



**TECHNOLOGICAL UNIVERSITY OF THE
PHILIPPINES – TAGUIG**

KM. 14 East Service Road, Taguig City Philippines

**REDigitalized: Empowering Research and Extension Services at Technological
University of the Philippines-Taguig with the REDigitalized Repository Management
System**

A Capstone Project 1 Project Presented to the
Faculty of the Electrical and Allied Department Technological
University of the Philippines – Taguig Campus

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Bachelor of Science in Information Technology

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CHAPTER 1

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1.1 Introduction

Higher education is constantly evolving, and technology is playing a major role in transforming how universities interact with their stakeholders and operate. The current technological advancements have brought about an era of innovation that is altering the traditional methods of education. Universities, as centers of knowledge dissemination and generation, have embraced technology as a motivation for change, leveraging its potential to streamline processes and enhance the overall learning and research experience (Altbach & de Wit, 2017). From digitized classrooms to virtual laboratories, universities are harnessing technology to transcend physical boundaries and offer engaging and flexible learning environments that cater to the diverse needs of today's learners.

One of the most significant impacts of technological progress on higher education is the development of various systems that facilitate and optimize various aspects of academic life. These systems encompass a wide range of functionalities, from student enrollment and course management to research collaboration and data analysis. According to Daniel (2015), administrative tasks are now automated, giving academic staff more time to concentrate on teaching, research, and community engagement. Additionally, technology has allowed universities to establish connections with scholars worldwide, promoting cross-cultural learning experiences and international collaboration. As a result, universities are rapidly becoming successful centers of innovation and knowledge, creating an ecosystem that encourages creativity and critical thinking (Weller, 2021).

Technology has enabled many transformative systems; The development of repository management systems serves as proof of the advantageous capabilities of digitalization in the academic field. These systems, often tailored to the unique needs of each organization, provide a centralized platform for storing, organizing, and disseminating research materials. By digitizing research papers, reports, and extension-related documents, universities can break down geographical barriers and promote collaboration across disciplines (Jones et al., 2019). The development of the "REDigitalized Repository Management System," for instance, exemplifies how technology can be harnessed to empower research and extension services.



1.2 Background of the Study

Information and knowledge are essential resources in the present time that promote progress in many different industries. Educational institutions, particularly universities, play a vital role in generating and sharing knowledge through research and extension services (Smith & Johnson, 2020). These services not only contribute to academic advancement but also have a significant impact on community development and problem-solving (Brown & Davis, 2018). In the pursuit of maximizing the reach and impact of research and extension efforts, institutions are turning to technology-driven solutions. One such solution is the implementation of comprehensive digital repository management systems (Jones et al., 2019).

The concept of a digital repository has gained prominence due to its ability to efficiently store, organize, and provide access to a vast array of academic and research-related materials (Garcia & Martinez, 2021). These materials may include research papers, scholarly articles, conference proceedings, theses, dissertations, reports, and extension-related documents. The digital repository serves as a centralized platform that transcends physical limitations, enabling users to access, share, and collaborate on knowledge assets from diverse locations and disciplines (Miller & White, 2017).

The "REDigitalized" initiative is focused on utilizing a digital repository to enhance research and extension services. Its goal is to transform how knowledge is managed and shared within the academic community and beyond.

As part of this initiative, the Technological University of the Philippines (TUP) recognizes the significance of its involvement in research and community engagement. TUP has a proud tradition of enhancing academic excellence and promoting societal progress through its research contributions and outreach programs (Robinson & Perez, 2020). However, the traditional methods of storing and sharing these outputs often face limitations in terms of accessibility, discoverability, and scalability. The need for a more efficient and agile system to manage these resources has become apparent.

The "REDigitalized Repository Management System" is an innovative response to this need. The platform is user-friendly and offers a vast collection of academic and research materials for TUP researchers, faculty members, students, and external stakeholders to access easily. The repository will not only streamline the process of archiving and organizing these materials but will also incorporate advanced search functionalities that empower users to swiftly locate specific resources.



1.3 Statement of the Problem

The Research and Extension Services at the Technological University of the Philippines-Taguig face operational challenges due to the absence of an efficient repository system. This inhibits streamlined research and thesis management, undermines academic integrity without plagiarism detection, and restricts accessibility to research outcomes. The REDigitalized project aims to address several challenges by introducing a comprehensive repository management system. This system will enhance research processes, maintain academic integrity, comply with accreditation standards, and encourage collaboration through data-driven insights. The challenge lies in successfully implementing this system to foster an innovative and collaborative academic environment while addressing potential limitations in adoption and security.

1.4 Objective of the Study

1.4.1 General Objective

The REDigitalized project aims to support the Research and Extension Services at the Technological University of the Philippines-Taguig by implementing the REDigitalized Repository Management System. It aims to facilitate seamless operations, optimize thesis, and research management, and ensure academic integrity through plagiarism detection (Turnitin). The project also aims to enhance accessibility, align with accreditation standards, and provide data-driven insights for ongoing improvement, all contributing to an innovative and collaborative academic environment.

1.4.2 Specific Objectives

Specifically, this study aims to achieve the following objectives:

- Implementing Repository System and integrate the REDigitalized Repository Management System to provide a centralized platform for storing, organizing, and disseminating research, thesis, and extension materials.
- Developing a platform to improve Accessibility and Visibility through Digitize and centralize research outputs to enhance their visibility and accessibility, benefiting stakeholders. To implement a billing and payment module within the system, enabling



- Implementing a tool for tracking citations to the university's research outputs, allowing researchers to gauge the impact of their work and fostering academic recognition.
- Offering a Usage Analytics to provide researchers, faculty, and administrators with analytics on users, published thesis, repository usage, citations count, and etc to inform decisions about content relevance and future directions.
- Streamlining Management Processes to optimize the submission, review, and approval processes of thesis and research projects, providing efficient tools for students, advisors, and administrators to manage academic works.

1.5 Significance of the Study

This study creates online platform for optimizing the operation of Research and Extension Services The results of the study would be a great benefit to the following:

- **Researchers and Faculty:** The project offers researchers and faculty members an effective platform to manage, access, and share their research work, promoting interaction and increasing their productivity.
- **Students:** Students benefit from improved access to research materials, theses, and projects, enriching their learning experiences and enabling them to engage in more comprehensive rese
- **Administrators:** The streamlined repository management system reduces administrative burdens, making it easier for administrators to oversee research processes and ensure alignment with accreditation standards.
- **Future Researcher:** The result could be a basis for other researchers conducting future research. This study may assist individuals in delving deeper into the system, producing fresh concepts, and advancing knowledge.

1.6 Scope and Delimitation

The REDigitalized Repository Management System will be utilized to store, manage and preserve valuable research files within the stakeholders of the Research and Extension Department. These includes the students, the professors, the Research and Extension Faculty



of the Technological University of the Philippines-Taguig. The data that will be stored in this repository is the research published between 2020-Present.

1.7 SWOT Analysis

Strengths	Weaknesses
<ol style="list-style-type: none">1. Project streamlines research and thesis management, reducing administrative overhead.2. Plagiarism detection enhances academic integrity and research originality.3. A repository facilitates research access, knowledge sharing, and collaboration.	<ol style="list-style-type: none">1. New system implementation faces resistance from unfamiliar stakeholders.2. Storing sensitive research data requires robust data security measures to prevent unauthorized access or breaches.3. Consistent maintenance, updates, and technical support ensure system longevity.
Opportunities	Threats
<ol style="list-style-type: none">1. Repository enhances university's research excellence through increased publication opportunities.2. Repository preserves research data for future analysis and studies.3. Repository preserves university's research contributions and intellectual legacy.	<ol style="list-style-type: none">1. Evolving technologies may lead to competition or obsolete features.2. Research activities and resource access may be disrupted by technical issues.3. the database cannot handle the data being received due to the sheer volume