



CSLDrive: A Web-Based Management Information System for the Center of Student Leadership and Development (CSLD) Student Unit at Urdaneta City University

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Abstract – This study presents CSLDrive, a web-based Management Information System developed for the Center of Student Leadership and Development (CSLD) Student Unit at Urdaneta City University. The study addresses the inefficiencies of manual processes in handling student organization documents, approval workflows, event management, participation monitoring, and report generation. Existing practices often result in delays, misplaced records, incomplete participation tracking, and limited accessibility of organizational data. To address these challenges, the researchers designed and developed a centralized digital platform that streamlines administrative operations and improves transparency and accessibility. The study employed a descriptive-developmental research design to assess the existing processes of the CSLD Student Unit and to guide the design, development, and evaluation of the proposed system. The system was implemented with key modules including document management with access permissions, document submission and approval workflows, event management with QR-based attendance tracking, feedback collection, analytics and report generation, and Progressive Web Application (PWA) support for improved accessibility across devices. The Progressive Web Application feature enabled users to access the system through mobile and desktop devices with faster loading performance, responsive design, and application-like usability. The system was evaluated by selected respondents composed of CSLD personnel, advisers, officers, and students to determine its usability, functionality, and effectiveness. Results of the evaluation revealed that CSLDrive was rated highly acceptable in terms of usability, functionality, efficiency, and security. Respondents agreed that the system significantly improved the speed and accuracy of document processing, enhanced transparency in approval workflows, and strengthened the monitoring of student participation in events. The centralized document repository, event management module, and Progressive Web Application functionality were identified as key features that contributed to operational efficiency, accessibility, and reduced manual workload.

Keywords – Document management system, Management information system, role-based access control, Progressive web application, QR-based attendance tracking.

INTRODUCTION

Across higher education institutions, administrative units responsible for managing student organizations continue to face persistent challenges related to fragmented record-keeping, manual approval workflows, and heavy reliance on paper-based documentation. These conventional practices are widely associated with operational inefficiencies, such as delayed processing of requests, difficulties in tracking requirements, and limited accessibility of organizational data, all of which collectively weaken workflow

efficiency and institutional transparency (Fatajo & Sa'ad, 2026; Parchment Staff, 2024).

In response to these challenges, empirical studies have consistently highlighted that the adoption of integrated digital platforms can significantly enhance administrative performance by centralizing data storage, automating approval processes, and improving information accessibility (Obasi, 2026; Susanto et al., 2023). Building on this perspective, Management Information Systems (MIS) have been recognized as



effective tools for strengthening institutional coordination and decision-making through structured data management and streamlined workflow integration. Supporting this, Hamdat et al. (2024) emphasized that organizations that implement MIS in their operations tend to experience improved decision accuracy and greater organizational responsiveness.

The necessity of such digital transformation becomes more pronounced in the context of student engagement and leadership development, where the timeliness, accuracy, and reliability of information significantly influence program implementation and student participation outcomes. The implementation of digital event management systems significantly enhances operational efficiency and data integration in student organizations (Gumilar et al., 2025). Furthermore, Abello et al. (2026) stated that such platforms enhance coordination, accessibility, and administrative efficiency by providing a unified digital environment for managing institutional activities. This highlights the importance of adopting centralized web-based solutions as part of broader digital transformation efforts in education, particularly in improving organizational efficiency and supporting data-driven decision-making.

Recent advancements in web technologies have further expanded the capabilities of information systems through the integration of Progressive Web Applications (PWA). As emphasized by Thomas and Rajesh Kumar (2024), PWAs introduce significant improvements in accessibility, performance, and engagement by eliminating the need for separate platform-specific development and enabling seamless access through web browsers. This approach ensures seamless access across devices, improved loading performance, and an application-like user experience without requiring traditional installation processes.

At the Center of Student Leadership and Development (CSLD) at Urdaneta City University, where event coordination, document handling, and participation tracking are still largely managed through

disconnected and semi-manual processes. Consequently, issues such as record loss, processing delays, and limited data visibility continue to hinder effective organizational management. Viewed in relation to the broader institutional challenges previously established, these localized inefficiencies underscore the need for a purpose-built Management Information System, not merely as an enhancement, but as a necessary intervention to modernize administrative processes and strengthen the management of student leadership activities.

The integration of PWA technology is therefore relevant in addressing accessibility concerns in institutional systems such as CSLDrive, where users require flexible and reliable access to services across varying devices and network conditions.

The system, CSLDrive, is a web-based Management Information System designed to address these challenges by integrating key administrative processes into a single platform. The system incorporates Role-Based Access Control (RBAC), which ensures that users such as administrators, staff, advisers, officers, and students are granted appropriate levels of access based on their responsibilities. RBAC is a widely recognized security model in information systems that restricts system access to authorized users, thereby enhancing data security and operational control (Lindemulder & Kosinski, n.d.).

The development of CSLDrive is guided by a descriptive-developmental research design, which involves the systematic analysis of existing processes, system design and development, and evaluation of the implemented system based on user experience and system performance. This approach is appropriate for studies that aim not only to describe current conditions but also to design and produce a functional system as a direct response to identified problems.

This study is significant as it aims to improve document management, streamline approval workflows, enhance event monitoring through participant



attendance tracking, and strengthen feedback collection and reporting mechanisms within the CSLD Student Unit. The potential outcomes of this study include improved efficiency in administrative tasks, increased accuracy in student participation records, and enhanced transparency in organizational processes. Furthermore, the system is expected to promote better decision-making through real-time analytics and reporting features.

OBJECTIVES OF THE STUDY

The primary objective of this study is to design, develop, and evaluate CSLDrive, a web-based Management Information System (MIS) for the Center of Student Leadership and Development (CSLD) Student Unit at Urdaneta City University.

Specifically, the study aims to (1) identify and analyze the current processes of the CSLD Student Unit in terms of document management, submission and approval of requests, event management and feedback collection, and report generation; (2) determine the functional and non-functional requirements necessary for the development of the proposed system based on the identified processes and user needs; (3) design and develop CSLDrive as a centralized web-based MIS integrating role-based access control, document repository and workflow management, event monitoring with QR code-based attendance, feedback collection, and analytics and reporting features; and (4) evaluate the developed system in terms of usability, functionality, efficiency, and security based on user assessment and system testing results.

MATERIALS AND METHODS

This section outlines the research design, development methodology, system implementation, data collection procedures, target respondents, research instruments, and techniques employed for the development and evaluation of CSLDrive.

Research Design

This study employed a descriptive-developmental research design. Descriptive research

was used to analyze and document the existing processes of the Center of Student Leadership and Development (CSLD) Student Unit, while developmental research focused on the design, creation, and improvement of the proposed system based on identified needs. According to Singh (2023) explains that descriptive research is a methodological approach used to observe and describe characteristics of a phenomenon without manipulating variables. On the other hand, Ibrahim (2016) explains that developmental research is a systematic study of designing, developing, and evaluating instructional programs, processes, and products. This combined approach was appropriate for developing CSLDrive as it allowed both problem analysis and system creation to be conducted in a structured manner.

Scope and Limitations of the Study

This study focused on the design, development, and evaluation of CSLDrive. The system integrates key features aimed at streamlining and automating core administrative and organizational processes.

Access to the system is managed through Role-Based Access Control (RBAC). Users are assigned specific permissions depending on their roles, such as administrators, staff, advisers, officers, and students. Officers can submit required documents electronically, while administrators and staff are responsible for reviewing, approving, or returning these submissions for revision. Events and organizational activities can be created, scheduled, and shared through the system. The system also processes data from events, attendance records, documents, and feedback to generate useful reports such as participation trends, attendance summaries, document processing status, and evaluation results. These outputs assist administrators and advisers in monitoring performance and supporting data-driven decision-making.

To enhance accessibility, the system is designed as a Progressive Web Application (PWA), allowing users to access it across different devices. Attendance during events is recorded automatically through QR code scanning, reducing manual errors and improving



accuracy. In addition, users can evaluate events through structured online feedback forms, enabling the system to gather and consolidate responses for future improvements.

The scope of the system is limited to the operations of the CSLD Student Unit and does not include other university departments such as academic records, finance, or human resources. It is intended for institutional use within the university and may require further customization for deployment in other organizations or external institutions.

Data Gathering Procedure

The data gathering process involved the examination of current CSLD Student Unit operations. The researchers conducted interview with relevant personnel to identify existing workflows, challenges, and system requirements. These interviews generated qualitative data, which were used to gain an in-depth understanding of the current processes.

In addition, quantitative data were collected during the user acceptability testing phase. Selected respondents evaluated the system using a structured Likert-scale questionnaire. This instrument measured user perceptions in terms of usability, functionality, efficiency, and security. The quantitative responses were then analyzed using weighted mean to determine the overall level of system acceptability. This combined use of qualitative and quantitative data ensured a comprehensive evaluation of both system requirements and performance outcomes.

Sampling Method and Respondent Distribution

The study utilized a stratified random sampling technique to ensure proportional representation of all key stakeholder groups involved in CSLD operations. The population was divided into five strata: students, student organization officers, advisers, CSLD staff, and the CSLD Student Unit Head. This method was chosen to ensure that each group was adequately represented in the evaluation of the system, considering their differing roles and interaction levels with CSLDrive.

The total population consisted of 13,149 students, 585 student organization officers, 39 advisers, 4 CSLD staff members, and 1 CSLD Student Unit Head, with an overall population size of 13,778. Using a standard Slovin's formula with a 0.05 margin of error, a sample size of 388 respondents was determined. The final sample was proportionally allocated across each stratum to reflect their population sizes.

System Development Methodology

The development of CSLDrive followed the Rapid Application Development (RAD) model of the Software Development Life Cycle (SDLC). RAD is an iterative and incremental development approach that emphasizes rapid prototyping, continuous user feedback, and quick refinement of system components (Khan, 2023). This methodology was chosen due to the evolving requirements of the CSLD Student Unit and the need for close user involvement during development. Through RAD, system modules were developed in iterative cycles, allowing stakeholders to evaluate early versions of the system and provide feedback for immediate improvements.

System Evaluation

System evaluation was conducted using a structured questionnaire distributed to selected respondents, including CSLD staff, advisers, officers, and students. The evaluation focused on assessing the system in terms of usability, functionality, efficiency, and security. Responses were measured using a Likert scale and analyzed using weighted mean to determine the overall acceptability and performance of the system. The results of the evaluation provided insights into the effectiveness of CSLDrive in improving administrative processes within the CSLD Student Unit.

RESULTS AND DISCUSSION

The CSLDrive system, a web-based Management Information System (MIS) developed for the Center of Student Leadership and Development (CSLD) Student Unit at Urdaneta City University, was successfully implemented using the Rapid Application

Development (RAD) model. The system integrated key modules including user management with Role-Based Access Control (RBAC), document management and access control, document submission and approval workflow, event management with QR code-based attendance tracking, feedback collection, and analytics and report generation. All modules were tested with representative users from administrators, staff, advisers, officers, and students, and no critical system failures were recorded during final testing.

Current Process of CSLD Student Unit

The analysis of existing processes revealed that the operations of document handling, event coordination, and participation tracking within the CSLD Student Unit were largely performed through manual and partially digitized procedures.

organizational requirements. These documents commonly include proposals, accomplishment reports, letters, attendance sheets, and other compliance-related files. Physical copies are stored in folders or filing cabinets, while digital files are saved in separate computers, flash drives, or cloud storage platforms. Due to the absence of a centralized document management system, retrieving records often requires manual searching and coordination with multiple personnel. In some instances, documents become misplaced due to inconsistent file management practices.

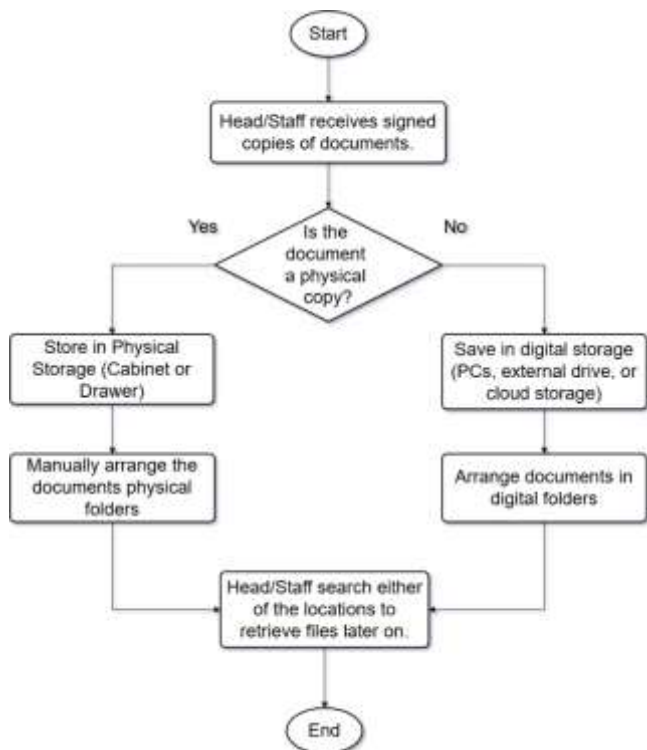


Figure 1. Document Management Process

Document management within the CSLD Student Unit is primarily conducted through manual and semi-digital procedures, where student organizations submit printed documents or basic digital copies of

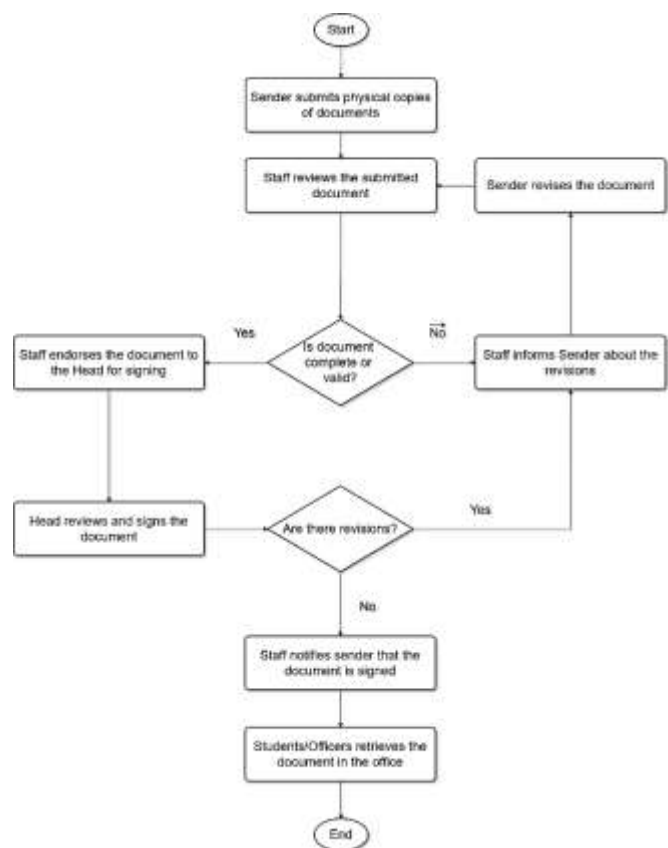


Figure 2. Document Submission and Approval Process

Requests are submitted in printed form and processed through a sequential manual approval workflow involving CSLD staff, and Student Unit Head. Student organization officers personally submit documents to the office. The process heavily depends on physical signatures, endorsements, and face-to-face coordination, which often causes delays when

signatories are unavailable or when documents are misplaced during routing. In addition, there is no centralized mechanism for monitoring the progress of submitted requests, making it difficult for officers to track the current status of their documents. As a result, follow-ups are commonly done through repeated office visits or informal communication, increasing both processing time and administrative workload.

Once finalized, event information is disseminated through multiple channels depending on availability. These include verbal announcements during meetings, postings on social media platforms, and distribution of printed notices to different colleges. While these methods allow broad dissemination, they often result in inconsistencies in information dissemination.

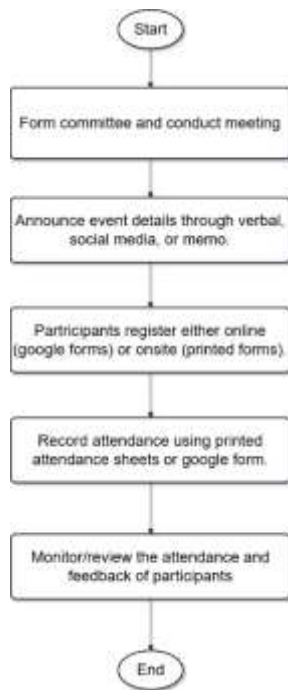


Figure 4. Event Management and Feedback Collection Process

Event management within the CSLD Student Unit is initiated through the formation of an event committee, which typically includes the CSLD Student Unit Head, staff members, student organization officers, and selected volunteers. The committee conducts a series of planning meetings to discuss essential event details such as objectives, schedules, venues, assigned responsibilities, logistics, and expected participant outcomes. Decisions are usually documented informally or through meeting minutes, with limited use of standardized digital planning tools.

During the actual event, attendance and participation are typically recorded manually using printed sheets or online forms. After the event, feedback collection is conducted using printed evaluation forms or online survey tools. These responses are gathered and then reviewed by the committee.

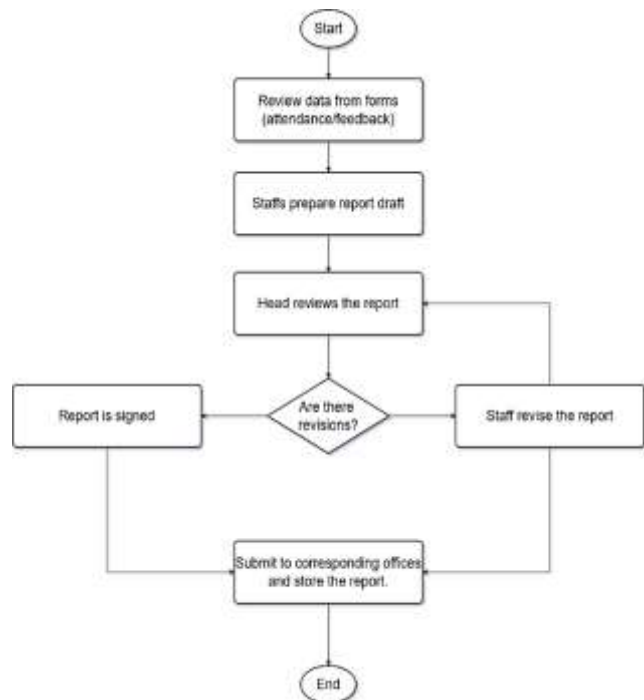


Figure 5. Report Generation Process

Reports are created by manually consolidating data from attendance sheets, documents, and feedback forms. This results in time-consuming preparation and delays in producing accurate and updated reports for evaluation and decision-making.

Based on the responses gathered, users commonly experienced challenges in retrieving records,



delays in processing and approving submitted documents, and inconsistencies in recording and validating attendance during events.

processes. The insights collected from stakeholders served as the basis for defining both functional and non-functional requirements of the system.

Table 1. Identified Problems in the Current Process

Identified Problem	Description
Manual Documentation	Reliance on printed forms and manual approvals
Delayed Approval	Slow processing of organizational requests
Manual Attendance	Attendance tracking done manually during events
Limited Monitoring	Difficulty tracking student participation
Manual Reporting	Reports prepared through manual consolidation
Difficult File Retrieval	Time-consuming search for records and documents
Manual Feedback Processing	Feedback collected and processed manually

The results presented in Table 1 further emphasize that the absence of an integrated and automated system contributes significantly to operational inefficiencies such as redundant data encoding, misplaced files, and delays in information processing. These conditions not only increase the workload of personnel but also reduce the accuracy and reliability of records. Consequently, these identified challenges strongly justify the need for a centralized Management Information System that can streamline workflows, improve data accessibility, and enhance the overall efficiency of CSLD Student Unit operations.

Determination of System Requirements

The system requirements for CSLDrive were identified through a careful analysis of data gathered from interviews of the current processes within the Center of Student Leadership and Development (CSLD) Student Unit. This phase focused on understanding how users currently handle documents, manage events, record attendance, and generate reports, as well as identifying the challenges they encounter in these

Table 2. Functional Requirements of the Developed System

Functional Requirements	Description
Role-Based Access Control (RCBC)	Assigns permissions based on user roles
Document Uploading and Approval	Enables officers to submit documents online while authorized users review, approve, or return them for revision
Event Management	Allows creation organizational events and announcements
QR Code-Based Attendance	Automates attendance recording through QR code scanning
Feedback Submission	Provides a digital form for participants to evaluate events.
Automated Report Generation	Generates summaries of events, attendance, documents, and feedback for decision-making

Table 2 presents the major functional modules of the developed system, outlining the core system requirements and their corresponding descriptions. It summarizes the essential features of CSLDrive, including secure user authentication, role-based access control, document management and approval, event scheduling, QR code-based attendance tracking, feedback submission, and automated report generation. These modules collectively define the system’s operational capabilities in supporting efficient, secure, and centralized management of CSLD Student Unit processes.

Non-functional requirements included system usability, data security, response time efficiency, scalability, and reliability. These requirements guided the design and development of CSLDrive to ensure alignment with actual user needs and institutional processes.

Development of CSLDrive System

The development of CSLDrive followed iterative cycles under the Rapid Application Development (RAD) model. Each module was designed, prototyped, tested, and refined based on user feedback. The system successfully integrated all core functionalities into a centralized platform.

activities and quick access to key modules. It displays summarized information such as pending documents, upcoming events, announcements, and participation status depending on the user role. The dashboard is designed to be user-friendly and responsive, allowing users to navigate the system efficiently. It also provides quick links to frequently used features such as document submission and event registration.

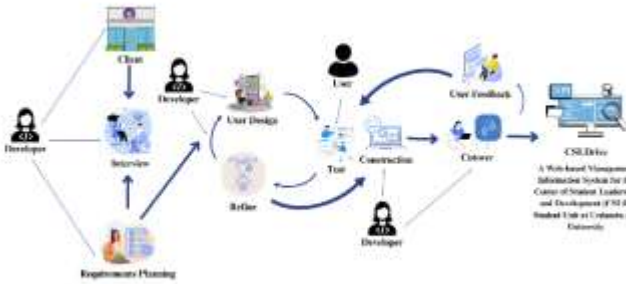


Figure 6. Conceptual Framework of CSLDrive

The Role-Based Access Control (RBAC) feature manages user permissions depending on their assigned roles within the organization. Each role—administrator, staff, adviser, officer, and student—has specific access rights and limitations within the system. Administrators have full control over system management, while officers and students have restricted access focused on document submission and participation activities. This feature ensures data security, prevents unauthorized actions, and maintains proper workflow segregation within the system.



Figure 8. User Dashboard

The document management serves as a centralized storage system for all approved and archived documents within CSLDrive. Users with proper permissions can search, view, and download files efficiently. The repository organizes documents using categories, tags, and metadata for easy retrieval. This feature ensures that important records are securely stored and systematically managed for future reference.

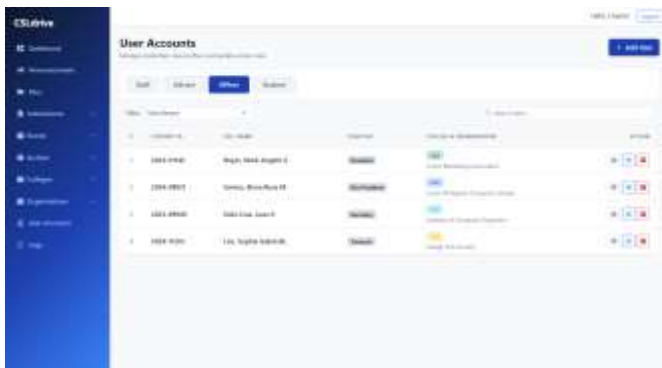


Figure 7. Role-based Access Control Feature

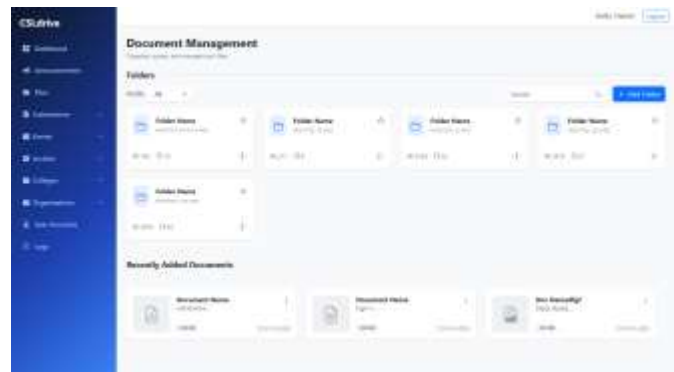


Figure 9. Document Management

The dashboard serves as the central interface of CSLDrive, providing users with an overview of system

The system allows officers and authorized users to upload documents directly into the system for

processing and review. Users can attach files, input document details, and submit them to the appropriate approving authorities. Status tracking (Pending, Approved, Returned) is displayed in real time, allowing users to monitor progress.

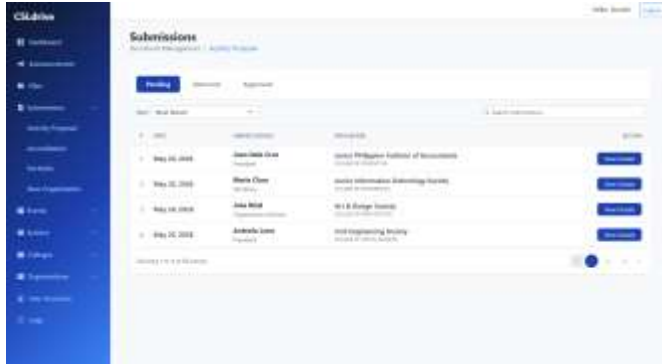


Figure 10. Document Submission and Approval Workflow

The event management module allows administrators and officers to create, manage, and monitor organizational events. Users can input event details such as title, description, schedule, venue, and participants. Events are displayed in a calendar or list format for better visibility. The module ensures proper coordination and planning of student organization activities.

The Calendar of Activities page provides a centralized and organized view of all scheduled events and organizational activities within CSLDrive. It allows users to easily visualize upcoming events by date, helping improve planning, coordination, and time management. Events are displayed in a calendar format where users can click specific dates to view detailed information such as event title, schedule, and venue.

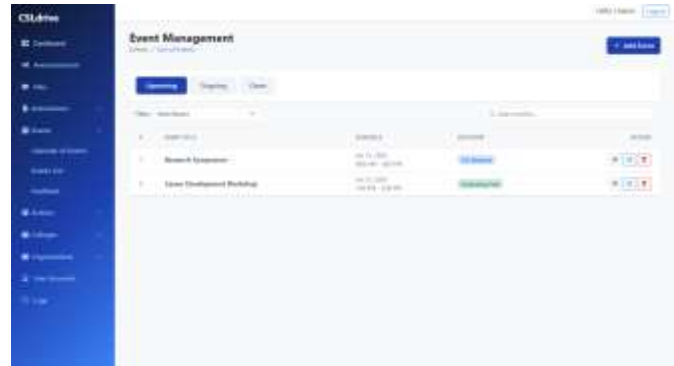


Figure 11. Event Management with Feedback Monitoring

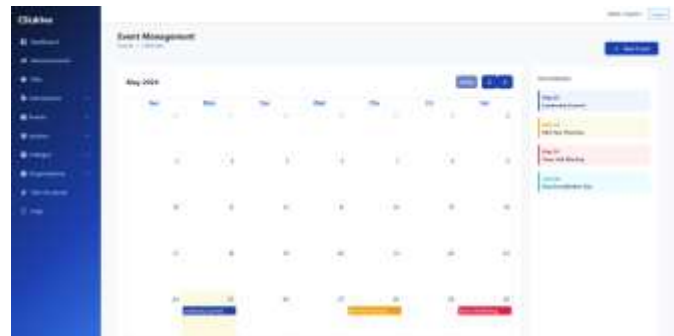


Figure 12. Calendar of Activities

System Evaluation in Terms of Usability, Functionality, Efficiency, and Security

The CSLDrive system was evaluated by a stratified sample of 388 respondents drawn from the total population of 13,778 stakeholders. The respondents were composed of students, student organization officers, advisers, CSLD staff, and the CSLD Student Unit Head.

Table 3. Likert Scale Interpretation Table

Weighted Mean Range	Verbal Interpretation
4.21 – 5.00	Strongly Agree
3.41 – 4.20	Agree
2.61 – 3.40	Neutral
1.81 – 2.60	Disagree
1.00 – 1.80	Strongly Disagree

The Likert Scale Interpretation Table is a reference guide used in research to translate the



weighted mean values from survey responses into verbal interpretations such as Strongly Agree, Agree, Disagree, or Strongly Disagree. The interpretation ranges are calculated by dividing the total scale range by the number of response options.

Table 4. Usability Acceptance Test Results of CSLDrive (n = 388)

Indicators	Weighted Mean	Interpretation
Usability	4.32	Strongly Agree
Functionality	4.28	Strongly Agree
Efficiency	4.25	Strongly Agree
Security	3.92	Agree
Overall Mean	4.19	Strongly Agree

The evaluation result of 4.60 indicates a very high level of system acceptability among respondents. Usability obtained the highest rating, suggesting that users across all stakeholder groups found the system intuitive and easy to navigate despite differences in roles and technical familiarity.

The overall findings confirm that CSLDrive provides a centralized, efficient, and secure Management Information System that effectively addresses the operational inefficiencies of the CSLD Student Unit.

CONCLUSION AND RECOMMENDATION

This study successfully developed and evaluated CSLDrive, a web-based Management Information System designed for the Center of Student Leadership and Development (CSLD) Student Unit at Urdaneta City University. The findings revealed that the existing processes within the CSLD Student Unit were largely dependent on manual and fragmented systems, which contributed to inefficiencies such as delayed document processing, difficulty in tracking requirements, inconsistent attendance records, and limited accessibility of organizational data. These issues validated the need for a centralized and automated system to support administrative operations.

Using the Rapid Application Development (RAD) model, CSLDrive was designed and

implemented with integrated modules for user management with Role-Based Access Control (RBAC), document repository and approval workflows, event management, QR code-based attendance tracking, feedback collection, and analytics and reporting. The system evaluation, conducted using a stratified sample of 388 respondents from a total population of 13,778 stakeholders, showed a very high level of acceptability. The overall weighted mean of 4.60 indicated that respondents strongly agreed that the system is usable, functional, efficient, and secure.

The result shows that CSLDrive effectively addresses the operational challenges of the CSLD Student Unit by improving workflow efficiency, enhancing data accuracy, strengthening security through access control, and promoting transparency in student organization management. The system demonstrates that a centralized MIS can significantly improve the management of student leadership activities and institutional records.

Based on the findings and conclusions of the study, the researcher recommends to include the integration of Artificial Intelligence (AI) capabilities, such as intelligent document classification, automated content summarization, and AI-assisted decision support. In addition, it is recommended that future researchers explore extending the system to other university units or conduct comparative studies between CSLDrive and other Management Information Systems to further validate its effectiveness, scalability, and adaptability in different institutional contexts.

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