José Rizal University

**CHURCH SERVICE MANAGEMENT SYSTEM FOR IGLESIA FILIPINA
INDEPENDIENTE PARISH**

**A Project Study Submitted
To the Faculty of the College of Computer Studies and Engineering**

**In Partial Fulfillment of the Requirements
For the Degree of Bachelor of Science in Information Technology**

By

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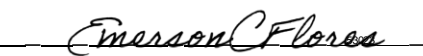Mary Koline N. Caguimbal
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APPROVAL SHEET

The project study entitled Church Service Management System for Iglesia Filipina Independiente Parish, prepared and submitted by Norman Jake S. Alain, Mary Koline N. Caguimbal, Brixter C. Luquing and Zai Ren R. Recto, in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology has been examined and recommended for acceptance and approval for Oral Presentation.

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Declaration of Originality

We hereby declare that the project study entitled

CHURCH SERVICE MANAGEMENT SYSTEM FOR IGLESIA FILIPINA

INDEPENDIENTE PARISH

is our original work carried out as Undergraduate students at Jose Rizal University except to the extent that assistance from others in the project's design and conception or in style, presentation, linguistic expression are duly acknowledged.

All sources used for the project have been fully and properly cited. It contains no material which to a substantial extent has been accepted for the award of any other degree at JRU or any other educational institution, except where the due acknowledgement is made in the project.

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CHAPTER I

Introduction

This chapter provides an overview of the Church Service Management System, including its problem and setting. It outlines the background of the study, conceptual framework, and statement of objectives, the significance of the study, scope, limitations, and definition of terms.

Background of the Study

Churches offer a variety of services and support to people and communities. They function as places of worship, centers for neighborhood activities, and platforms for charitable and social causes. However, managing a church's various operations and activities may be difficult, especially for smaller congregations with fewer resources.

Churches can overcome these difficulties by streamlining their administrative actions and offering their members better, more effective services with the help of a Church Service Management System. According to Noormansyah, I. et al. (2018), People can go to Church to worship and express their gratitude to God. Additionally, it is a location where individuals can donate or help others who are less fortunate. The place of worship is also where religious holidays are celebrated, where religious doctrine is discussed and researched, where sermons are delivered, and where people can learn about the Bible.

Olipas, C. N., et al. (2022), means that the Church provides a place for religious expression and worship and handles the administration of essential papers and records. By implementing a Church Service Management System, churches can manage various administrative activities, such as scheduling services, requesting documents, storing information, and booking services. For church employees, this can free up time and lessen the administrative strain so they can concentrate on other crucial activities like spiritual counselling and community outreach.

According to Villanueva, et al. (2018). Customers of the Church must come in person to the main office to get the relevant forms for making a reservation. It might not be possible to finish the reservation process in a single day due to the long lines and demanding requirements. This procedure could be laborious, time-consuming, and difficult.

The Iglesia Filipina Independiente Parish is a religious institution that is located in the town of Guagua, which is situated in the province of Pampanga in the Philippines. The church is known to be the oldest standing church in the entire province of Pampanga. The parish office would use this system to have an organized soft copy of the information of their constituents. Also, they will benefit from this by having a system where they can quickly know the donation details and accept it online. This system can manage the schedule of the priest and Church.

The Church faces challenges acquiring information as it is primarily disseminated through printed materials involving paper use. It may lead to difficulties in accessing church-related information for congregation members. Wiratama, J., & Desanti, R. (2022) The Church Service Management System that will develop can have several features that can assist church operations. The system can include a dashboard that allows users to view schedules, donations, attendance and communicate with members. Members can have their login and access to various features such as online donations, volunteer sign-ups, and request scheduling.

The system provides church members' contact information and gift history. The Church can better understand members' needs and provide more personalized services with all this information in one place. According to Chris Norman Olipas et al. (2022), data may be moved quickly across places to improve internet enterprises' offerings, capabilities, and features.

Managing church operations through technology is not new, but it is becoming more crucial as churches adjust to their constituents' shifting requirements and expectations. The COVID-19 Pandemic has forced churches to look towards innovative methods of reaching out to their members, such as internet giving and virtual services. A church service management system can offer a platform to promote these new working methods and keep churches in touch with their constituents.

The study by Darmawan, I. P. A., et al. (2021) proves that the economy, culture, and religion have all been significantly impacted by the COVID-19 epidemic, among other facets of daily life. The Pandemic has changed how people view the Church and use digital media. The epidemic has also brought attention to the value of green technology and the necessity for the Church to adopt innovations to enhance ministry and service. Also underlines the need for fresh perspectives on how the Church can see its obligations in the face of the Pandemic.

Technology has made operations more efficient, allowed users to save time, and allowed enterprises to cut costs (Apiyo & Kiarie, 2018). An additional benefit of a church service management system is that it can give users more access to information and services. For instance, members can donate money online, sign up for events, and know about upcoming events. User engagement and participation may increase and foster a sense of community.

This project aims to develop a Church Service Management System to help churches manage their administrative tasks more efficiently and provide more effective services to their members. Implementing this system is expected to offer several benefits to the Church and its members, including improved efficiency, increased engagement, and better stewardship of resources. By leveraging technology, small churches can enhance their operations and better serve their communities.

Conceptual Framework
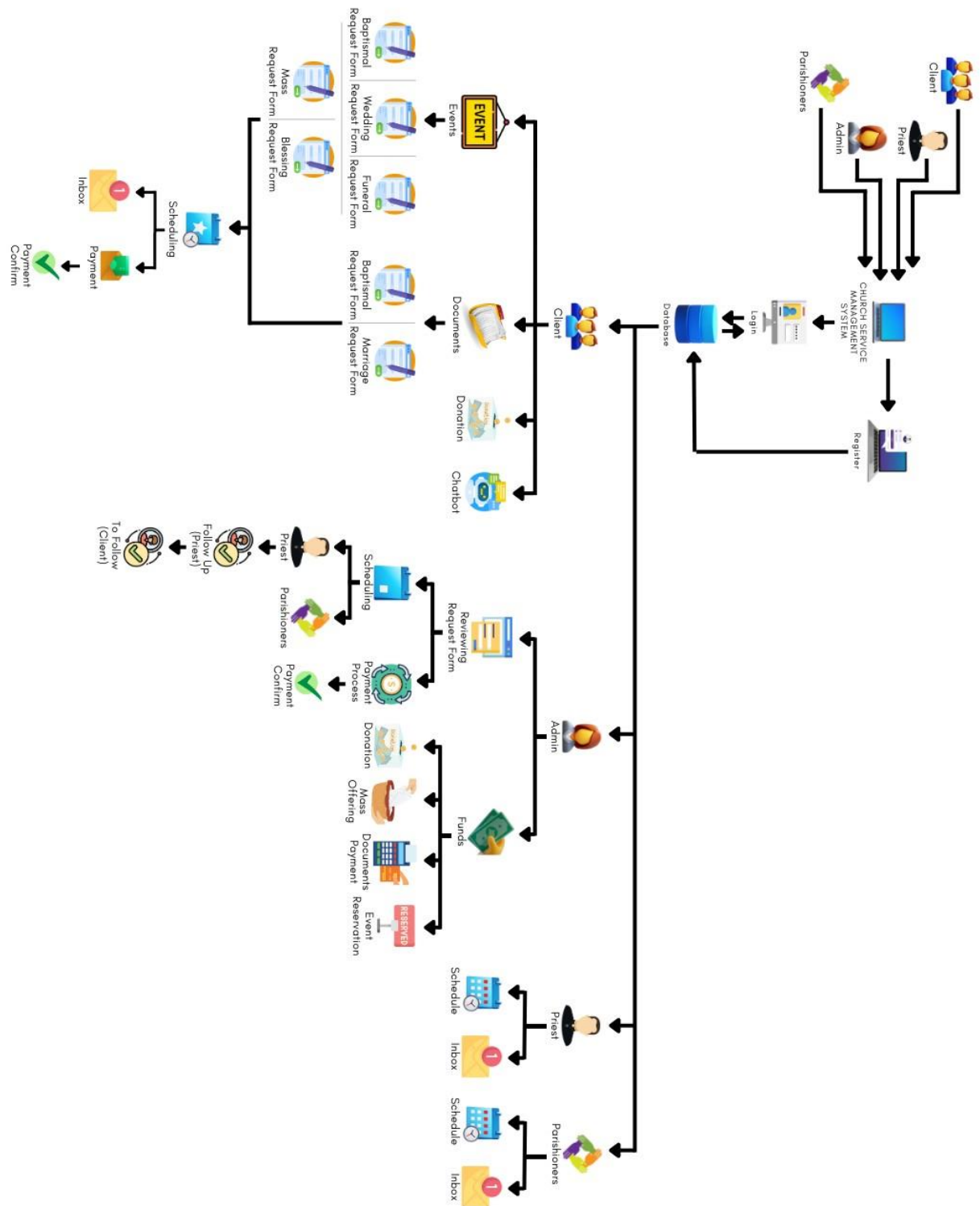
Figure 1.1 Conceptual Framework

The **Client** can access the reservation system easily through the Events, Documents, Donations, and Chatbot Features web application. To use these features, the Client must first register and have an account in the database. After that, they can log in to the website. The dashboard has four options: Events, where the Client can request a church event service. Under Events, there are many choices: Baptismal, Wedding, Funeral, Mass, and Blessing Request Form. Same for the Documents, but under the documents, there are only two choices, which are Baptismal and Marriage Certificate. After choosing and filling up a requisition form, the Client can schedule when it will happen. At the bottom of it are the Payment and Inbox. The Admin's announcement regarding the requested event service is viewable in the Inbox below the Schedule and after the Payment process for the Documents if the Client chooses the Document. That last process is the Payment Confirm. The next feature is Donation, where the Client can donate any money. And Chatbot will be one way in which the system will gather information, feedback, and questions from clients that will be recorded and analyzed by the Admin to give solutions.

The **Admin** accesses the web application from Reviewing Request Form and Funds. The Reviewing Request Form is one of the first items an Admin will see on his dashboard. The Admin examines the request forms that the Client has submitted in this section. Under Reviewing Request Form: Scheduling and Payment Process is the next step. For Scheduling, the Admin will set the Priest's and Worship Ministry' Schedule. When it's all set, the next step is to Follow Up with the Priest and To Follow the Client to update any further instructions regarding the event's details. For the Payment Process, the Admin checks or reviews the Client's Payment and Payment Confirm to update the Client that it is approved. Funds are the second feature of the Admin. Under this, Funds are Donations, Mass Offering, Documents Payment, and Event Reservations from the Client, where the Admin can see and input the records of all the money donated to the church.

Priest and **Worship Ministry** have two features: Schedule to see their event schedule and an Inbox to communicate with their Secretary. The Database gathered the data, including the data of the Client, Admin, and Priest.

Statement of Objectives

Implementing a "Church Service Management System" aims to improve the efficiency and effectiveness of managing church services by providing an integrated platform for managing various aspects of church service management. The Church Service Management System aims to:

- To create a module that makes it easy for church administrators to create and manage services scheduling. These are the following:
  - Baptismal
  - Wedding
  - Funeral
  - Mass
  - Blessing
  - Church
  - Worship Ministry

- To create a module that will help church members to smoothly process payments from services offered and any other revenue-generating activities. That includes the following:
  - Donations
  - Mass Offerings
  - Documents Payment
  - Event reservations

- To create a notification module that sends reminders and updates to the priest, members, and admin about upcoming events and services. This includes the chatbot and FAQ.

- To create a module that generates reports such as Baptismal Certificate, and Marriage Certificate and display the dashboard.

- To tests the system's functionality, reliability, usability, efficiency, maintainability, and portability using ISO/IEC 9126.

Significance of the Study

The use of technology in churches has grown in popularity over the past few years. The management of church services is one of the areas where technology has had a significant impact. Development of a church service management system (CSMS) can significantly improve the efficiency and accuracy of church operations by developing a system that provides baptism, wedding, funeral, mass, and events. With the help of this system, the CSMS can easily manage scheduling, reservation, payments for document requests, reports, and any other income generating.

These studies and findings will help:

1. **Iglesia Filipina Independiente Parish -** The Iglesia Filipina Independiente Parish can improve their church service management system using the study's recommendations and insights. The study's recommendations can improve church members' satisfaction. The study will suggest ways to improve communication and collaboration between church staff and members, leading to better engagement and participation.

2. **Developers –** The study can provide valuable insights and guidance for developers who are involved in designing, developing, or maintaining church service management systems. Developers can use the study's findings and recommendations to develop more effective and useful systems that address church management professionals' needs.

3. **Future Researchers** - They can use the details, findings, analysis, and conclusions of this study on the impact of a church service management system as secondary data to help them understand and develop new ideas for this type of study.

Scope and Limitations

Scope:

The researcher's intention is to create a church management system that is web-based and will benefit the Iglesia Filipina Independent Parish in managing various aspects of their operations and engaging with their members and clients. The system aims to develop administrative tasks and improve communication and engagement with the members of the church and clients. The scopes of the study are the following:

- o Manage event scheduling and reservations.
- o Manage donations and any other income generating sources.
- o Manage communication through chatbot, FAQ and Customer Feedback.
- o Manage documents processing.
- o Manage worship ministry.

Limitation:

The following are the limitations of the study:

- The system can only be accessed through a web browser.
- The system is only implemented at Iglesia Filipina Independiente Parish in Barangay Natividad, Pampanga.

Definition of Terms

Baptismal - A Christian sacrament or ritual involving the application of water to a person's Head or body, symbolizing purification, renewal, and admission into the Christian church.

Chatbot – this is an Artificial intelligence designed that will be use to interact with the clients.

Certificate - A document or credential issued by a school, organization, or government agency to verify that someone has completed a course of study, training program, or qualification.

Church - A religious organization or building where people gather for worship, prayer, and other religious activities.

Church Services - A religious ceremony or gathering held in a church or other place of worship, often involving prayer, scripture reading, hymn singing, and a sermon or message delivered by a pastor or other religious leader.

Client – An individual who submits requests for certificates and inquires about scheduling events within a church context.

Database - A database is a system or software application that stores and organizes data in a structured way, making it easy to retrieve and use. It will be used by the researcher to organize data's into tables with rows and columns and can be managed using DBMSs. Examples include Oracle, Microsoft SQL Server, and MySQL.

Documents - A written, printed, or digital record that provides information or evidence about a particular subject or transaction.

Donation - The act of giving something, often money or goods, to a person or organization without expecting anything in return.

Event - A planned occasion, often with a specific purpose or theme that may involve a gathering of people, such as a conference, festival, concert, or wedding.

FAQ - this refers to the list of questions and answers that address common inquiries or concerns about a particular topic or subject about the church.

Feedback – this will gather the clients' insights with regards to the services being offered by the system or the church.

Funeral - A ceremony or service held to honor and remember a person who has died, often involving religious or cultural traditions.

Information - Information is organized data that is communicated in a meaningful way. It is used in various contexts and can be in the form of text, numbers, images, audio, or video. The effective use of information requires the use of tools such as computers and databases.

ISO/IEC 9126 - this will be used for evaluating software quality. It will evaluate software quality based on its functionality, reliability, usability, efficiency, maintainability, and portability.

Management - Management is the process of planning, organizing, directing, and controlling resources to achieve organizational goals. It involves coordinating efforts, making decisions, and monitoring progress towards goals. Effective management is essential for organizational success.

Mass Offering - Is a Catholic practice where a priest celebrates a Mass for a specific intention, usually for the repose of a deceased person or for the intentions of the living, in exchange for a donation.

Parish - A parish is a local church community led by a priest that provides religious services and pastoral care to its members, as well as educational and social services to the broader community.

Worship Ministry - They are the members who belong to and actively participate in the life and activities of that parish.

Priest - A clergy member responsible for leading worship services, providing religious guidance and support to church members, and performing other religious duties and ceremonies.

Reservation - A formal arrangement to secure a specific item or service, often made in advance, such as a hotel room, airline ticket, or restaurant table.

Service offerings - This will be the cash being paid by the clients for the services offered by the church.

Web-based - The system can only be accessible through web browsers with the access of internet connection.

Wedding - A wedding is a formal ceremony where two people publicly declare their love and commitment to each other, often followed by a reception to celebrate the occasion with family and friends.

CHAPTER II

Review of Related Literature

The Review of Related Literature is an essential component of any research study, providing a comprehensive and critical analysis of existing literature related to the research topic. In this section, the researcher identifies, evaluates, and synthesizes relevant studies, and theories.

Foreign Studies

According to Wiratama, J., & Desanti, R. (2022). Amidst the COVID-19 pandemic, restrictions were imposed on worship activities at the Church, leading to the need for data collection and preparation on the congregations who visit regularly to minimize the risk of transmission. To address this issue, data on the health condition of the congregants attending worship needs to be collected, which is currently done through writing on the attendance list, leading to a build-up of attendance records that require iterative updates.

Furthermore, there is a lack of media information about the activities of the Indonesia Church, indicating the need for an information system that can collect, store, and provide general information about the Church.

According to Olipas, C. N., et al. (2022). The manual process of data management has been found to be problematic, hence the study aimed to design and assess a WebBased Church Records and Information Management System (CRIMS) to aid in the management of data and produce relevant information for parish management.

Hwang J. & Lee J. (2020). The purpose of this research is to create an open-source records management system for Catholic churches. This system will focus on managing and preserving sacrament records, which are of great importance to Catholic churches and make up most of their records. The aim is to ensure that the management of these records is systematic and efficient.

Foreign Literature

The research of Andrew Gordon (2018) delves into the individuals who recorded parish records, how they were maintained, and their purpose. The available records indicate a "memorial moment" at the end of the 16th century where there was a collective attempt to restructure and present parish documents as objects of memory, representing parish memory physically. These records demonstrate an increasing communal investment in and monitoring of record-keeping practices. Nevertheless, annotations and corrections in parish records indicate that oral forms of communal memory persisted and challenged the written record. Hence, the development of the parish register in this era serves as an essential area for reshaping the forms and patterns of parish memory.

According to Kryhina Olha (2019). The importance of recognizing and utilizing the informative value of parish registers and preserving this historical source is increasingly crucial in contemporary times. Furthermore, it is imperative to arrange the parish registers stored in local state archives systematically to safeguard them from harm and loss, ensuring proper storage for modern researchers and future generations to access.

Based on the research of Janzen T. As., (2019) It begins by defining

technology and assessing its impact on daily life, from worship services to office productivity. With the widespread use of technology in the church, this study explores the positive and negative aspects of its adoption by conducting literature reviews and interviewing technical directors from different churches. The research analyzes how technology has influenced the church dynamic in the past and present, including its impact on the ease of process and spiritual potency.

Aaron Janzen (2019) this study examines the impact of technological advancements on church service management systems. It begins by defining what technology is and how it has affected daily life, including worship services and office productivity. By analyzing both literature and interviews with technical directors in churches, this review evaluates the positive and negative aspects of technology adoption, such as ease of process and spiritual potency. The paper also examines how technology has transformed the church dynamic over time and makes predictions about the future. Finally, the review weighs the benefits and drawbacks of technology adoption in church service management systems.

Local Studies

Villanueva, L. M. A., et al. (2018) the advancement of technology has had a significant impact on various industries, including the economy and daily living. This project aims to create a reservation system that will enhance the quality and simplify the process of generating reports. Clients can reserve services by either calling or visiting the church office in person. Upon receiving a reservation request, the secretary checks the availability of the requested date and time in a record book manually. If the requested time and date are not available, the

secretary suggests an alternate schedule and checks availability again. The client provides the necessary information and requirements for reservation. After completing the reservation, the client pays the fee for the service and receives a receipt. Service fees vary based on the service details, such as for wedding services, which range from a simple nuptial mass to a nuptial mass with additional carpet and flowers, with prices starting at 1,650. Future research in this field could explore implementing a church service management system to streamline the reservation process and improve overall efficiency.

Barlis M. M. (2020) highlighted that parishes, as community service organizations, offer a variety of services and activities to meet the needs of their congregation, including both ecclesiastical and financial aspects. Thus, to serve their people accurately and efficiently, parishes require a systematic plan and strategies. The present study aims to aid in the implementation of the parishes' Strategic Information Systems Plan (SISP) by creating a centralized information system for their parishes. The purpose of this system is to address issues in their conventional system, such as the time-consuming process of searching for information, generating reports, and losing valuable records. The researchers validated these problems by conducting interviews and observations. They adopted an iterative approach to system development and created a prototype called the "Centralized Parish Record and Information Management System," which they developed and simulated.

Local Literature

According to Turner K. & Turner T., (2021) Church leaders, and pastors often find themselves struggling to balance administrative tasks such as managing communication tools, accounting spreadsheets, and church membership software with their ministry responsibilities. The adoption of Church Management Software (ChMS) has become increasingly popular as a solution to this challenge. The software is a cloud-based technology that offers a centralized platform for managing church operations, automating processes, organizing membership information, and facilitating communication. By integrating with church databases, event calendars, communication software, finances, accounting, online giving, and other relevant tools, the software allows for streamlined management and greater efficiency. As more churches recognize the benefits of the software, the trend toward adoption is expected to continue to grow.

The work of Kelsey Yamell (2022) stated that Digital transformation is still a work in progress for many church organizations, particularly in terms of modernizing administrative tasks, daily operations, attendance management, donation tracking, and communication with members. However, the adoption of cloud-based church management software presents a significant opportunity for growth. With the help of this software, churches can streamline their operations by automating workflows, utilizing accounting tools, planning services, facilitating email communication, and conducting social media marketing. This technology provides a centralized platform for managing diverse church operations and can help churches operate more efficiently and effectively.

The concept of a service management system consists of the terms service, management, and system. Essentially, an SMS represents how an organization manages its services. This organization can be the entire organization or a specific subset, such as an IT department. While service management is applicable to various types of organizations, such as those in the food, manufacturing, or healthcare industries, the fundamental idea is to provide a centralized system for planning, developing, and delivering services to either the organization or third parties. (Kumari Ranju, 2022)

Synthesis

The literature review indicates that the incorporation of technology can enhance the administration of church operations, particularly in the areas of data collection and management, reservation systems, and parish records management. To assist in managing data and generating relevant information for parish management, a web-based church records and information management system can be created and evaluated. Similarly, a records management system for Catholic churches can be developed as an open-source system, with a focus on managing and safeguarding sacrament records. Additionally, traditional systems' challenges, such as spending too much time searching for information, generating reports, and losing valuable records, can be addressed through the development of a centralized information system. To facilitate church operations, automate processes, organize membership information, and facilitate communication, a church management system can be

implemented. By integrating with church databases, event calendars, communication systems, online giving, and other relevant tools, the system can improve management and enhance efficiency. The incorporation of technology in church service management offers significant opportunities for growth and can improve churches' effectiveness and efficiency.

Table 2.0 Related Review of Literature Matrix

| FEATURES	RRL1	RRL2	RRL3	RRL4	RRL5	RRL6	RRL7	RRL8	RRL9	SYSTEM
Website Home Page	✓	✓	X	X	X	X	X	X	X	✓
Login Form	✓	✓	X	X	X	X	X	X	X	✓
User Dashboard	✓	X	X	X	X	X	X	X	✓	✓
View Available Date and Time	X	✓	X	X	X	X	X	X	X	✓
Settle Payment	X	✓	X	X	X	X	X	✓	X	✓
Date Schedule	X	✓	X	X	X	✓	X	✓	✓	✓
Parish Register	X	X		X	X	X	X	X	X	✓
Members communication	X	X	X	X	✓	X	X	✓	✓	✓
Oversee Finances	X	X	X	X	✓	X	X	X	X	✓
Generate Reports	X	X	X	X	✓	X	X	X	✓	✓
Offers Services such as Wedding, Baptismal etc.	X	X	X	X	X		X	X	X	✓
Service offerings	X	X	X	X	X	X	X	✓	X	✓

CHAPTER III

METHODOLOGY

In the methodology section of a research paper, readers can expect to find a detailed description of the methods used to collect and analyze data for the study. This includes information on the research design, data collection instruments, data analysis methods, and any procedures protocols followed during the study. The methodology section is essential for establishing the credibility and reliability of the research findings, as it allows readers to evaluate the rigor and validity of the research methods used.

Research Design

Pritha Bhandari (2023) explains that research design refers to the blueprint for using empirical evidence to tackle a research problem. A well-planned research design involves making decisions about the overarching research objectives and methodology, choosing between primary and secondary research, selecting subjects and sampling techniques, determining data collection methods and procedures, and establishing data analysis strategies. The proper use of data analysis techniques and alignment of methods with research objectives is facilitated by a well-considered research design. With the help of a systematic approach and a research plan, a researcher can embark on their journey into uncharted territory. Just as an engineer designs a structure, a researcher selects a research design from a range of options to determine the type of study to conduct (Team Leverage Edu, 2023).

The research approach selected by the researchers is quantitative study, which involves collecting and interpreting numerical data. This method allows for the identification of trends and averages, the formulation of hypotheses, the examination of causality, and the generalization of findings to larger populations. In contrast to qualitative research that deals with non-numerical data (such as text, video, or audio), quantitative research is based on numerical data. The quantitative method is popular among researchers due to its efficiency and speed, as technology facilitates quick data processing and analysis even with large sample sizes. Surveys, polls, statistical analysis software, and weather thermometers are among the tools used to collect and measure quantitative data (Pritha Bhandari, 2023; Traci Williams, 2021).

Software Development Methodology
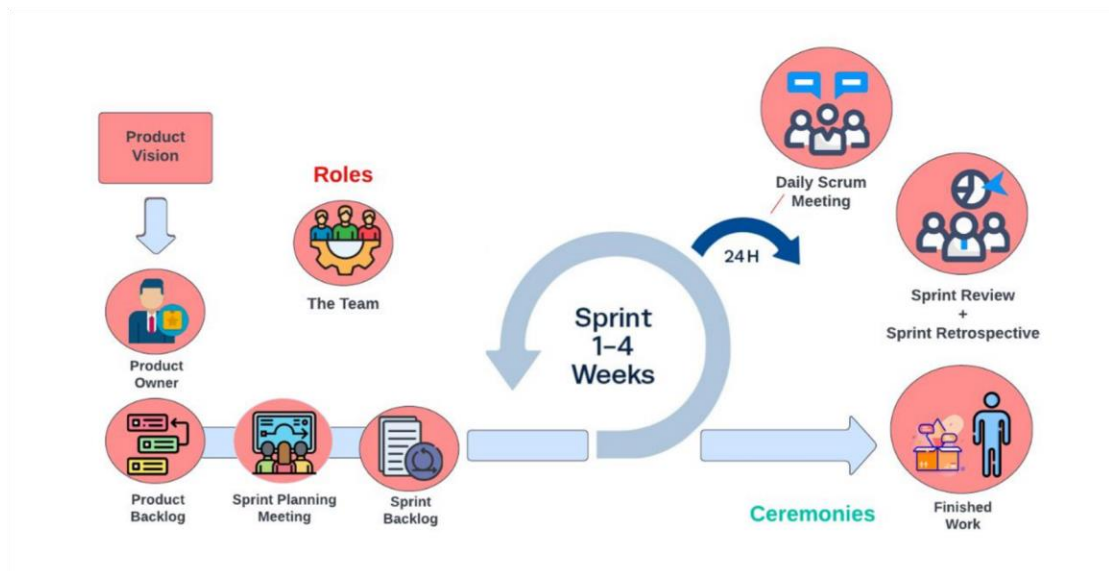
Figures 3.1 Agile Scrum Diagram

According to Valpadasu Hema *et al* (2020). Agile methodology is an iterative and incremental approach that provides a working framework for traditional software development practices, such as the waterfall model. However, traditional models are best suited for small projects with no changing requirements and are not suitable for rapidly changing projects. Therefore, the SCRUM methodology is recommended for church service management systems. This approach involves regularly seeking feedback from customers through review meetings, allowing for upgrades to be made in response to customer requests and the product to be developed more efficiently and rapidly.

Agile software development, particularly the Scrum methodology, has gained importance due to its focus on human agility and return on investment. In a research and development laboratory setting, the Scrum agile software project management methodology has been deployed and adapted to the software project management model. This paper reports on experiences and lessons learned from seven real projects developed by the authors as a result of this deployment (Lima I. R. et al, 2012).

- **Product Vision** - The product vision for the Church Service Management System is to develop a web-based platform that enables the church staff to efficiently administer all aspects of church services, including the scheduling of volunteers and worship leaders and the monitoring of attendance and donations.

- **Product Owner** - The Product Owner is accountable for defining the product vision, prioritizing the product backlog, and ensuring the team is working on the most valuable features. In this instance, the Product Owner could be the church secretary, or another member of staff tasked with administering church services.

- **The Team -** The Scrum team for the Church Service Management System may include software developers, designers, and testers. Depending on the size and complexity of the project, the team may consist of 4 members.

- **Product Backlog** - The Church Service Management System's product backlog would list its features and functionality. This may involve scheduling events, tracking donations, and managing membership. New features and requirements update the product backlog throughout development.

- **Sprint Planning Meeting** - During the sprint planning meeting, the Product Owner and development team examine the product backlog and select the highest-priority items for the upcoming sprint. The team determines how long each task will take and how many tasks they can feasibly finish during the sprint.

- **Sprint Backlog** - The Church Service Management System's product aim is to create a web-based platform that helps church staff schedule volunteers and worship leaders and track attendance and donations.

- **Daily Scrum Meeting** - The daily scrum meeting is a concise (15-minute) standup meeting in which team members discuss what they accomplished the previous day, what they plan to accomplish the following day, and any obstacles or challenges they are encountering. The purpose of the daily scrum is to ensure that all team members are on the same page and that the sprint objective is being met.

- **Sprint Review** - At each sprint review meeting, the team shows off its new features. The Product Owner and other stakeholders review the new features, and the team discusses sprint issues.

- **Sprint Retrospective** - The team reviews the previous sprint and makes improvements in the sprint retrospective. The team analyzes what went well, what didn't, and how to work better together.

- **Finished Work** - Each sprint, the team should finish user stories and items from the sprint backlog. These finished items should be tested and deployed. After completion, the Church Service Management System integrates the work for church personnel and members.

SOURCES OF DATA

When developing a Church Service Management System, it is important to gather data from various sources to ensure that the system meets the needs of its users. The following are some common sources of data that developers can use to gather information:

- **Interviews** – Interviews are a useful way to gather qualitative data, which can provide rich, detailed insights into beneficiary opinions and needs. Interview is one of the methods that the researchers did to gather information about the target beneficiary which is the Church of Iglesia Filipina Independiente Parish at Guagua Pampanga.

- **Surveys** - Surveys are a valuable tool for gathering insights and making improvements to system, services, or processes. The researchers gave a survey to the Iglesia Filipina Independiente Parish that they had answered that provided information to the researcher to further gather more data and be able to study and analyze the information.

- **Observations** –The researchers made a voice recording to capture the respondents' answer which is the Priest of Iglesia Filipina Independiente Parish to be able to get more accurate data and information and to avoid the risk of losing important details regarding about their Parish.

- **Google Scholar** - Google Scholar provided access to literature reviews, including articles, theses, books, and journals that have been very useful to the researchers. It has been a valuable resource for researchers looking for information on a particular topic.

- **ResearchGate** – The researchers used ResearchGate which provides access to research papers, making it a great resource for the researchers to gather information on a particular topic they are looking for.

INSTRUMENTATION AND DATA COLLECTION

The process of gathering data is essential to any development process, including the development of a Church Service Management System. In order to gather data effectively, developers use different methods and tools to collect information from users.

- **Interviews** Developers can conduct interviews with individuals or groups to gather specific information about their experiences, preferences, and suggestions related to the Church Service Management System. Interviews can be structured, where a set of predefined questions are asked, or unstructured, allowing for a more conversational approach. This method provides an opportunity for in-depth exploration of user perspectives and can uncover valuable insights that may not be captured through other means.

- **Questionnaire** is a set of questions that are created by developers to obtain information from respondents about one or more specific topics. Questionnaires can be distributed in various formats, such as paper-based or online, and can be customized to suit the needs of the project. The questions in a questionnaire can be open-ended or closed-ended and can be designed to gather quantitative or qualitative data. Questionnaires can

also be used to obtain feedback on specific aspects of the Church Service Management System, such as usability or functionality.

- **Survey** is a method used by developers to collect data by distributing questionnaires and analyzing the resulting statistical data. Surveys are often used to gather information from a larger population and can be used to measure the opinions of respondents. Surveys can be conducted in face-to-face interviews.

TOOLS FOR DATA ANALYSIS

Developing a Church Service Management System requires a combination of different technologies that work together to create a functional and effective solution. Here are some of the potential system development tools that will possibly be used:

- **CSS** - Is a style sheet language that is used to define the visual design of a web application. It will be used to create the layout and formatting of the user interface, such as fonts, colors, and styles. CSS helps in separating the design from the content of the web pages, making it easier to maintain and change. It also allows for consistent styling across the application, providing a better user experience.

- **PHP** - The Church Service Management System uses server-side scripting to create dynamic functionality. It will retrieve and process database data and respond to user queries. Web developers employ PHP, an easy-to-learn scripting language. It works with most web servers to construct dynamic web applications that interface with databases and other web services.

- **SQL Server** - Is a relational database management system that provides a structured and organized way to store and manage data. It will be used to store data related to church members, and schedules. SQL Server provides a reliable way to manage large amounts of data, and it is widely used in enterprise-level applications.

- **XAMPP** - Is a free, open-source web server solution that includes Apache, MySQL, and PHP. It provides a platform-independent way of running web applications, making it easier to test and deploy web applications on different platforms. XAMPP allows developers to run and test the Church Service Management System application locally before deploying it to a web server, ensuring that the application is working as expected before it goes live.

- **Visual Studio Data Tools for NET -** Visual Studio includes data tools for.NET developers. These tools aid database and data-driven app developers. Visual Studio Data Tools allows developers create, modify, and debug SQL queries, database schemas, and other database activities.

These tools seamlessly integrate with Visual Studio to construct Church Service Management System databases.

- **Microsoft SQL Server -** Microsoft's RDBMS. Securely manages and retrieves data. Enterprise applications use SQL Server for its reliability, performance, and advanced features. SQL Server manages Church Service Management System member, scheduling, and other data. It securely combines, reports, and analyzes vast data.

SQL Server, CSS, XAMPP, PHP, and Visual Studio Data Tools for .NET provide the necessary tools to create a secure and functional Church Service Management System that can help manage church requests, schedules, and members. Visual Studio Data Tools for .NET, along with Microsoft SQL Server, offer a comprehensive solution for database development and management within the system. These tools enable developers to efficiently work with databases, create and modify schemas, write SQL queries, and perform various database-related tasks. SQL Server, known for its reliability and scalability, provides a robust platform for storing, managing, and retrieving data related to church members, schedules, and other relevant information. Combined with CSS for visual design, XAMPP for platform-independent web server support, and PHP for dynamic functionality, these technologies can be used to create a responsive, userfriendly, and reliable application that helps churches manage their operations more efficiently. By leveraging these technologies, churches can improve communication, streamline scheduling, and better engage with their members.

Weighted Mean

The weighted mean is a statistical measure that takes into consideration the relative Importance or contribution of each data point by assigning specific weights to them. It is a valuable tool when dealing with datasets where certain data points carry more significance or represent a larger portion of the overall population. This statistical measure is particularly beneficial in research, analysis, and decision-making processes. It allows for a more precise understanding of the data by considering the varying degrees of importance or representation within the dataset. It helps researchers make more informed conclusions and decisions based on the true contributions of each data point.

Formula:

$$x = \frac{\sum fx}{N}$$

Where:

X = Weighted Man

$\sum fx$ = Total Weighted Mean

N = Number of Respondents

Likert Scale

ISO/IEC 9126 is a standard that provides guidelines for evaluating software product quality. It focuses on characteristics and sub-characteristics related to software quality, rather than specifying a Likert scale for test questionnaires.

When designing a Likert scale for test questionnaires related to software quality assessment, it would be necessary to align the scale with the specific characteristics and sub- characteristics outlined in ISO/IEC 9126. The Likert scale should reflect the dimensions of software quality being measured.

Scale	Range	Verbal Interpretation
5	4.51 – 5.00	Strongly Agree
4	3.51 – 4.50	Agree
3	2.51 – 3.50	Neutral
2	1.51 – 2.50	Disagree
1	1.0 – 1.50	Strongly Disagree

Table 3.1 Verbal Interpretation Reference

- **Strongly Agree -** This response indicates that the respondent strongly agrees with the statement or holds a very positive attitude or opinion towards it.

- **Agree -** This response indicates that the respondent agrees with the statement or holds a positive attitude or opinion towards it, but not as strongly as the "Strongly Agree" response.

- **Neutral -** This response indicates that the respondent neither agrees nor disagrees with the statement. It reflects a lack of strong positive or negative feelings or opinions.

- **Disagree -** This response indicates that the respondent disagrees with the statement or holds a negative attitude or opinion towards it, but not as strongly as the "Strongly Disagree" response.

- **Strongly Disagree -** This response indicates that the respondent strongly disagrees with the statement or holds a very negative attitude or opinion towards it.

References:

Apiyo, R. O., & Kiarie, D. (2018, March 8). Role of ICT Tools in Supply Chain Performance. Retrieved from https://www.iprjb.org/journals/index.php/IJSCM/article/view/598/739

Awuku-Gyampoh, R. K., & Asare, A. O. (2019). Assessing the Impact of Good Governance, Church Management and Structure on the Growth and Development of the Church. International Journal of Business and Management, 14(4), 99-107.

https://ideas.repec.org/a/ibn/ijbmjn/v14y2021i4p99.html

Barlis, M. M., Tan, J. S., Tanquerio, E., Llesol, M., & Intai, G. L. (2020). Development of centralized Parish Record and Information Management System (PRIMS) to support Strategic Information System Plan (SISP) of Diocese of Cubao.

https://www.researchgate.net/publication/341695621_Development_of_c entralized_Parish_Record_and_Information_Management_System_PRI MS_to_support_Strategic_Information_System_Plan_SISP_of_Diocese_ of_Cubao

Bhandari, P. (2023) What Is Quantitative Research? | Definition, Uses & Methods.

https://www.scribbr.com/methodology/quantitative-research

Darmawan, P. A., Giawa, N., Katarina, Budiman, S. (2021). Covid-19 impact on
Church Society Ministry. International Journal of Humanities and
Innovation, 4(2).

http://humanistudies.com/ijhi/article/view/122/98

Gordon, A. (2018). The Paper Parish: The Parish Register and the Reformation
of Parish Memory in Early Modern London.

https://www.researchgate.net/publication/321524955_The_Paper_Parish_
The_Parish_Register_and_the_Reformation_of_Parish_Memory_in_Early
_Modern_Lon don

Kryhina, O. (2019, June). The Usage and Storage of the Information Contained
in the Parish Registers.

https://www.researchgate.net/publication/333032632_The_Usage_and_St
orage_ of_the_Information_Contained_in_the_Parish_Registers

Kumari, R. (2022, March 4). Service Management Systems. Retrieved from
https://www.linkedin.com/pulse/service-management-systems-ranju-
kumari

Lima I. R. & et al (2012). Adapting and Using Scrum in a Software Research and
Development Laboratory.

https://www.fsma.edu.br/si/edicao9/FSMA_SI_2012_1_Principal_2_en.pdf

Noormansyah, I., Wulandari, B., Saumi, S., & Herdiana, V. (2019, February).
Formal vs Informal Systems of Fund Management in House of Worship:
Comparative Study between Mosque and Church in Indonesia.

https://www.atlantis-press.com/proceedings/aicar-18/55913640

Olipas, C. N., Sawit, R. C. M., & Esperon, R. M. (2021, January). The Design and

      Assessment of a Church Records and Information Management System.

      https://www.researchgate.net/publication/362859612_The_Design_and_A

      ssessment_of_a_Church_Records_and_Information_Management_Syste

      m#fullTextFil eContent

Richey, R., Klein, J., & Nelson, W. (2004). Developmental research. In K. Tobin

      & H. Capie (Eds.), Handbook of Research in Science Teaching and

      Learning (pp. 10991130). Lawrence Erlbaum Associates.

      https://www.researchgate.net/publication/263963734_Developmental_rese

      arch

Team Leverage Edu (2023). Research Design.

      https://leverageedu.com/blog/researchdesign/?fbclid=IwAR20D6FzvwfPm

      OI1_3G1Tjdh_xAUtuO54sVEzNyPSY-g6dbFksF_qHct0xA

Turner, T. & Turner, K. (2021, July). A Complete Guide to Church Management

      Software (ChMS).

      https://subsplash.com/blog/church-management-software-a-complete-

      guide

Valpadasu, H., & et al (2020). The Challenges of Software Development:

      Waterfall   and   agile

      https://www.stcrs.com.ly/istj/docs/volumes/Waterfall%20and%20Agile.df

Villanueva, M. A. L., Villapando, M. M., Laurena, C., & Laurena, C. A. (2018, August). Online Registration and Reservation System for St. John Evangelist Church. https://lpulaguna.edu.ph/wp-content/uploads/2018/12/9-ONLINE-REGISTRATION- AND-RESERVATION-SYSTEM-FOR.pdf

Wiratama, J., & Desanti, R. I. (2022). Analysis and Design of Web-Based Information System for Church Congregations: Case Study of Church BNKP Pewarta. Journal of Information Systems. https://ejournals.umn.ac.id/index.php/SI/article/view/2403

Yarnell, K. (2022, January 18). What is ChMS? (Church Management Software). https://get.tithe.ly/blog/chms

Appendix A - Letter for Beneficiary

JOSÉ RIZAL UNIVERSITY

Iglesia Filipina Independiente Parish
Natividad
Pampanga

Warm greetings from the third-year students of Bachelor of Science in Information Technology at Jose Rizal University! We are writing to request your office's permission to conduct an interview with a highly suggested informant who can provide us with sufficient information about the Church Service Management System of Iglesia Filipina Independiente Parish. This is part of our course subject ITC C310 IT PROJECT 1, where we are conducting a capstone/thesis project.

We believe that your informant's insights would be a valuable contribution to our study, and we assure you that all the information we gather will be kept confidential and used solely for academic purposes.

We appreciate your consideration of our request and are looking forward to the possibility of working with you. If you have any questions or concerns, please do not hesitate to contact us.

Thank you for your time and attention.

Sincerely,

Group Why-Pie

Norman Jake S. Alain   Mary Koline N. Caguimbal   Brixter C. Luquing   Zai Ren R. Recto

Noted by:

Mr. Emerson Flores
Subject Adviser

FR. REX ANGELES LUGTU
Father Rev. Angeles Lugtu

Date Released:
April 11, 2023

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Appendix B - Interview Questionnaire

Interview Questions:

1. What are the different kinds of certifications that are kept in the church office?

   In Tagalog: (Ano ang iba't ibang uri ng mga sertipikasyon na iniingatan sa opisina ng simbahan)?

2. When requesting certifications like a baptismal or marriage certificate, how is the process done (is there any form need to fill up or how many days does it take before getting the hard copy)?

   In Tagalog: (Kapag humihiling ng mga sertipikasyon tulad ng kontrata ng binyag o kasal, paano ginagawa ang proseso (may anumang form na kailangang punan o ilang araw bago makuha ang hard copy)?

3. Are there any fees associated with obtaining copies of certificates or documents, and how are these fees determined?

   In Tagalog: (Mayroon bang anumang mga bayarin na nauugnay sa pagkuha ng mga kopya ng mga sertipiko o dokumento, at paano tinutukoy ang mga bayarin na ito)?

4. Where are the certificates or information of the clients saved or hidden (database or hard copy)

   In Tagalog: (Nasaan ang mga sertipiko o impormasyon ng mga kliyente na naka-save o nakatago (database o hard copy)?

5. In a document with errors such as the misspelt name, surname, and any other possible errors on the papers. What should clients do to correct the mistakes?

   In Tagalog: (Isang dokumentong may mga error tulad ng maling pagbabaybay ng pangalan, apelyido at anumang iba pang posibleng pagkakamali sa mga papel. Ano ang dapat gawin ng mga kliyente upang itama ang mga pagkakamali)?

6. How long does it take to fix the errors on the document?

   In Tagalog: (Gaano katagal bago ayusin ang mga error sa dokumento)?

7. In booking the church, like weddings, baptisms, events, and priests (blessing). What are the requirements that need to be submitted?

   In Tagalog: (Sa pag-book ng simbahan, tulad ng mga kasalan, binyag, mga kaganapan, at mga pari (pagpapala). Ano ang mga kinakailangan na kailangang isumite)?

8. How did you determine that the schedules of the church and priest did not conflict?

   In Tagalog: (Paano natutukoy na ang mga iskedyul ay hindi magkasalungat)?

9. How many priests and bishops are there in the church?

   In Tagalog: (Ilan ang mga pari sa simbahan)?

10. How do the priests schedule their time every time they have a mass?

    In Tagalog: (Paano itinatakda ng mga pari ang kanilang oras tuwing may misa)?

11. In a day, how many clients take or request documents in the church?

    In Tagalog: (Sa isang araw, ilang kliyente ang kumukuha o humiling ng mga

dokumento sa simbahan)?

12. How often in a month does the church reserve or request events such as weddings, baptisms and others?

In Tagalog: (Gaano kadalas sa isang buwan ang simbahan ay nagrereserba o humihiling ng mga kaganapan tulad ng kasalan, binyag at iba pa)?

Appendix C - Transcript of interview with Father Angeles Lugtu

Norman: So, Bali po Father may thesis po kami about church management system ang gagawin namin, Nandito po kami para tanungin kayo kung pwede po ba kayo maging beneficiary sa gagawin namin na system para sa thesis namin.

Brixter: So bali po yung system po nayun ay andun po yung mga services po na binibigay ng simbahan like binyag, kasal, records. And then sa system nayun like kunware kung gusto nila mag request ng binyag, dun ka nila cocontact-in para ma-schedule yung binyag o kasal.

Norman: Pwede din po kumuha ng mga certificates kung dun nag pakasal

Koline: Tapos mas mapapadali din po kasi mas ma oorganize na din po yung mga documents. Kasi po mayroon na siyang database

Father Rex: Actually, yun yung isang prinopropose din ng IT dito dati kaso di lang namin nasisimulan.

Norman: So ngayon po father may system na po ba kayo dito?

Father: Actually, kung Church Management System meron na kami pero kung sa mga records wala pa, Plinano kaso hindi pa siya natututukan.

Koline: Yung prinopropose po namin pwde niyo pong gamitin libre naman po, tsaka tuturuan naman po namin kayo kung pano gamitin. Ang amin lang po kung papayag po kayo maging beneficiary.

Father: Payag na payag naman walang problema.

Father: Saang school kayo?

All interviewer: Jru pa po

Norman: Kapag po nakuha na po naming kayong beneficiary kakailanganin po namin na kunin yung data niyo.

Koline: Ano ang iba-ibang uri ng mga sertipikasyon na iniingatan sa opisina ng simbahan?

Father: Baptismal and Marriage

Koline: Saan po nakatago? Meron po ba kayong mga hard copy?

Father: Nasa natividad nakatago. Yung lumipat ako dito pinadala na dito. Naka sulat kamay at Nakalagaydito (Filing Cabinet)

Koline: May bayad po ba kapag kumukuha ng certificates?

Father: Dipende sa mga tao kung magbabayad sila. Pero kapag nagpabinyag ka, yung anak mobininyagan ko. Yung unang copy ibibigay sayo ng libre pero ang pangalawang kopya meron ng bayad.

Koline: Kapag po merong maling naisulat sa papel or kapag po nagkakaroon ng error paano po ito napprocess?

Zai: Sa pangalan po.

Father: Yun yung dahilan ng church kung bakit kumukuha siya ng Xerox copy ng birth

certificate.

Koline: Kapag po nagbobook ng church like po sa kasal or magpapabinyag ano po yung mga process?

Father: Sa binyag, yung willingness ng anak nila magpabinyag, naghihingi kami ng kopya ng birth certificate ayun lang.

Koline: Kapag naman po sa mga kasal?

Father: Kapag kasal naman, yung mga documents na iaano ng civil registration, dagdag na lang yung sa kumpilan na kailangan kumpilan.

Koline: Dito rin po sa simbahan niyo?

Father: Oo ako ang magkukumpil sakanya. At kung dadaan sila ng pre-marriage counciling.

Koline: Yung mga ano po nagpapabless po paano po yung napprocess?

Father: By Scheduling

Koline: Pwede po ba iischedule ang pari po. Kunwari po ipapabless po yung bahay.

Paano po napprocess yun?

Father: Don umaano yung mga parish secretary doon sila nag aano ng mga schedule. **Koline:** Yung sa ano po sa conflict po ngschedule ng pari at ng simbahan, paano po yun na hindi nagsasabay-sabay?

Father: Yun yung kagandahan ng nakaschedule.

Koline: Sinusulat po ba siya sa papel?

Father: Oo sinusulat, minsan sa papel, minsan sa cellphone ko.

Father: Kapag kasal naman, yung mga documents na iaano ng civil registration, dagdag na lang yung sa kumpilan na kailangan kumpilan.

Koline: Dito rin po sa simbahan niyo?

Father: Oo ako ang magkukumpil sakanya. At kung dadaan sila ng pre-marriage counciling.

Koline: Yung mga ano po nagpapabless po paano po yung napprocess?

Father: By Scheduling

Koline: Pwede po ba iischedule ang pari po. Kunwari po ipapabless po yung bahay. Paano po napprocess yun?

Father: Don umaano yung mga parish secretary doon sila nag aano ng mga schedule.

Koline: Yung sa ano po sa conflict po ngschedule ng pari at ng simbahan, paano po yun na hindi nagsasabay-sabay?

Father: Yun yung kagandahan ng nakaschedule.

Koline: Sinusulat po ba siya sa papel?

Father: Oo sinusulat, minsan sa papel, minsan sa cellphone ko.

FR REX ANGELES LUGTU
Father Rev. Angeles Lugtu

_____
Date

Appendix D - Documentation

After conducting our interview with the priest, a significant event took place, captured in the picture. During the interview, we diligently posed all the relevant questions that were crucial for enhancing the quality and depth of our research. The interview with the priest served as a valuable opportunity to gather essential insights, perspectives, and knowledge that could significantly contribute to the advancement of our study.

After the defense, one of our panel emphasized the importance of obtaining signatures to authenticate both our interview with the priest and the letter intended for the beneficiary. The purpose behind acquiring these signatures is to provide concrete evidence of the proceedings and ensure the validity and credibility of the documented information. To comply with this request, it is necessary to gather the signatures of the individuals involved in both the interview with the priest and the drafting of the beneficiary letter. These signatures will serve as tangible proof of their participation and endorsement.

## Appendix E - Entity Related Data
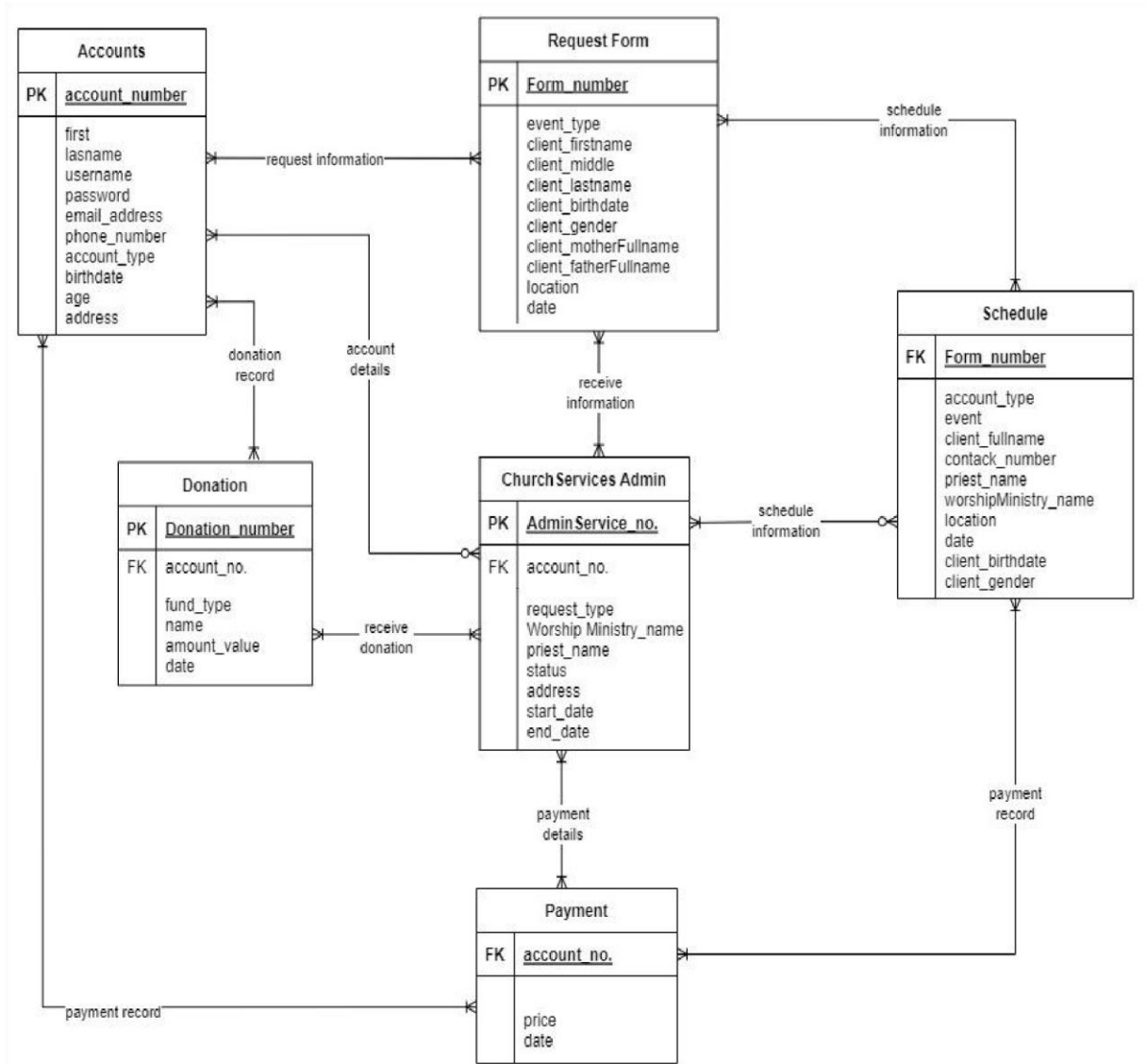
Business Scenario

- The **Accounts** entity allows users to create an account and log in to access various web application features. To create an account, you need to input the following first, lastname, username, password, email_address, phone_number, account_type (client, priest, admin and worship ministry), birthdate, age, and address. For the account_no. It will automatically generate when one is done creating an account.

- The **Funds** has has fund_no, account_no, fund_type, name, amount_value and date. For the donation from people.

- The **ChurchService** has service_no., request_type, priest_name, status, address, start_date, and end_date. For requesting documents or events.

- The **Events** is one of the request_type in ChurchService that indicates the following event: Wedding, Mass, House Blessing, Baptism, Confirmation, and Funeral Mass. The client needs these to book an event_type, client_firstname, client_middle, client_lastname, client_birthdate, client_gender, client_motherFullname, client_fatherFullname, location, date, event_no. for the primary key and service_no. For the foreign key.

- The **Schedule** entity manages the schedules of the church, client, and secretary. The Schedule entity has account_type, event_type,

client_fullname, priest_name, location, contact_number, date, and service_no. for the primary key.

- The **Documents** entity is another request_type of ChurchService. It manages two documents, namely the baptismal and marriage certificates. The Documents entity has document_type, client_firstname, client_middle, client_lastname, client_birthdate, client_gender, client_motherFullname, client_fatherFullname, date, service_no. as the foreign key, and document_no. for the primary key.

- The **Payment** entity manages the financial transactions to document's requests by the client. The Payment entity has document_type, price, date, and document_no. as a primary key. The Accounts entity allows users to create and log in to access various web application features. Client, Priest, Worship Ministry, and Admin are the three types of users in the Accounts entity. The Fund entity manage all different kind of donation from people. The ChurchService entity manages service requests and statuses, while the Events entity specifies the available booking events. The Schedule entity manages schedules for clients, priests, worship ministry, and secretaries. Documents contain the client's baptismal and marriage certificates, while the Payment entity manages financial transactions for those requests. All entities have primary and foreign keys that link them together.

Appendix F - Context Level Diagram
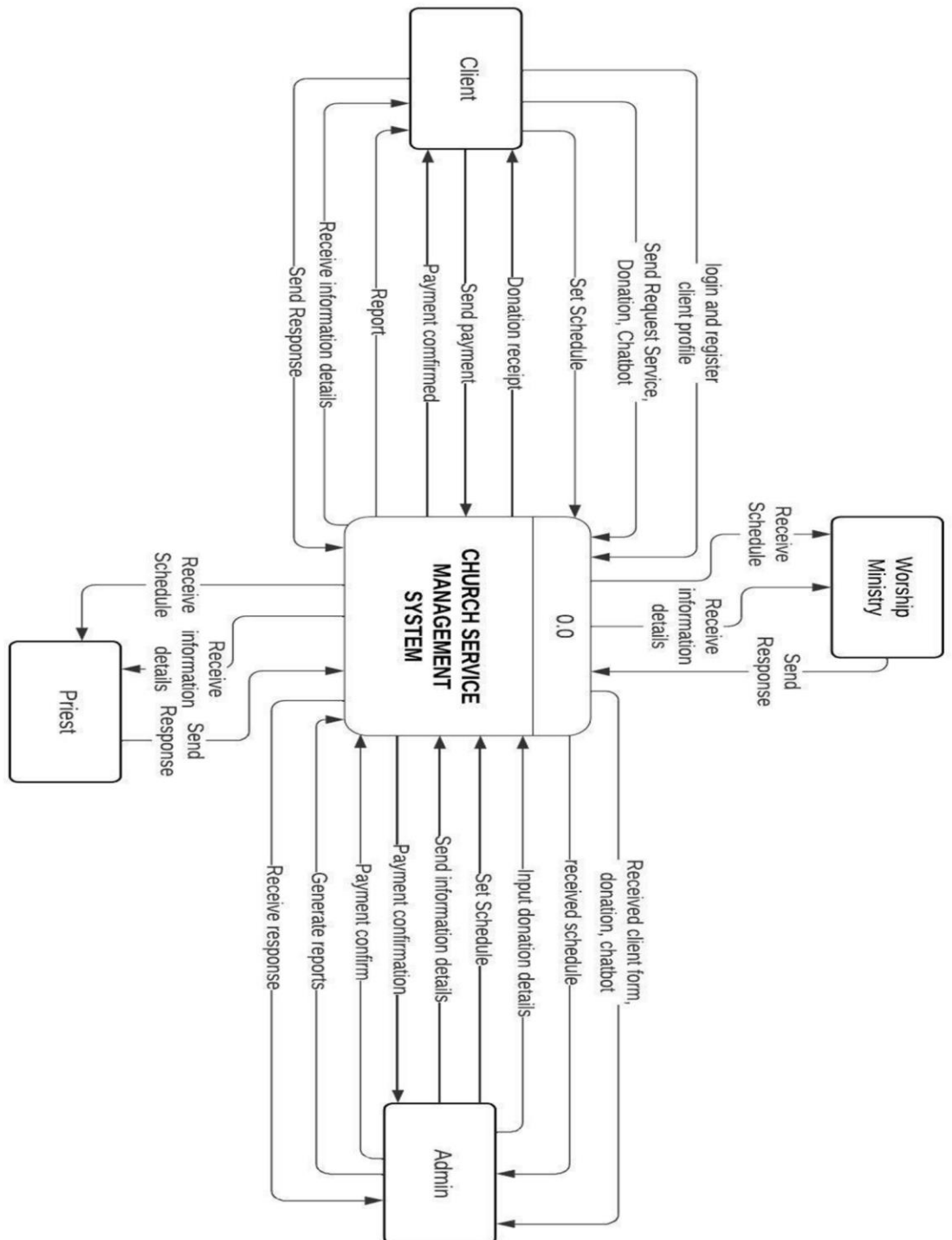
A church service management system context diagram illustrates the interactions between the system and its external entities. The system's primary purpose is to manage the request services, donation, and chatbot by clients, and the entities involved are the client, admin, priest, and worship ministry. The diagram shows how the client can register and login, file a service request, donate, schedule, make a payment, and use a chatbot. The admin reviews the client's request and the set schedule and sets the schedule for the priest and worship ministry of the service. Then notify the client, priest, and worship ministry for further and additional information about the event. The priest and worship ministry can view their schedule and the service's details on the system. Furthermore, a priest, client, and worship ministry can also send a response.

Appendix G - Data Flow Diagram
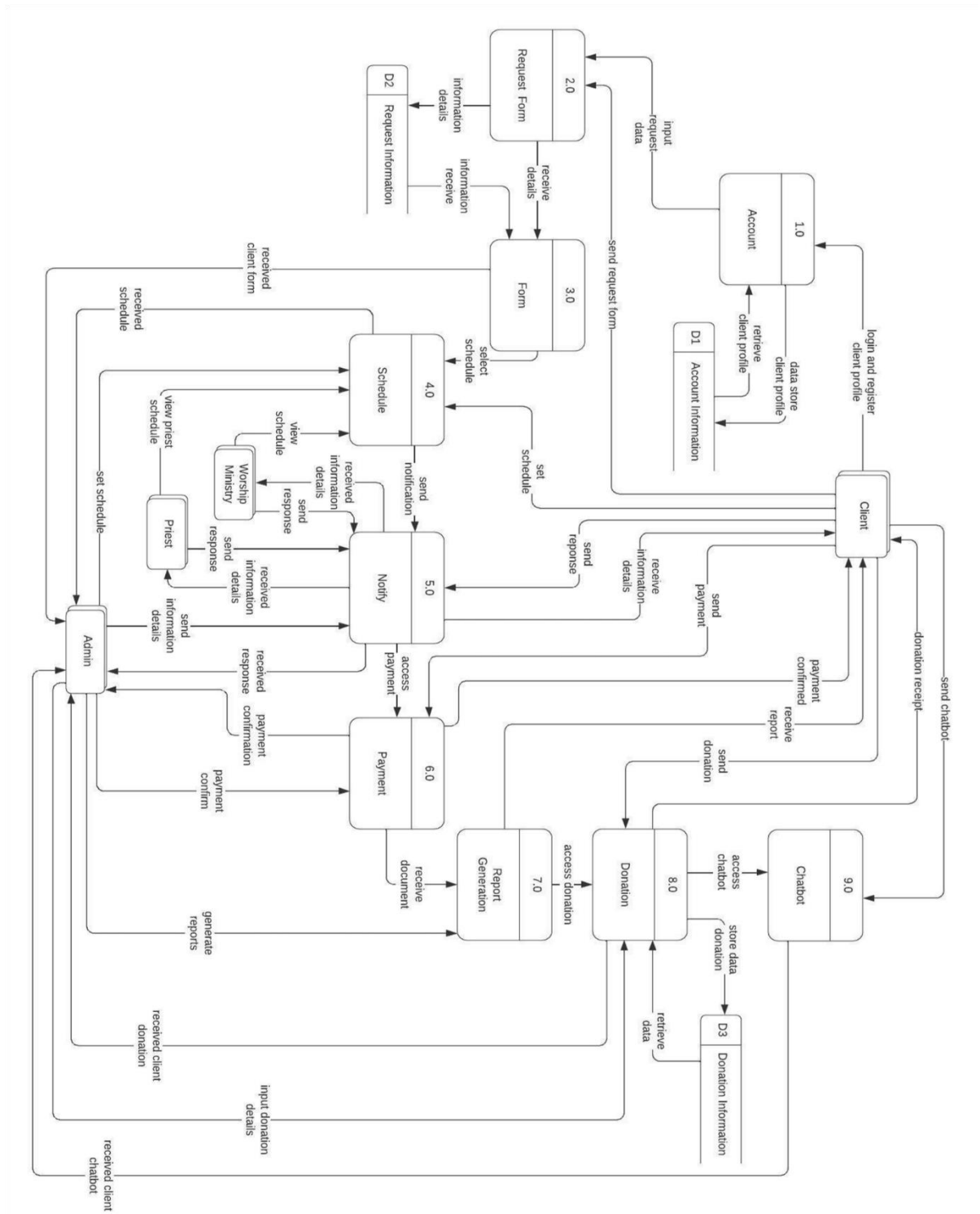
The DFD illustrates a system's data and process flow that responds to the client's service requests. The process starts with the client's registration and login. Once registered and logged in, clients can submit requests for the service they want and access the schedule to set when and where it will happen. Admin will review the request form and notify the client regarding the request they made. After reviewing the request form, the admin will set the schedule for the priest and worship ministry, then inform the priest, worship ministry, and client for additional instructions. Also included are payments and donations. This will proceed to generate report once the payment has been made. This system also has a chatbot for our clients.