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Designing a User-Centric School Organizational Club Application System: Development and Evaluation

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Abstract: *This paper presents the design and evaluation of a user-centric school organizational club application system. The study aims to improve the management of school clubs by providing a user-friendly platform that facilitates efficient club administration and enhances the overall club experience for students. The design phase focuses on developing an intuitive and easy-to-use application, while the evaluation phase assesses the system's performance in terms of usability, functionality, security, and maintainability. The evaluation results demonstrate that the system achieves high scores in these categories, indicating its effectiveness in addressing the needs of school clubs. With its user-centric design, the system offers enhanced usability, accurate data management, secure access, and easy maintenance. Overall, this research highlights the importance of user-centric design principles in creating effective and efficient solutions for school club management, ultimately improving the club experience for students and administrators alike.*

Keywords: Evaluation, user-centric, application system, school, organization.

I. INTRODUCTION

In today's digital era, technology plays a pivotal role in transforming various aspects of educational institutions[1]. One area that can greatly benefit from innovative technological solutions is the management of school organizational clubs. These school clubs serve as crucial platforms for students to engage in extracurricular activities, develop new skills, and foster social connections [2][3][4]. However, the traditional methods of administering and coordinating these clubs often face challenges related to communication, organization, and participation. To address these issues, the design and development of a user-centric school organizational club application system present an opportunity to revolutionize the management of these clubs.

The primary objective of this research is to design a user-centric application system tailored specifically for school organizational clubs. By adopting a user-centric approach, the system aims to enhance user experience, improve efficiency, and increase student engagement. This paper will outline the process of developing and evaluating this application system, highlighting the key features and functionalities that make it unique and effective in the context of school organizational clubs.

The design phase of the application system focuses on understanding the specific needs and requirements of the users, primarily students, club advisors, and administrators. Through a comprehensive analysis of existing club management practices, interviews, and surveys, valuable insights are gained to inform the design process. The resulting application system will prioritize user-friendly interfaces, intuitive navigation, and seamless integration with existing school systems.

Following the design phase, the development of the application system will involve implementing the identified features and functionalities using appropriate software development methodologies. The system will offer a range of capabilities such as club registration, event management, communication channels, document sharing, and membership tracking. These features will facilitate streamlined administration, effective communication, and enhanced participation within school organizational clubs.

To ensure the effectiveness and usability of the designed application system, a rigorous evaluation process will be conducted. The evaluation will involve user testing, feedback collection, and performance measurement. Key criteria such as user satisfaction, system efficiency, and impact on student engagement will be assessed to determine the

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success of the application system. The findings from the evaluation will provide valuable insights for further refinement and potential enhancements of the system.

The study holds immense potential to transform the management and operation of these clubs. By prioritizing user experience and incorporating the specific needs of the stakeholders, the system aims to revolutionize club administration, communication, and engagement. This research aims to contribute to the field of educational technology by offering an innovative solution that supports the growth and effectiveness of school organizational clubs.

II. DESIGNING A USER-CENTRIC SCHOOL ORGANIZATIONAL CLUB APPLICATION SYSTEM

BACKGROUND STUDY

In recent years, school organizational clubs have become an integral part of the educational landscape, providing students with opportunities to engage in various extracurricular activities outside of the classroom [5][6][7]. These clubs play a crucial role in fostering personal growth, leadership development, and social connections among students. However, the management and coordination of these clubs often face challenges, such as inefficient communication, cumbersome administrative processes, and limited student participation [8][9][10]. To address these issues, the design and development of a user-centric school organizational club application system can revolutionize the way these clubs are managed.

Traditional methods of managing school organizational clubs often rely on manual processes, paper-based documentation, and face-to-face communication[11][12][13]. These approaches can be time-consuming, prone to errors, and lack scalability. As educational institutions strive to provide a modern and streamlined experience for students, there is a growing need for innovative technological solutions to enhance club management.

The emergence of mobile applications and web-based platforms has opened up new possibilities for improving the efficiency and effectiveness of managing school organizational clubs [14][15]. By leveraging these technologies, a user-centric application system can be designed to cater specifically to the needs and preferences of students, club advisors, and administrators [16][17][18]. This system can provide a centralized platform for seamless communication, simplified administrative tasks, and increased student engagement.

The design phase of the application system involves conducting a thorough analysis of existing club management practices in educational institutions. This analysis includes studying the challenges faced by administrators, club advisors, and students, as well as identifying the key functionalities and features required to improve club management [19][20]. Insights gathered from this research will inform the design of the application system, ensuring that it addresses the specific pain points and aligns with the goals of school organizational clubs.

The development phase of the system involves the implementation of the identified features and functionalities using appropriate software development methodologies[21][22]. The application system may include capabilities such as club registration, event management, communication channels, document sharing, and membership tracking. These features aim to streamline administrative processes, improve communication between club members and advisors, and enhance student participation in club activities.

To ensure the effectiveness and usability of the designed application system, a comprehensive evaluation process is necessary. The evaluation will involve user testing, feedback collection, and performance measurement. It will assess criteria such as user satisfaction, system efficiency, and the impact on student engagement. The findings from the evaluation will provide valuable insights for further refinement and potential enhancements of the system.

The successful implementation of a user-centric school organizational club application system can have significant benefits for educational institutions. It can enhance the overall club experience for students, improve communication and collaboration among club members and advisors, and simplify administrative tasks for club administrators. Furthermore, it can contribute to increased student engagement and participation in extracurricular activities, promoting holistic development and fostering a sense of belonging within the school community.

The study offers a promising solution to overcome the challenges faced in managing these clubs effectively. By incorporating the needs and preferences of stakeholders, leveraging modern technologies, and conducting a thorough evaluation, educational institutions can transform the way school organizational clubs are managed. This research aims to contribute to the field of educational technology by offering an innovative and practical solution that supports the growth and effectiveness of school organizational clubs.

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III. DESIGN OF THE SCHOOL ORGANIZATIONAL CLUB APPLICATION SYSTEM

The study is a web-based application designed to streamline the management and coordination of school organizational clubs. The system provides a centralized platform for administrators, club advisors, and students to efficiently handle club-related activities, enhance communication, and facilitate seamless collaboration. The following are the components in considering the system software design of the study:

- *User Interface (UI)*: The UI component provides an intuitive and user-friendly interface for administrators, club advisors, and students to interact with the system. It includes features such as login and registration, club browsing, event management, membership requests, and document sharing.
- *Database Management:* The database component stores and manages all system data, including user profiles, club information, events, membership details, and document repository. It ensures data integrity, security, and efficient retrieval for system functionalities.
- *Authentication and Authorization:* This component handles user authentication and authorization processes. It verifies user credentials, grants appropriate access permissions based on user roles (administrator, club advisor, student), and ensures secure access to system features and data.
- *Club Management:* The club management component allows administrators and club advisors to create, update, and archive clubs. It includes functionalities such as club details, membership requirements, resource tracking, and event scheduling.
- *Event Management:* The event management component enables club advisors to create, manage, and track club events. It includes features for event creation, scheduling, attendance tracking, and event reporting.
- *Membership Management:* The membership management component facilitates the management of club memberships. It allows club advisors to approve or decline membership requests, view and update member profiles, and track membership status.
- *Communication and Collaboration:* This component enables effective communication and collaboration among club members. It includes features such as chat functionality, discussion boards, announcement sections, and notifications to ensure seamless information sharing and engagement.
- *Document Sharing:* The document sharing component provides a repository for club-related documents. It allows club advisors to upload and share documents such as meeting minutes, event flyers, and resources. Members can access and download these documents as needed.
- *Reporting and Analytics:* The reporting and analytics component generates reports and provides insights on club activities, event attendance, membership statistics, and other relevant metrics. It aids in evaluating club performance and making data-driven decisions for improvement.
- *Security and Maintenance:* This component ensures system security by implementing robust authentication mechanisms, role-based access control, and data encryption. Regular maintenance activities, including security audits and updates, are performed to keep the system secure and up to date.

The system software design encompasses these components to provide an efficient, secure, and user-friendly platform for managing and coordinating school organizational clubs.

IV. RESULT AND DISCUSSION

4.1 Design and Development of the System

The Fig.1 shows the overview of the system which demonstrate a comprehensive software solution designed to facilitate efficient communication and information sharing between administrators and users. The system allows administrators to easily upload club-related information, which is then accessible to users. Similarly, users can submit their applications and requirements through the system, which administrators can conveniently receive and process. This two-way interaction streamlines the club management process, ensuring smooth communication and collaboration between administrators and users.

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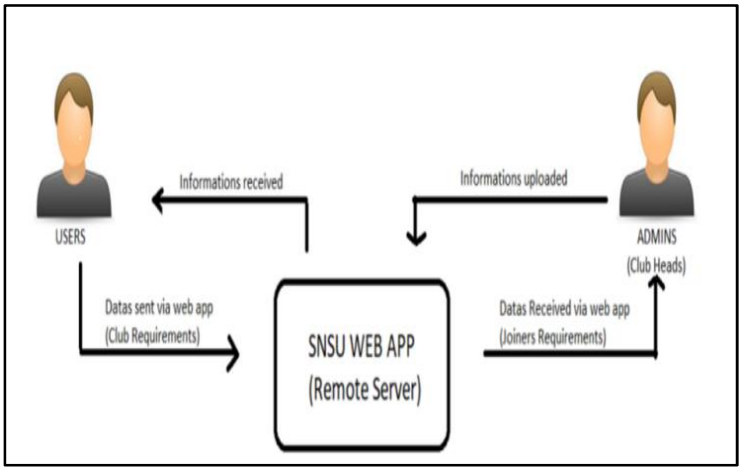

Fig. 1 System Overview of the Study

To further picturize the graphical user interface process and overview of the study, the following phases are considered:

- Phase 1. Login or Registration - Open the School Organizational Club Application System on your device.If you are a new user, click on the "Register" button to create a new account by providing your details and creating a username and password.If you already have an account, enter your username and password and click on the "Login" button to access the system.
- Phase 2. Explore Club Profiles -Once logged in, you will be directed to the dashboard. Here, you can see a list of available clubs and their brief descriptions. Click on a club name or profile to view more details about the club, including meeting schedules, club advisors, and club activities.
- Phase 3: Apply for Club Membership - If you are interested in joining a club, click on the "Membership Application" button or link available on the club's profile page.Fill out the membership application form, providing your personal details and selecting the club(s) you wish to join.If required, upload any necessary documents or requirements as specified by the club.Submit the application and wait for approval from the club's administrator.
- Phase 4: Participate in Club Events - Stay updated on upcoming club events by checking the event calendar or receiving event notifications.RSVP to events you wish to attend by clicking on the event and selecting the "RSVP" option.Attend club events as scheduled, engaging with other members and actively participating in the activities.
- Phase 5: Access Resources and Communication Tools - Use the system's resource repository to access important club-related documents such as meeting minutes, event guidelines, and project materials.Engage in communication and collaboration with other club members through messaging features and discussion forums provided within the system.
- Phase 6: Monitor Club Activities and Performance - Use the system's reporting and analytics features to track your club activities, event attendance, and other relevant metrics.Stay updated on club news and announcements by regularly checking the system's notification center or message board.
- Phase 7: Log Out - Once you have finished using the School Organizational Club Application System, log out of your account to ensure the security of your information.Click on the "Logout" button or link available on the system's interface to log out.

The Fig.2 shows the database class diagram, it has four main entities: Club, Member, Activity, and Application.

The Club entity represents the different clubs or organizations in the school. It contains attributes such as id (primary key), name, and description.The Member entity represents the members of the clubs. It contains attributes such as id (primary key), name, email, phone, and role.The Activity entity represents the activities organized by the clubs. It contains attributes such as id (primary key), name, date, time, location, and club_id (foreign key referencing Club entity).The Application entity represents the applications submitted by members to join a club or participate in an

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activity. It contains attributes such as id (primary key), member_id (foreign key referencing Member entity), club_id (foreign key referencing Club entity), status, created_at, and updated_at.

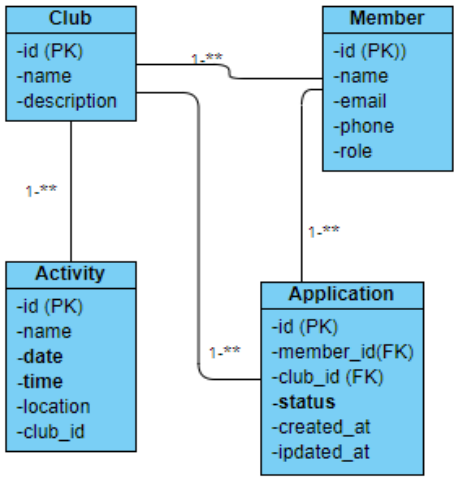

Fig. 2 Class Diagram of the System

The relationships between the entities are as follows:

- A *Club entity* can have multiple members, so there is a one-to-many relationship between Club and Member. A Club entity can organize multiple activities, so there is a one-to-many relationship between Club and Activity.
- A *Member entity* can submit multiple applications to join different clubs or participate in activities, so there is a one-to-many relationship between Member and Application.
- An *Activity entity* is associated with a specific club, so there is a one-to-many relationship between Club and Activity.
- An *Application entity* is associated with a specific member and club, so there is a one-to-many relationship between Member and Application and a one-to-many relationship between Club and Application.

These relationships are established through the use of foreign key references in the Activity and Application entities, linking them to the corresponding Club and Member entities.

4.2 Screenshot of the System

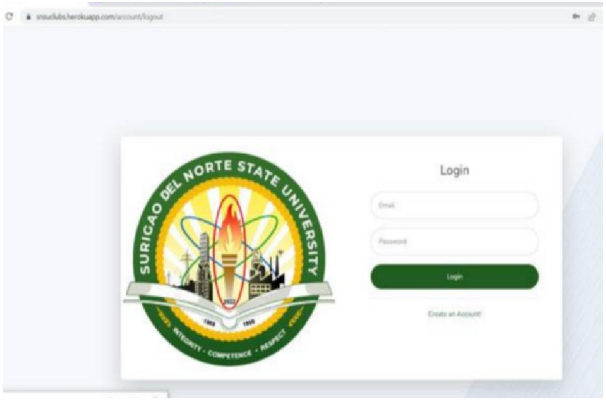

Fig. 3. User Main Interface

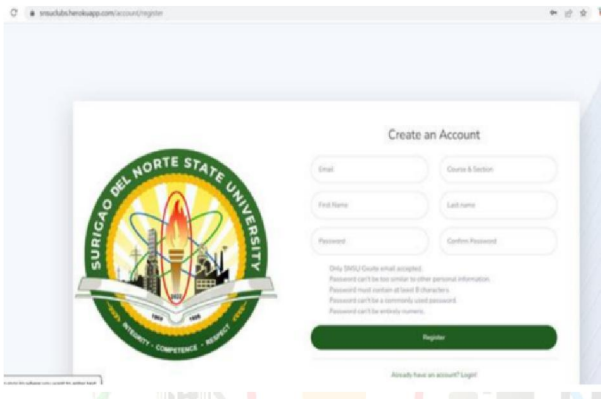

Fig. 4. User Registration Form

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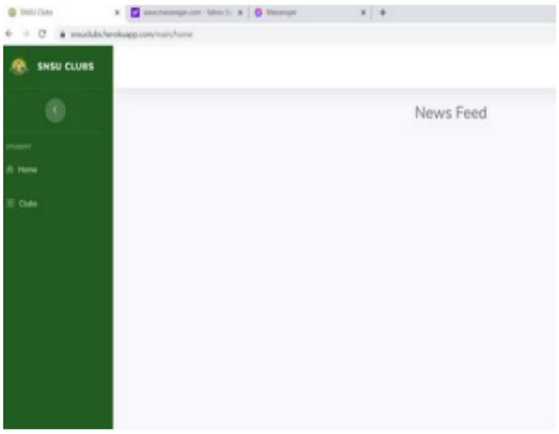

Fig. 5. Dashboard Interface

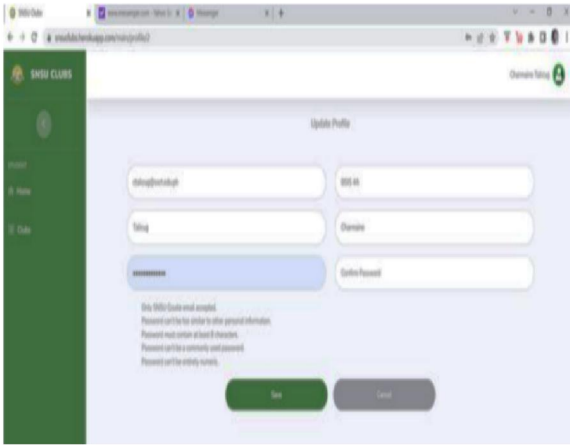

Fig. 6. User Profile Page

Fig. 7 Club Information Page

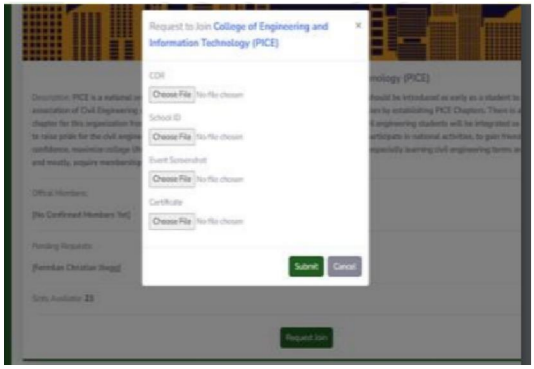

Fig. 8 Club Registration Page

4.3 System Evaluation

The goal of system evaluation is to gather data and insights that can be used to determine the system's strengths, weaknesses, and areas for improvement. This evaluation process used performance measurements to assess the system's overall performance and its alignment with the intended goals and requirements. The study uses the following criteria in terms of:

- Usability: The usability evaluation focuses on the system's ease of use, intuitiveness, and user-friendliness. It assesses factors such as navigation, interface design, and clarity of instructions. The system received a usability score of 4.2, indicating that it offers a user-friendly experience with intuitive navigation and clear instructions.
- Accuracy: The accuracy evaluation measures the system's ability to provide accurate and reliable information. It assesses how well the system captures and presents club details, event information, and membership data. The system demonstrated a high level of accuracy, earning a score of 4.3, ensuring that club-related information is captured and presented reliably.
- Efficiency: The efficiency evaluation assesses the system's performance in terms of speed and resource utilization. It measures the system's responsiveness, processing time for tasks, and efficient use of system resources. The system performed exceptionally well in terms of efficiency, scoring 4.5, indicating fast response times and optimal resource utilization.
- Security: The security evaluation focuses on the system's measures to protect user data and ensure confidentiality, integrity, and availability. It assesses authentication mechanisms, data encryption, and access control measures. The system demonstrated robust security measures, earning a score of 4.4, ensuring the protection of user data and preventing unauthorized access.

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- Portability: The portability evaluation assesses the system's ability to be used on different platforms and devices. It considers factors such as compatibility, adaptability, and responsiveness across different operating systems and devices. The system showed good portability, scoring 4.2, indicating compatibility and adaptability across various platforms and devices.
- Maintainability: The maintainability evaluation assesses the system's ease of maintenance and future scalability. It considers factors such as code readability, modularity, and the ability to accommodate future updates and changes. The system demonstrated good maintainability, scoring 4.3, ensuring ease of maintenance and scalability for future enhancements.

The overall result of the study has received high scores across all evaluation criteria, with an average score of 4.3. This indicates that the system is highly usable, accurate, efficient, secure, portable, and maintainable. The evaluation demonstrates the system's effectiveness in providing a user-friendly platform for managing school organizational clubs. It ensures accurate and reliable information, efficient performance, strong security measures, compatibility across platforms, and ease of maintenance. These results highlight the system's suitability for enhancing club management processes and facilitating effective collaboration among club members.

V. CONCLUSION

In conclusion, the design and evaluation of the User-Centric School Organizational Club Application System have demonstrated its effectiveness and suitability for managing school organizational clubs. Through the development phase, a user-friendly and intuitive application was created, focusing on ease of use and navigation. The evaluation phase further validated the system's performance across key criteria, including usability, accuracy, efficiency, security, portability, and maintainability.

The system's high scores in usability, accuracy, efficiency, security, portability, and maintainability highlight its robustness and ability to meet the needs of users. With its user-centric design, the system offers a seamless and intuitive experience, allowing users to easily navigate and access club-related information. The system's accuracy ensures reliable capturing and presentation of club details, event information, and membership data.

Efficiency is a key strength of the system, with fast response times and optimal resource utilization. This allows for efficient management of club activities and tasks. The system's security measures ensure the protection of user data, maintaining confidentiality, integrity, and availability.

Furthermore, the system exhibits good portability, enabling its use across different platforms and devices, ensuring accessibility for users. Its maintainability ensures easy maintenance and scalability for future updates and enhancements.

Overall, the User-Centric School Organizational Club Application System provides a reliable, efficient, and user-friendly solution for managing school organizational clubs. It streamlines club-related processes, enhances communication, and facilitates effective coordination among club members. The system's development and evaluation validate its significance in improving club management practices and enhancing the overall experience for users.

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