ASIA INFORMATION SYSTEM JOURNAL

DEVELOPING MOBILE JOURNAL INFORMATION SYSTEM ON LIBRARY OF HIGHER EDUCATION INSTITUTION

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Article Info	Abstract
	This research aims to design and develop a mobile-based online journal system for higher education institutions, addressing the need for improved accessibility and efficiency in academic publishing. The study employs a mixed-methods approach, including comprehensive surveys and interviews with students, lecturers, and researchers to gather insights on user requirements and preferences. The findings reveal that the current online journal systems lack flexibility and mobile compatibility, with a mobile-ready test scoring only 0.9 out of 1, indicating it is running fine but a pressing need for enhancement. The proposed mobile journal system not only facilitates easier access to research articles but also streamlines the publishing process, significantly improving user engagement and satisfaction. In conclusion, the implementation of a mobile journal information system is essential for fostering a more inclusive academic environment, and future research should focus on integrating advanced technologies to further enhance system functionality and security.

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INTRODUCTION

In the current digital era, universities worldwide are increasingly embracing information technology to enhance efficiency and effectiveness in various aspects of their operations. One area that has garnered particular attention is the realm of academic journal publishing. The implementation of a mobile-based online journal system in higher education can yield numerous advantages, such as facilitating easier and quicker access for researchers, teachers, and students. This article aims to delve into the design of a mobile-based online journal system in higher education, spanning from requirements to implementation[1].

The development of journal systems based on mobile applications is an emerging trend in the realm of information systems. The incorporation of blockchain technology into mobile apps can heighten security and decentralization, thereby rendering the systems resistant to interference and tampering. Mobile systems heavily rely on SQLite databases, with journaling writes largely dominating storage writes. As a result, the proposal of employing small capacitor-backed nonvolatile write buffers can substantially diminish the burden of journaling-induced writes while upholding data consistency[2].

Moreover, harnessing smartphones for internet connectivity can streamline accessing Open Journal System databases, enabling users to peruse PDF articles without the need for browser navigation. Furthermore, the realm of

mobile application development is progressing to provide insights into daily time allocations and behavioral patterns through apps like the Hourly Journal, which offers futuristic insights for personal growth and productivity. By integrating these technologies and approaches, efficient, secure, and insightful mobile-based journal systems can be realized[3].

The findings of a survey conducted by the Indonesian Internet Service Providers Association (APJII) in 2018 indicated that there were approximately 63.1 million residents, or around 47.6%, who used mobile devices for internet access. This number is expected to continue increasing. The integration of mobile technology in libraries can be seen as an innovative approach to enhance services for readers, particularly in terms of accessing journals. One specific application of mobile technology is the use of Android-based systems[4].

At the Indonesian Institute of Business and Informatics (IBII), there is potential for implementing an online journal system that incorporates Android technology. This system would consist of research findings from both lecturers and students. However, the current development of the online journal system is seen as lacking flexibility, as it can only be accessed through a computer connected to the internet. Consequently, there is a need to design an Android-based application for the online journal system that offers users the flexibility to access it at any time and from any location, while also being more effective and efficient. The results of a mobile-ready test conducted on the online journal website of the Indonesian Institute of Business and Informatics scored 0.9 out of 5, indicating the necessity for the website to be upgraded to a new version that is mobile-friendly and Android-based[1].

Previous research has focused on the development of an Android-based mobile journal system as a learning reference for students. The results showed that the Android-based Online Journal System (OJS) application is more efficient in terms of functionality, allowing users to read articles without the need to open a browser. The objective of this research is to design an Android-based online journal system that provides users with greater flexibility, effectiveness, and efficiency in processing and searching for information, particularly scientific publications such as research journals[2].

An electronic journal, also known as an e-journal, is a digital publication that can be accessed through the internet or electronic storage media. According to Senthil (2018), electronic journals offer several important features to users, including ease of access, linking to other sources of information, multimedia capabilities, remote access, and search functionalities. They serve as the primary resource for conducting scientific research, and are widely popular among the academic community and researchers for purposes such as writing articles and conference papers. Research conducted by Esh (2019) indicates a rapid increase in the use of electronic journals at the University of North Bengal, highlighting their significance as a valuable source of information for research endeavors[5].

Needs and Objectives
The mobile-based online journal system has been developed to cater to various key needs[6], which include:

Accessibility: Students, lecturers, and researchers can access the journal at any time and from anywhere using their mobile devices.

Efficient Management: The system facilitates journal management and distribution for the editorial team and journal managers.

Interactivity: Enhances interaction between readers and authors through features such as comments and discussions.

Data Security: Ensures the security and confidentiality of journal data and author copyrights.

Main System Components
The mobile-based online journal system comprises[7], several key components:

User Interface (UI): The interface design is responsive and user-friendly, aiming to provide an optimal user experience.

Content Management: This module enables the management of journal articles, including submission, review, and publication.

Database: The system incorporates a secure and efficient database for storing and managing articles, metadata, and user information.

Search Functionality: A powerful search feature is implemented to facilitate users in finding relevant articles easily.

Notifications: The system includes a notification system to keep users informed about the latest updates, submission statuses, and discussions[8].

On the other hand, Android is an operating system designed for smartphones and Linux-based tablets. It has gained popularity among cellphone users due to its ability to streamline work processes. Being an open-source operating system, Android allows numerous programmers to develop applications and make modifications to enhance its functionality[9].

METHOD

The research uses System Development and Data Collection.

System Development is guided by the flowchart show on the figure above[10]:
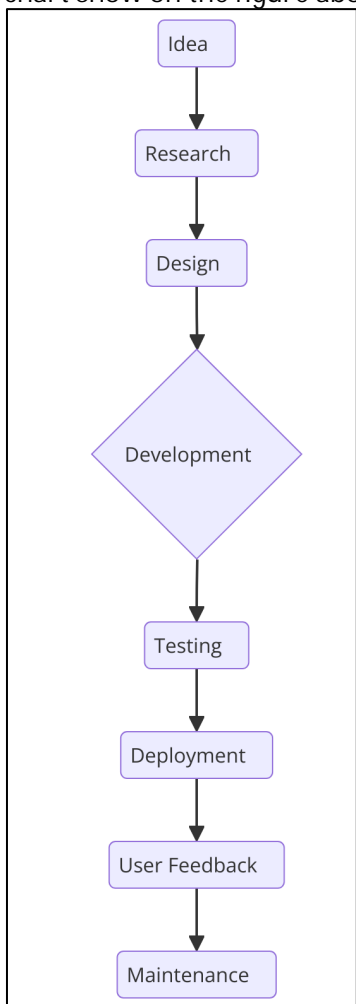

Figure 1. The Steps in Developing System

• Idea: This phase entails the initial idea or inspiration behind the development of a mobile journal system. It encompasses the process of brainstorming and recognizing the necessity for such an application.

• Research: This stage involves conducting comprehensive research to gain insights into the market, user requirements, existing solutions, and potential obstacles. It includes gathering information about the technologies, platforms, and tools that will be utilized.

• Design: During this step, the user interface (UI) and user experience (UX) designs for the application are created. It entails wireframing, prototyping, and defining the visual style and layout of the app.

• Development: In this phase, the code is written and the application is built. It encompasses front-end and back-end development, the integration of features, and ensuring the app functions properly and adheres to the design specifications.

• Testing: Various tests are conducted to ensure that the application is free of bugs, performs well, and offers a seamless user experience. This includes unit testing, integration testing, and user acceptance testing (UAT).

• Deployment: The application is released to the public through app stores (such as Google Play or the Apple App Store) or other distribution methods. This involves setting up the necessary infrastructure for app deployment and making it accessible to users.

• User Feedback: Feedback from users is collected to gain an understanding of their experiences and identify areas for improvement. This may involve surveys, reviews, and direct interactions with users.

• Maintenance: This phase involves providing ongoing support and updates for the application to fix bugs, introduce new features, and ensure compatibility with new devices and operating systems. It ensures that the app remains functional and relevant over time[11], [12].

The last method is collective data by Surveying and Interview user by 100 people. Using categories

RESULTS AND DISCUSSION
Design and Implementation Process

Needs Analysis: The initial stage involves conducting surveys and interviews with students, lecturers, and researchers to identify user needs and system goals[3].

System Design: In this phase, system architecture designs are created, encompassing database structures, process flowcharts, and UI wireframes[13].

Development: Utilizing cutting-edge technologies such as Flutter or React Native, the development process focuses on cross-platform mobile application development[14].

Testing: A comprehensive testing approach is adopted, encompassing unit tests and integration tests, to ensure the proper functioning of all system features[15].

Launch and Training: Once the system is ready, it is officially launched and users are provided with training sessions to ensure optimum system utilization[16].

Maintenance and Updates: Regular maintenance activities are carried out, and system updates are implemented based on user feedback to enhance performance and functionality[17].

Figure 2. Mobile Journal Application UX Design

Interface Design
Intuitive Layout[18]
Home Screen: The home screen has been designed to have a clean and simple layout, allowing users to easily access key features

such as creating a new journal entry, viewing recent entries, and accessing settings. This ensures that users can navigate the app effortlessly.

Journal Entry Screen: This screen includes clear icons for adding different types of content (text, voice notes, images, videos). A prominent "Save" button ensures that users can easily save their entries.

Responsive Design
Adaptive Layout: The app adjusts itself to different screen sizes and orientations. On larger screens, such as tablets, the journal entry screen may display a two-column view, with the entry content on one side and a list of past entries on the other. This makes better use of the available screen space.

Touch Gestures: The app supports intuitive swipe gestures, such as swiping left to view the next entry or swiping down to refresh the list of entries. This enhances user interaction and navigation[19].

Usability Testing
Beta Testing Phase: The app is released to a group of beta testers who use various devices. They perform tasks such as creating entries, searching for past entries, and setting reminders. This helps to identify any usability issues or bugs.

Observation: User interactions are monitored to identify any difficulties or confusion. For example, if users have trouble finding the search function, adjustments to its icon or placement may be necessary[20].

User Feedback
In-App Feedback: Users can submit feedback directly through the app via a feedback form in the settings menu. This form allows users to report bugs, suggest features, and provide general comments, ensuring continuous improvement.

Surveys and Interviews: Conducting surveys and interviews with a selected group of users provides more detailed feedback on their experience, preferences, and pain points. This helps to gain a deeper understanding of user needs.

Iterative Improvement
Analyzing Feedback: Collected user feedback is categorized to identify common issues and
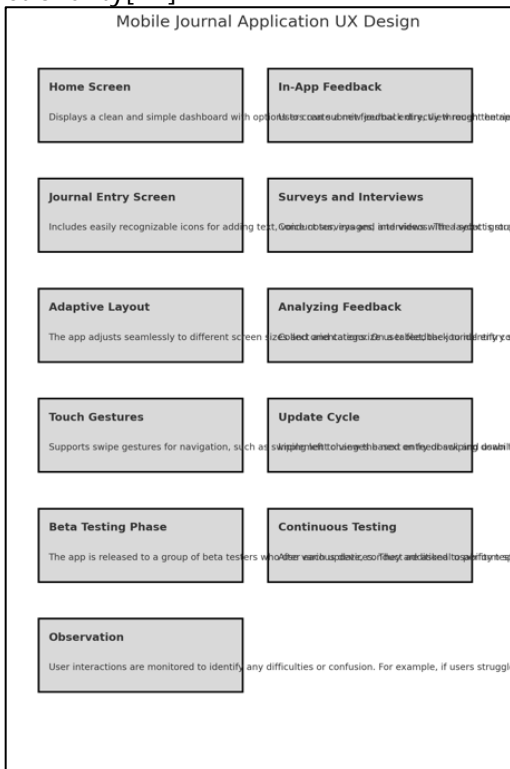
feature requests. For example, if multiple users request a dark mode for nighttime journaling, this becomes a priority.

Update Cycle: Changes are implemented based on feedback and usability testing results. Regular updates address specific issues and add new features. For example, an update might include an improved search function and the introduction of a dark mode.

Continuous Testing: After each update, additional usability testing ensures that new features work as intended and that no new issues have been introduced. This iterative process helps to maintain a high-quality user experience.

The results of the interview analysis indicate that the system users consist of three actors: the administrator, the reviewer, and the user. Each user has different levels of access to the system. The following are the results of the analysis of the online journal system requirements of the Indonesian Institute of Business and Informatics[21].

During this stage, the system requirements analysis results obtained from the communication stage are presented in the form of a use case diagram. There are three actors: the administrator, the reviewer, and the user. The administrator has several activities, such as approving journal data submitted by the user, which will then be reviewed and accepted by the reviewer. The reviewer has the activity of reviewing and publishing approved journal data. The user has several activities, including inputting journals into the system and searching for journal data. The use case diagram represents the online journal system in the library.

The quick design modeling stage is carried out by planning the appropriate use case of the database. The connection between tables in the diagram serves as a reference for creating the class diagram. The ERD model is illustrated in the form of six tables in the database: user, journal, rating, comments, displayed journal, and final journal. The ERD represents the design of the online journal system. Based on the analysis conducted in the previous stage, an Android interface design for the online journal system is produced, as follows:

The purpose of testing is to determine whether the system meets the needs of the users. The questionnaire includes questions on web design (system appearance), reliability (system performance), functionality (menu options in the system), efficiency (system speed), and attractiveness (user interest).

The image above displays the results of the questionnaire given to 100 respondents who used the system and provided different assessments for each question criterion. Based on the test results, it can be observed that (a) web design received an average score of 4.0, indicating that the system appearance is appealing to users; (b) reliability received an average score of 3.0, suggesting that the system is fairly reliable when used; (c) responsiveness received an average score of 3.0, indicating that the system provides satisfactory services to users; (d) security received an average score of 3.0, indicating that the system effectively maintains user data security; (e) functionality received an average score of 3.0, indicating that the menu options in the system are comprehensive; (f) attractiveness received an average score of 5.0, indicating that users find the system very interesting; and (g) personalization received an average score of 3.0, indicating that the availability of information to answer questions is satisfactory.

Benefits and Challenges
Advantages:
Profitability: The accessibility of the journal is greatly enhanced, allowing users to conveniently access it through mobile devices.
Efficiency: The process of publishing and distributing journals becomes more streamlined, resulting in improved efficiency.
Collaboration: Enhancing collaboration and communication between writers and readers.

Challenges:
Content Management: Ensuring that the published content maintains its quality and integrity.
Security: Safeguarding data and information from potential cybersecurity threats.
Technology Adoption: Encouraging users to embrace and adapt to new systems.

CONCLUSION

The research underscores the necessity of adapting academic journal systems to the mobile landscape, reflecting the changing

dynamics of information consumption in thedigital age. By prioritizing mobile accessibility, higher education institutions can significantly enhance the dissemination of knowledge and foster greater collaboration among researchers, educators, and students. As the academic community continues to embrace technological advancements, the development of mobile journal systems represents a critical step towards a more efficient, inclusive, and responsive educational framework. Future research should build on these findings to further refine and innovate mobile solutions that meet the diverse needs of users in the academic sphere.

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