Server"	Role updated in system and new permissions applied	Test Case was Successful
5b	Sr.	June	Admin	Ineligible	Test

	Francine Caecuerva	20, 2025	approves or rejects user registration requests	user accounts were rejected and removed from pending list	Case was Successful
5c	Christian Jay Portrias	June 20, 2025	Admin clicks "Send Email" button to email QR code to newly approved member	QR code image successfully sent with approval message	Test Case was Successful

Part IV

CONCLUSION AND RECOMMENDATIONS

Conclusion

The development of the integrated digital solution for Sta. Ana Parish effectively resolved the core problem of inefficient event management and limited communication regarding church activities. Previously, manual processes made it difficult to monitor the effective participation and accountability of members or servers during various church events, and public access to information was limited. By embracing the opportunity to implement an automated system, we successfully digitized church member records and centralized event details, establishing a robust, organized, and accessible data repository. This directly addressed the prior issues of untracked absences, challenges in organizing volunteers, and critically, the lack of a formal platform for disseminating church announcements and event schedules to the community.

All project objectives were successfully achieved. We established an official website for Sta. Ana Parish, providing churchgoers and the wider community with a public platform to easily view future events and announcements. Internally, we streamlined attendance tracking with

convenient QR code scanning and implemented role-based access to manage event schedules, which simplified tasks for both volunteers and administrators. Crucially, the system now generates comprehensive reports on member attendance, evaluation, and event participation. These outputs provide vital insights, empowering the church leadership to make informed decisions and manage the parish community with greater efficiency and precision.

Recommendations

First, it was recommended to include a feature that allowed users to edit their profile pictures. This would provide a more personalized user interface and support easier member identification during events or system interactions. Additionally, it was suggested that the overall user experience (UX) of the admin panel be improved. Streamlining the interface with clearer navigation, responsive layouts, and more intuitive controls could reduce administrative workload and improve system efficiency.

Furthermore, users recommended the addition of a feature that allowed members to indicate the reason for their absence from an event. This data could help the

parish priest and church staff better understand attendance patterns and make informed decisions for future planning and pastoral care. Another key suggestion from the panel was to implement a policy or counter that tracks how many events a member needs to attend in order to appeal a suspension, ensuring fairness and encouraging consistent participation. They also recommended expanding the system's potential use to other churches where attendance is mandatory, such as Iglesia ni Cristo (INC), which could open up more opportunities for system adoption.

While these features were not part of the original project scope, their inclusion in future updates would significantly increase the system's value and usability. Therefore, it was recommended that these enhancements be considered for future system development to address user needs and support more effective church operations.

References

Almomani, I. M., Al-Akhras, M. A., & Abu-Shanab, E. (2014). *RFID technology and its applications in Internet of Things (IoT)*. In 2014 International Conference on Future Internet of Things and Cloud (pp. 257–262).IEEE. https://doi.org/10.1109/FiCloud.2014.43

Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. W. W. Norton & Company.

Kuo, Y.-F. (2011). *The impact of employee satisfaction on organizational performance: Evidence from the church sector*. The Service Industries Journal, 31(9), 1387–1402. https://doi.org/10.1080/02642060903473852

APPENDICES

Appendix A

Letter in Conducting a Study

COLLEGE OF COMPUTER AND INFORMATION SCIENCE
MAPÚA MALAYAN COLLEGES MINDANAO

April 15, 2025

Rev. Fr. Allan Rodriguez
Parish Priest
Sta Ana Shrine Parish,
Sta. Ana Avenue, Davao City

Dear Rev.:

Greetings!

As part of the requirements for our course CS103P, we, the second-year students of Bachelor of Science in Information Systems at Mapua Malayan Colleges Mindanao, are required to conduct a study to develop a computer-based information system that will help a company improve productivity in its daily operations. We are to select three (3) companies/clients and conduct preliminary data gathering to create a single company profile that will be used as our official company and the recipient of the aforementioned software solution.

In light of this, our group would like to respectfully request permission from your esteemed company to allow us to conduct an interview with one of your personnel and/or staff regarding your business process concerns.

Respectfully yours,

Jervin Andoy _____
Student Name and Signature

Nepthali Sollano _____
Student Name and Signature

Francis Elixer Tupaz _____
Student Name and Signature

Noted by:

CHERRY B. LISONDRA, MIT
CS103P Adviser

Conforme: _____
Date: _____

Appendix B

Letter in Conducting an Interview

CCIS COLLEGE OF COMPUTER AND INFORMATION SCIENCE
MAPÚA MALAYAN COLLEGES MINDANAO

April 20, 2025

Rev. Fr. Allan Rodriguez
Parish Priest
Sta Ana Shrine Parish,
Sta. Ana Avenue, Davao City

Dear Sir:

Greetings!

We, the undersigned, are second-year Bachelor of Science in Information Systems students from Mapua Malayan Colleges Mindanao and are currently enrolled in CS103P – Systems Analysis and Design.

You have been selected as the client company that will receive the solution software we are developing as part of our study. In connection with this, we would like to respectfully request permission from your esteemed office to allow us to conduct a thorough data gathering and investigation of your company's business operations, specifically regarding [particular transaction such as inventory/payroll/sales]. We also kindly ask for your commitment to assist us in this endeavor. This collaboration will greatly aid our group in creating a high-quality software solution that can enhance your company's operations.

Respectfully yours,

Jervin Andoy
Student Name and Signature

Nepthali Sollano
Student Name and Signature

Francis Elixer Tupaz
Student Name and Signature

Noted by:

CHERRY B. LISONDRA, MIT
CS103P Adviser

Conforme: _____
Date: _____

Appendix E

Letter in Conducting System Testing

COLLEGE OF COMPUTER AND INFORMATION SCIENCE
MAPÚA MALAYAN COLLEGES MINDANAO

June 19, 2025

Rev. Fr. Allan Rodriguez
Parish Priest
Sta Ana Shrine Parish,
Sta. Ana Avenue, Davao City

Dear Sir:

Greetings!

We, the undersigned, are second-year Bachelor of Science in Information Systems students from Mapúa Malayan Colleges Mindanao, currently enrolled in CS103P – Systems Analysis and Design.

You have been selected as the client organization to receive the solution software we are developing as part of our study. In connection with this, we would like to respectfully request permission from your esteemed office to allow us to conduct system testing at your parish for our project entitled:
"Event and Attendance Monitoring System with QR Code for Sta. Ana Parish Church."

We also kindly ask for your continued support and collaboration throughout this testing process. Your assistance and feedback will greatly help us refine the system and ensure it meets the needs of your parish operations.

We remain committed to delivering a high-quality and useful software solution that benefits your community.

Respectfully yours,

Jervin Andoy
Student Name and Signature

Nepthali Sollano
Student Name and Signature

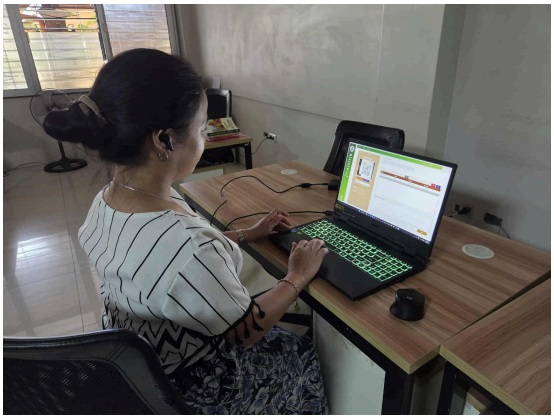
Francis Elixer Tupaz
Student Name and Signature

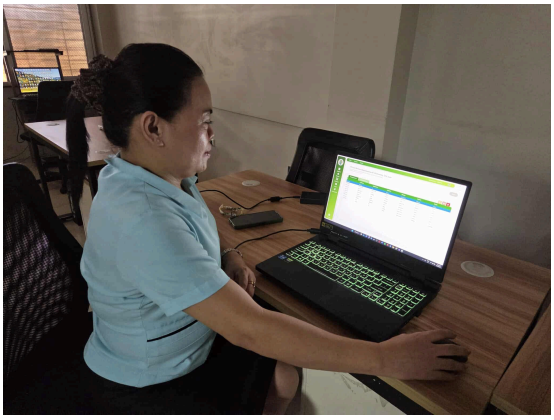
Noted by:

CHERRY B. LISONDRA, MIT
CS103P Adviser

Appendix J

Photos





CURRICULUM VITAE

Name: Jervin Andoy

Address 1: Pisces St. Dona Luisa Phase 2, Talomo Pob., Davao City

Address 2: Dangcagan, Bukidnon

Mobile: 09182210680

Email Address: andoyjervin1@gmail.com

EDUCATION

BS in Information Systems (BSIS) at Mapua Malayan Colleges Mindanao (MMCM)

Central Mindanao University Laboratory High School - Senior Highschool (2017 - 2023)

ELIGIBILITY & CERTIFICATIONS

AWS Cloud Practitioner (2025)

Introduction of Internet of Things Course (2025)

MOS Excel Certificate (2022)

TRAININGS/SEMINAR/CONFERENCES

IOT Seminar (2025)

API Introduction to Java & Python (2024)

Curriculum Vitae

Name: Francis Elixer M. Tupaz

Address 1: 2 LILAC ST. EL RIO VISTA VILLAGE Ph4-A Davao City

Mobile: 09560329585

Email Address: francistupaz516@gmail.com

EDUCATION

BS in Information Systems (BSIS) at Mapua Malayan Colleges Mindanao (MMCM)

University of the Immaculate Conception - Senior High School & Junior High School

ELIGIBILITY & CERTIFICATIONS

AWS Cloud Practitioner (2025)

MOS Excel Certificate (2022)

TRAININGS/SEMINAR/CONFERENCES

IOT Seminar (2025)

Curriculum Vitae

Name: Nepthali Sollano

Address 1: Purok 14 Bugac Ma-A Davao City

Mobile: 09096002006

Email Address: nepthalinconln9@gmail.com

EDUCATION

BS in Information Systems (BSIS) at Mapua Malayan Colleges Mindanao (MMCM)
Philippine Women's College of Davao (2023)
Ma-A National High School (2020)

ELIGIBILITY & CERTIFICATIONS

AWS Cloud Practitioner (2025)
Introduction of Internet of Things Course (2025)
MOS Excel Certificate (2022)

TRAININGS/SEMINAR/CONFERENCES

IOT Seminar (2025)

USER'S MANUAL

This user manual provides step-by-step instructions for using the Sta. Ana Shrine Parish Event Management, Attendance Monitoring, and Announcements System.

It is divided into two parts: **System (Admin features)** and **Web App (User features).**

1. System (Admin Features)

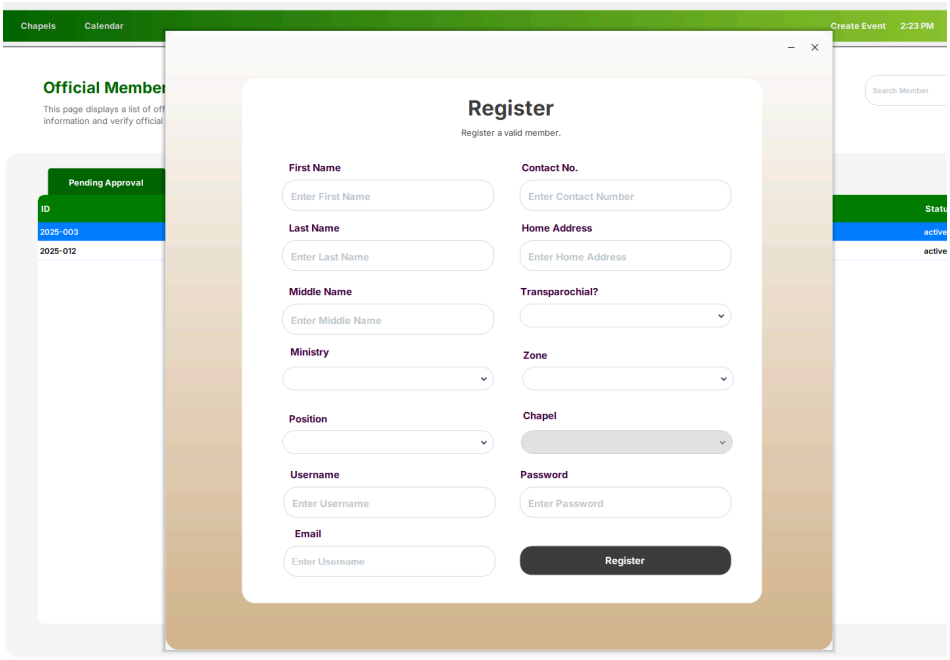
1.1 User Roles

Role	Description
Admin	Full access to all features: member/event management, attendance, QR code, announcements, reports.

1.2 Member Registration and Management

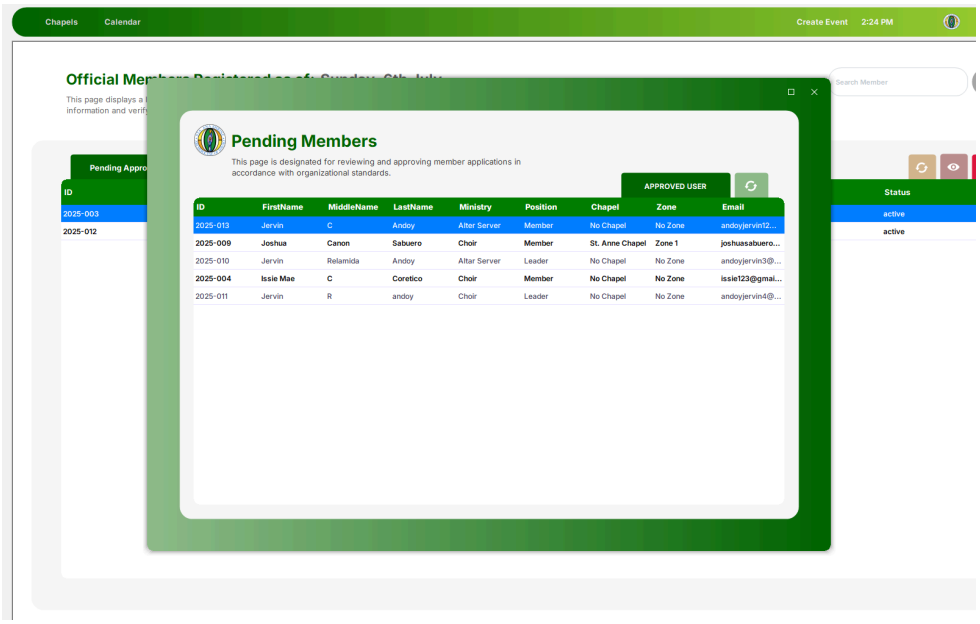
- **Manually Register Members:**

  Go to Members → Click Register a Member → Enter details → Register.



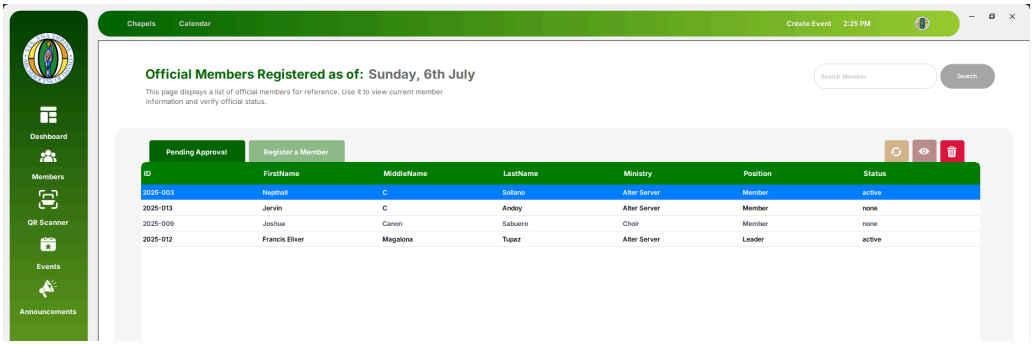
- **Review and Approve New Members:**

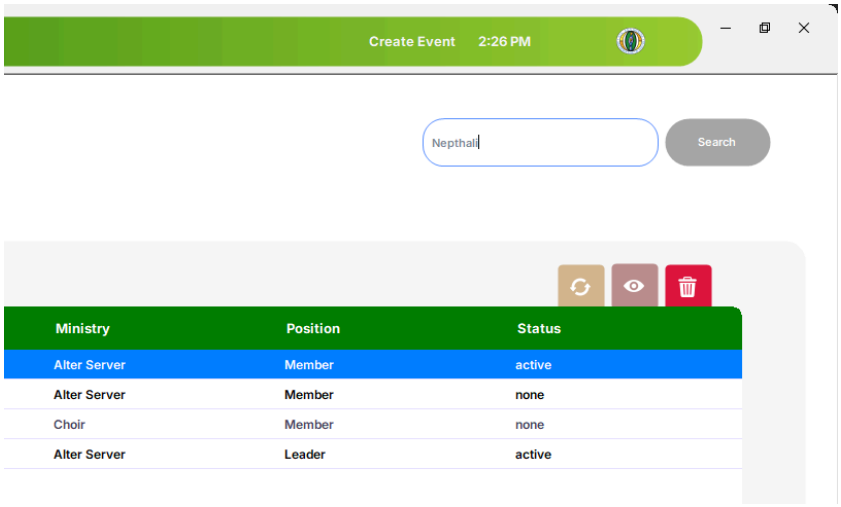
  Go to Pending Members → Review details → Click Approve.

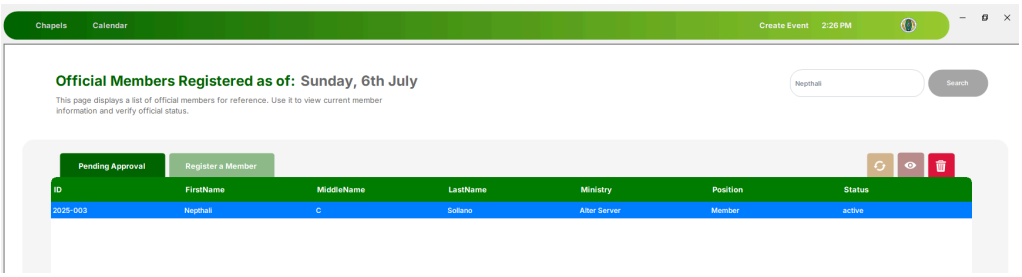


- **Edit Member Info:**

  Go to Members → Search member → Click Edit → Update info → Save.

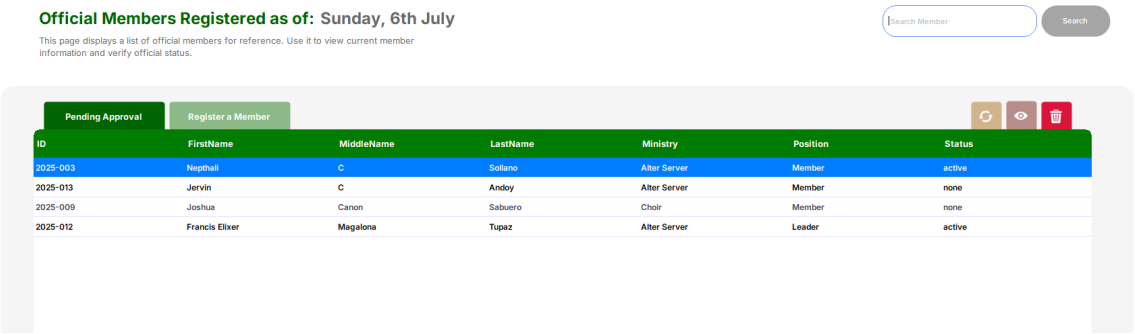






- **View All Members:**

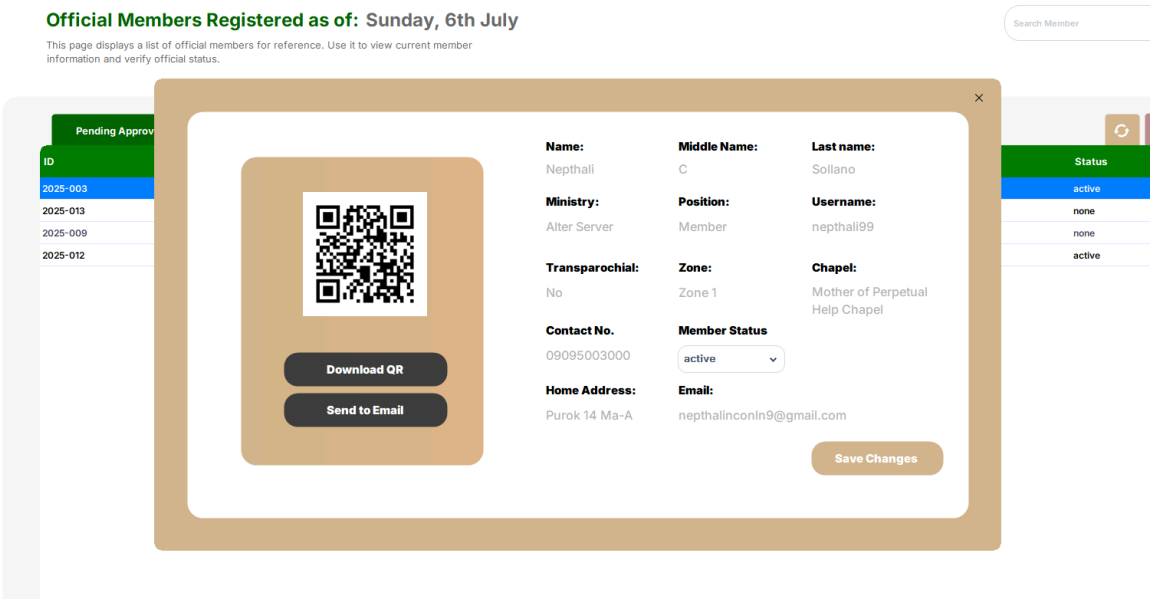
  Go to Members → List of all registered members shown.

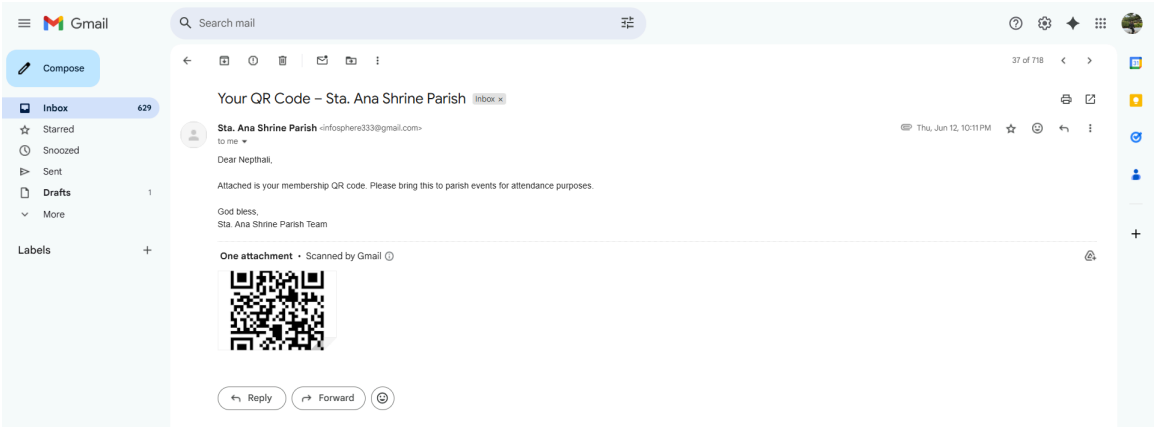


1.3 QR Code Handling

- **Email QR Code to User:**

  In Member Profile, click Email QR Code; confirm to send to the user's email.





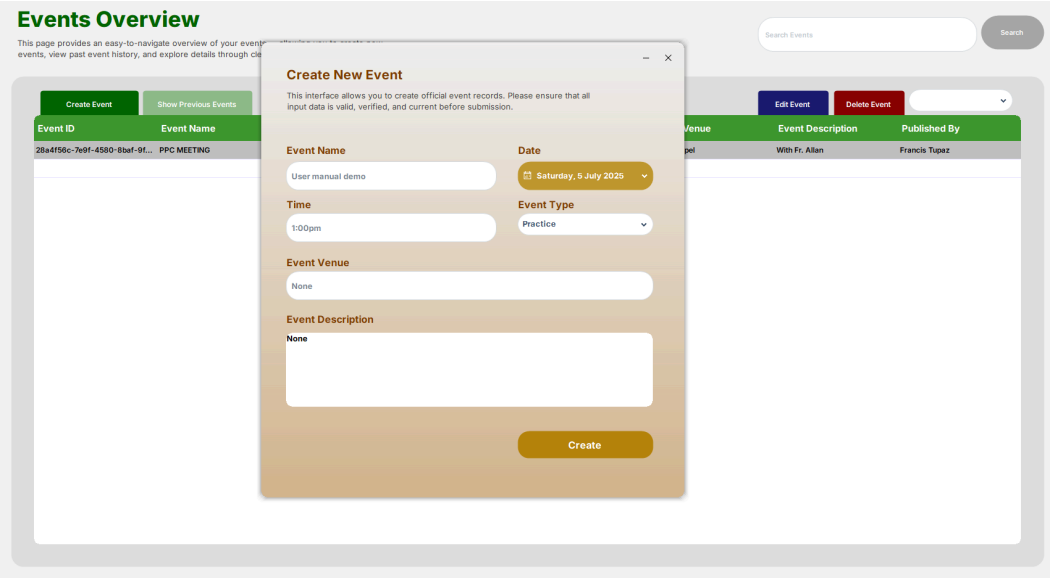
- **Download QR Code:**

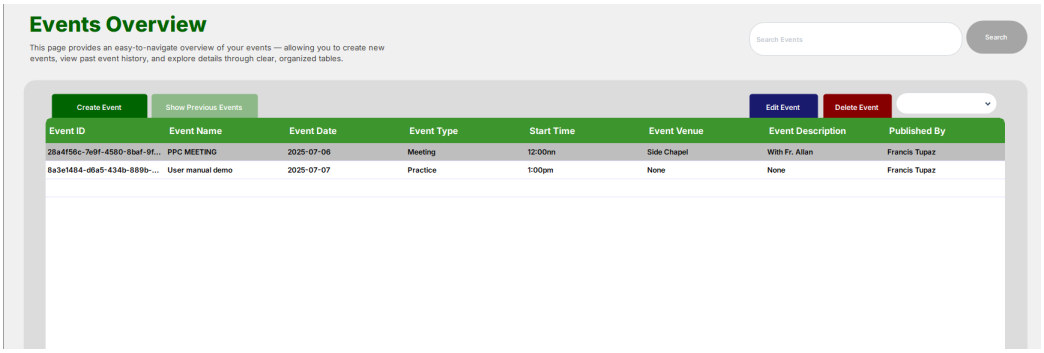
  In Member Profile, click Download QR Code; file is saved to your device.

1.4 Event Management

- **Create Event:**

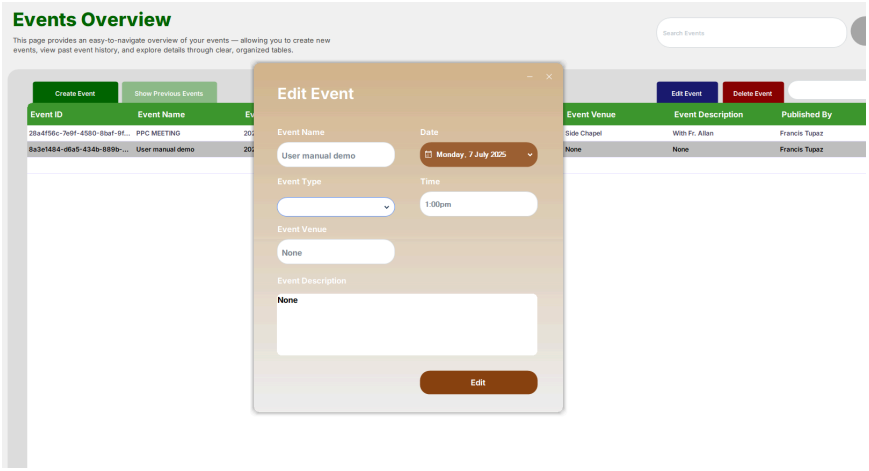
  Go to Events → Click Create Event → Fill event details (name, date, etc.) → Create.





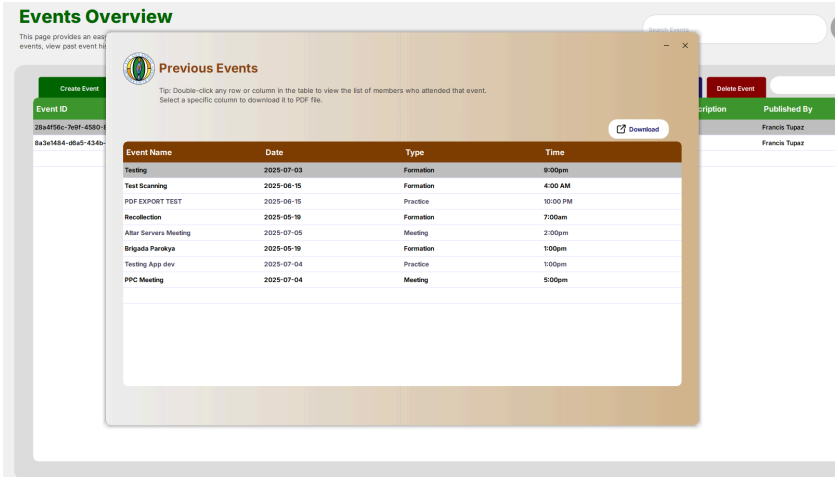
- **Edit Event Info:**

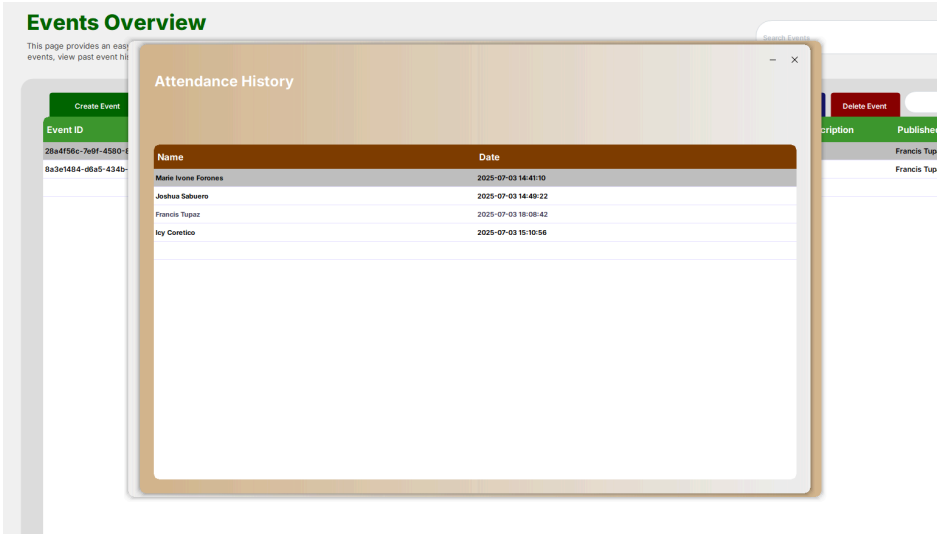
  Go to Events → Click Edit Event → Update → Save.



- **View Events:**

  By Clicking the events button in the dashboard we can see all upcoming, ongoing, and past events.

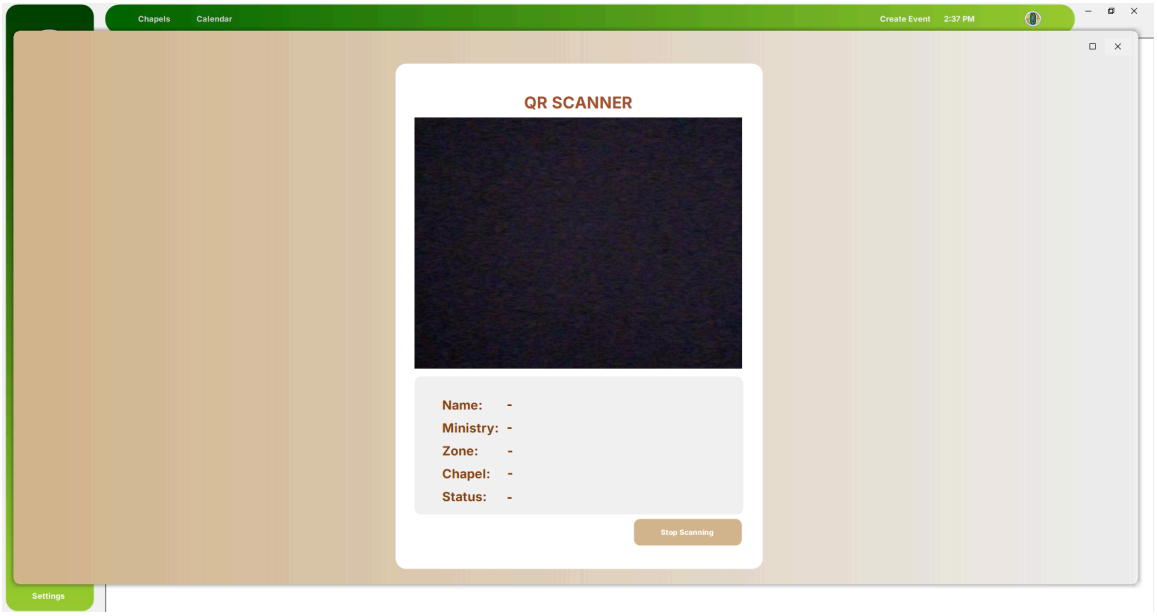




1.5 Attendance Monitoring

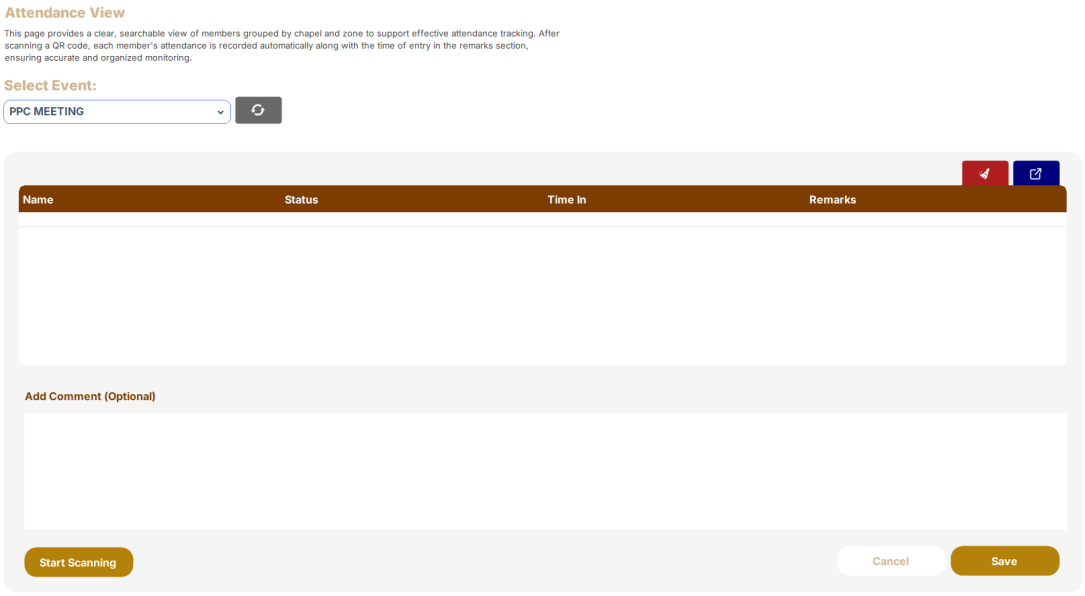
- **Scan QR Code for Attendance:**

  Go to QR SCanner → Select event → Click Start Scanning → Use device camera to scan.



- **Export Attendance:**

  After scanning, click Save to database & Export to PDF in the Attendance section.



2. Web App (User Features)

This section explains how both parishioners and visitors can use the Sta. Ana Shrine Parish web app.

Many features—such as viewing announcements, events, and the calendar of activities—are available to everyone, even without registering or logging in.

However, logging in is required to access your personal dashboard, view your attendance record, membership status, and profile information.

Note:

Announcements, events, and the calendar can be viewed by anyone, even without an account or login.

2.1 Dashboard Overview

When you log in, you will see your personal dashboard, which displays:

- **Total Events**

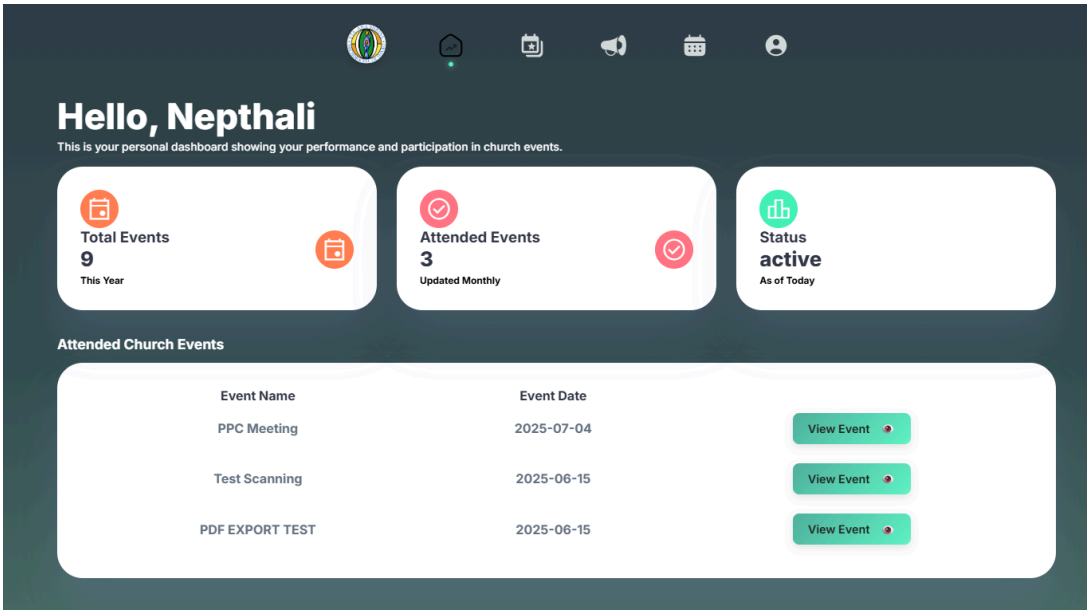
  Shows the total number of church events held this year.

- **Attended Events**

  Displays the number of events you have attended. This count is updated monthly.

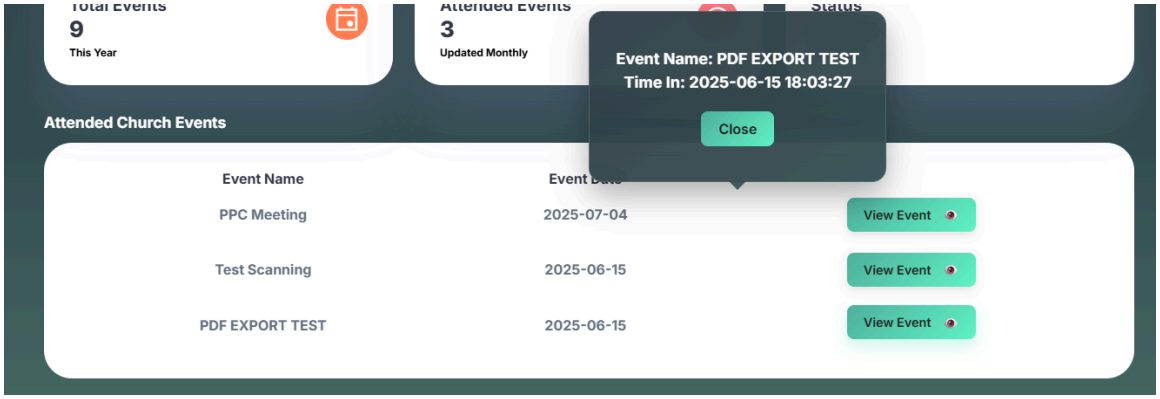
- **Status**

  Shows your current membership status (Active, Suspended, Dropped).



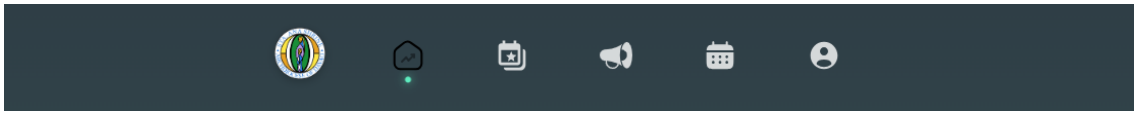
2.2 Viewing Attended Events

- Under "Attended Church Events," you can see a list of events you have participated in.
    - **Event Name:** The name of the event you attended.
    - **Event Date:** When the event took place.
    - **View Event:** Click this button to see more details about each event.

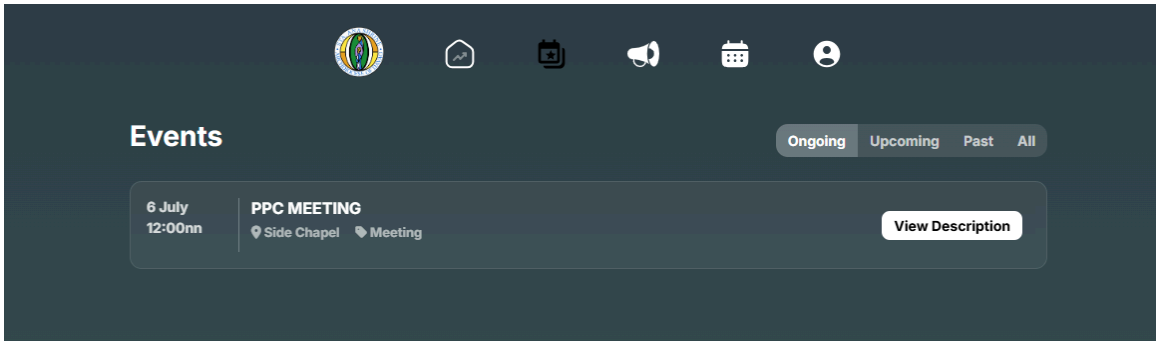


2.3 Navigation Menu

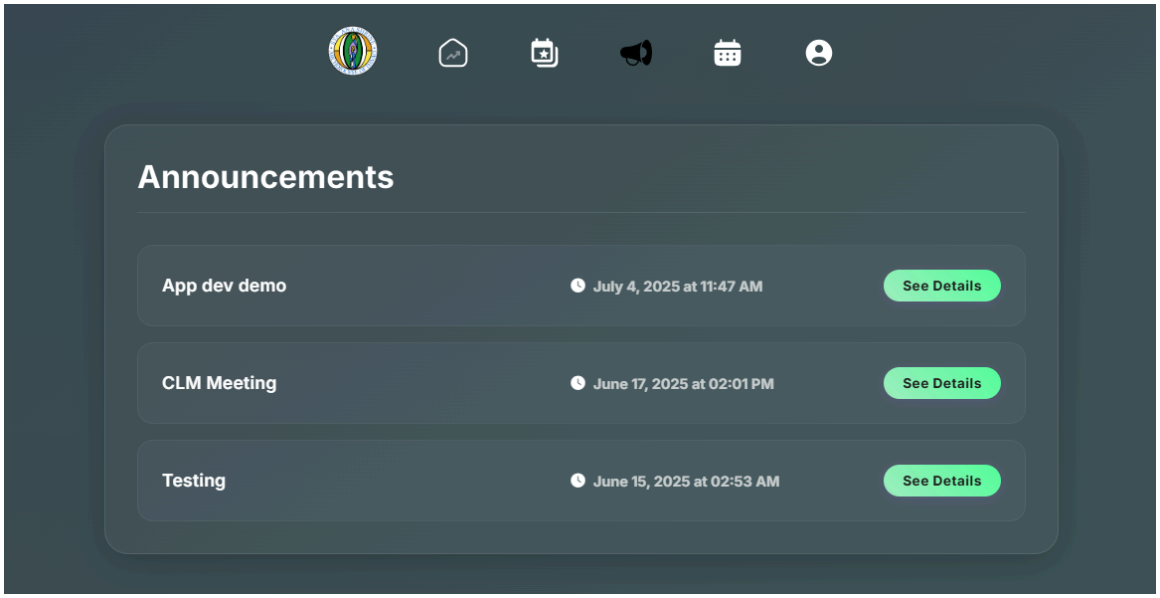
At the top of every page, you will see these main menu options:



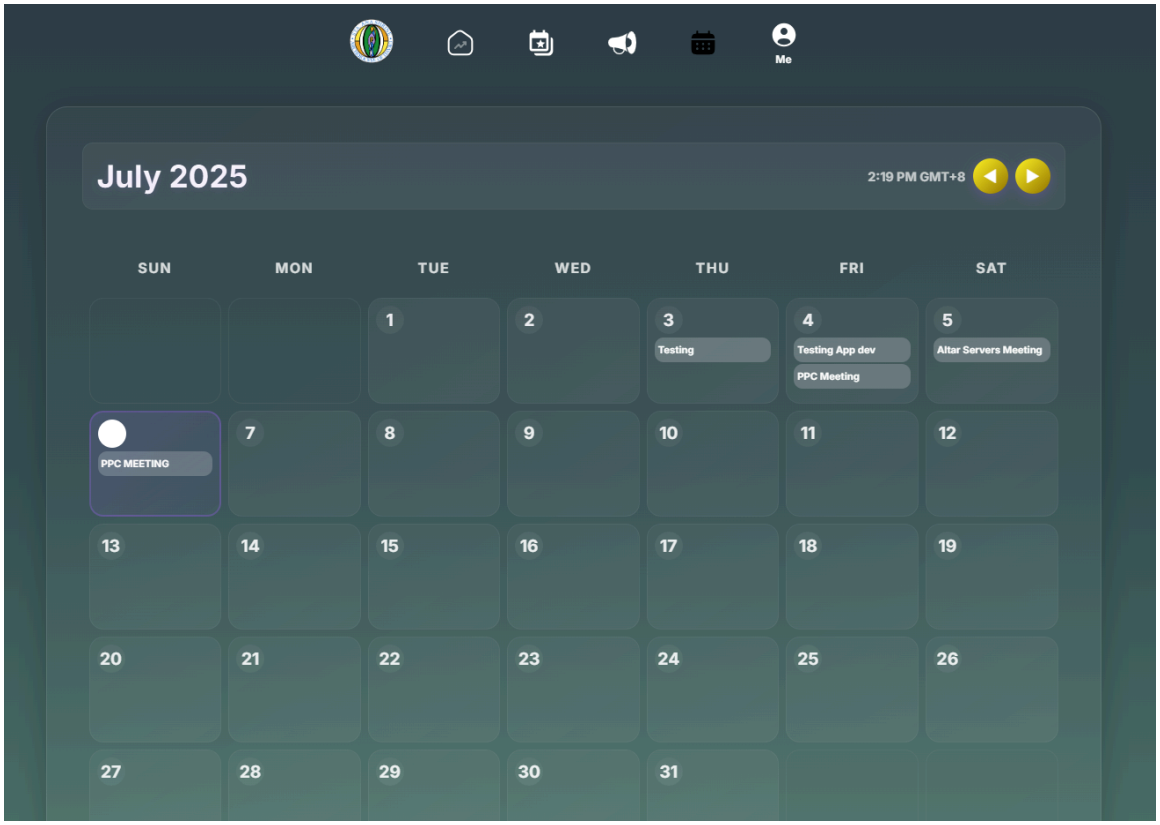
- **Home:** Return to your dashboard.
- **Events:** View all upcoming and ongoing church events.



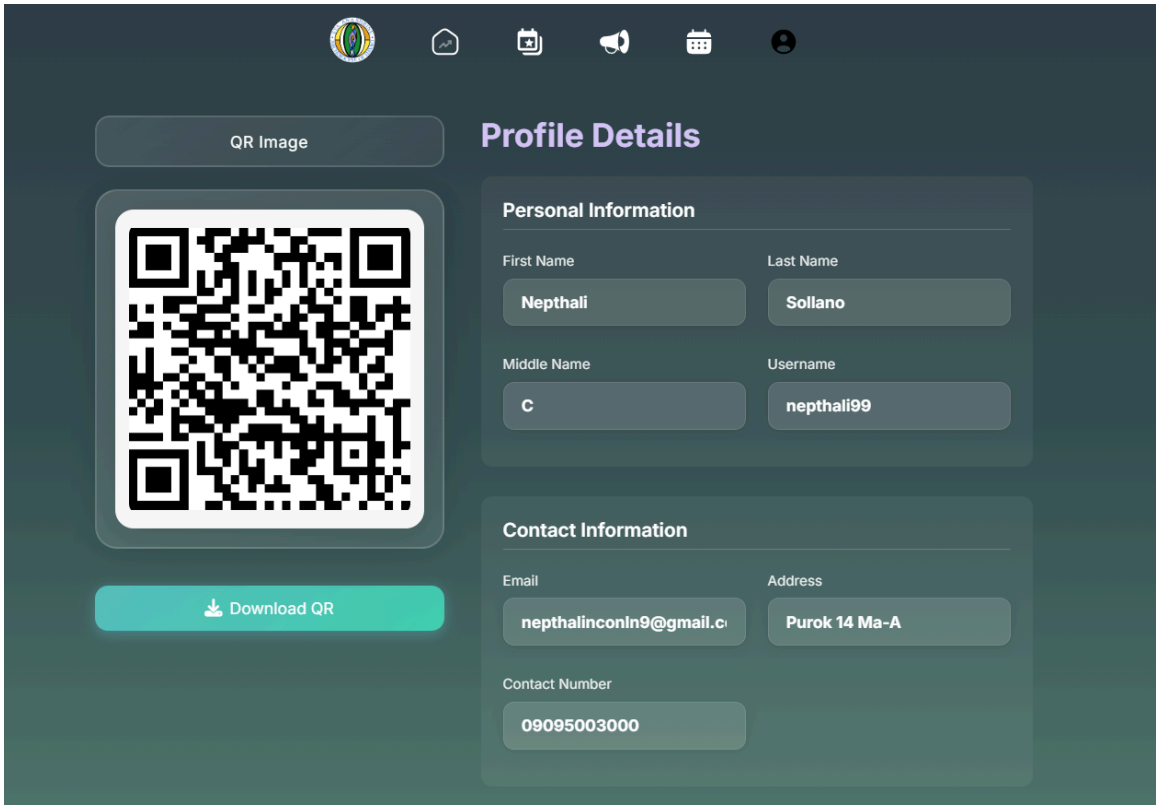
- **Announcement:** Read parish news and updates.



- **Calendar:** See the full schedule of parish activities for the year.

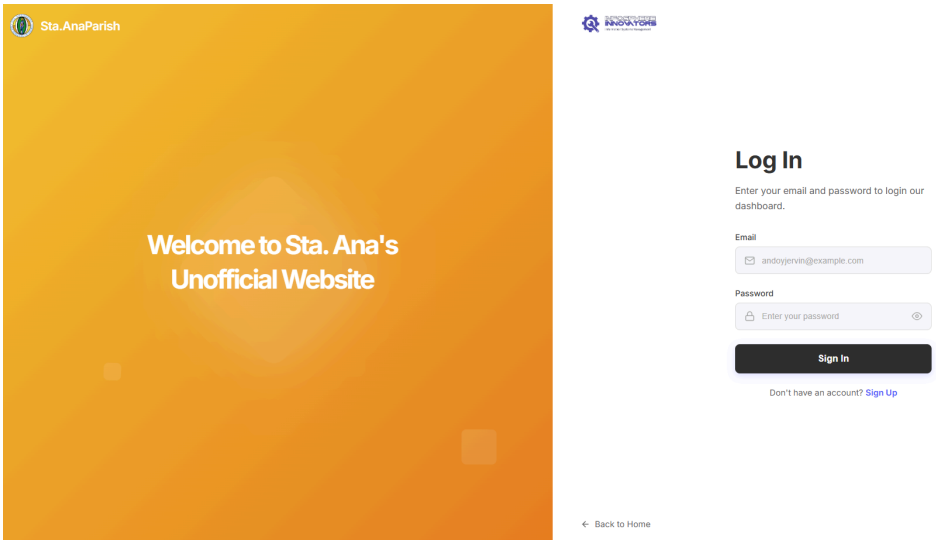


- **Me:** Access your profile, QR code, and contact information.



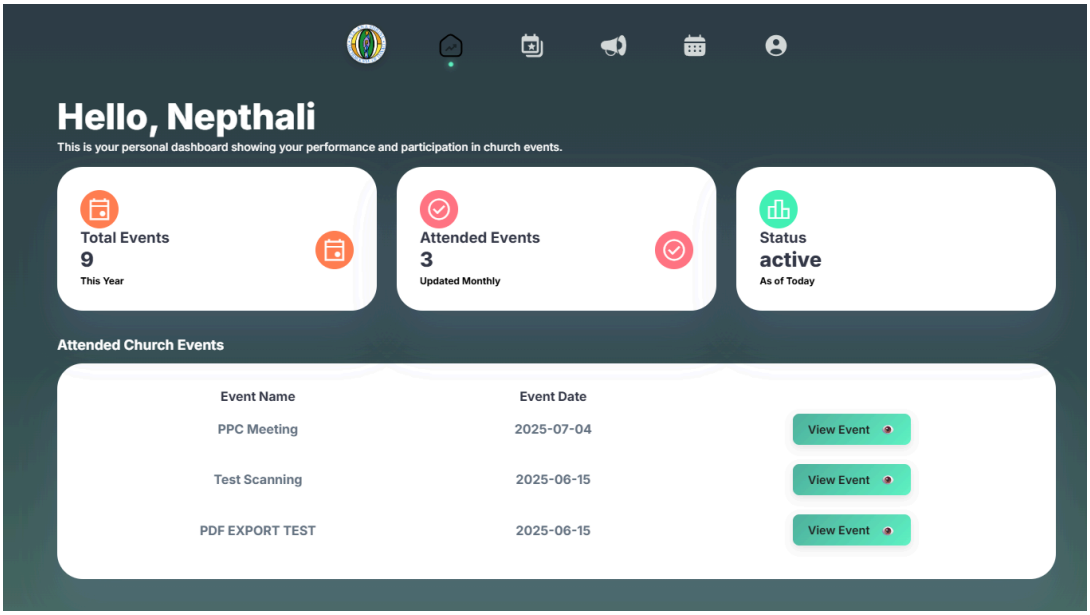
2.4 How to Check Your Participation

1. Log in to your account on the parish web app.



2. From the Home dashboard, view your Total Events, Attended Events, and Status.

3. Check the Attended Church Events list to see the events you have attended, along with dates and links for more details.



2.5 What If My Status Is Not "Active"?

- If your status is "Suspended" or "Dropped," you can still attend events, but your limitations as a volunteer will be determined by your ministry coordinator.
- For any issues or to reactivate your membership, please contact the parish office or your respective ministry coordinator.