The Design and Assessment of a Church Records and Information Management System

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Abstract: **Information Technology (IT) has provided an opportunity to improve the quality of processes performed in society's different areas. Parishes are essential components of a society in which spiritual development is exercised. Aside from being an avenue for parishioners to express and appreciate their religion, parishes also handle essential files and records that need to be properly managed. Problems were encountered using the manual process of data management; thus this study aimed at designing and assessing a Web-Based Church Records and Information Management System (CRIMS) for a Parish to provide a basis for adopting an IT solution to aid in the management of data, and produce essential information relevant for the management of the parish. The research's descriptive-developmental design was utilized in this study, involving thirty respondents to assess the system developed for the parish. The system was assessed based on the following criteria: Content, Functionality, Reliability, Understandability, and Security. Results revealed a very satisfactory rating from the respondents, indicating that the CRIMS can be a basis for developing a system for a parish.**

Keywords: **Church Information System, Records Management System, Descriptive-Developmental Research**

I. INTRODUCTION

The advent of new technologies has brought significant impacts on people's lives, which is evident in the different technological solutions present from society's different areas and industries. This significant impact was caused by computer technology, resulting in the information revolution (Deitel and Deital, 1986). Kamalov (2016) asserts that the information revolution has brought people in the age of the internet in which a massive amount of data is continuously transmitted over a communication network to different areas of the globe. The ability to quickly transfer data from one point to another had opened new possibilities, including improving the different services, capabilities, and features of the establishments, institutions, and organizations that can be found on the internet. In line with this, Brey and Soraker (2009) explained that the information revolution has caused inequalities in society and has created a digital divide wherein those who have the means and capabilities to use information technology effectively can enjoy its benefits while others are left behind. Advancement in technologies has positive and negative impacts as cited by Sutton (2013), indicating its impact on technology and education and Legg and Johnson (2020) in psychological, social, and health of people, to name a few. Information Technology plays a vital role in optimizing their processes in organizations and different institutions from the different sectors of society. Countless numbers of IT solutions have been deployed and utilized and have significantly impacted how operations are handled. Efficiency, accuracy, security, and increased productivity are the benefits of having an IT solution in an organization. Today, more and more organizations and institutions deploy IT solutions to reap the benefits and positive effects of the technology.

The church is one of the society's sectors that handle different kinds of data and produces various information based on their records. Like business organizations, parish churches need to effectively and efficiently handle their files and records to provide reliable results to their parishioners. Several studies about the development of a Church Information System have been made like Kurniawan and Cassandra (2014) and Shaibu (2018), but there is a need to conduct more studies to contribute to the existing pool of information to provide knowledge and new insights. The researchers conducted this study to provide new realizations and information about the design, development, and assessment of a Church Records and Information Management System.

This study aimed to design and assess a Church Information and Record Management System (CIRMS). Specifically, it sought to describe the CRIMS design based on the Software Development Life Cycle (SDLC), which includes the Planning, Analysis, Design, and Testing stages. However, the Implementation and Maintenance Stages of the SDLC were not included in this study since it only covered the design, development, and assessment of an initial prototype to draw insights for future study. Also, it sought to assess the CRIMS based on the Content, Functionality, Reliability, Understandability, and Security from the perspective of Parish Staff and Selected Parishioners.

II. METHODOLOGY

This study utilized a quantitative method of research to understand the design and assessment of the system. Specifically, it used a descriptive-developmental method to describe the researchers' processes to develop the CRIMS. Developmental research covers a systematic approach in developing the system. It covers the design, development, and assessment of the output (Bridle, 1989). Studies of Olipas

(2019), Olipas and Esperon (2020) and Crossman (2020) utilized the descriptive-developmental method to understand the design, development, and assessment of an I.T. solution.

In terms of the respondents, the researchers used a purposive sampling technique to identify the Parish Staff and Selected Parishioners who had joined and assessed the developed system. Crossman (2020) mentioned that purposive sampling is a type of non-probability sampling that regards the characteristics of a population and the study's objective in choosing who participates in a study. This study is essential to utilize a purposive sampling technique since the needed respondents were only Parish Staff and Selected Parishioners.

In subjecting the developed system for assessment, the researchers explained the study's objective and asked for the respondents' permission to participate in evaluating the output. The researchers also assured the respondents that all the gathered information was treated with the utmost confidentiality. After the respondents' approval, the researchers presented the system and allowed them to use and explore the features and capabilities of CRIMS. When the assessment was done, the researchers asked for additional feedback for future enhancements of the system.

Table 1 presents the rubric used for assessing the system of the developed Church Records and Information Management System.

Table 1: Rubric for Data Analysis

Numerical Rating	Qualitative Rating	Verbal Description
4.20 – 5.00	Very Satisfactory	CRIMS meets all the required standards of software. Very minimal or no alteration is needed.
3.40 – 4.19	Satisfactory	CRIMS meets almost all the required standards of software. Least revisions are needed.
2.60 – 3.39	Fairly Satisfactory	CRIMS meets some of the required standards of software. Some revisions are required.
1.80 – 2.59	Unsatisfactory	CRIMS fails to meet the standard of making software. Major changes are required.
1.00 – 1.79	Very Unsatisfactory	CRIMS fails to meet the standard of making software. Needs to be rebuilt to oblige its purpose.

III. RESULTS AND DISCUSSION

The Development of the CRIMS based on the stages of the SDLC

Planning

In undertaking software development projects, the planning stage plays a vital role in the endeavor's overall success (Olipas, 2019). In the planning stage, all the essential requirements were identified, including the scope of the project and its limitations. In the planning stage, the researchers came up with a plan that served as a solid foundation of what should be done to achieve the set goals.

In the planning stage, the researchers gathered data through observations of daily operations performed by the Parish Church staff. Also, transactions involving parishioners were observed and recorded to draw additional insights. Aside from observation, the researchers conducted interviews to gather additional information. This information was essential during the requirements analysis in this stage. The requirements gathered were part of the basis in planning how to develop the CRIMS. To guide the researchers in utilizing their schedule and time correctly, a Gantt chart was utilized. Gantt chart is an effective tool that guides researchers and software developers in managing time and schedule. When time is managed properly, the development of the system can be effectively and efficiently done.

Analysis

The analysis stage is the phase in which the researchers collected, organized, and analyzed the requirements essential for the system's development. Based on the planning stage results, the researchers were able to manage the stage procedurally and adequately since there was a concrete plan created during the previous stage. Although the plan was continuously enhanced, revised, and revisited, it was still vital in guiding the researchers on how to analyze the system requirements, end-user requirements, functional and non-functional requirements, and other requirements relevant for the software development.

This was the stage where the overall direction of the project was identified. In developing CRIMS, it was in this stage where the researchers conducted the relevant activities in analyzing requirements such as elicitation, validation, specification, and verification. The outputs of this stage were then used in the next stage of the system development life cycle.

Figure 1 presents the manual system's flow chart, while Figure 2 presents the flow chart of the developed system as a result of analyzing the requirements and other relevant information for the development of CRIMS.

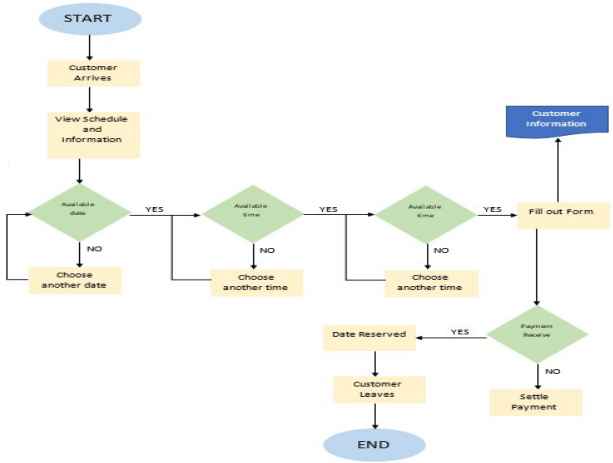

Figure 1. Flow chart of the manual process

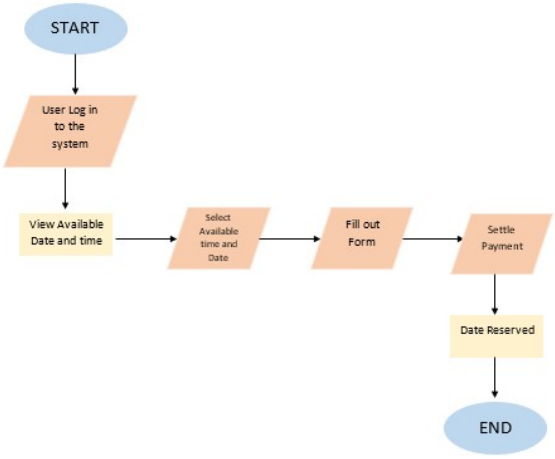

Figure 2. Flow chart of the computerized process

Design

The design stage of the Software Development Life Cycle helps define the essential components of the proposed project. It allows the researchers to construct *blueprints* that would guide them in the process of development. Olipas and Urmatan (2019) developed a series of models and diagrams to aid them in developing a Disaster Preparedness Application. Also, Olipas and Villanueva (2019) performed similar activities to guide them in developing the proposed system. Concerning the activities they have undertaken, the present researchers also developed several diagrams that would aid them in the SDLC design stage. Use-Case Diagram and Data Flow Diagram helped the researchers fully understand the requirements gathered in the earlier SDLC stage. Also, it served as a guide in the design of the system. Figure 3 and Figure 4 present the Use-Case Diagram and the Data Flow Diagram used in this study.

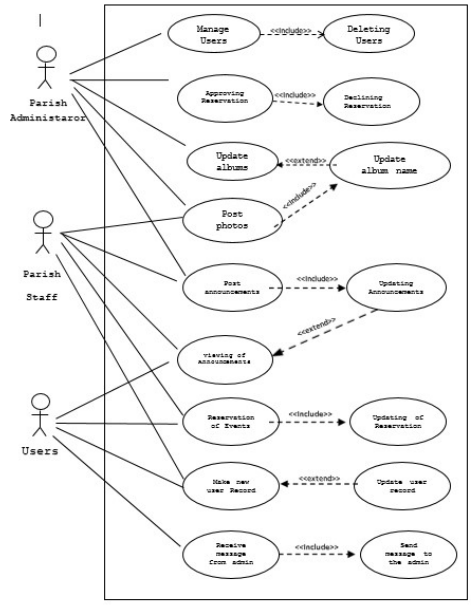

Figure 3. Use-Case Diagram of CRIMS

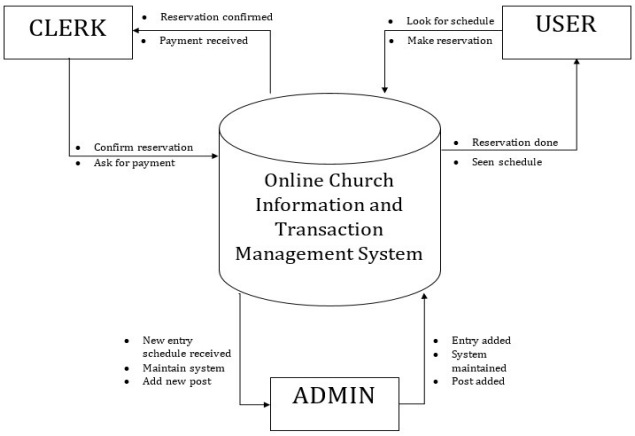

Figure 4. Data Flow Diagram of CRIMS

Testing

Software Testing is a vital activity in software development. This activity ensures that the end-product conforms to the specified requirements and that developing the system's goals and objectives are achieved. In the testing stage, the researchers employed several testing activities. The researchers test the system's performance, back-end, front-end components, and the over-all user interface to provide a better user experience. Through these activities, the researchers were able to draw insights and identify rooms for improvement for CRIMS's betterment.

The Assessment on CRIMS by the Parish Staff and Selected Parishioners

Table 2: The Assessment on CRIMS based on Contents

Item	Weighted Mean	Verbal Interpretation
C1	4.43	Very Satisfactory
C2	4.23	Very Satisfactory
C3	4.90	Very Satisfactory
Average		4.52
Verbal Interpretation		Very Satisfactory

Table 2 shows the parish staff and parishioners' assessment of the developed CRIMS based on its contents. The respondents very satisfactorily agree that the system's interface was appropriately designed with a mean rating of 4.43 and that the text on the system are readable, allowing users to view and understand the contents easily with a mean rating of 4.23. In terms of contents organization, the respondents rated the system with a mean rating of 4.90 with a very satisfactory verbal interpretation, indicating that the CRIMS' contents were properly organized. Overall, the CRIMS contents got an average mean rating of 4.52 with a verbal interpretation of very satisfactory. This result denotes that the CRIMS in terms of its contents are very much acceptable to the parish staff and parishioners.

Table 3: The Assessment on CRIMS based on Functionality

Item	Weighted Mean	Verbal Interpretation
F1	4.20	Very Satisfactory
F2	4.00	Satisfactory
F3	4.00	Satisfactory
Average		4.10
Verbal Interpretation		Satisfactory

Table 3 shows that the respondents viewed CRIMS' functionality as satisfactory, with an overall mean rating of 4.10. Specifically, the system's ability to process data to provide valuable information was viewed way faster than the manual system of operating with a mean rating of 4.20, translated as very satisfactory. Also, results show that the system satisfactorily satisfied the users' job requirements with a mean rating of 4.00. Lastly, the users thought that the system could help them satisfactorily lessen the time and efforts in performing the parish church's operations and activities, as evident in the mean rating of 4.00.

Table 4: The Assessment on CRIMS based on Reliability

Item	Weighted Mean	Verbal Interpretation
R1	4.33	Very Satisfactory
R2	4.06	Satisfactory
R3	4.00	Satisfactory
Average		4.13
Verbal Interpretation		Satisfactory

Table 4 shows the parish staff and parishioners' assessment results in terms of the systems' reliability features. The respondents viewed the system's reliability feature to provide clear and informative data as very satisfactory, evident on the mean rating of 4.33. The respondents also thought that the system produces consistent results resulting in better system integrity, as evident in the mean rating of 4.06 translated as satisfactory. Lastly, the system produces correct and comprehensive results resulting in a satisfactory mean rating of 4.00. As a whole, the respondents viewed the system as reliable. Thus, processes and activities performed in the office become more effective and efficient.

Table 5: The Assessment on CRIMS based on Understandability

Item	Weighted Mean	Verbal Interpretation
U1	4.10	Satisfactory
U2	4.83	Very Satisfactory
U3	3.90	Satisfactory
Average		4.27
Verbal Interpretation		Very Satisfactory

The result of the assessment on CRIMS based on understandability is presented in Table 5. Results show that the system provides a satisfactorily user-friendly interface with a mean rating of 4.10. The system can also be easily manipulated because using it is clear and straightforward, as can be seen on the mean rating of 4.83, interpreted as very satisfactory. Lastly, the system met the user's expectations, making it easier for them to understand how to use it with a mean rating of 3.90. Overall, in terms of understandability, CRIMS got a very satisfactory rating with an overall mean of 4.27.

Table 6: The Assessment on CRIMS based on Security

Item	Weighted Mean	Verbal Interpretation
S1	4.10	Satisfactory
S2	4.83	Very Satisfactory
S3	3.90	Satisfactory
Average		4.27
Verbal Interpretation		Very Satisfactory

In terms of security, the result of the assessment on CRIMS is presented in Table 6. CRIMS got a satisfactory rating with a mean rating of 4.10 in terms of its feature of enabling password protection for information assurance and security mechanisms. The system only allows users to access the system privilege given to them, and this feature is rated as very satisfactory with a mean rating of 4.83. Lastly, there is a restriction from the different types of users. This feature that covers the system's security function got a Satisfactory rating with a mean rating of 3.90. In general, CRIMS's security feature got a Very Satisfactory rating with an overall mean rating of 4.27.

IV. CONCLUSION

The design and assessment of the Church Records and Information Management System (CRIMS) was the study's primary goal. The researchers utilized a developmental method guided by the Software Development Life Cycle stages with the following stages: Planning, Analysis, Design, and Testing. The implementation stage was not covered in this study. Based on the results of the assessment made by the respondents, the developed system has very satisfactorily achieved good ratings in terms of Contents, Understandability, and Security. On the other hand, it achieved a satisfactory rating in terms of its Functionality and Reliability. In general, the developed CRIMS was beneficial and feasible to be improved and implemented in the parish.

V. RECOMMENDATIONS

Based on the conclusions drawn, the researches came up with the following recommendations:

1. The developed CRIMS may serve as a starting point in transforming the manual process into computerized operations in the parish;

2. The developed CRIMS may be further improved and analyzed considering other factors and procedures performed in the parish to broaden its scope and its functionality;
3. The developers of the system may continue to improve other system features to increase its effectiveness and efficiency.

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