ONLINE RESEARCH PUBLICATION AND JOURNAL SYSTEM

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Abstract. Research is an integral part of education institutions, as it allows teachers to deepen their understanding and knowledge of their subject matter, which in turn enables them to impart that knowledge to their students more effectively. In academia, faculty members are often required to engage in research activities to contribute to the advancement of knowledge in their respective fields. Moreover, students are encouraged to participate in research as it helps them develop critical thinking, problem-solving, and analytical skills.

One of the ways this developed system can benefit education institutions is by providing online references that can be accessed anywhere and anytime. This enables both faculty members and students to stay updated with the latest information and research findings in their areas of interest. The system can serve as a repository of knowledge, allowing users to explore a wide range of topics conveniently.

The evaluation of the developed system using the ISO25010 evaluation framework further reinforces its effectiveness and relevance. By utilizing this comprehensive assessment framework, the system's performance can be evaluated across various dimensions, such as functionality, usability, reliability, and security. The high rating of 4.8 weighted mean suggests that the system is highly applicable and beneficial to the stakeholders, including teachers, faculty members, and students.

This positive evaluation implies that the system possesses the necessary qualities and features to effectively support research activities within education institutions. By providing easy access to information, facilitating collaboration, and ensuring the reliability and security of data, the system enhances the research capabilities of teachers and students. It enables them to conduct thorough investigations, stay updated with the latest knowledge, and contribute to the academic community's growth.

The research plays a vital role in education institutions, and the developed system's provision of online references enhances the knowledge acquisition process for both teachers and students. The positive evaluation using the ISO25010 framework confirms the system's effectiveness and relevance in supporting research activities. By embracing such a system, education institutions can foster a culture of research, enabling their stakeholders

to thrive in their academic pursuits and contribute meaningfully to their respective fields of study.

Key Words: Capstone Projects, Online Research, Online Systems, Publication and Journal, Research System

INTRODUCTION

Research is a process that involves the creation of new knowledge or the utilization of existing knowledge in innovative ways to generate new concepts, methodologies, and understandings. It encompasses activities such as synthesizing and analyzing previous research to generate novel and creative outcomes. The purpose of research is to expand our understanding of various phenomena and to explore how this knowledge can be applied to improve everyday life. By advancing scientific theories, concepts, and ideas, research aims to enhance society as a whole.

In the context of academic institutions, research plays a crucial role in their sustainability and development. Embracing knowledge-driven growth through innovation is essential for their progress. Research serves as the foundation for high-quality teaching and learning experiences in the classroom, benefiting not only the students but also the broader society and country. Recognizing the importance of research, the Commission on Higher Education (CHED) encourages colleges and universities to actively engage in research and become platforms for research and development, innovation, and social and economic development.

The Camarines Sur Polytechnic Colleges (CSPC) and its teaching staff are highly motivated in their research activities. Over the years, numerous research projects have been conducted, and there is an ongoing effort to involve more faculty members in research endeavors. However, to support and streamline these research initiatives, the need for a solution became evident. This led to the conceptualization of the Online Research Publication and Journal System (ORPJS), which aims to facilitate easy, efficient, and effective delivery of automated services to researchers and other stakeholders.

The ORPJS serves as a platform for storing, retrieving, and managing research data. It offers economic advantages, particularly when utilizing the network as an internet facility. Additionally, the system proves to be a valuable tool for interested researchers, as it provides a centralized repository of research documents and helps eliminate duplication of research activities, reducing redundant outputs. By developing the ORPJS, the researcher aimed to create a browser-based management system that automates the storage and organization of research documents within educational institutions.

The system not only simplifies the management of research documents but also facilitates the identification of existing research papers, thereby minimizing the chances of duplication. This feature ensures that researchers can easily refer to previous work and

build upon it, contributing to the overall advancement of knowledge within the institution. By leveraging technology and implementing the ORPJS, the institution can efficiently detect research duplications and promote a culture of originality and innovation.

The development of the Online Research Publication and Journal System (ORPJS) addresses the need for an automated platform to manage research documents in educational institutions. It aims to streamline research activities, provide easy access to research data, and prevent duplication of efforts. By utilizing such a system, the institution fosters a conducive environment for research, enabling faculty members to further their career development and contribute to the overall progress of their respective fields.

Specific Objectives

Specifically, this study aimed to:

1. Design and develop an Online Research Publication and Journal System with the following features:
    1.1 Registration and application
    1.2 Collecting and Storing
    1.3 Verifying submitted researches
2. Develop a printable report module
    2.1 List of research outputs
    2.2 List of faculty members identified as researcher
3. Evaluate the system with acceptable industry model using ISO 9126 in terms of:
    3.1 functionality suitability
    3.2 performance efficiency
    3.3 compatibility
    3.4 usability
    3.5 reliability
    3.6 security
    3.7 maintainability
    3.8 portability

Scope and Delimitation

This study focused on the Online Research Publication and Journal System of Camarines Sur Polytechnic Colleges. The system included getting data of research, profiling of documents, publications, journals, articles. The constraint that affected the conduct of the study, was the data gathering procedure. Several considerations were taken care of that led to software evaluation using an industry accepted quality model, the ISO 25010.

Testing and evaluation were conducted upon customized system is developed. The system was validated by the ten (10) IT experts, ten (10) researchers, and ten (10) personnel from the Admin and Research Office of the campus.

Significance of the Study

The following will be benefited by this study:

CSPC. The system will be of great help to the College. This will address the efficiency of the smooth and fast transaction in storing, retrieval of documents, publication, journals and articles.

Faculty. The developed system is a big help in submitting researches with efficient processing feature. Likewise, the system provides easy accession and retrieval of information regarding research documents, journals, publication and articles.

Researcher. The study provides an avenue where the researcher proved his knowledge and skills in designing and developing a project as well as documenting the processes.

Future Researchers. This study can be considered as a reference of data and information in designing and developing projects with similar concepts.

Conceptual Framework

This study primarily focused on the design and development of the Online Research Publication and Journal System, utilizing the input, process, and output approach as the conceptual framework. The input stage of the study concentrated on defining the specific objectives, with a particular emphasis on evaluating the necessary features that would make the system functional and efficient for researchers.

To ensure a systematic and well-executed development process, an agile methodology with six phases was adopted: planning, requirement analysis, user design, coding/building, testing, and deployment. This approach allowed for careful planning and execution, following a structured framework while remaining flexible and responsive to changes. By adhering to this methodology, the system development process was able to meet the assessment criteria based on the ISO 25010 quality model, which ensures the system's performance, usability, reliability, security, compatibility, maintainability, and portability.

The output of the study was the web-based Online Research Publication and Journal System, specifically tailored for the researchers of the Camarines Sur Polytechnic Colleges. Throughout the development process, feedback was obtained from the beneficiaries, stakeholders, and evaluators. This feedback played a vital role in refining and improving the system, transforming it into a functional, usable, efficient, reliable, secure, compatible, maintainable, and portable tool for its users.

By actively engaging with the beneficiaries and stakeholders, the developer could address their needs and concerns, making necessary adjustments and enhancements to the system. This iterative feedback loop helped refine the system and ensure its alignment with the users' requirements and expectations. As a result, the developed Online Research Publication and Journal System became a valuable resource for researchers, providing them with a user-friendly platform to manage and publish their research work effectively.

Furthermore, the evaluators played a critical role in assessing the system's performance and identifying areas for improvement. Their insights and recommendations helped the developer enhance the system's overall quality and functionality. By incorporating their feedback, the system was refined to better meet the needs of its users, ensuring a seamless and efficient research experience within the academic institution.

The study adopted the input, process, and output approach to design and develop the Online Research Publication and Journal System. By following an agile methodology and gathering feedback from beneficiaries, stakeholders, and evaluators, the system evolved into a refined and reliable tool for researchers. This comprehensive development process, coupled with adherence to the ISO 25010 quality model, ensured that the system met high standards of functionality, usability, efficiency, reliability, security, compatibility, maintainability, and portability.

Requirements

It is necessary to prepare and procure first the system requirements. It is important that after having an interview with the end-users, gathering all the tools, device, materials – may it be hardware or software, in order to comply the necessary composition of the system. All the requirements were present and locally available in the market.

Design

The system was designed and developed with the suggestions of the end-users. Their comments were carefully considered. Every detail was consulted in order to become user-friendly and interesting to the one who will be using it.

Diagrams were made and presented for critiques. Contextual Diagrams were carefully prepared. The context diagram was used to describe the system's context and limits, as well as the system's interactions with external entities. A context diagram, also known as data flow diagram, was used to describe and explain the limits of a software system. It recognized data flows between the system and external entities. The entire system was represented by a single operation. It was also regarded as a high-level summary of the system's goals. The background diagram depicted the system as a single high-level operation, as well as its relationships with other external entities like the system and external data storage.
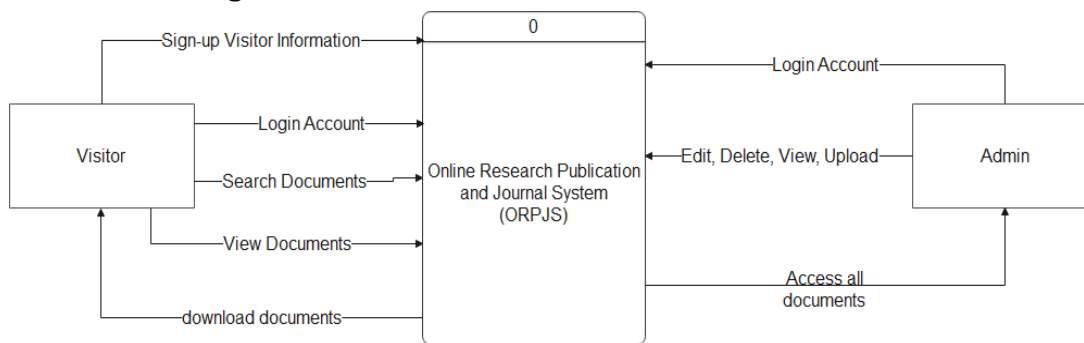

Figure 4.1 Contextual Diagram

Figure 4.1 displayed the contextual diagram of the Online Research Publication and Journal System. It depicted the flow of information, as well as the functions, processes, manipulation, storage, and distribution of data, between a system and its operational environment, as well as its components. Because of the visual representation, it was a fantastic communication tool between the user and the system designer. The Data Flow Diagram (DFD) structure enabled you to begin with a broad overview and work flow of detailed diagrams in a hierarchy. The Data Flow Diagram (DFD) showed how information traveled through a system, but not the program logic or processing stages. It provided a logical model that showed what the system did instead of how it accomplished it.
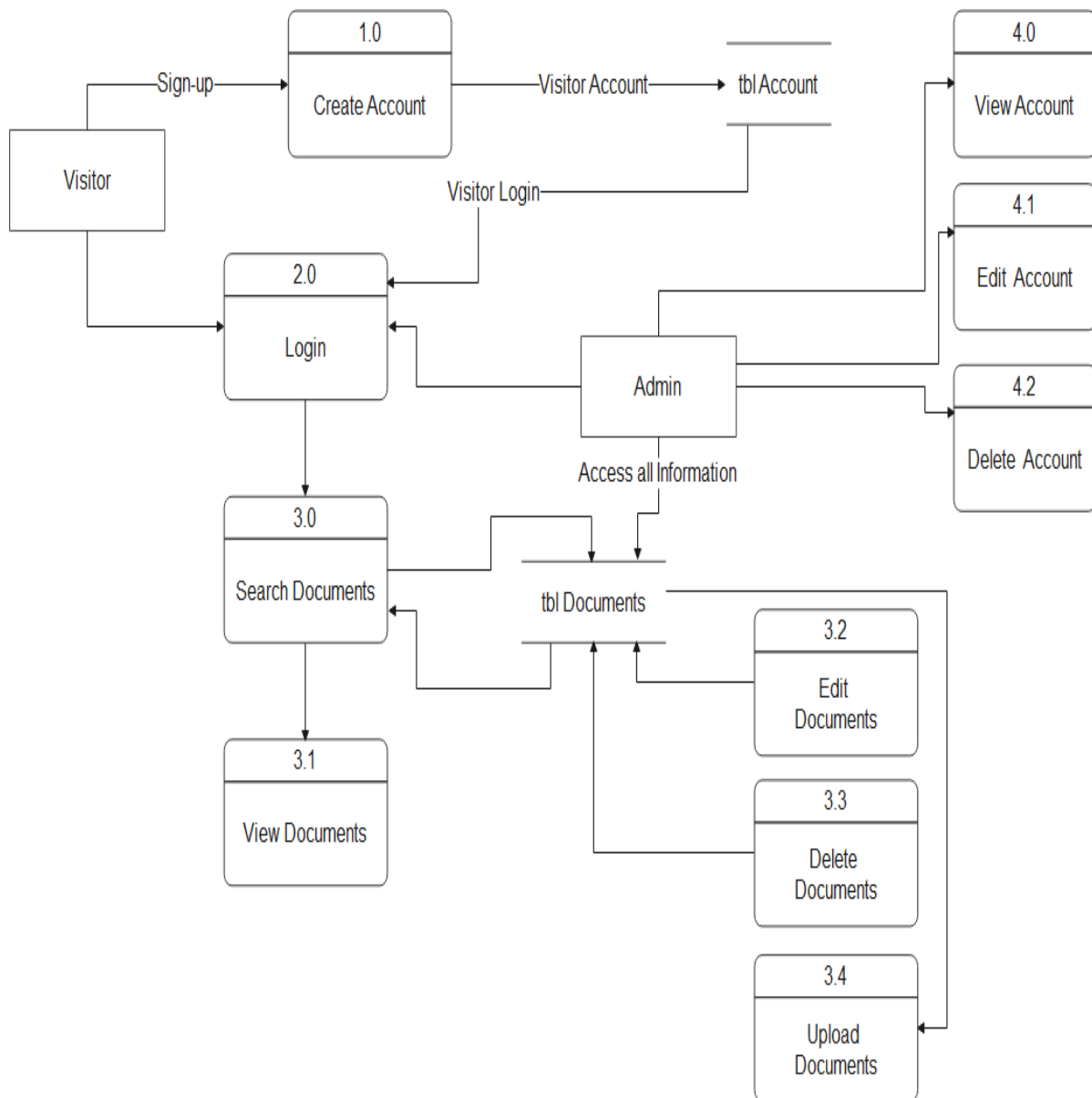
Figure 4.2. Data Flow Diagram of the Developed System

Development

Several iterations were made during the development of the system. For several months, it was developed according to the author's design and based on the suggestions of the end user. The following are the screenshots of the Online Research Publication and Journal System:

Figure 4.3 Main Page

Figure 4.3 showed the Main Page which was used to register and log in, explore, read, and download the most recent publications and journals posted in the system.

Testing

The successful development was not enough unless its quality was proven. Hence, the developed system was brought to ten (10) IT experts, ten (10) researchers, and ten (10) personnel from the Admin and Research Office of the campus for critical evaluation.

The formula used to determine the weighted mean was:

$$\text{Weighted mean} = \frac{F_1(1) + F_2(2) + F_3(3) + F_4(4) + F5(5)}{F_1 + F_2 + F_3 + F_4 + F_5}$$

Where: The numerical rate: (1) not applicable, (2) slightly applicable, (3) applicable, (4) very applicable, (5) highly applicable) = Overall Satisfaction.

Table 4.1 – The Evaluation Rubrics

Interval Scale	Interpretation	Description
4.1 – 5.0	Highly Acceptable	The system efficiently and effectively satisfied all the quality model characteristics in terms of functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.
3.1 – 4.0	Acceptable	The system efficiently and effectively satisfied some of the quality model characteristics in terms of functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.
2.1 – 3.0	Slightly Acceptable	The system minimally satisfied all quality model characteristics in terms of functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.
1.1 – 2.0	Slightly Unacceptable	The system hardly satisfied all quality model characteristics in terms of functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.
1.0 or less	Unacceptable	The system did not meet the quality model characteristics in terms of functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.

Table 4.2 – Table of Verbal Interpretation

Mean Range	Interpretation
4.1 – 5.0	Highly Acceptable
3.1 – 4.0	Acceptable
2.1 – 3.0	Slightly Acceptable
1.1 – 2.0	Slightly Unacceptable
1.0 – 0	Unacceptable

Table 4.2 shows the Table of Verbal Interpretation that is used in the system's evaluation.

Table 4.11 – Overall Rating of the Developed System

Characteristics	IT Experts	Clients	Weighted Mean	Interpretation
Functional Suitability	4.66	4.8	4.72	Highly Acceptable
Performance Efficiency	4.63	4.93	4.77	Highly Acceptable
System Compatibility	4.69	5	4.84	Highly Acceptable
System Usability	4.73	4.96	4.84	Highly Acceptable
System Reliability	4.6	4.95	4.77	Highly Acceptable
System Reliability	4.6	4.95	4.77	Highly Acceptable
System Security	4.53	5	4.76	Highly Acceptable
System Portability	4.58	5	4.79	Highly Acceptable
Average	**4.6**	**4.9**	**4.8**	Highly Acceptable

Table 4.11 displays the overall rating of the developed system with a weighted mean of 4.8, which means "highly applicable" to be used by the end-users.

Deployment

The success of the development of a system was determined by whether it served its purpose. The researcher was confident that it could be used because it had passed the quality model using the ISO 25010. As a result, the system was deemed ready for deployment and installation.

Summary of Findings

The following findings were obtained from the study:

1. The design and development of the Online Research Publication and Journal System proved to be useful, and the database was reliable. The system was accessible via the Internet, providing benefits to all users. It facilitated the provision and viewing of the latest research that had been uploaded and made public. Users could easily download and retrieve related and vital information to enhance the quality of their conducted research.

2. Regarding the evaluation conducted by the developer with the respondents, the Online Research Publication and Journal System received a rating of 4.8 in the testing, using the ISO 25010 as the quality model. This high rating of "highly acceptable" in the IT industry further reinforced the system's credibility and demonstrated its ability to meet industry standards.

Conclusions

Based on the study's findings, the researcher was able to draw these conclusions:

1. The newly developed system for researchers has proven to be a significant aid in their activities, facilitating information gathering regardless of their location. With the system in place, researchers can access the necessary information anytime and anywhere, as long as there is an internet connection available. This accessibility and availability of information have greatly enhanced the efficiency and convenience of researchers in their pursuit of knowledge.

2. The rating of 4.8, indicating "highly applicable," signifies that the system successfully fulfilled its purpose within the research community. It proved to be a valuable tool for research enthusiasts, greatly assisting them in maintaining informative and up-to-date research. This high rating further validates the system's effectiveness and its contribution to the advancement of research endeavors.

Recommendations

Based on the conclusions, the following recommendation are hereby offered:

1. The Online Research Publication and Journal System can be installed and utilized by end-users at their convenience, provided it receives approval from the administration and the necessary materials are available. This flexibility allows users to access and benefit from the system whenever they require it, ensuring that the system is accessible and adaptable to the users' needs. The administrative approval process and availability of materials serve as important considerations to ensure a smooth and successful implementation of the system.

2. The developed system has been proven to be both functional and reliable, ensuring that research abstracts can be stored and retrieved safely. With the system in place,

researchers can have confidence in the security and integrity of their valuable research abstracts. The system provides a robust and dependable platform for storing and accessing research abstracts, promoting efficient and secure data management within the research community.