Research Vault: A Capstone Management System with Integrated Research Repository for Santa Rita College of Pampanga

A Capstone Project

Presented to the

Faculty of the College of Computer Studies

Santa Rita College of Pampanga

In Partial Fulfillment

of the Requirements for the Degree

BACHELOR OF SCIENCE IN INFORMATION SYSTEM

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CHAPTER I

INTRODUCTION

BACKGROUND OF THE STUDY

Over the past few years, technology have become important in universities and colleges and help to improve the research and student projects organized and accessed easily. The use of online tools for management of research and project submissions is on the rise in universities and colleges globally. Colleges and universities worldwide are increasingly turning to web-based tools to handle research and project submissions. This transition into a larger trend toward digital change in education, aiming to spread knowledge and encouraging collaboration between students and teachers.

At Santa Rita College, the CCS Department still uses traditional methods for handling research. The students are required to submit hard copies of the documents for the faculty to review, and scheduling a project defense is a time-consuming process. This traditional method has caused several problems, which include schedule conflict, difficulties in communication between students and faculty, and slow feedback on documents. Without a modern system, time and effort are lost on tasks that could have been better spent on more meaningful academic activities.

The researchers propose this study as a solution to these issues by creating a capstone management system with integrated research repository for Santa Rita College

of Pampanga. The objective of this system is to modernize the submission by an online process, replacing a structured digital workflow for paper-based methods. Students will submit project working titles and required documents online, covering both title defense and final defense stages. In a centralized system, faculty members will receive and review submissions, accept or decline them and arrange for the defense presentations. The system will have a user-friendly interface that will help improve communication between students and faculty, reduce administrative task, and make the evaluation of research projects more efficient.

Through this system, the CCS Department hopes to speed up how research documents are submitted and evaluated, showing its commitment to embracing innovations and enhancing education. The department is trying to make these processes easier, shorten the timeline and make feedback to teachers and students more timely and transparent. This will help to make the process efficient and allow for a more organized workflow, maximizing the benefits for the academic environment regarding the education of students.

STATEMENT OF THE PROBLEM

This study aims to address the following problems:

1. What process and challenges are encountered by the Santa Rita College CCS Department in managing research?

2. What are the modules and features of the proposed system?

3. What are the security measures to be implemented on the proposed system?

4. What is the level of user acceptability of the proposed system?

OBJECTIVES OF THE STUDY

This study aims to achieve the following objectives:

1. To identify the current processes and problems encountered by the Santa Rita College CCS Department in managing research.

2. To determine and specify essential modules and features of the proposed system.

3. To develop and implement security measures in the proposed system to ensure confidentiality and protect unauthorized access.

4. To determine the level of user acceptability of the proposed system through user acceptance testing and survey analysis.

SIGNIFICANCE OF THE STUDY

This study is significant for several reasons:

- Santa Rita College of Pampanga: This system contributes to the college's position as a forward school that uses technology to improve administrative procedures and enhance the educational experience.

- College of Computer Studies: The capstone management system with integrated research repository will enhance the handling of the process of managing project

working titles, research project submissions, and reviews. It will help the department reduce the amount of time lost due to delays and manage the projects more effectively.

- Faculty: The capstone management system with integrated research repository will reduce the task of the faculty by providing the tools online to review, approve, or reject project submissions. They can also manage defense schedules more effectively; this will allow them to provide more time to guide students and provide feedback.

- Students: The capstone management system with integrated research repository will make it easy for students that they can submit their project working titles and other necessary documents through the system. Additionally, it offers an organized method to project progress updates, which can help students save time and avoid the inconveniences associated with traditional methods.

- Future Researchers: This study will be an instrument for future research into capstone management system with integrated research repository, offering significant ideas on their design, features, and benefits.

SCOPE AND DELIMITATIONS

This study is about developing a capstone management system with integrated research repository for the CCS Department at Santa Rita College. The system will include the process of facilitating smoother research project submission, evaluation, and scheduling. Students will be able to submit project titles and research papers online, and

teachers will have the resources they need to assess submissions, decide whether to accept or reject them, and schedule project defenses. Both desktop and mobile web browsers will be able to access the system except for the administrator, it will only be accessible through desktop web browser, and it will have an easy-to-use interface and a secure login.

This study is exclusive only for the research projects of the CCS Department. It will not provide cooperation with other institutional systems including grading systems or student information databases. The system cannot be used in offline settings and needs an internet connection to operate. Other advanced tools do not include data analytics, offline access, or reporting, as they prioritize the immediate need for submission and approval procedures.

DEFINITION OF TERMS

DEFINITION OF TERMS

1. CCS Department: Refers to the College of Computer Studies (CCS) Department of Santa Rita College that will handle the managing of student research projects using the capstone management system with integrated research repository which will control the submission, review and scheduling processes.

2. Routing System: A procedure within the system that manages the flow of documents associated with a student's research project within the CCS department, to

include submission, evaluation by faculty, approval/rejection, and scheduling of defense.

3. Faculty: Refers to the teachers at the CCS Department of Santa Rita College.

4. Research: The process by which students collect and analyze data or information to investigate a specific topic. In the capstone system, research is submitted for faculty review and must meet specific academic criteria before being approved.

5. Capstone: The final project where students apply their learned skills and knowledge to solve real-world problems.

6. User-Friendly Interface: Represents the system's graphical user interface (GUI) which is designed to be easy to use. It allows students, faculty, and other staff members to submit and review research documents and manage project defenses with ease.

7. Centralized System: A single system that provides authorized users easy access and efficient management of all research proposals and documents.

8. Responsive Design: The structure of the design that allows users to access the system effortlessly. Users of PCs, laptops, and smartphones are all able to comfortably access the system.

9. Login Authentication: Before enabling access, a built-in security process checks user identities. Only approved faculty, students, and staff members can log in, submit, or review capstone projects.

CONCEPTUAL FRAMEWORK

Conceptual Framework image not available.

The conceptual framework's schematic representation of the inputs, processes, and outputs is shown in Figure 1. The input includes programming experience, hardware requirements, and software requirements. Data gathering tools and SDLC (RAD Model Methodology) are all part of the processes. The output demonstrates how the framework was translated into a customized solution and shows the Research Vault: A Capstone Management System with Integrated Research Repository for Santa Rita College of Pampanga.

CHAPTER II

REVIEW OF RELATED LITERATURE AND STUDIES

INTRODUCTION

In this chapter, we summarize existing studies and literature on digital systems used to manage capstone projects, such as online systems for the submission of projects, evaluation of projects, and scheduling of project defense. It describes their features and their strengths and potential applications in the capstone management system with integrated research repository including examples of similar systems developed by other institutions.

RELEVANCE OF THE STUDY

As discussed in an article by Verity Platform (2025), today's RMS platforms provide a centralized interface for faculty, students, and administrators to engage seamlessly. These systems also allow for easy upload of documents, capable of handling proof of approval workflows and ensuring that all activities associated with research are tracked and archived. Verity Platform emphasized that RMS has the potential to drastically decrease administrative burden through integration and automation of customary references and activities like though not limited to scheduling, data collection, and reporting which provide increase efficiency in research management.

Qashou et al. (2025b) explored this mobile cloud computing model further,

recommending it for research routing in higher education. They found that mobile cloud-based systems improve flexibility and foster collaboration among students, faculty members, and external partners. Finally, the accessibility and synchronization abilities given by mobile cloud computing enhance research routing, enabling organization and accountability facilitation and assisting in ensuring compliance with the academic standards imposed.

A web-based platform, created by Gabor (2024), was designed to facilitate formative assessment of capstone projects, with a focus on optimizing feedback loops between students and supervisors. The research emphasizes the need for feedback loops at regular intervals, which promote student learning and about supervisors improving their evaluation processes. With the gradual introduction of agile methodologies, this system enhances capstone project outcomes and ultimately better prepares students for effective integration in the workplace.

Sankar et al. (2023) developed a Student Management System as a capstone project, hoping to improve on the organizational aspects of student data, submission tracking, and communication between faculty and students. They explain the way their findings suggest that web-based systems make administrative tasks easier to perform, can minimize human error regarding record keeping, and enhance access to academic records. This indicates a need for the Research Routing System, which aims to

electronic the process of capstone project submission, review and scheduling under the CCS Department at Santa Rita College. These systems help in increasing transparency, reducing manual effort, and facilitating a better collaboration between students and faculty by incorporating methods like structured workflows for data management and real-time processing of data.

The Project Hub platform creates a digital environment where students and faculty can work together to follow a project, share feedback and facilitate evaluation. Manual project tracking mechanisms have proven inefficient, time-consuming, and often opaque, leading to issues with both productivity and accountability in the project. Using automated tracking and communication tools, Project Hub encourages a more interactive and structured workflow, allowing both students and faculty to monitor project milestones and outcomes (Patil et al., 2023).

A model was presented by Grover and Nandal (2023) that combines Edu-Cloud computing along with machine learning for the purpose of improving academic activities. This type of cloud computing technique allows access to academic resources anytime, anywhere, as well as enhanced storage, management and retrieval of related research.

The rise of web-based research systems in academic institutions is associated with a host of security and privacy concerns. Arpaci et al. (2023) made a study on the impact

of national culture on the adoption of cloud computing in higher education, particularly underlining data security and privacy issues. It highlights a noticeable impact of data security practices, varying by culture, on the implementation of cloud-based systems: strong encryption and authentication western methods of handling sensitive application capabilities.

Maulana et al. (2022) developed a web-based thesis management information system that focused on improving the efficiency and quality of the thesis guidance process and document management. Hence it helps you to communicate and work with your lecturer and students, no matter where you are. In this way, we will experience an experiment without bodily returning to our thesis. The thesis process will help your pitfall of a thesis, both effective and time sensitive.

Chio et al. (2022) built a web-based university thesis management portal called "THESISIT" with the aim of helping students through the thesis-writing process - even including an automated defense scheduler. One important highlight is that we developed a genetic algorithm for automatic scheduling of oral defense, which saves effort and time. Usability testing showed that 94% of users considered the system appropriate and recognizable, and overall functionality index was rated with 84%.

Almeida et al. (2022) proposed a multi-objective mixed-integer linear programming model for optimally scheduling a thesis defense. They showcased the

ability of the model to handle sophisticated scheduling problems after simulating realistic factors like availability constraints for committee members and rooms in their computational experiments.

Alvarez et al. (2022) conducted a Capstone Project Evaluation System to enhance the thesis and capstone project evaluation process in University of Perpetual Help System Laguna. Previously, the assessment methods were merely manual, and paper based and proved to be inefficient and time taking. To tackle this issue, the authors adopted a web-based assessment platform and make use of Technology Acceptance Model (TAM) to evaluate its trustworthiness and usability. Their results demonstrated that the system could stand as a suitable substitution for manual assessment, enhancing the efficiency of the methodology and facilitating the workflow of the assessment of projects.

The need for user-friendly interfaces and adequate training to guarantee that faculty and students use web-based research systems has been pointed out elsewhere. System adoption is highly dependent on intuitive navigation, structured workflows, and ongoing user support (Mikelsone & Segers, 2022).

Student research evaluation is a human-based task that can age or trigger a bottleneck, the introduction of online capstone manuscript evaluation systems can greatly improve evaluation accuracy and efficiency. Time-consuming manual evaluation

processes often wastepaper and create communication and logistical inefficiencies, preventing timely feedback and progression of projects. The DOI process also enables students to receive structured feedback as well as track its submission and evaluation in real time, whilst enabling faculty members to systematically track revisions and approvals. Moreover, such a system mitigates the environmental effect of printing numerous copies of research manuscripts, thereby adopting a greener philosophy for academic evaluations (Alipio et al., 2022).

Ibrahim et al. (2022) describe an experience with the implementation of an online management system that aims to facilitate and improve the quality of learning outcomes assessment. Traditional assessment methods, including paper-based tests, manual grading, and siloed data, can be cumbersome and often lead to inefficiencies in the evaluation process. Being an online system, allows a more formal and a transparent approach to the evaluation process, resulting in instant feedback and data facilitated decision-making. Another key advantage of implementing an electronic assessment system is that it maintains continuity in academic assessments and evaluations, despite cases of disruptive events like the COVID-19 pandemic, by providing a centralized accessible and easily utilizable platform for both students and faculty.

Qasem et al. (2020), cloud computing is a significant enabler that transforms higher education institutions. Their analysis provided a multi-dimensional perspective on cloud

adoption in academia, identifying infrastructure, technology readiness, and institutional support as key determinants. The results indicate that the scalability, cost-effectiveness and access to resources - features of cloud computing - are critical for enhancing research routing systems.

Synthesis of the Reviewed Related Literatures and Studies

Collectively, the reviewed studies and literature illustrate a robust foundation for developing a capstone management system with an integrated research repository. Web-based and cloud-based platforms, as demonstrated by Verity Platform (2025), Qashou et al. (2025b), and Sankar et al. (2023), offer cost-effective, scalable solutions that streamline submission, tracking, and collaboration processes. Automated tools that are incorporated in Project Hub (Patil et al., 2023) and in THESISIT (Chio et al., 2022) can simplify scheduling and evaluation with reduced manual effort and greater transparency. Accessibility and trust in systems are being supported by security measures (Arpaci et al, 2023) and user-friendly designs (Mikelsone & Segers, 2022), while intelligent features such as machine learning (Grover & Nandal, 2023) and predictive scheduling (Almeida et al, 2022) guide adaptive, next generation solutions.

The CCS Department at Santa Rita College can benefit from technology trends by using a digital service to collect, guide, and manage capstone projects. This allows for secure record-keeping and access to a research repository for future reference. A system

that integrates real-time data, organized workflows, and cloud-based technology can remove inefficiencies and enable flexible management in academic environments.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

INTRODUCTION

This chapter explains the research design and methodology used in designing the capstone management system with integrated research repository in the CCS Department of Santa Rita College. It provides insights into the research methods that must be executed to collect, analyze, and assess the data. This chapter also provides details of the data collection tools and respondents.

RESEARCH DESIGN

This study uses a mixed-methods research design in developing and evaluating the proposed capstone management system with integrated research repository, where qualitative and quantitative research approaches have been employed. Qualitative, this aspect findings from students, faculty, and administrators focus on input stakeholders to find out system requirements and usability preferences. The quantitative part consists of evaluating the performance of the system.

RESEARCH PARTICIPANTS

The sample size will consist of approximately thirty (30) IS 3rd year students, 3 faculty members, and 1 administrator.

RESEARCH LOCALE

The study will be conducted at Santa Rita College, specifically within the CCS Department. The CCS Department relied on manual process of research management, and thus it is a natural subsystem for the suggested system to use and test with.

SOFTWARE DEVELOPMENT METHODOLOGY

The Rapid Application Development Model (RAD) is responsible for the construction of the capstone management system with integrated research repository, which emphasizes assertive prototyping and user feedback to adapt the system to the needs of the parties involved. RAD focuses more on putting something functional together in the shortest time possible and building that system, based on the user feedback, which also allows you to have a flexible system, The RAD model will include the following stages:

1. Requirements Planning: Work with stakeholders to outline the requirements of the system and define the core problems as described in Chapter I.

2. User Design: Create multiple prototypes and design ideas for a user-friendly interface specifically for students, faculty members, and administrators, enabling stakeholders to see and experience the system early in the design process.

3. Construction: Develop the core system that includes functionalities like online submission, document routing, review workflows, and scheduling tools based on user feedback from the prototypes.

4. Cutover: Move to full deployment of the system with final testing and user training to secure the proper functioning within the CCS Department.

5. Feedback and Iteration: Once deployed, gather feedback, iterate and refine the system based on the input received, ensuring it continues to evolve to meet user needs.

RESPONDENTS OF THE STUDY

The respondents were the research participants who participated in the testing and evaluating the system are the student, faculty, and administrator. Respondents will be a data source for the system evaluation and answer surveys, interviews, and usability tests.

THE RESEARCH INSTRUMENT

The study will utilize the following research instruments:

1. Questionnaire: A structured survey based on the Technology Acceptance Model (TAM), designed to access user perceptions of key factors such as perceived usefulness, perceived ease of use, attitude toward using, and behavioral intention to use. The questionnaire will include criteria related to user satisfaction and system performance, focusing on elements such as the system's functionality, ease of use, performance, and overall user experience. Respondents will rate their agreement with each statement on a 5-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree).

2. Interview: Semi-structured interviews with open-ended questions to gather

qualitative insights on user experiences, challenges, and suggestions for improvement.

3. System Testing Checklist: Standardized test cases that will be used to test the features of the system and verify their compliance with requirement.

DATA GATHERING PROCEDURES

This study begins with a requirement analysis phase where interviews with faculty, students, and the administrator are conducted to find areas of needs and challenges faced in the CCS Department's research management process at Santa Rita College. Using RAD model methodology, develop a capstone management system with integrated research repository that serves as a canal to direct downstream data requests, with in-line feedback from stakeholders to iterate on its capabilities. Thereafter 30 students, 5 faculty members and the administrator will test a functional prototype in a pilot for one-month. Data will be gathered through a structured questionnaire that complies with Technology Acceptance Model (TAM) and semi-structured interviews with participants to gain qualitative evidence after test run. Finally, quantitative data will be examined utilizing descriptive statistics and qualitative feedback will be analyzed to inform systems improvement.

SYSTEM DEVELOPMENT TOOLS

The following tools will be utilized to construct the capstone management system with integrated research repository:

a. Hypertext Markup Language: For organizing the system's webpages, enabling students, instructors, and administrators to access and manage.

b. Cascading Style Sheets: For style the interface, enabling a responsive and visually appealing design across multiple devices for all users.

c. JavaScript: For increasing interaction, enabling real-time features like form validation and status updates to improve the system's usability.

d. PHP: For server-side coding and managing database interactions.

e. MySQL: For storing user data, research documents, submission records, and schedule details in a centralized system.

f. Visual Studio Code: Main code editor for writing and debugging the system.