Development of LYDO Scholarship Management System

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Abstract—The LYDO Scholarship Management System was developed to address the slow, and unorganized processing of scholarship applications, which often caused delays, missed updates, and difficulty in managing records. The main objective of the project was to create a digital system that makes the entire scholarship process easier, faster, and more organized for both staff and applicants. The group developed a web-based and mobile-based system using the Waterfall Model. The system was built using Laravel for the backend, React.js for the web interface, Flutter for the mobile app, and MySQL for the database.

The system includes key features such as organized record storage, submit online application, scholar announcements and notification for applicants. Testing results showed that the system works correctly and follows the requirements. It improved accuracy, processing time of application, and organized storage of scholarship records. The SUS evaluation showed a good usability score, which users found the system helpful, although some applicants experienced confusion during first use and slow loading due to weak internet.

The system proved effective in addressing the main problems in the scholarship process. It reduced staff workload, prevented missed updates, and made records easier to manage. Future improvements may include real-time alerts and added messaging features.

Keywords—Scholarship System, Waterfall Model, Notifications, Web, Mobile Based

I. INTRODUCTION

Information Technology (IT) plays an important role in solving real-world problems by making tasks easier, organizing data, and improving work efficiency. This is especially important in scholarship programs that support students financially and help them continue their education. The Local Youth Development Office (LYDO) of Tagoloan, Misamis Oriental manages scholarship grants for local students under the Municipal Social Welfare and Development (MSWD). However, LYDO still uses manual processing for applications and managing records. This situation reflects common challenges in scholarship management, such as delays, poor record organization, and security risks, making LYDO an appropriate setting for this study.

II. PROBLEM STATEMENT

The LYDO scholarship program faced several problems due to its manual process. These included slow application reviews, difficulty in retrieving and managing records, delayed updates on application status, and a high risk of data loss or unauthorized access. Administrators experienced heavy workloads and delays when reviewing applications and updating records, while students had difficulty tracking their application status, leading to missed deadlines and incomplete requirements. These issues affected the efficiency, accuracy, and security of the scholarship process, showing the need for an improved system.

To address these problems, the LYDO Scholarship Management System was proposed to digitize the existing manual process. The system aimed to improve application review, approval, and monitoring by making the process faster and more organized. Administrators were expected to benefit from reduced workload, faster processing, and accurate record management, while students were expected to have an easier application process and timely status updates. The system planned to use secure technologies such as authentication, encryption, cloud computing, and a centralized database to protect student information and prevent data loss. The proposed system was intended to improve efficiency, security, and accessibility in managing the LYDO scholarship program.

III. OBJECTIVES OF THE STUDY

The primary objective of this study was to design and build a LYDO Scholarship Management System that improved the application process, protected scholar records, and enhanced notifications. The system helped digitize tasks while still allowing processes such as interviews and receiving hard copy requirements. Specifically, the study aimed:
- To digitize data input and validation processes during application submissions.
- To provide a centralized database for storing and managing scholar records.

- To allow administrators to send announcements within the system.
- To notify applicants about their application status.
- To notify scholars about important updates and deadlines.
- To implement measures that protected scholarship records such as using strong passwords, limiting access only to authorized staff and securing the system from unauthorized users while allowing authorized personnel to manage and update Information.
- To design a user-friendly and mobile responsive interface for both web and mobile apps.
- To generate a payroll report that tracks scholarship fund disbursement.
- To track scholars who received the disbursement.

IV.   REVIEW OF RELATED WORKS

Several local and foreign studies have explored the development of scholarship management systems to improve application processing, record management, and administrative efficiency. Studies by Rivera and Lagarteja (2021), Alvaro and Gabayan (2021), and Fajardo et al. (2024) focused on web-based scholarship systems using technologies such as PHP, MySQL, HTML, CSS, and JavaScript. These systems helped organize large amounts of data and automate application reviews however, most lacked mobile integration and real-time communication features. Students and administrators still experienced delays in receiving updates and notifications.

Other studies, such as Orgianus et al. (2022), highlighted challenges related to system performance and the absence of real-time updates, which affected user engagement. Some researchers, including Komsari and Airlangga (2021) and Herdiansah (2023), applied advanced methodologies like machine learning and decision trees to improve decision-making and optimization in scholarship systems. While these approaches enhanced administrative efficiency, they focused less on user accessibility and direct application submission. These related works revealed gaps in mobile accessibility, real-time notifications, and user-centered features, which guided the design of the proposed LYDO Scholarship Management System to be more secure, accessible, and responsive to users' needs.

V.   METHODOLOGY

The study used the Waterfall methodology as the system design approach for developing the LYDO Scholarship Management System. This model followed a linear and structured process where each phase had to be completed before moving to the next. The design phase transformed the gathered requirements into a clear technical blueprint using Use Case Diagrams, Entity-Relationship Diagrams (ERD), Data Flow Diagrams, and User Interface (UI) layouts. These designs guided the development of both the web-based system and the mobile application, ensuring that all system functions, data flow, and user interactions were clearly defined and organized.
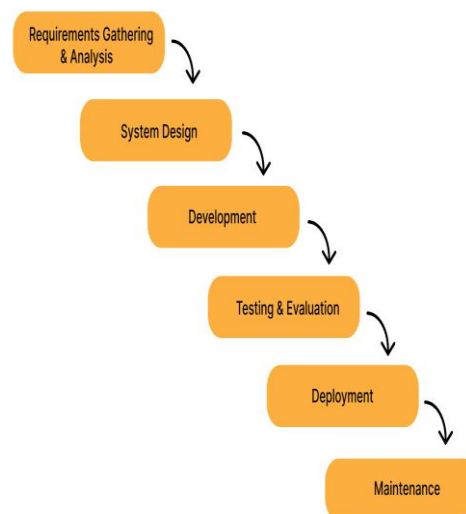

Fig 1.0 Waterfall Methodology (Rawi and Ghani, 2023)

Different tools were used to help in designing and developing the system. Google Docs was used for writing and collaborating on system requirements and documentation. Lucidchart was utilized to create Use Case Diagrams, while MySQL Workbench was used for designing the Entity-Relationship Diagrams (ERD). Figma was employed to design the user interface layouts and prototypes for both web and mobile platforms. Visual Studio Code (VS Code) served as the main development environment, supporting PHP, JavaScript, and Dart for full-stack and mobile development.

The LYDO Scholarship Management System was developed using modern web and mobile technologies. Laravel, a PHP framework, was used for backend development to handle system logic, user authentication, data processing, and security. React.js was used for building a dynamic and interactive web frontend, while Flutter was used to develop the mobile application for both Android. MySQL served as the database management system for storing scholarship records and user data. XAMPP was used for local testing, and cloud computing was used for hosting, secure storage, and backup of system data.

The system was implemented based on the approved design and development plans. The backend exposed RESTful APIs that connected the web and mobile applications, allowing data access and updates. Key features such as online application submission, document uploads, application review, record management, and report generation were integrated into the system. Email and SMS notifications were implemented to provide timely updates to students and administrators regarding application status and important announcements. The final output of the implementation phase was a fully functional web-based admin system and a mobile application that improved efficiency, security, and accessibility in managing the LYDO scholarship program.

VI.   RESULTS & DISCUSSIONS

The results showed that the LYDO Scholarship Management System performed well in supporting scholarship processes. Users were able to complete tasks such as application submission, record management, and status checking faster compared to the manual system. The system responded properly during testing, and users found it easy to navigate and understand. The use of a digital platform reduced delays, improved data organization, and helped administrators manage applications more efficiently.

When compared to the previous manual process, the system showed clear improvements. The manual method required more time, effort, and paper-based records, which often caused delays and errors. Meanwhile, the developed system allowed faster processing, easier record retrieval, and timely updates for students. Compared with related systems discussed in the study, the LYDO system also included added features such as notifications and mobile access, which were not present in some earlier systems

Fig 1.0 High Fidelity User Interface for Web Mayor Staff Pending Review Applicants Application

Figure 1.0 shows the Pending Review Applicants Interface for Mayor Staff. The page displays a filter option at the top, allowing staff to select categories, and two tabs for switching between Pending Review and Reviewed Applications. The main content area lists applicants whose submissions are waiting for review. If no applications are found, the system displays a blank list. Staff can return to the dashboard or proceed to review once applications appear in the list.

Fig. 2.0 High Fidelity User Interface for Web Lydo Admin Scholar List

Figure 2.0 shows the Scholar List Reports Interface of the system. It presents detailed reports of scholarship recipients, including their name, school, barangay, year level, and status. The purpose is to provide an organized report for record-keeping and monitoring. Filtering options enable administrators to generate customized reports based on academic year, program or campaign.
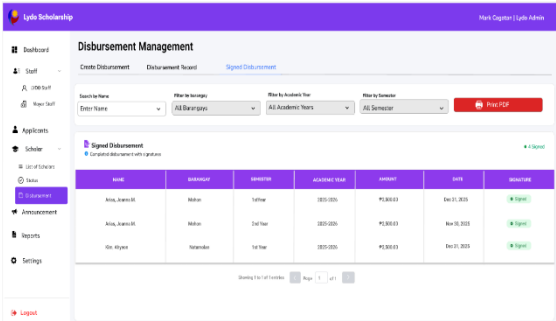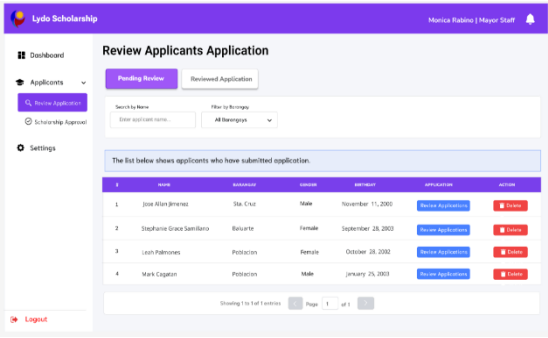

Fig 3.0 High Fidelity User Interface for Web Lydo Admin Disbursement Records.

Figure 3.0 shows the Disbursement Records Interface of the system. It displays a list of past financial transactions, including scholar name, academic year, semester, amount, and release date. It allows administrators to review and track scholarship fund distribution. Search and filtering options enhance record retrieval, while the sidebar ensures easy access.

The system successfully addressed the problems identified in the earlier chapters. The positive results proved that digitizing the scholarship process helped reduce workload, minimize errors, and improve communication between students and administrators. User feedback indicated good acceptance of the system, showing that it met user needs and expectations. Overall, the analysis confirmed that the LYDO Scholarship Management System was effective, useful, and suitable for improving scholarship management operations.
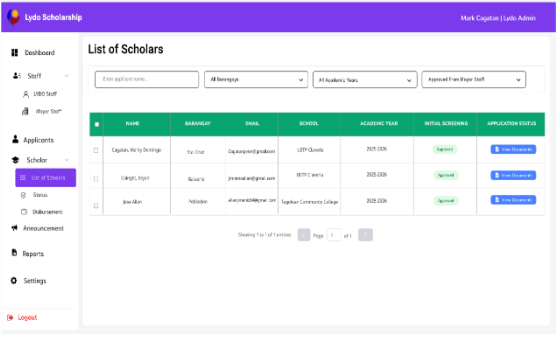
	System Usability Scale (SUS)	P1	P2	P3	P4	P5	P6	P7	P8	Total
1.	I would like to use this application frequently.	3	4	4	4	0	3	3	0	
2.	I found some parts of the application confusing.	2	4	2	1	4	1	3	3	
3.	The application is simple and easy to use.	3	4	4	4	3	3	1	0	
4.	I think I would need help from others to use it.	3	3	2	1	3	1	3	3	
5.	The features of the application work smoothly together.	2	4	4	3	3	2	3	4	
6.	Some functions feel unclear or hard to understand.	4	4	3	3	2	2	3	3	
7.	Most people could learn to use the application quickly	4	4	4	4	4	2	1	4	
8.	Using the application can be frustrating at times.	4	3	3	3	2	3	3	3	
9.	I feel comfortable and confident using the application.	2	4	4	4	4	3	3	4	582.5
10.	Certain features are difficult to figure out.	4	3	3	3	2	2	3	3	
Total:		77.5	92.5	82.5	75	67.5	55	65	67.5	
Average SUS Score:		72.81								

Table 1.0 Final SUS Score Computation

The final SUS scores of the participants show that the LYDO Scholarship Management System has an average usability score of **72.81**, which indicates good overall usability. Staff members, including the mayor's staff secretary (P1), LYDO staff (P2 and P3), and the LYDO administrator (P4), gave higher scores because the system helped them perform approval, screening, and management tasks more easily. These participants are mostly in the **24 to 26 age range**, who are more experienced in administrative tasks. Applicants (P5 and P6) and scholars (P7 and P8), who are mostly in the **20 to 21 age range** gave lower scores, reflecting initial difficulties in navigating the system, especially during their first use. This score suggests that those less familiar with digital platforms, may need guidance at the beginning.

The SUS results show what can be improved in the system and how to make it easier for users, while high scores from staff indicate that core functions such as approval, record management, and notifications are working well. Lower scores from applicants and scholars highlight areas that need attention, such as clearer navigation, faster page loading, and step by step guidance for first-time users. Addressing these issues can make the system easier for all users, reduce frustration, and encourage regular use, which is essential for managing scholarship applications efficiently.

During the SUS activity, several positive and negative insights were observed. Positively, staff and applicants managed to complete tasks correctly despite their confusion, and the system showed fast processing and proper handling of records under stable internet conditions. Negative insights included difficulties for applicants during first-time use, slow page loading on weak internet, and delayed notifications. No participant was completely unable to proceed with a task due to confusion but some participants asked for assistance to continue their tasks. LYDO Staff asked for help while filling in the Intake Sheet, as they were unsure about entering applicant's information. Applicants and scholars also asked for guidance on what to do next because the pages loaded slowly due to weak internet. These issues are manageable through system updates, better internet support, and short user training sessions. Overall, the system successfully solved the major problems such as slow manual application processing, heavy administrative workload, and scattered student records, proving its value for both staff and scholarship applicants.

VII.   CONCLUSION & FUTURE WORK

Conclusions

The findings of the study show that most of the objectives of the LYDO Scholarship Management System were met, especially the goal of providing proper and organized storage of scholarship applications and records. The system was able to digitize data entry, keep all scholar information in one secure database, send announcements, and notify scholars for updates. This organized storage helped staff easily manage, locate, and process applications without relying on scattered or manual records, making their workflow faster and easier.

The results of the implementation give important insights, showing that proper digital storage reduced the workload of staff by removing the need to manually search through multiple folders and helping the organization manage scholarship records in a faster and more organized way. It prevents missed updates for scholars because all information is now in one place and easy to access. This improvement solves the organization's IT problems by making the scholarship process faster, more correct, and easier to manage. The system shows that simple digital tools can make work better and save time for both staff and applicants.

Despite these advantages, limitations such as poor internet connection and the need for user familiarity affected the implementation and outcomes of the project. Some users experienced slow loading and confusion, which made certain functions harder to access. From these results, users learned the importance of adapting to digital systems, developers learned which features need improvement, and stakeholders recognized that digital transformation is beneficial but requires proper support, training, and continuous updates. The system improved the scholarship management process and established a strong foundation for future enhancements.

Future Work

1. **System Deployment** – Future researchers should ensure that the system is properly deployed and fully utilized by both staff and applicants. This includes testing deployment processes, preparing user instructions, and checking if the deployed system continues to reduce manual workload and improve record management.
2. **Stakeholder Actions** – Future researchers should consider how users learn the system. They should explore ways to strengthen communication between users and developers, provide clearer instructions, and maintain regular monitoring of system performance. Understanding user behavior and challenges is important for improving future versions.
3. **Enhanced Features** – Future researchers may include advanced features such as real-time notifications and mobile alerts that work even when the app is closed. These features can make announcements faster and reduce missed updates. Researchers should test how these improvements affect user experience.
4. **Performance and Technical Improvements** – Future researchers should focus on solving issues like slow loading during weak internet connection and UI concerns. Improving speed, responsiveness, and interface design should be a priority so users can complete tasks smoothly.
5. **New Features** – Adding a built-in chat or messaging tool is recommended for future versions. Researchers should explore how direct communication inside the system can help staff and applicants resolve concerns faster without using external platforms.

6. **Integration and Expansion** – Future researchers should consider adding a secure backup system to prevent data loss. They should also explore more export options like Excel, not only PDF, to allow flexible reporting. These features can help researchers improve data safety and usability.

7. **Training Actions** – Future researchers should include user training strategies such as guide manuals, tutorials, and live demonstrations. They must consider how training materials can reduce confusion and help users adapt to the system more easily. Evaluating training effectiveness can also be a good area for future study.

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