Journal of Artificial Intelligence and Engineering Applications

Website: https://ioinformatic.org/

15th February 2025. Vol. 4. No. 2; e-ISSN: 2808-4519

Financial Information System at the Sumba Christian Church Web-Based Wainggai Congregation

Toni Y. Nd. Otu[1], Fajar Hariadi[2], Desy A. Sitaniapessy[3]

[1,2,3]Program Studi Teknik Informatika, Universitas Kristen Wira Wacana Sumba,
tonianakariung@gmail.com [1], fajar@unkriswina.ac.id[2], desyasnath@unkriswina.ac.id[3]*

Abstract

Financial information systems are information systems designed to provide users with information about cash flows throughout an organization. The procedures carried out in this system are a series of written documents or actions involving many people in a department to ensure consistent treatment. The Sumba Christian Church (GKS) Wainggai Congregation currently does not have information technology that can help to summarize church finances, so that errors often occur from the congregation when examining the treasurer. Because the calculation or addition of church finances every month is often wrong, so each income and expense must be recalculated from the beginning of the month. From certain problems, using information technology can help alleviate complaints or problems that often occur. Therefore, it is necessary to create an information system at the GKS Wainggai Congregation to help manage church finances so that errors do not occur again. This study uses the prototype method.
The results of testing using the blackbox method show that this system can run according to its function without any errors. Meanwhile, from the results of the SUS test that has been carried out from the level of user satisfaction with the church's financial recording information system, the assessment given to 1o respondents resulted in a score of 78%. With acceptability ranges "Acceptable" and "High" ranges. The scale of grades is in the category of class "C". and on the "Good" Adjective ratings model. These results show that the financial recording information system can be accepted by its users.

Keywords: *Church, Web-Based, Financial.*

1. Introduction

Financial record keeping is an important process that involves collecting, classifying, and reporting all financial transactions that occur in an organization. The main purpose is to create accurate, detailed, and transparent records, which allow related parties to clearly understand the financial position of the organization [1], [2], [3]. This process is not only limited to business organizations, but also applies to various other types of organizations, including non-profit and religious organizations such as churches. In the context of the church, financial record keeping plays a vital role in ensuring that funds received from the congregation and other donations are used properly and in accordance with the social and spiritual goals of the church, while ensuring accountability and transparency in the management of these funds [4], [5], [6].

Financial record keeping involves the process of collecting, classifying, and reporting all financial transactions. These transactions include income, expenses for operational costs, and payment of ministerial salaries. This structured process is essential to ensure transparency and accuracy in financial reports, thus supporting better decision-making and helping to achieve the church's financial goals [7], [8], [9]. This data is systematically recorded in a ledger or computer accounting system, which records each transaction in detail to ensure accuracy and compliance with applicable accounting standards. The financial record keeping process is not only limited to business organizations or business entities, but is also applied by non-profit organizations or religious organizations such as churches [10], [11], [12].

Church financial record keeping is an important part of managing finances received and spent, with the aim of maintaining the transparency of church finances. Income comes from weekly offerings, congregation donations, and business activities managed by the church. Meanwhile, expenses include church operational costs, staff salary payments, worship activity costs, and other expenses related to the church. Each transaction is recorded clearly and accurately to facilitate the preparation of financial reports that can be audited and accounted for. Good record keeping also helps the church to plan and allocate funds properly in supporting the church's vision and mission [13], [14], [15], [16].

Every institution requires good financial information system management to make it easier for officers or treasurers to manage financial data. The Sumba Christian Church (GKS) Wainggai Congregation is a religious institution located in East Sumba Regency, Umalulu District, Ngarukanoru Village, with a service area covering two villages, namely Ngarukanoru Village and Pabera Manera Village. Currently, the GKS Wainggai Congregation does not have an effective information system, so it often experiences problems in financial information management. The financial recording process in the church begins with collecting all income and expenses of the church, both from congregation donations and other income [17], [18], [19] ,[20]. Recording financial data at the GKS Wainggai Congregation uses a lined folio book or commonly called a cash book and financial calculations do not use any tools such as calculators or computer facilities.

Recording the incoming and outgoing finances at the GKS Wainggai Congregation is carried out by the treasurer. In addition, periodic financial reports are prepared and announced weekly to interested parties, including the congregation and the church governing body, to ensure the use of funds in accordance with the church's objectives and responsible financial principles [21], [22].

Some of the problems that arise with conventional financial records are lack of security, delays in data updates, limited accessibility and limited reports. Delays in updating financial data can occur because physical cash books do not allow for real-time transaction recording. Another form of problem is limited accessibility, making it difficult to check congregation data information or church expenditure data. With the web, it will be easier for treasurers to recheck information that has been missed more quickly. Physical cash books are susceptible to loss or damage which can result in the loss of important financial data for the church. Finally, limitations in financial reporting can be an obstacle in presenting comprehensive financial information to the congregation and other related parties. Based on the problems experienced by the financial recording process of GKS Jemaat Wainggai, these problems can be solved with a web-based financial information system. This system will allow real-time transaction recording, facilitate easy transaction tracking and increase the accessibility of financial information for the entire congregation. With process automation, the risk of human error can be significantly reduced, so that the accuracy of financial data can be guaranteed. In addition, this system will provide sophisticated and comprehensive reporting capabilities, allowing the presentation of financial information that is more transparent and easy to understand by related parties. By adopting web-based technology, GKS Jemaat Wainggai can increase efficiency in managing church finances and strengthen transparency and accountability in managing congregation funds [23], [24].

2. Research Methodology

1. Data collection was conducted through direct interviews with the church congregation and the data was collected into one where the data obtained from the Assembly during the interview process was raw data. then the data was collected/grouped into one to be processed into information that is relevant to the problems obtained.
2. The creation of a financial information system, focused on developing a system that is able to manage and process financial data efficiently. The process begins with a needs analysis to understand the features needed, followed by system design that includes system architecture and user interface.
3. At the trial stage, an evaluation of the information system was carried out by involving users to ensure that the system functions according to their needs. Furthermore, developing and testing the system to ensure accurate and secure data before implementation. After the system is running, it will also ensure that users get sufficient training and carry out maintenance to ensure the system remains optimal and runs smoothly.

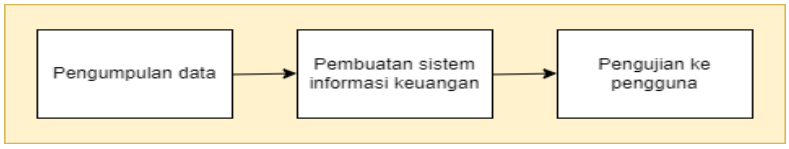

Fig. 1: Research Flow

3. Results

3.1. System Design

3.1.2. Use Case

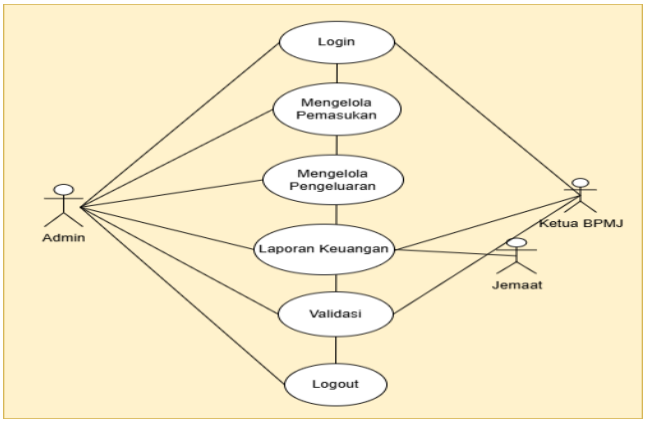

Fig. 2: Research Flow

The use case below was found to be 3 actors who used the system, namely the secretary as an admin, the chairman of BPMJ and the congregation. Admins can log in and have the right to add, change, delete, and print financial statements. The Chairman of BPMJ can also log in, view financial statements and validate reports and congregations can only see in the financial statements section.

3.1.3. Activity Diagram

3.1.3.1. Activity Diagram Login

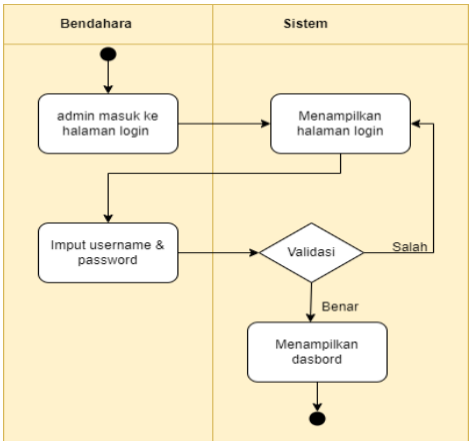

Fig. 3: Activity Diagram Login

The process starts from the admin to enter the login page. After that, the system will display the login page. Then the admin will enter the username and password. Furthermore, the system validates user data which will assess the correctness of the username and password provided. If the combination is wrong, then the system will display the login page again and the admin will re-enter the username and password, if the combination is correct then the system will display the dashboard page.

3.1.3.2. Activity Diagram Increase Income

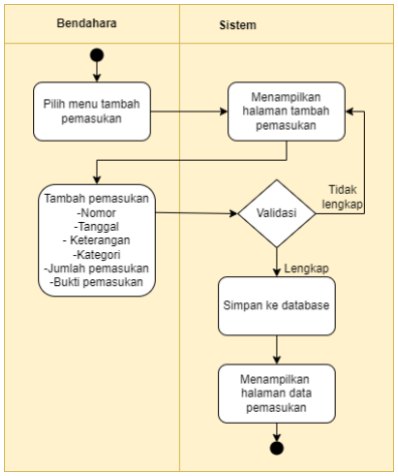

Fig. 4: Activity Diagram Increase Income

The process starts from the treasurer selecting the add income menu then the system displays the add income page, then the treasurer adds data then the system will validate the data, if the data is not complete, the system will again display the add income page and the treasurer re-enters the data. If the data is complete, the system saves it to the *database*, not only here, then the system returns to display the income data page then exits the system.

3.1.3.3. Activity Diagram Edit Income

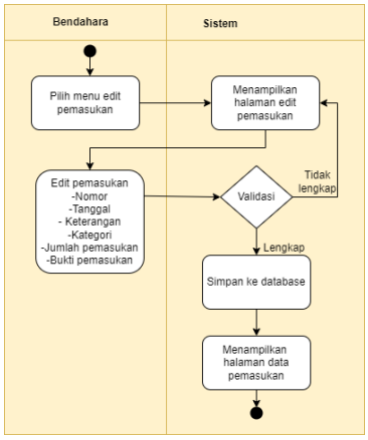

Fig. 5: Activity Diagram Edit Income

The process starts from the admin selecting the input edit menu then the system displays the edit page, then the admin makes data edits then the system will validate the data, if the data is not complete then the system will again display the income edit page and the treasurer re-enters the incomplete data. If the data is complete, the system saves it to the database, not only up here, then the system returns to display the edited data page and then exits the system.

3.1.3.4. Activity Diagram Delete Income

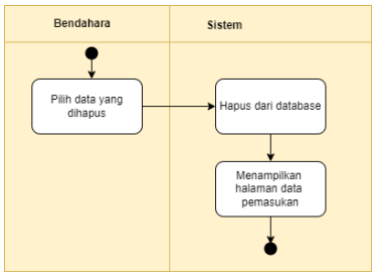

Fig. 6: Activity Diagram Delete Income

Starting from the treasurer who will select the deleted data and then the system deletes it from the *database*, then displays the income data page.

3.1.3.5. Activity Diagram View Income

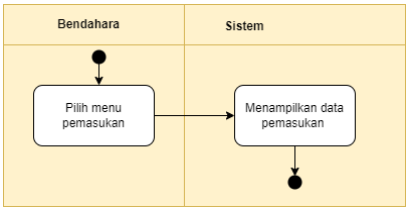

Fig. 7: Activity Diagram View Income

The process is that the treasurer selects the income menu and then the system displays the income data then exits the system.

3.1.3.6. Activity Diagram Increase Expenditure

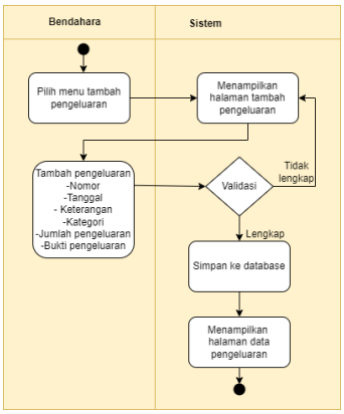

Fig. 8: Activity Diagram Increase Expenditure

The process starts from the treasurer selecting the add expenditure menu then the system displays the add expenditure page, then the treasurer adds expenditure data then the system will validate the data, if the expenditure data is still incorrect, the system will again display the increase expenditure page and the treasurer re-enters the missing data. If the data is complete, the system will save it to the *database*, then the system will return to display the input data page then exit the system.

3.1.3.7. Activity Diagram Edit Expense

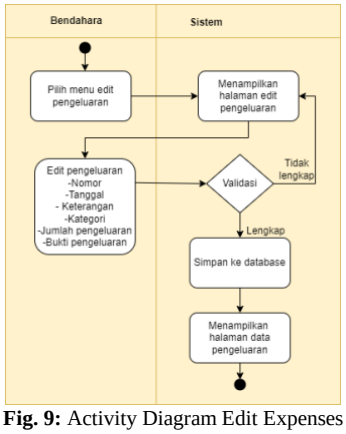

Fig. 9: Activity Diagram Edit Expenses

The process starts from the treasurer selecting the edit expenditure menu then the system displays the edit expenditure page, then the treasurer makes changes to the data then the system will validate the data, if the editing data is not complete, the system will again display the edit expenditure page and the treasurer re-enters the data that has not changed. If the data is correct, the system saves it to the *database*, then the system returns to display the edited data page then exits the system.

3.1.3.8. Activity Diagram Delete Expenses

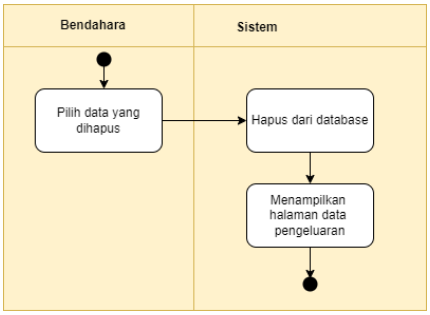

Fig. 10: Activity Diagram Delete Expenses

Starting from the treasurer who will select the deleted data and then the system deletes it from *the database*, then displays the expense data page.

3.1.3.9. Activity Diagram View Expenses

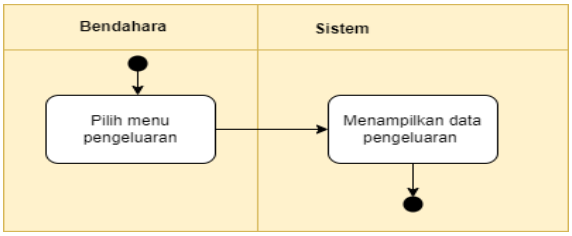

Fig. 11: Activity Diagram View Expenses

In the process, the admin selects the expense menu and then it will display the expenditure data.

3.1.3.10. Activity of Financial Statement Diagram

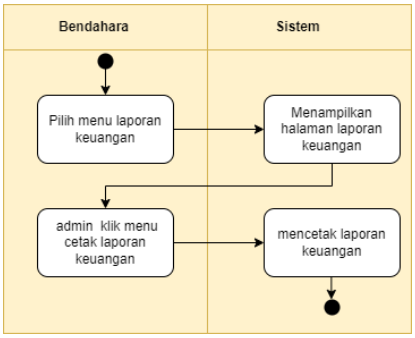

Fig. 12: Activity of Financial Statement Diagram

The process is that the treasurer selects the financial report menu then the system displays the financial report page if you want to print it, then the treasurer selects the report print menu then the system prints the report.

3.1.3.11. Activity Diagram Logout

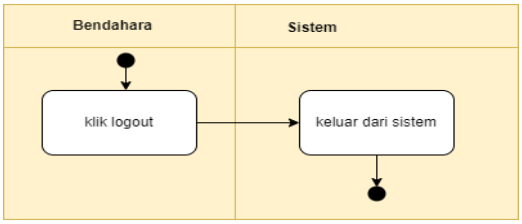

Fig. 13: Activity Diagram Logout

The process is that the admin is already in the system if you want to log out, then the admin clicks *logout*, then logs out of the system.

3.1.4. Class Diagram

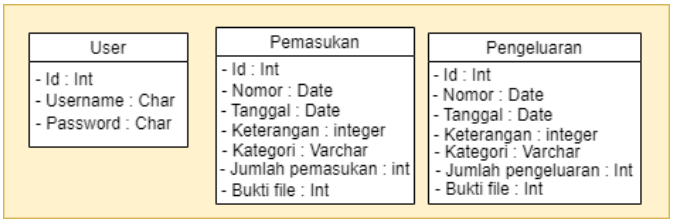

Fig. 14: Class Diagram

The class diagram below consists of three classes, namely users, income and expenses. In the user class there are id, username, and password attributes, then in the church income class there are attributes of id, number, date, description, category, amount of income, and proof of file/note, then for the expenditure of the attributes are the same as income.

3.2. Implementation

3.2.1. Login Page

Fig. 15: Login Page

Login page, which serves as an administrative login page where administrators need to log in by entering their username and password. If the login is successful, a message confirming the successful login will appear. Then you can click ok to proceed to the website page. However, if the login fails, an error message will appear indicating a failed login. In such cases, you will have to go back to the starting state by providing the username and password again.

3.2.2. Dashboard Page

Fig. 16: Dashboard Page

The image above is the main page view that can display the total financial income and expenditure data or the remaining financial balance of the church and there is a graph to find out whether the financial statements are decreasing or increasing.

3.2.3. Revenue Data Page

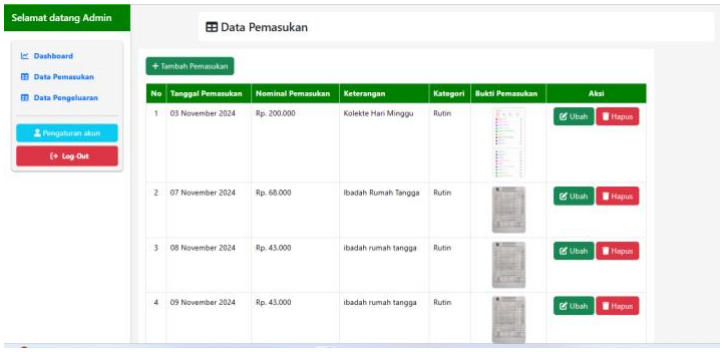

Fig. 17: Revenue Data Page

The image above is the interface of the church's financial income data page where *the admin* can see the details of the income in the form of a table and *the admin* can add income data by clicking add income data

3.2.4. Expense Data Page

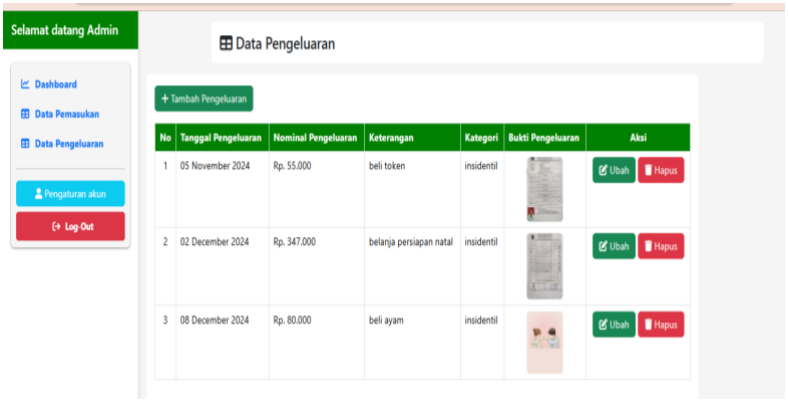

Fig. 18: Expense Data Page

On the following page is the appearance of the income edit page and there is a welcome admin letter, *dashboard menu*, income and expense data menu. There are numbers along with columns, dates of expenditure, descriptions, categories, photo evidence of expenditures and actions where the place changes and deletes the data.

3.2.5. Financial Report Page

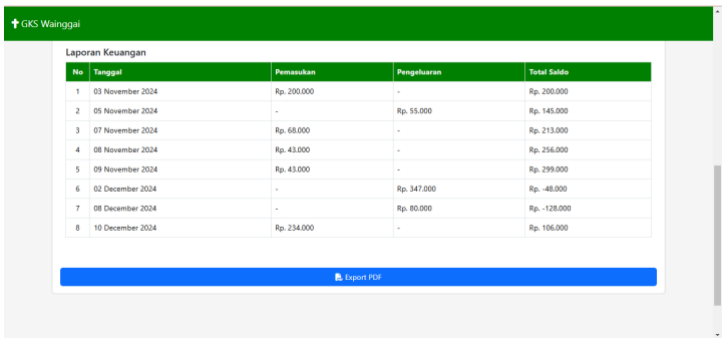

Fig. 19: Financial Report Page

On the page below there is the writing GKS Wainggai in the upper left, below it there is the next financial information of the church in the income and expenditure report, date, income and expenses, and total balance. And at the very bottom there is a PDF export menu.

3.3. Testing

3.3.1. Black Box Testing

The following is a *black box testing test* table with test results on GKS of the Wainggai Congregation.

Table 1: Black Box Testing

Function	Procedure	Scenario	Conclusion
Login	Successfully log in by entering your email and password	Can display the login page correctly and successfully log in if entering the appropriate email and password	Succeed
Dashboard Page	Displaying the start page successfully	Can display the dashboard page correctly and is running as expected	Succeed
Revenue Data Page	Successfully display your earnings data page	Can display the income data page as expected	Succeed
Add Income Data Page	Displaying the Add Earnings page correctly	Can display the page to add income data as expected	Succeed
Edit Earnings Page	Display the earnings edit page correctly	Can display the income edit page as expected	Succeed
Expense data page	Display expense data pages correctly	Can display the expense data page as expected	Succeed
Add Expense Data Page	Displays the Add Expense Data page correctly	Can display the page to add expense data as expected	Succeed
Edit Expense Data Page	View the edit expense data page	Can display the expense edit page as expected	Succeed
Change Settings Page	View the account change settings page	Can display the account change form page as expected	Succeed
Logout Page	Displaying the logout page successfully	Can display the logout page correctly	Succeed

Black box testing is carried out to be able to know every menu and button in the system can be used or run as desired or not, therefore from each testing process carried out on the financial recording information system, conclusions are obtained from each stage of testing. Thus, the financial recording information system can run as expected.

3.3.2. SUS Testing

In the next test using SUS which is a direct test by the end user of the system. The following are the results of the SUS test obtained from 1 respondent who is in charge of managing church finances, namely the treasurer, 2 assembly members and 7 congregational members.

Table 2: SUS Testing

No.	Question	Strongly disagree	Disagree	Nervous	Agree	Strongly agree
1	I feel this system is very easy to learn	1	2	3	4	5
2	I feel this system needs significant improvement	1	2	3	4	5
3	I feel that this system is very consistent	1	2	3	4	5
4	I feel this system is quite complicated to use	1	2	3	4	5
5	I am very confident in using this system	1	2	3	4	5
6	I need technical assistance to be able to use this system	1	2	3	4	5
7	I feel like the system is very quickly mastered	1	2	3	4	5
8	I feel this system is sulig to use	1	2	3	4	5
9	I feel comfortable using this system	1	2	3	4	5
10	The system is a little confusing	1	2	3	4	5

From the value provided by the user, the SUS score is calculated with the following rules:

1. For each question with an odd number, the score obtained from the user will be subtracted by 1.
2. For each question with an even number, the final score is obtained by subtracting the value of 5 by the score given by the user.
3. The SUS score is calculated by summing the scores of each question, then the result is multiplied by 2.5.
4.

Table 3: Sus Score

Respond	Statement										Jml	JML x 2.5
	1	2	3	4	5	6	7	8	9	10		
1	4	3	4	4	3	3	4	3	3	4	35	87,5
2	4	4	3	3	3	3	3	4	4	3	34	85
3	3	3	4	2	4	2	4	3	4	2	31	77,5
4	4	3	3	2	3	3	3	2	4	3	30	75
5	4	2	3	2	3	3	4	3	3	3	30	75
6	3	3	3	3	4	3	4	2	4	3	32	80
7	4	2	3	3	3	2	3	2	3	3	28	70
8	3	2	4	2	4	3	4	2	3	2	29	72,5
9	3	3	4	3	4	2	3	2	4	3	31	77,5
10	4	2	4	3	3	3	4	3	4	2	32	80

1. Sum of all SUS scores:
   87.5 + 85 + 77.5 + 75 + 75 + 80 + 70 + 72.5 + 77.5 + 80 = 780
2. Calculate the average SUS:
   Rat-rat SUS = = $78\frac{780}{10}$

The average SUS score of 10 respondents was 78.

After obtaining the final results of the respondents' assessment, the grade of the assessment results in *virtual reality is determined*. *The grade scale* is determined according to the average score obtained from the results of the calculation *of the usability scale score system*, with the scale used being *grade* A with a score between 90-100, *grade* B with a score of 80-90, *grade* C with a score of 70-80, *grade* D with a score of 60-70, and *grade* E with a score of

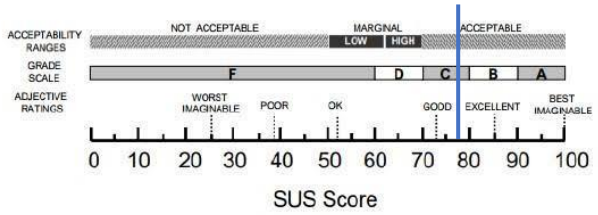

Fig. 20: SUS Score

The average value obtained from the built church financial system is 78%, thus the financial system gets a grade C when viewed from the standard *grade scale* in the SUS method and *the adjective ratings* are included in the *Good category*.

4. Conclusion

After the analysis, design, manufacture, and testing of the church's financial recording implementation system, it can be concluded that the financial recording system at GKS Wainggai Jamaat has been developed. The results of testing using *the blackbox* method show that this system can run according to its function without any *errors*.

Meanwhile, from the results of the SUS test that has been carried out from the level of user satisfaction with the church's financial recording information system, the assessment given to 1o respondents resulted in a score of 78%. With *acceptability ranges* "*Acceptable*" and "High" ranges. The scale of grades is in the category of class "C". and on the "Good" *Adjective ratings* model. These results show that the financial recording information system can be accepted by its users.

REFERENCES

[1] Agoestina, E. (2022). The church as a center of Christian education. *Kaluteros Journal of Christian Theology and Religious Education*, *4*(1), 1-17.

[2] Anggriani, F., Latief, M., & Takdir, R. (2022). *Designing a Financial Management Information System Case Study in the Canaan Suwawa Church*. *Journal of System and Information Technology 2*(1), 97–106.

[3] Asmarajaya, I. K. A., Sanjaya, K. O., Putra, D. M. D. U., Mahendra, G. S., & Hasanah, F. N. U. (2021). Financial Information System in Elite Boarding Companies with the Waterfall Method. *Swabumi (Voice: Suarai Wawasan Sukabumi): Computer Science, Management, and Society*, *9*(2), 107-116.

[4] Febrianto, A., Achmadi, S., & Sasmito, A. P. (2021). Application of the K-Means Method for Clustering Visitors to the Itn Malang Library. *Journal of Informatics Engineering Students*, *5*(1), 61-70.

[5] Febriyanti, N. M. D., Sudana, A. K. O., & Piarsa, I. N. (2021). Implementation of Black Box Testing in the Lecturer Management Information System. *Scientific Journal of Technology and Computers*, *2*(3), 535-544.

[6] Husain, F. A., Latief, M., & Takdir, R. (2022). Designing a Financial Management Information System Case Study in the Canaan Suwawa Church. *Diffusion: Journal of Systems and Information Technology*, *2*(1), 97-106.

[7] Joshua, S. R., Akay, Y. V., Palilingan, K. Y. R., Kainde, H. V. F., Mapaly, H. A., & Lengkong, S. P. (2022). Pelatihan Penggunaan Sistem Informasi Keuangan Berbasis Web di GMIM Imanuel Walian Kota Tomohon: Training on the Use of Web-Based Financial Information Systems at GMIM Imanuel Walian Tomohon. *Journal of Community Service Sisthana*, *4*(1), 30-36.

[8] Juliany, I. K., Salamuddin, M., & Dewi, Y. K. (2018). Design of a Web-Based Waste Bank E-Marketplace Information System. *National Seminar on Information and Multimedia Technology 2018*, 19–24.

[9] Mubarak, A. (2019). Design and build school web applications using UML (Unified Modeling Language) and Php (Php Hypertext Preprocessor) object-oriented programming language. *JIKO (Journal of Informatics and Computers)*, *2*(1), 19-25.

[10] Ngawu, Y. A., Rada, Y., & Sitaniapessi, D. A. (2024). Financial Recording Application at GKS Pahomba Jamaat is Website-based. *Journal of Technology and Information Systems Management (JMS)*, *4*(2), 712-722.

[11] Nopriandi, H. (2018). Design of student registration information system. *Journal of Technology and Open Source*, *1*(1), 73-79.

[12] Pah, M. U. (2016). *Designing a web-based church information system using the codeigniter framework: Case Study of the Church of the Messengers of Pentecosta Kartasura* (Doctoral dissertation, Informatics Engineering Study Program FTI-UKSW).

[13] Palit, R. V., Rindengan, Y. D., & Lumenta, A. S. (2015). Design of Web-Based Church Financial Information System at GMIM Bukit Moria Malalayang Congregation. *Journal of Electrical and Computer Engineering*, *4*(7), 1-7.

[14] Putra, D. W. T., & Andriani, R. (2019). Unified modelling language (uml) in the design of the sppd restitution payment application information system. *Journal of Informatics Engineering Technographic Engineering, Padang Institute of Technology*, *7*(1), 32-39.

[15] Ngawu, Y. A., Rada, Y., & Sitaniapessi, D. A. (2024). Financial Recording Application at GKS Pahomba Jamaat is Website-based. *Journal of Technology and Information Systems Management (JMS)*, *4*(2), 712-722.

[16] Rozi, M. F. (2024). *Religious Life Harmony Movement Through the Christian Oikumene Fellowship (POUK) in Jagakarsa District, South Jakarta*. Journal of the Oikumene Movement and Harmony of Life Between Religious Communities, 16(5), 43-46.

[17] Rozana, L., & Musfikar, R. (2020). Analysis and Design of a Web-Based Letter Archiving Information System at the Dayah Tuha Village Village Office. *Cyberspace: Journal of Information Technology Education*, *4*(1), 14-20.

[18] Saputra, A. (2019). *Usability Implementation in PENTAS Application Using the System Usability Scale (SUS) Method). 1*(3), 206–212.

[19] Silalahi, F. D. (2022). MySQL (Structured Query Language) database management. *Publisher of Yayasan Prima Agus Teknik*, 1-158.

[20] Sumiati, Mia, Rahman Abdillah, and Alqomari Cahyo. "UML Modeling for Party Equipment Rental Information System." *Journal of Fasilkom* 11.2 (2021): 79-86.

[21] Sutabri, T. (2012). Information System Concept. *UPI Journal of Educational Administration*, *3*(1), 248.

[22] Tamuntuan, T. V., Mongi, C. E., & Hatidja, D. (2022). Design of Web-Based Financial Information System for Public Service and Church Building (CASE STUDY: GMIM EFRATA RAP-RAP).

[23] Toar, E., Maris, I., Nintias, A., & Bawole, C. (2020). Web-Based Financial Information System at PT PLN UP3 Kotamobagu. In JOINTER: JOURNAL OF INFORMATICS ENGINEERING (Vol. 01, Issue 02).

[24] Ulfa, R. (2021). Measuring user satisfaction of the counseling guidance information system (e-bk) using the usability scale (sus) system at SMK Negeri 1 Banda Aceh (Doctoral dissertation, UIN Ar-raniry).