

**CAPTRACK 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

By

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APPROVAL SHEET

This capstone project entitled “**CapTrack Vault: A Capstone Management System with Integrated Research Repository for Santa Rita College of Pampanga**” proposed and submitted by **Jhon Louie B. Dizon, John Carl D. Dizon, and Clarence B. Dula** in partial fulfillment of the requirements for the degree **BACHELOR OF SCIENCE IN INFORMATION SYSTEM**, has been examined and found in order and is hereby recommended for acceptance and approval for **ORAL EXAMINATION**.

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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.

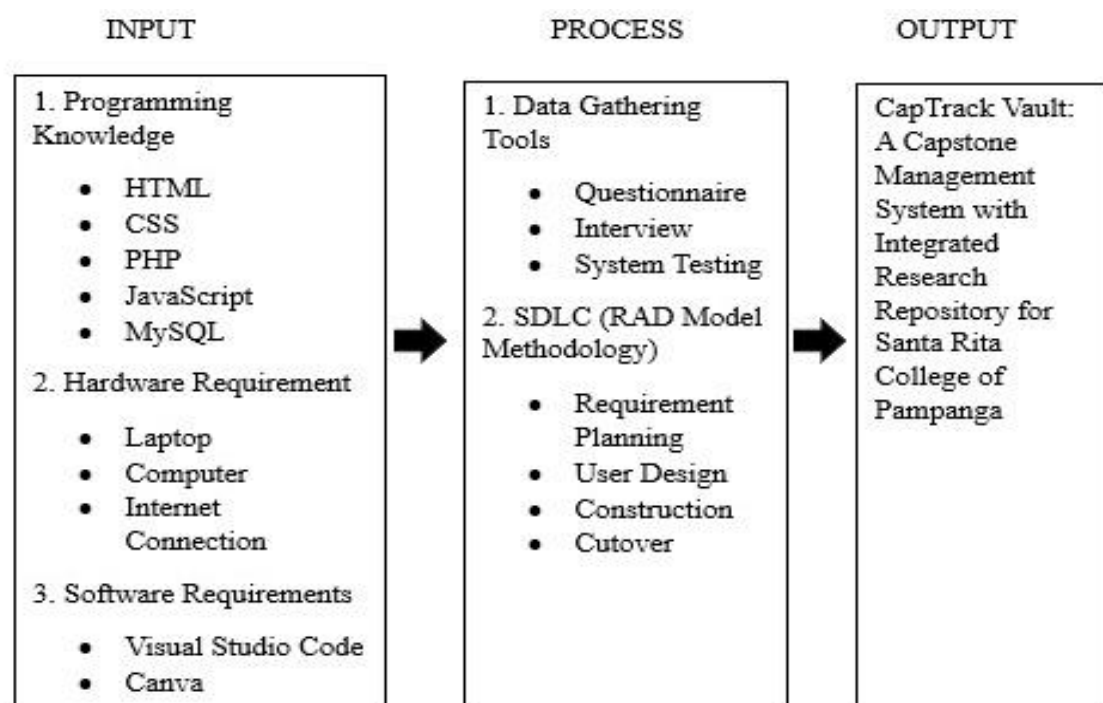
The researchers propose this study as a solution to these issues by creating a capstone management system with integrated research repository for Santa Rita College of Pampanga. The objective of this system is to modernize the submission by an online process, replacing a structured digital workflow for 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.

Figure 1

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



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

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, it will only be accessible through 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

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 identity. Only approved faculty, students, and staff members can log in, submit, or review capstone projects.

CHAPTER II

REVIEW OF RELATED LITERATURE AND STUDIES

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 RELATED LITERATURES AND STUDIES

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

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. The qualitative aspect of the findings from students, faculty, and administrators focuses on gathering input from key participants to identify system requirements and usability preferences. The quantitative part consists of evaluating the performance of the system.

RESEARCH PARTICIPANTS

The respondents of the study totaled 75 students, 3 faculty members, and 5 IT experts. To determine the appropriate sample size, the researchers used the Finite Population Correction (FPC) formula, which is suitable when the total population is known and relatively small. The formula is given by:

$$n = \frac{N \times Z^2 \times p(1 - p)}{e^2(N - 1) + Z^2 \times p(1 - p)}$$

$$n = \frac{105 \times (1.96)^2 \times 0.5(1 - 0.5)}{(0.05)^2(105 - 1) + (1.96)^2 \times 0.5(1 - 0.5)}$$

$$n \approx 83$$

Where:

n = sample size

N = population size (105)

Z = Z-score corresponding to the desired confidence level (1.96 for 95%)

p = estimated proportion of the population (0.5)

e = margin of error (0.05)

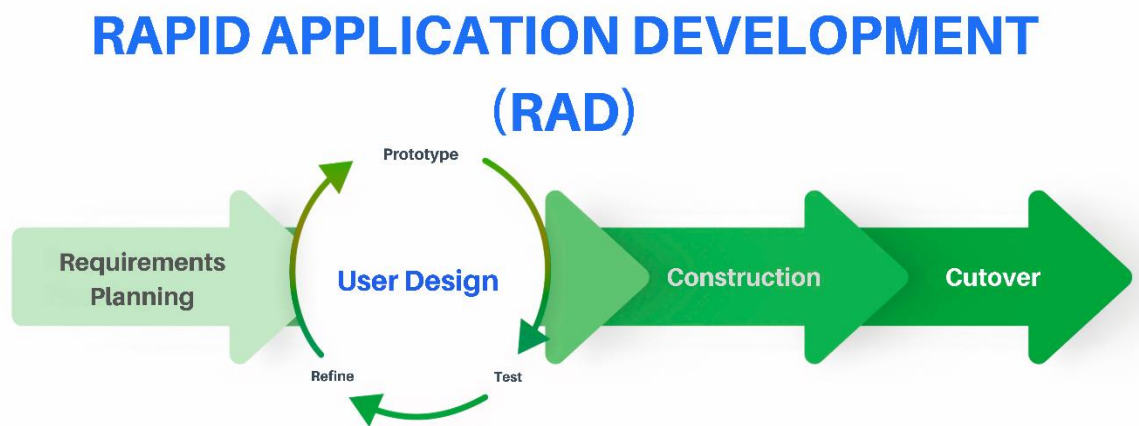
RESEARCH LOCALE

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 (RAD) Model was used in creating the Capstone Management System with Integrated Research Repository. This method focuses on building prototypes quickly and getting feedback from users to improve the system. It allows faster development while making sure the system meets the needs of students, faculty, and administrators.

Figure 2
Rapid Application Development



The RAD model has four main stages:

1. **Requirements Planning:** Work with key contributors to outline the requirements of the system and define the core problems as described in Chapter I.
2. **User Design:** Develop prototypes and sample designs for the system. This stage follows a cycle of prototype-test-refine, making changes based on user suggestions until the design is acceptable.
3. **Construction:** Build the actual system based on the refined design, including features such as online submission, document routing, review workflows, and scheduling tools.
4. **Cutover:** Complete the project by testing the system, training users, and deploying it fully for use in the CCS Department.

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 assess 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 4-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = 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

The study started with a requirements analysis by conducting interviews with faculty, students, and the administrator to identify the needs and challenges in the CCS Department's research management process at Santa Rita College. Based on the RAD model, a capstone management system with an integrated research repository was designed and continuously refined through feedback from key users.

Data were collected using a structured questionnaire based on the Technology Acceptance Model (TAM) and supported by semi-structured interviews to gather additional qualitative insights. The quantitative data were analyzed using descriptive statistics, while the qualitative responses were reviewed to guide further improvements to the system.

DATA ANALYSIS TOOLS

The study utilized the Technology Acceptance Model (TAM) as the primary analytical framework to evaluate the system's acceptance and usability. Mogaji et al. (2024) mention that the technology acceptance model (TAM) is a frequently used framework for analyzing why people accept new technologies. TAM focuses on key constructs such as Perceived Usefulness, Perceived Ease of Use, Attitude Towards Technology, and Behavioral Intention to Use the system. These constructs guided the development of the structured questionnaire.

Qualitative data from semi-structured interviews were analyzed through thematic review to extract meaningful insights and feedback from faculty and students. This qualitative approach helped contextualize the quantitative findings and guided iterative system improvements.

STATISTICAL TOOLS USED

To analyze the quantitative data gathered from the structured questionnaires, descriptive statistics were employed. The responses from participants were measured using a Likert scale based on the Technology Acceptance Model (TAM), which includes

categories such as Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD).

The following formula was used to calculate the average rating for each questionnaire item:

$$\text{Rating} = \frac{(SA \times 4) + (A \times 3) + (D \times 2) + (SD \times 1)}{\text{Total Respondents}}$$

Table 1
The Likert Scale Conversion

DESCRIPTION	VALUE	CONVERSION
SA	4	3.26 - 4.00
A	3	2.51 - 3.25
D	2	1.76 - 2.50
SD	1	1.00 - 1.75

Whereas:

Rating = total calculated score from the evaluation

SA = total number of respondents who answered Strongly Agree

A = total number of respondents who answered Agree

D = total number of respondents who answered Disagree

SD = total number of respondents who answered Strongly Disagree

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.

CHAPTER IV

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents the findings, analysis, and interpretation of data gathered during the development and evaluation of the CapTrack Vault: A Capstone Management System with Integrated Research Repository for Santa Rita College of Pampanga. The data were collected through a mixed-methods approach, including a structured questionnaire based on the Technology Acceptance Model (TAM), semi-structured interviews, and system testing. The results address the research objectives, focusing on the current processes and challenges, system modules and features, security measures, and user acceptability. The findings are presented in the context of the Rapid Application Development (RAD) methodology stages used in the system's development.

REQUIREMENTS PLANNING

4.1 Current Processes and Challenges in Research Management

The initial phase of the study aimed to identify the existing processes and challenges in the CCS Department's research management. Data were collected through semi-structured interviews with 3 faculty members and 30 students. This was supported by looking at how manual processes worked during the Requirements Planning stage of the RAD method.

Figure 3
Interview with the Locale



4.1.1 Current Processes

The interviews revealed that the CCS Department employs a manual, paper-based system for managing capstone projects, consisting of the following steps:

- **Document Submission:** Students submit physical copies of project proposals, working titles, and final manuscripts to the faculty or department office.
- **Review and Approval:** Faculty manually review submissions, provide feedback, and often require multiple rounds of physical revisions.
- **Defense Scheduling:** Faculty and students coordinate defense schedules via Messenger or in-person meetings, frequently causing delays due to miscommunication or conflicting schedules.
- **Record Keeping:** Research documents are stored in physical folders, leading to inefficient retrieval and archiving processes.

4.1.2 Challenges Encountered

The qualitative data highlighted the following challenges:

- **Time-Consuming Processes:** 80% of students (24 out of 30) reported that manual submission and review processes are excessively time-consuming, leading to delays in receiving feedback and progressing with their projects.
- **Scheduling Conflicts:** 70% of students (21 out of 30) experienced delays in scheduling title and final defenses due to manual coordination and lack of streamlined communication.
- **Communication Gaps:** 90% of students (27 out of 30) cited difficulties in receiving timely feedback, attributing delays to reliance on physical submissions and the need for in-person meetings.
- **Document Management Issues:** Several students reported inefficiencies in tracking and retrieving their submitted documents, with some instances of misplaced or lost files.
- **Environmental Impact:** Some students expressed concern about the environmental impact of continuous paper-based submissions, highlighting the need for a more sustainable process.

USER DESIGN

4.2 System Modules and Features

The second objective was to define the essential modules and features of the CapTrack Vault system. During the User Design stage of the RAD methodology, iterative prototyping and feedback from key users were used to refine the system's functionality

through multiple prototype-test-refine cycles. The following modules, features and iterations were developed to address user needs and challenges.

4.2.1 Modules

- **User Management Module:** Supports role-based access for students, faculty, and administrators with secure login authentication to ensure appropriate access levels.
- **Submission Module:** Enables students to upload project titles, proposals, and final manuscripts online, simplifying the submission process.
- **Review and Approval Module:** Allows faculty to review, provide feedback, and approve or reject documents digitally, improving review efficiency.
- **Scheduling Module:** Facilitates automated scheduling of title and final defenses with calendar integration and user notifications.
- **Research Repository Module:** Provides a centralized, searchable database for storing approved research documents for future reference.
- **Communication Module:** Enables real-time notifications and messaging for feedback and updates between students and faculty.

4.2.2 Features

- **User-Friendly Interface:** Designed with a responsive layout accessible on desktop and mobile browsers.
- **Document Tracking:** Offers real-time status updates on submissions (e.g., "Submitted," "Pending," "Approved," "Rejected") to keep users informed.

- **Automated Notifications:** Sends alerts for submission deadlines, feedback updates, and defense schedules to enhance communication.
- **Searchable Repository:** Allows users to efficiently search and access past research projects.
- **Dashboard:** Provides a centralized interface for managing tasks, viewing deadlines, and tracking progress, improving user experience.

4.2.3 Iterations of the System

1st Iteration

- On the submit project, you can edit your submissions based on the remarks of capstone adviser, capstone professor, and dean.

2nd Iteration

- Multi-role implementation: For example, a capstone adviser can have multiple roles, such as serving as a capstone professor or panelist.

3rd Iteration

- Make the year and section dynamic, allowing the admin to add or delete them as needed.

4th Iteration

- Enable group-based submissions.

5th Iteration

- Implementing notifications for all roles and adding search bars wherever submissions are accessed

4.2.3 Use Case Diagram

Figure 4

Use Case Diagram of Capstone Management System with Integrated Research Repository for Santa Rita College of Pampanga

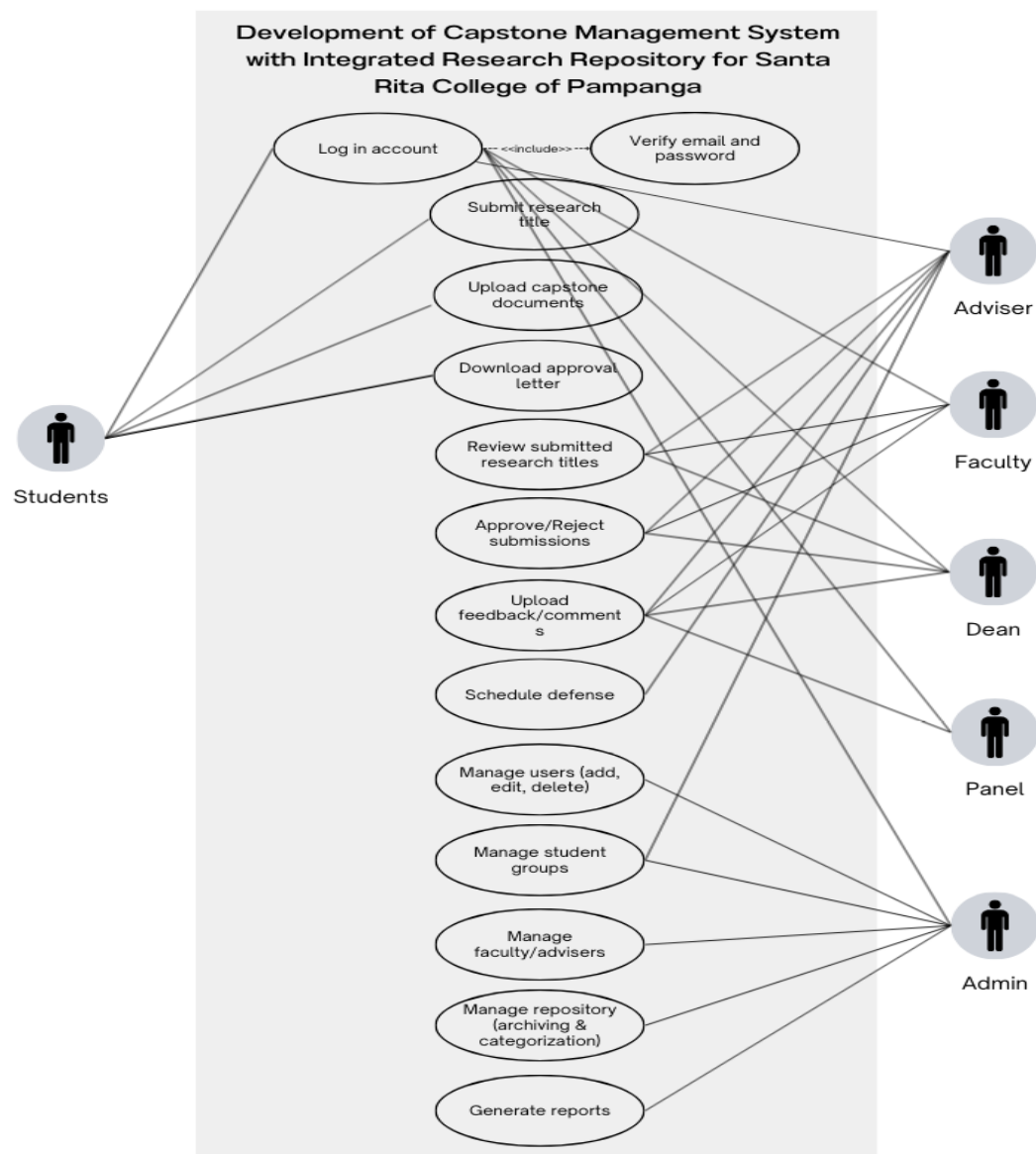


Figure 4 shows how the system works for the Development of Capstone Management with an Integrated Research Repository at Santa Rita College of Pampanga. The diagram outlines a system where different users have their own set of permissions. These permissions cover basic tasks, such as logging in and verifying email, to more advanced tasks like managing users, archiving research, and generating reports. The lines connecting the different roles show how everyone interacts with the system. This includes things like submitting research titles, uploading documents, going through approval workflows, scheduling defense sessions, managing feedback, and organizing the research repository. The whole system is designed to make managing the capstone project easier, from submission to final archiving and categorization.

4.2.4 Data Flow Diagram

Figure 5

Context Diagram Level 0 of Capstone Management System with Integrated Research Repository for Santa Rita College of Pampanga

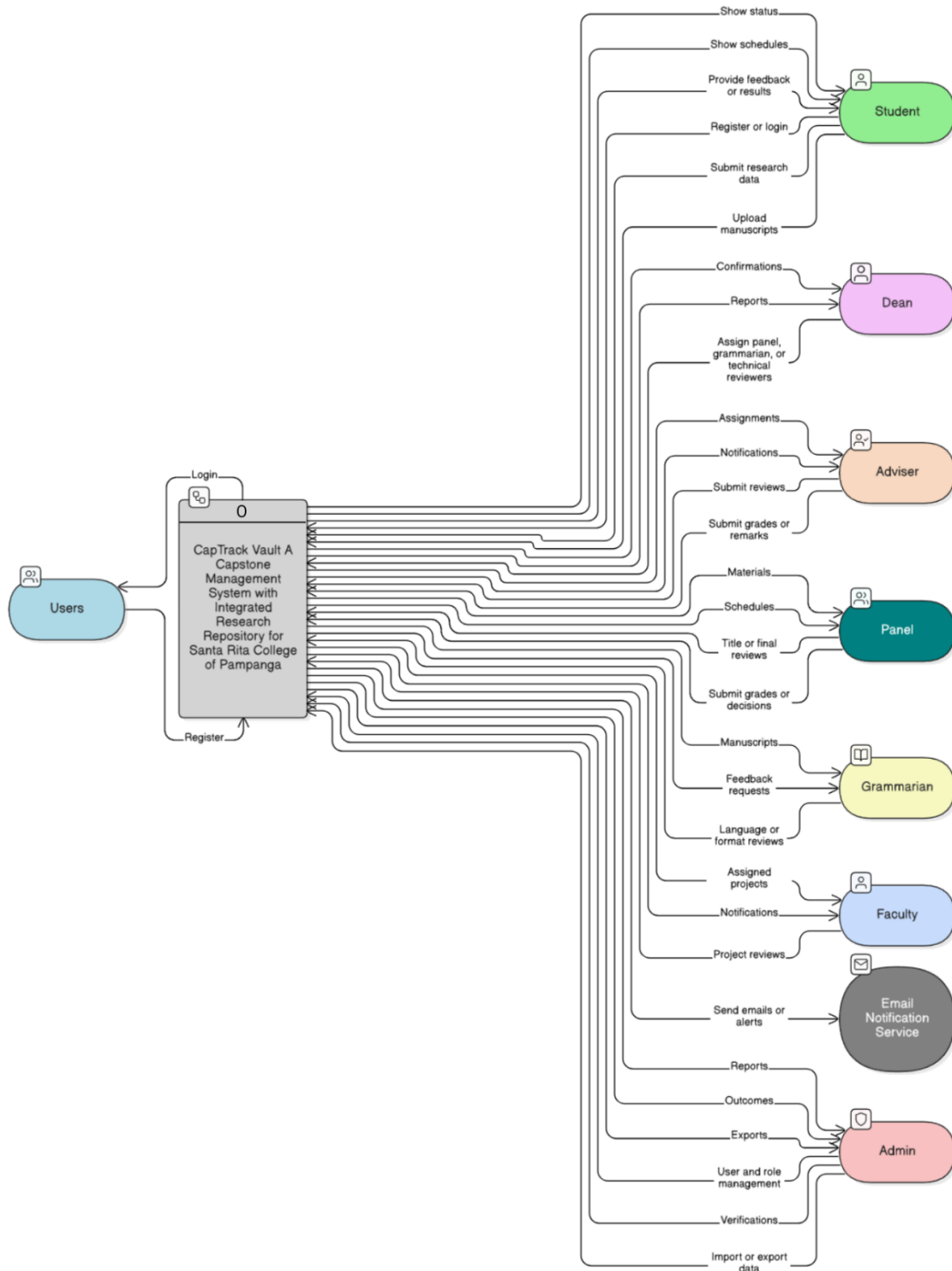


Figure 5 shows the Level 0 Context Diagram for the CapTrack Vault Capstone Management System, which connects with key users at Santa Rita College of Pampanga. The system interacts with eight main entities: Students submit research data and receive updates; Deans assign panels, receive reports, and confirm actions; Advisers give assignments, send notifications, and submit reviews; Panel Members access materials, conduct reviews, and submit grades; Grammarians review manuscripts for language; Faculty handle assignments and conduct reviews; the Email Notification Service sends alerts; and Administrators manage roles, generate reports, and handle data imports/exports. This system acts as a central hub, ensuring smooth communication and coordination throughout the capstone project process.

Figure 6

Context Diagram Level 1 of Capstone Management System with Integrated Research Repository for Santa Rita College of Pampanga

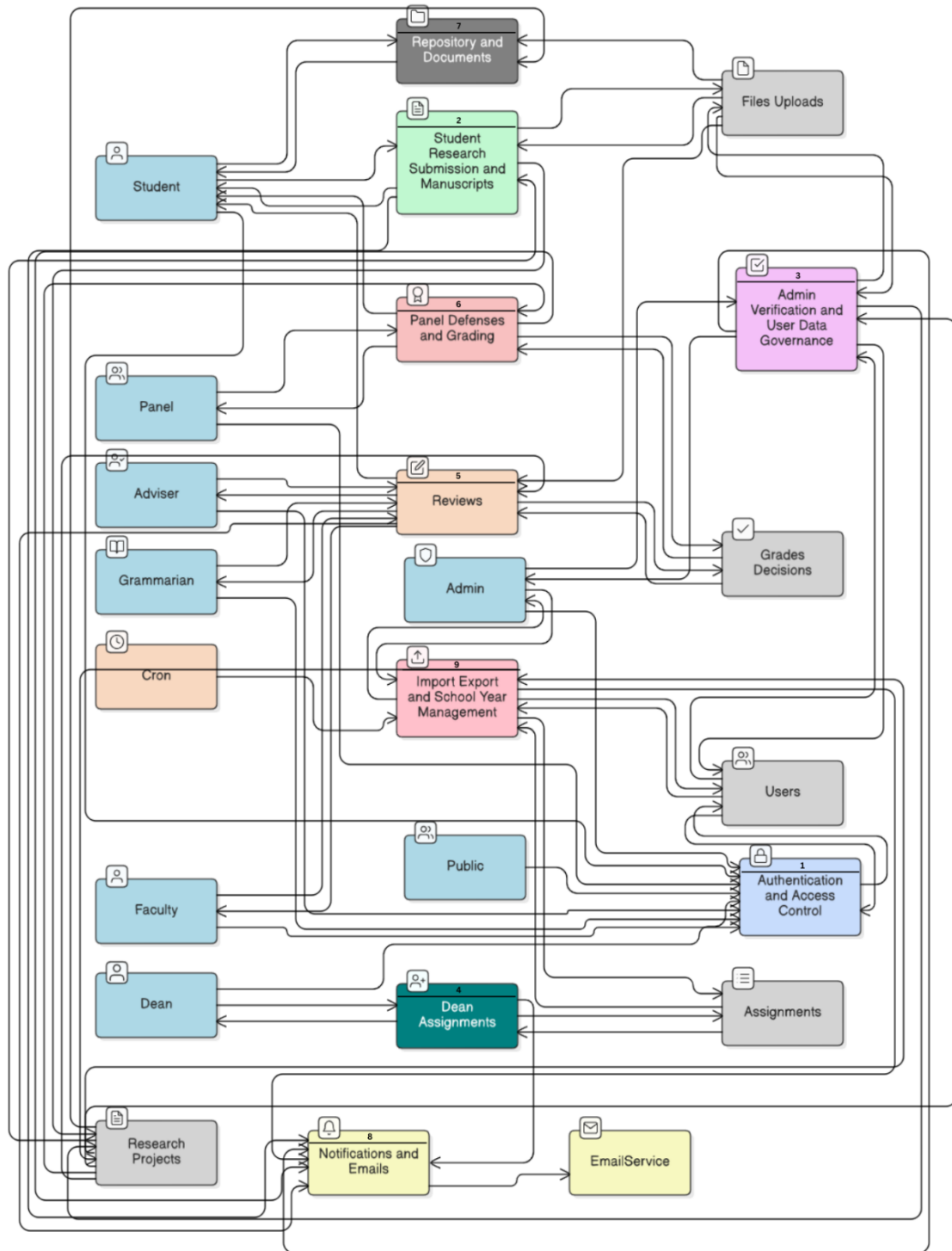


Figure 6 shows the Level 1 Context Diagram for the Capstone Management System at Santa Rita College of Pampanga, breaking the system into nine core processes. These include Authentication, Student Research Submission, Admin Verification, Dean Assignments, Panel Grading, Notifications, Reviews, Grade Decisions, and Data Management. The system connects with key data stores like Research Documents and User Data. This setup creates an integrated system that supports the capstone project lifecycle from start to finish.

CONSTRUCTION

4.3 System Implementation

During the Construction stage, the modules and features conceptualized in the User Design stage were developed, focusing on digitizing and automating the research management process. Iterative feedback from the User Design stage was incorporated to finalize the system's functionality. The implemented modules and features are as follows:

4.3.1 Modules

- **User Management Module:** Implements role-based access with secure login authentication for students, faculty, and administrators, ensuring robust security.
- **Submission Module:** Allows students to upload project titles, proposals, and final manuscripts online, fully digitizing the submission process.
- **Review and Approval Module:** Enables faculty to review submissions, provide feedback, and approve or reject documents digitally with an intuitive interface.

- **Scheduling Module:** Provides automated scheduling for title and final defenses, integrated with calendar systems and notification mechanisms.
- **Research Repository Module:** Stores approved research documents in a centralized, searchable database, ensuring accessibility and organization.
- **Communication Module:** Supports real-time notifications and messaging, facilitating seamless communication between students and faculty.

4.3.2 Features

- **User-Friendly Interface:** Deployed with a responsive design accessible on desktop and mobile browsers (administrators restricted to desktop), ensuring broad accessibility.
- **Document Tracking:** Provides real-time status updates for submissions, allowing users to monitor progress (e.g., "Submitted," "Under Review," "Approved," "Rejected").
- **Automated Notifications:** Sends alerts for submission deadlines, feedback updates, and defense schedules, improving efficiency and communication.
- **Searchable Repository:** Enables users to search and access past research projects with optimized search functionality.
- **Dashboard:** Offers a centralized interface for managing tasks, viewing deadlines, and tracking progress, providing a streamlined user experience.

4.3.3 Database Tables

Figure 7

Database Tables of Capstone Management System with Integrated Research Repository for Santa Rita College of Pampanga



Figure 7 shows the database structure for the Capstone Management System, highlighting key tables like users, students, and projects, along with others for things like project approvals and defense schedules. The setup is built to keep data organized and make sure everything runs smoothly, from user logins to project submissions.

4.3.4 Entity Relationship Diagram

Figure 8

Entity Relationship Diagram Capstone Management System with Integrated Research Repository for Santa Rita College of Pampanga

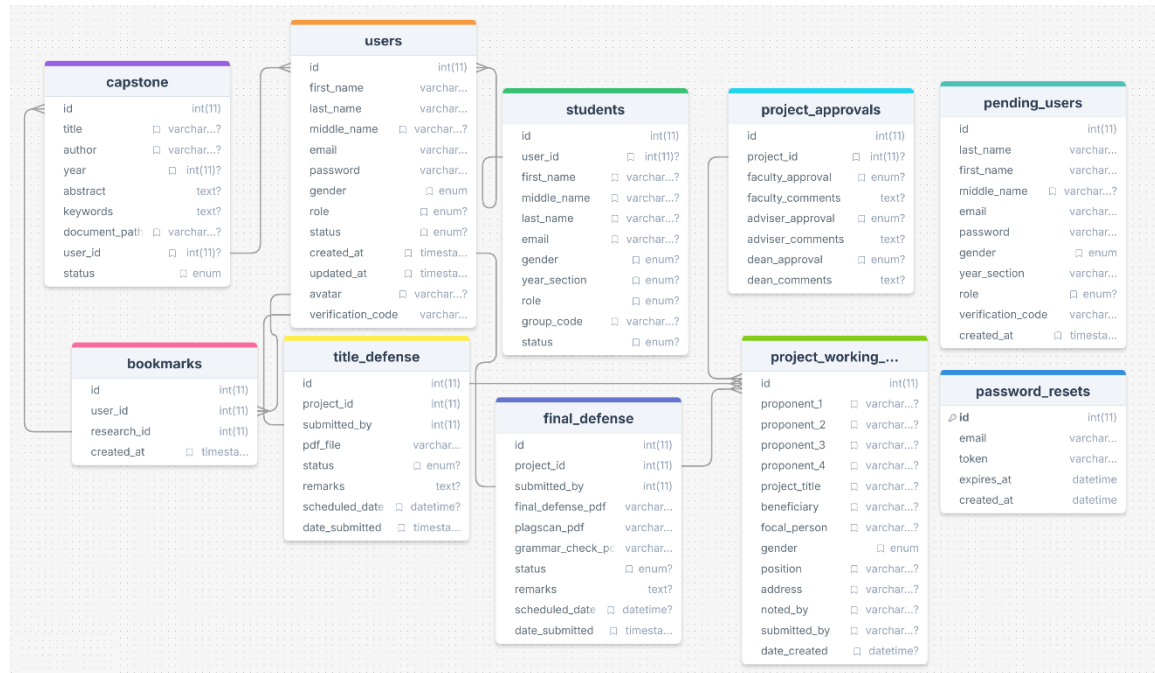


Figure 8 shows the Entity Relationship Diagram (ERD) for the Capstone Management System, highlighting how core entities like users, students, and projects are connected through relationships. The diagram maps out how approval workflows, defense scheduling, and research repository access all work together in a normalized structure, ensuring smooth data flow and supporting multi-user access and project management.

4.4 Security Measures

The third objective was to implement security measures to ensure confidentiality and protect against unauthorized access. These measures were designed and integrated during the Construction stage and validated in the Cutover stage.

- **Login Authentication:** Utilizes secure username-password combinations with role-based access control (RBAC) to restrict access to authorized users.
- **Data Encryption:** Encrypts all data transmissions using HTTPS.
- **Session Management:** Implements session timeouts.
- **Database Security:** Configures MySQL databases with restricted access, and regular backup.
- **Audit Logs:** Tracks user activities (e.g., logins, submissions, reviews) to ensure accountability and traceability.

CUTOVER

4.5 User Acceptability

The final objective was to evaluate user acceptability through user acceptance testing and survey analysis based on the Technology Acceptance Model (TAM). This evaluation was conducted during the Cutover stage, involving 30 students and 3 faculty members. The evaluation process included a structured questionnaire and interviews to gather feedback on user experiences and perceptions.

4.5.1 Quantitative Analysis

The questionnaire assessed TAM constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Technology (ATT), and Behavioral Intention to Use (BIU). Responses were rated on a 4-point Likert scale (1 = Strongly Disagree, 4 = Strongly Agree). The results are presented below.

PERCEIVED USEFULNESS (PU)

Table 2
Evaluation of System Perceived Usefulness

Criteria	4	%	3	%	2	%	1	%	Mean
The system enhances my productivity in managing capstone projects.	56	67.47	25	30.12	2	2.41	0	0.00	3.65
The system improves the efficiency of research submissions and reviews.	76	91.57	7	8.43	0	0.00	0	0.00	3.92
The system makes my academic tasks easier to accomplish.	69	83.13	34	40.96	0	0.00	0	0.00	4.55
Using the system improves the quality of research/project management.	28	33.73	52	62.65	3	3.61	0	0.00	3.30
The system is useful in streamlining communication between students and faculty.	17	20.48	53	63.86	8	9.64	3	3.61	2.94
Weighted Mean									3.67

Table 2 shows the system evaluation based on perceived usefulness as rated by respondents in this study. Most of the respondents rated the system perceived usefulness with a general weight mean of 3.67.

PERCEIVED EASE OF USE (PEOU)

Table 3
Evaluation of System Perceived Ease of Use

Criteria	4	%	3	%	2	%	1	%	Mean
The system is easy to learn and navigate.	10	12.05	66	79.52	2	2.41	5	6.02	2.93
The features of the system are user-friendly.	27	32.53	54	65.06	2	2.41	0	0.00	3.30
Interacting with the system does not require a lot of mental effort.	22	26.51	44	53.01	13	15.66	4	4.82	2.98
I can quickly become skilled at using the system.	17	20.48	49	59.04	15	18.07	2	2.41	2.96
Overall, I find the system simple and straightforward to use.	23	27.71	57	68.67	3	3.61	0	0.00	3.24
Weighed Mean									3.08

Table 3 shows the system evaluation based on perceived ease of use as rated by respondents in this study. Most of the respondents rated the system perceived ease of use with a general weight mean of 3.08.

ATTITUDE TOWARD TECHNOLOGY (ATT)

Table 4

Evaluation of System Attitude Toward Technology

Criteria	4	%	3	%	2	%	1	%	Mean
Using the system is a good idea for managing capstone projects.	68	81.93	15	18.07	0	0.00	0	0.00	3.82
I feel positive about using this system in my academic tasks.	77	92.77	5	6.02	1	1.20	0	0.00	3.92
The system makes capstone management more engaging.	79	95.18	4	4.82	0	0.00	0	0.00	3.95
I like the idea of using this system instead of the traditional process.	80	96.39	3	3.61	0	0.00	0	0.00	3.96
Weighed Mean									3.91

Table 4 shows the system evaluation based on attitude toward technology as rated by respondents in this study. Most of the respondents rated the system attitude toward technology with a general weight mean of 3.91

BEHAVIORAL INTENTION TO USE (BIU)**Table 5***Evaluation of System Behavioral Intention to Use*

Criteria	4	%	3	%	2	%	1	%	Mean
I intend to continue using the system regularly.	65	78.31	16	19.28	2	2.41	0	0.00	3.76
I would recommend this system to others (students/faculty).	78	93.98	5	6.02	0	0.00	0	0.00	3.94
I plan to use the system for future academic project management.	75	90.36	8	9.64	0	0.00	0	0.00	3.90
The system has a high potential for long-term adoption in the CCS Department.	78	93.98	5	6.02	0	0.00	0	0.00	3.94
Weighted Mean									3.89

Table 5 shows the system evaluation based on behavioral intention to use as rated by respondents in this study. Most of the respondents rated the system behavioral intention to use with a general weight mean of 3.89.

CHAPTER V

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

SUMMARY

This study was made to solve the problems that the CCS Department of Santa Rita College faces in handling research and capstone projects. Before, students and teachers used the traditional way of submitting papers, scheduling defenses, and giving feedback. This process was slow, stressful, and required a lot of printed copies.

To address this, the researchers developed CapTrack Vault: A Capstone Management System with Integrated Research Repository. The system allows students to submit titles and research papers online, and lets teachers review, approve, and schedule defenses in a faster and easier way. It also has features like notifications, document tracking, and a research repository where all approved works are stored.

Based on the survey and testing, most of the students and teachers agreed that the system is useful, easy to use, and makes research management more organized and convenient.

CONCLUSION

From the results, the researchers conclude that CapTrack Vault is effective in solving the challenges of the old manual process. It saves time, reduces conflicts in scheduling, and improves communication between students and faculty. The system is also secure and user-friendly, which makes it reliable for academic use.

Overall, the project reached its goal of creating a system that helps the CCS Department modernize the way they handle capstone projects.

RECOMMENDATIONS

The researchers would like to recommend the following:

1. For the CCS Department – Use the system officially to replace the traditional manual process. This will help save time, effort, and resources.
2. For the Faculty – Explore the system’s features and give regular feedback so it can be improved further.
3. For the Students – Maximize the system by submitting documents and checking updates through it, instead of relying on printed copies or personal messages.
4. For Future Researchers – Add more features like analytics, offline access, or integration with other school systems to make the project even more advanced.

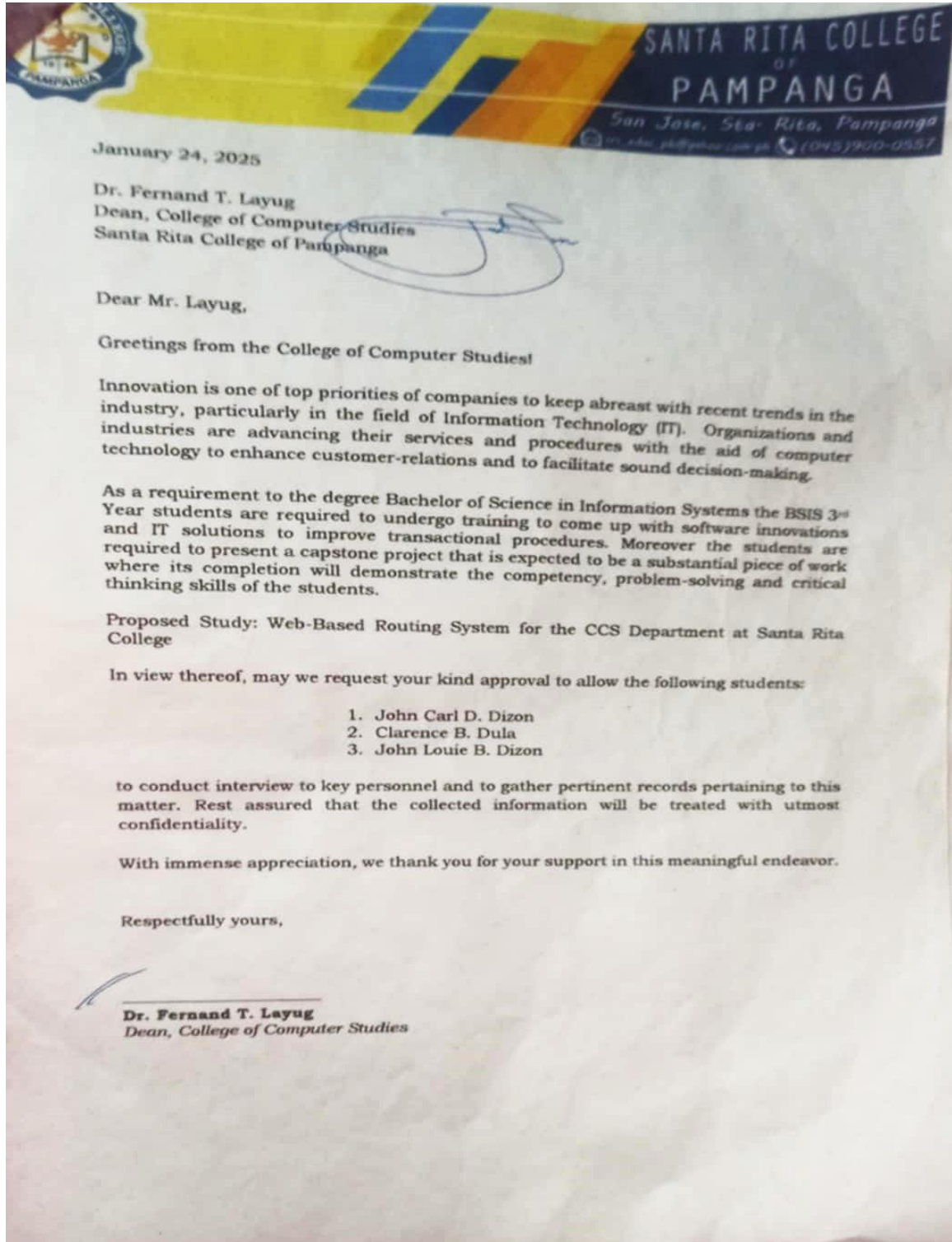
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APPENDIX A

LETTER OF ACCEPTANCE



APPENDIX B

PROJECT WORKING TITLE FORM

 **SANTA RITA COLLEGE OF PAMPANGA**
San Jose, Sta. Rita, Pampanga
0917 900 0000 (045) 900 0000

PROJECT WORKING TITLE FORM

Proponents/Researchers: (format: LASTNAME, FIRSTNAME MI)

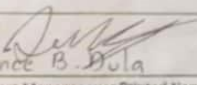
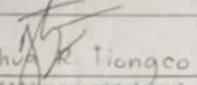
1.	DIZON, JOHN CARL P
2.	DULA, CLARENCE B.
3.	DIZON, JOHN LOUIS B.
4.	

Proposed Project Title:


Web-based Research ~~Appendix~~ ^{Featuring} System for the CCS Department at Santa Rita College

Research Beneficiary:

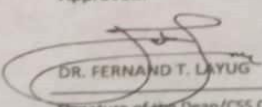
Beneficiary (Company/Organization)	Santa Rita College
Focal Person	Dr. Fernando Layug
Position	Dean
Address	San Jose, Sta Rita, Pampanga

Submitted by:	Noted:
	
Clarence B. Dula (Signature of Project Manager over Printed Name)	Joshua R. Tiongco (Signature of Adviser over printed name)
Date: 01-24-25	Date: 01-24-25

Recommending Approval:


MR. ANTHONY RIVERA 01-24-25
Signature of Panel over printed name

Approved:


DR. FERNAND T. LAYUG
Signature of the Dean/CCS Coordinator over printed name
Date: _____

College of Computer Studies
SRC-CCS-FRM003

APPENDIX C

CURRICULUM VITAE



John Carl Dizon

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✉️ dizon.johncarl0118@gmail.com

📍 Pias, Porac, Pampanga

PROFILE

As a second year student, at Santa Rita College I am focused on earning my Bachelor of Science degree in Information Systems. I am excited to put into practice the knowledge I have acquired through my coursework when facing real world challenges. My understanding of information technology concepts and principles is solid. I have an interest in keeping up with the latest advancements, in technology.

EDUCATIONAL BACKGROUND

PRIMARY SCHOOL

Pias Elementary School
2010 - 2016

SECONDARY SCHOOL

Pulung Santol National High School
2016 - 2017
Pampanga High School
2017 - 2022

COLLEGE

Bachelor of Science in Information Systems
Santa Rita College
2022 -

SKILLS

- TEXT PROCESSOR
- SLIDE PRESENTATION
- VIDEO EDITING
- PHOTO EDITING



Clarence Dula

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📍 Dila-dila, Sta. Rita, Pampanga

PROFILE

Second-year Santa Rita College student who is motivated and ambitious, committed to excelling academically and participating fully in extracurricular activities. With a strong desire to grow both personally and professionally, I'm excited to use my academic background and abilities to make a valuable contribution to dynamic workplaces. I'm looking for chances to contribute positively and obtain real-world experience.

EDUCATIONAL BACKGROUND

PRIMARY SCHOOL

Dila-dila Elementary School

2010-2016

SECONDARY SCHOOL

Pulung Santol High School

2017-2022

COLLEGE

Bachelor of Science in Information Systems

Santa Rita College

2022 -

SKILLS

- CREATIVITY
- COMMUNICATION
- VIDEO EDITING
- PHOTO EDITING



Jhon Louie Dizon

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PROFILE

A second-year Santa Rita College student who is motivated and hardworking and committed to both academic success and personal development. Shows outstanding verbal and written communication abilities that have been developed via extracurricular activities and coursework. Demonstrated the capacity to work well in a team setting and swiftly adjust to new situations. Devoted to using both academic expertise and real-world experience to advance both professional and academic goals.

EDUCATIONAL BACKGROUND

PRIMARY SCHOOL

Santa Rita Elementary School
2010-2016

SECONDARY SCHOOL

Becuran High School
2017-2022

COLLEGE

Bachelor of Science in Information Systems
Santa Rita College
2022 -

SKILLS

- TEAMWORK
- ADAPTABILITY
- VIDEO EDITING
- PHOTO EDITING

APPENDIX C

FLOW CHART

