Design and Development of the ASSET: A Web-Based Research Archiving System

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ABTRACT

The traditional archiving method describes storing research papers, within folders and filing cabinets that require massive and spacious area to contain amount of research papers. This occurring problem has been an ongoing problem of every Colleges in the campus, and this method consumes a lot of space and its archiving capacity doesn't last long compared to a web- based archiving system. That's is where the project entitled ASSET – a research archiving system comes in action. The system is designed to have a faster – recording through upload file, and more organized manner. Long-term storing and easy retrieval of different research studies of the undergraduate students of Cagayan State University Aparri in one data storage management system will no longer be a problem. The development team used the Waterfall Methodology encompasses the different activities towards the way of developing and implementing the Project. The system may be used as a tool for easy archiving and finding related literatures of researches for future research activities and to give its users a better experience. The system was developed using PHP and MySQL and maximizing the Laravel 9 framework for faster development incorporating CSS and Bootstrap for styling.

Keywords: archiving system, research, capstone, Laravel 9, CSS, Bootstrap

INTRODUCTION

Thesis archiving system is a system that stores and manages theses, researches, and capstone projects in one system. According to the French definition of archives, records become archival as soon as they are created or received. American federal records become archival as soon as they are formally offered by a federal agency and the National Archives signs a document accepting legal responsibilities for them. Although archives are records, not all records are archives. The records are selected for an archive because they have permanent value, either as evidence of transactions, or because of the information they contain about people, places, and things. The decision of selecting records for archives is taken by the archivists. Every thesis, project, and research completed by undergraduate students lack a suitable location to safely keep it. The research and capstone projects are kept manually using a rack book record and a compact disk for the soft copy (CD).

This project is entitled "Design and Development of the ASSET: A Web- Based Research Archiving System that provides an online platform for storing theses and capstone projects. This system, which was created specifically for students who are currently writing their thesis, covers all the research and capstone projects to be categorized by their title, subject, contents, and authors. The main purpose of this system is to maintain and preserve the undergraduate research and capstone projects and remain retrieved for as long as they require.

The capstone project titled "Design and Development of the ASSET: A Web-Based Research Archiving System" aims to address several key questions and challenges. Firstly, it seeks to understand the existing practices, issues, and policies within the current system. Secondly, it aims to devise a suitable system solution that can effectively mitigate the problems identified in the current system. Additionally, the project intends to evaluate the proposed system's compliance with ISO 25010:2011 Software Quality Standards through the perspective of IT experts. Furthermore, it aims to assess the system's

acceptance among end-users using the technology acceptance model.

Within its scope, the project primarily focuses on developing the ASSET system, designed to efficiently manage records by facilitating easy information recording, providing effective indexes for record retrieval, and delivering reliable information promptly to support decision-making and reporting processes. This system is specifically centered around storing undergraduate student theses and research reports (IMRAD) to serve as a valuable resource for future student researchers seeking references and ideas for their own projects. It will be accessible online through various devices such as desktop computers, laptops, and mobile phones.

The significance of this study is multifaceted. It holds importance for Cagayan State University as it establishes a repository of diverse studies for prolonged use by students, professors, and researchers alike. The Research Coordinator stands to benefit from efficient management and storage of research papers across various college departments. Faculty, staff, and students will find value in the system as it simplifies the process of accessing and managing researches and capstone projects. This project eases the burden of research searching for students, while also enabling researchers to contribute their knowledge and implement campus systems. Moreover, the system provides a reference guide for future research endeavors, fostering a wealth of relevant ideas, knowledge, and information for those embarking on similar ventures.

Objectives of the Study

The study titled "Design and Development of the ASSET: A Web-Based Research Archiving System" is driven by a set of well-defined objectives.

It aims to conduct a thorough analysis of the existing practices, policies, challenges, and issues inherent to the current system of archiving research papers, theses, and capstone projects. Subsequently, the study endeavors to craft a comprehensive and robust solution that effectively addresses the identified problems and limitations associated with the prevailing

archiving methods. The primary goal here is to develop a web-based research archiving system that introduces enhanced organization, efficient storage, and streamlined retrieval mechanisms.

The study seeks to ensure that the proposed system aligns with the rigorous standards of software quality. In this pursuit, it aims to evaluate the system's adherence to the ISO 25010:2011 Software Quality Standards, encompassing aspects like performance, reliability, and usability. Furthermore, the study places emphasis on the reception of the ASSET system among its intended users, which include students, researchers, faculty, and staff. This assessment is facilitated through the utilization of the Technology Acceptance Model (TAM), enabling an in-depth understanding of users' perceptions and attitudes towards the system.

The study also aims to create an efficient data recording and retrieval framework, optimizing the process of inputting research information through file uploads while implementing effective indexing mechanisms for easy data retrieval. Long-term storage and accessibility of diverse research studies, theses, and capstone projects undertaken by undergraduate students of Cagayan State University Aparri are integral aspects of the proposed system's objectives.

The study envisions contributing to the augmentation of research management within the university by providing a structured, reliable platform for storing, managing, and accessing research-related documents.

Efforts are directed towards streamlining the coordination of research activities, particularly across various college departments, which can empower the Research Coordinator to efficiently manage and organize a multitude of research works. In line with enhancing the user experience, the system seeks to alleviate the burden placed on students when seeking relevant research and capstone projects. By offering an easily accessible repository of pertinent materials, the system aims to expedite and simplify this process.

The study envisions the ASSET system not only as a present solution but as a catalyst for future research undertakings. It aspires to serve as a beacon of guidance and a comprehensive reference point for students and researchers embarking on similar projects. By compiling an expansive repository of references, ideas, and invaluable information, the system aims to foster and nurture the progression of future research activities within the academic community.

MATERIALS AND METHODS

Research Design
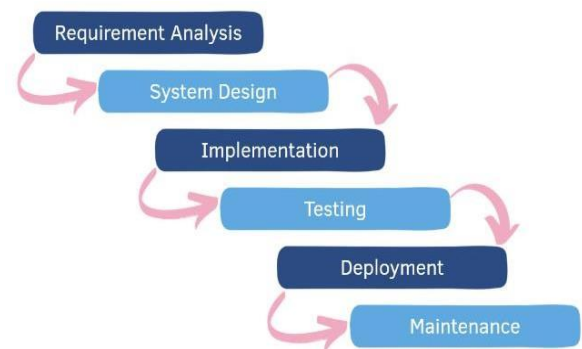
Figure 1. Waterfall Software Development Model

Waterfall Software Development Model
The Waterfall Method shows the researcher's way of implementing the system in Cagayan State University- Aparri Campus, ""Design and Development of the ASSET: A Web- Based Research Archiving System", the Cycle covers the process in the making of the study.

Locale of the Study

The study was conducted at the Aparri Campus of Cagayan State University. The study was

conducted in the first semester of the academic year 2022- 2023.

Data Gathering Tools and Instruments

The study made use of internet research, observation and interview, and Evaluation Questionnaire – (1) the ISO 25010:2011 for the IT Experts and (2) User Acceptance and Use of Technology for User.

RESULTS AND DISCUSSION

Current practices, issues, policies, and problems encountered or confronted by the students and teachers with the current or existing manual system they have are as follows:

Based on the data gathering activities laid down thru observations notes and casual interview, the following are the current practices, issues, policies, and problems encountered by the students and teachers:

1. The current practices and policies of the students and teachers in submitting research papers are the following:
   - The students will submit one (1) hard-bound copy and three (3) soft copy that was put on a cd.
   - The teacher will record the names of students in a logbook.
   - The teacher will compile the submitted research papers in legacy journal.
   - The students submit a hard-bound copy of their research/capstone paper to graduate. If the students failed to submit it, the student will not graduate.

2. The current problems that the students and teachers encountered in archiving research papers are the following:
   - Termites might infest the submitted research paper.
   - Submitted research papers might get wet during typhoons

- Retrieval of research papers is difficult because of unorganized filing.

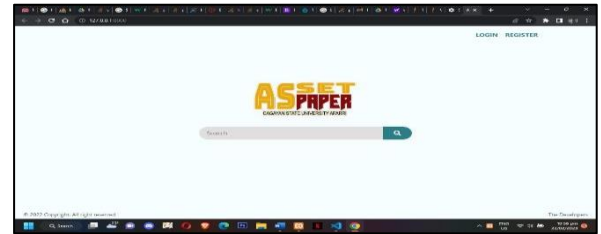**The Developed System: ASSET (Archiving System for Social, Experimental, and Technical) Paper**

Figure 2. Landing Page

The figure above shows the landing page of the developed system. It has a search bar where the users can search a topic of their choice.
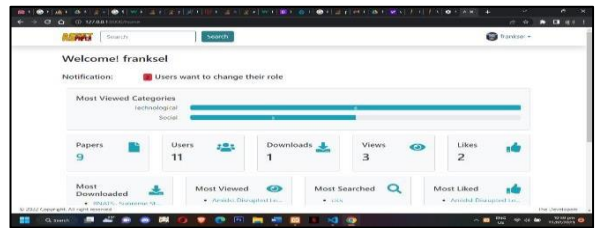

Figure 3. Dashboard (Admin)

Figure 3 shows the dashboard of the admin. It contains the data analytics of the system such as the most downloaded, most viewed, users, papers, most liked and most searched.
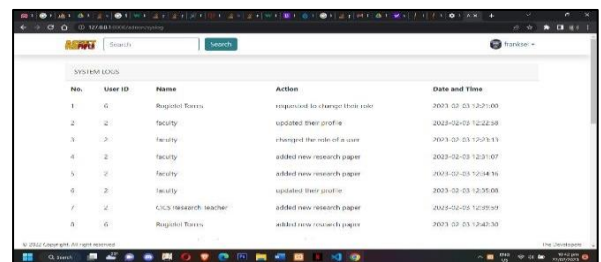

Figure 4. System Logs

The figure above shows the system logs of the system, where it records and compiles the activities of the users.
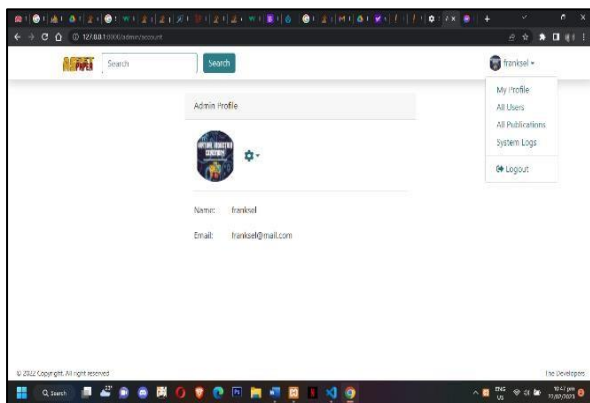
Figure 5. My Profile

The figure above shows the user's profile of the developed system. The profile has a setting where the user can edit their information and change their password.
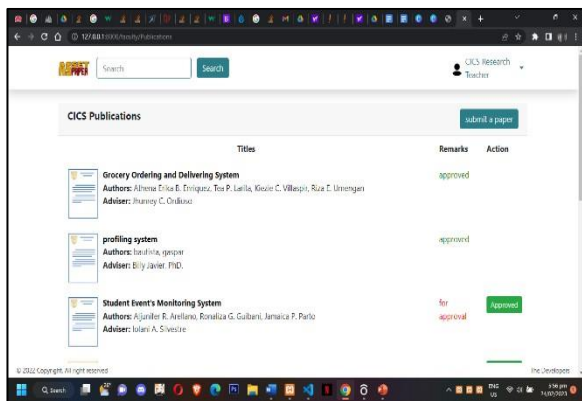

Figure 6. Publications

The figure above shows the publications of the student researchers who uploaded their technical or IMRAD paper. The teacher can approve the paper if it is complete.
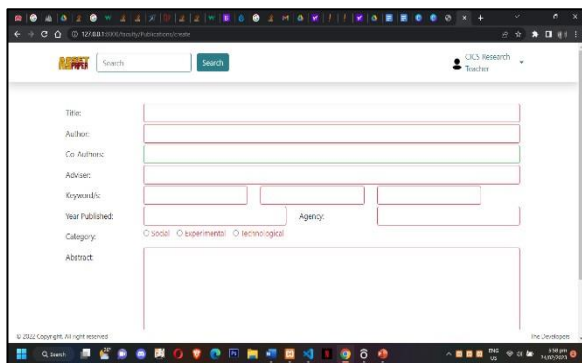

Figure 7. Submit a Paper

Figure 7 shows the 'submit a paper' page. Research teachers and students who were granted to upload can only access this.

Respondents of the Study

Table 1. Summary of the respondents of the study.

Participants	N	%
IT Experts/ Industry Professionals	12	13.48
Research Teacher	7	7.87
Student Researcher	70	78.65
Total	89	100

The researchers used a Sampling method as a basis in identifying respondents for the study. Twelve (12) IT Experts and Ten (10) student researchers and one (1) research teacher was selected from each of the seven (7) colleges of CSU-Aparri, a total number of 89 respondents.

Comparative Assessment of the ASSET and Common Research Databases

Table 2. Comparative Assessment of ASSET and Common Research Databases.

	ASSET	Scopus	Google Scholar
Subscription	Free to use	Paid	Free to use
Accessibility	Open Access	Some open/some subscription.	Open access
Quality of Articles	Institutionally assessed	Peer-reviewed / goes thru tedious process	Author-driven

Search functionality	Powerful search engine	Less Powerful search engine	Powerful search engine
User interface	User friendly/ easy touse	Complex user interface	User friendly/ easy to use

The table 2 above is the comparison that shows the advantages of ASSET between Google Scholar and Scopus

Extent of compliance to ISO Standards as assessed by the IT Experts

Table 3. Summary of Assessments of the IT Experts

Category	Mean	DV
Functionality Suitability	4.667	Very High Extent
Performance Stability	4.733	Very High Extent
Compatibility	4.667	Very High Extent
Usability	4.267	Very High Extent
Reliability	4.667	Very High Extent
Security	4.733	Very High Extent
Maintainability	4.267	Very High Extent
Portability	4.667	Very High Extent
Total	**4.583**	Very High Extent

The table 3 summarized that the system was given 4.583 weighted mean after being evaluated by IT experts and industry professionals, which indicates that the level of compliance of the system on ISO 25010:2011 is very high extent.

User Acceptance of the Developed System using the Unified Theory of Acceptance and Use of Technology

Table 4. Summary of Assessments of the Users

Statement	Mean	Interpretation
Performance Expectancy	4.66	Strongly Agree
Effort Expectancy	4.629	Strongly Agree
Social Influence	4.413	Strongly Agree
Facilitating Conditions	4.534	Strongly Agree
Behavioral Intention	4.492	Strongly Agree
Perceived Ease of Use	4.682	Strongly Agree
Perceived Usefulness	4.732	Strongly Agree
Self-Efficacy	4.72	Strongly Agree
Response Efficacy	4.745	Strongly Agree
Adoption Intentions	4.787	Strongly Agree
Total	4.64	Strongly Agree

The table 4 summarized that the system was given 4.64 weighted mean after being evaluated by the intended end- users, which indicates that the level of compliance of the system on Technology Acceptance Tool is strongly agree.

CONCLUSIONS

After logical analysis and interpretation of data, these are the conclusions that can be drawn from the findings of the study:

According to the project's findings, the developed system complies with ISO 25010:2011 Software Quality Standards and has been deemed acceptable by very high extent remarks. The teachers and students at Cagayan State University – Aparri Campus would benefit from the developed ASSET – a research and capstone archiving system in terms of keeping research and capstone paper

in long-term storage and looking for references for their prospective research topic.

RECOMMENDATIONS

The researchers recommended the following: To apply, register or deposit for applicable IP protection prior to its full utilization with assistance of the knowledge and technology management office.

To apply a filtering feature to the system for an easy searching of a topic.
To create a mechanism for storing back-up.

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ACKNOWLEDGEMENT