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Development and Evaluation of UE – Research Management System

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ABSTRACT

This study developed and evaluated a data-driven Research Management System (RMS) for the University of the East (UE) to facilitate and speed up documentation caused by the absence of a centralized research platform. The system was designed to streamline research submission, approval workflows, integration of external research profiles, and reporting functions. A quantitative research design was employed, with the system developed through a user-centered, iterative prototyping approach and evaluated using user acceptance testing based on the ISO/IEC 25010 quality model. Fifty respondents—including faculty, department chairs, deans, and administrators—assessed six quality characteristics: Functional Suitability, Usability, Performance Efficiency, Reliability, Security, and Overall Satisfaction. The system achieved an overall mean rating of 4.62 (Strongly Agree), with performance efficiency (4.70), usability (4.64), and reliability (4.62). Open-ended feedback highlighted the need for clearer input validation, UI/UX improvements, added support features (e.g., chat assistance, password recovery), and enhanced functions such as dashboards and search tools. Overall, the UE RMS demonstrated to be an efficient, secure, and user-friendly platform that improves transparency, accountability, and research productivity. Its positive evaluation confirms strong alignment with ISO/IEC 25010 standards and its potential as a sustainable digital solution for higher education institutions.

Keywords: Research Management System, academic research tracking, research data management, higher education research, University of the East

Managing research effectively is vital for keeping a university productive, transparent, and accountable. Research Information Management Systems (RIMS) have become the standard solution for bringing these processes—like submission, validation, and reporting—under one roof (Azeroual et al., 2019). Without these systems, universities often struggle with delays, messy data, and work that goes unnoticed (Azeroual et al., 2018). Currently, the University of the East (UE) relies on a manual and fragmented approach. Since the current system does not connect with major hubs like ORCID or Scopus, the university is dealing with unnecessary slowdowns. This lack of automation generally results in inefficiencies and limited research visibility within and beyond the institution.

To solve this problem, the study developed a new Research Management System (RMS). that automates submissions, approvals, and reporting of proposals, requesting research grants, sending real-time alerts and allowing researchers to link to their external profiles.

The main goal of this study was to build a Research Management System tailored specifically to the University of the East. The system was designed to handle the application for Type 1 and Type 2 research grants, and the archiving of past and present researches—from submission to automated approval workflows and analytics. It also prioritized data accuracy by using role-based permissions and detailed audit trails. To ensure the system was both effective and user-friendly, it was evaluated using ISO 25010 standards.

The true value of this study is how it is expected to improve the workflow for everyone involved in the research ecosystem. For faculty members, the system simplifies the submission process and cuts down on paperwork. The system also serves as repository for archiving past and present researches by the faculty members. Increased visibility of archived faculty work creates opportunities for interdisciplinary discovery. For example, a centralized repository allows researchers from different disciplines, such as Engineering

and Social Sciences, to identify existing theoretical frameworks that may be applicable to their own emerging projects. For department chairs and deans, it brings order to the validation process, using automated alerts to make monitoring and accountability much easier. At the institutional level, administrators gain access to reliable data needed for strategic planning and resource allocation. The system is designed to align with global metadata standards, which facilitates the accessibility and exchange of research data within the university walls.

This study focused on automating the entire research application workflow at the University of the East. This covers everything from the initial submission and validation of faculty work to the approval of applications. Designed for faculty, department chairs, deans, and administrators, the system provides a complete suite of tools including secure logins, profile management, workflow tracking, and detailed reporting. The system currently facilitates manual linking to identifiers like ORCID, establishing a foundation for future integration with global indexing databases such as Scopus and Google Scholar to further automate research tracking. While the system is currently tailored for UE's internal operations, it was built with scalability in mind to accommodate future growth like connection with similar systems in other academic institutions without sacrificing data privacy protection. Practically speaking, the system requires a stable internet connection to run smoothly, and the ability to migrate old data depends on the format of existing records.

To guide the study, the following research objectives were formulated:

1. To design and develop a Research Management System that would:

    - implement automated workflows for the application and approval of Type 1 and Type 2 research grants with feedback and notification mechanisms
    - streamline the end-to-end process of submitting, validating, approving, and reporting faculty research outputs at the University of the East. This study defines research outputs as a comprehensive archive of both historical and contemporary work, systematically capturing journal articles, conference papers, theses,

dissertations, books, and patents. By documenting these past and current research activities, the study ensures a complete record of institutional productivity and knowledge dissemination

- To integrate external academic profiles such as ORCID, Scopus, and Google Scholar within the system

2. To evaluate the system's performance and usability through user acceptance testing based on ISO 25010 standards.

By addressing the limitations of the manual system, this research provided a centralized, paperless, and efficient platform that supported academic productivity, enhanced institutional accountability, and aligned the University of the East with international best practices in research management.

REVIEW OF RELATED LITERATURE

Document Management Systems (DMS) and Evaluation of DMS

Document Management Systems (DMS) have become an essential infrastructure in modern organizations, serving as centralized repositories for storing, organizing, retrieving, and managing digital documents and information. In academic contexts, DMS applications extend to research management and institutional knowledge preservation. Bouasangthong (2024) describes the development of a research management system at the National University of Laos, which comprises four components (e.g. input, process, output, and feedback) with 61 indicators designed to optimize research management effectiveness. The system aims to support faculty in managing research activities, from project initiation through completion and evaluation.

The effective management of scientific activities within universities is essential for enhancing research productivity, quality, and institutional competitiveness. According to Pitukhin, Zyateva, and Peshkova (2023), modern data-driven management systems that integrate both quantitative and qualitative indicators such as publication counts, citation indices, innovation capacity, and collaboration outcomes are vital for evaluating and improving research performance. The study further indicates that the adoption of systematic digital tools for monitoring and decision-making is

necessary to ensure that research activities remain aligned with institutional objectives and international standards.

The adoption of DMS in educational institutions has demonstrated significant benefits for operational efficiency. Triyana and Fianty (2023) reported on a web-based Document Management System developed for a private school in Tangerang, designed to enable teachers and school staff to manage, store, and access educational documents digitally. The system successfully reduced manual document storage time and physical space requirements while providing positive user feedback through User Acceptance Testing. Similarly, Noche, Ventayen, and Galas (2023) presents a research management system using open-source applications for preprint servers and online journals, demonstrating how technology can facilitate research publication and data repository management in university campuses.

DMS implementation in healthcare research contexts reveals similar patterns of improvement. Mkumbwa, Pancras, and Sirili (2025) examined the transition from paper-based to electronic Research Ethics Information Management Systems (REIMS) at a health training institution in Tanzania, identifying strengths such as convenience and improved records management, alongside limitations including the need for reliable ICT resources and challenges in reviewer-researcher interaction.

Beyond basic document storage, specialized DMS applications have emerged for different domains. Ahmad, Bazlamit, and Ayoush (2017) investigated document management systems in small-size construction companies in Jordan, examining how DMS facilitates information access and improves organizational efficiency. The research emphasizes the importance of systematic management of construction project documents for improved operational performance.

Different Approaches to Evaluating DMS, Leading to the Use of ISO/IEC 25010

The evaluation of Document Management Systems and research management systems has evolved through various methodological approaches, with ISO/IEC 25010 emerging as a prominent international standard for software quality assessment. This standard defines eight key characteristics for evaluating

software product quality: functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.

Tsuda et al. (2019) established the Waseda Software Quality Framework (WSQF), which concretizes the ISO/IEC 25010 standard for comprehensive software quality evaluation. The framework addresses the limitations of existing ISO/IEC standards by providing concrete measurement methods and benchmarking approaches, making the standard more applicable to real-world software products.

The ISO/IEC 25010 standard has gained widespread adoption in assessing various types of systems. Melendres and Aranda (2024) evaluated a web-based resident information management system using the ISO 25010 criteria, demonstrating that this standard provides a systematic approach to quality assessment with an average mean result of 3.48-3.62 across the six evaluated characteristics. The study confirmed that the developed system met user requirements and was ready for implementation.

For research-specific applications, Canlas, Piad, and Lagman (2021) employed ISO/IEC 25010 to assess a Faculty Research Productivity Monitoring and Prediction System. The study identified necessary features for research management including support for paper proposal submission, review and approval processes, monitoring of ongoing approved papers, utilization of research outputs, repository functionality, and predictive analysis. The assessment resulted in a grand mean of 3.87 (Strongly Agree), indicating that the system possessed necessary features for determining faculty research productivity.

The application of ISO/IEC 25010 extends to specialized domains beyond general DMS. Salomón et al. (2025) customized the quality-in-use model from ISO/IEC 25010 for context-aware software systems in pervasive environments, recognizing that generic quality standards require modifying for specific application domains. This research developed measures specifically custom-made for context-aware systems that interpret and use context information to adapt functionalities.

Research management systems evaluation using ISO/IEC 25010 has also incorporated complementary methodologies.

Gañgan (2025) evaluated a web-based agricultural trading system using ISO/IEC 25010, incorporating feedback from IT experts, farmers, and buyers, achieving an overall weighted mean of 4.46, demonstrating the system's effectiveness in modernizing commerce. Similarly, De Melo et al. (2024) evaluated educational software using both ISO/IEC 25010 and NBR ISO-IEC 14598-6 standards, with expert evaluation showing agreement greater than 70% across all quality characteristics.

The integration of ISO/IEC 25010 with other methodologies has enhanced DMS evaluation. Haoues et al. (2023) combined machine learning algorithms with ISO/IEC 25010 to evaluate mobile health applications based on user feedback, achieving classification accuracy of 82% when categorizing user reviews according to ISO/IEC 25010 quality characteristics. This approach demonstrates how user feedback analysis can augment traditional quality assessment methods.

Practical Value of the DMS or RMS in Managing Research Outputs at University

The practical value of Document Management Systems and specialized research management systems for universities lies in their capacity to enhance operational efficiency, improve research documentation, facilitate knowledge management, and support informed decision-making regarding faculty productivity.

Innocent and Bupo (2025) demonstrated that effective utilization of technological tools, including document management and data analysis systems, significantly enhances postgraduate students' research productivity. The research found strong correlations between the use of citation management systems, data analysis software, and research productivity, suggesting that such tools provide tangible benefits to research output quality and quantity.

Research management systems provide comprehensive institutional support for tracking and evaluating research activities. Binh, Thang, and Tuan (2023) examined knowledge management factors at Vietnam National University, finding that knowledge creation, access, dissemination, and application all positively affect scientific research outputs. The study emphasizes that knowledge managers must create favorable ecosystems promoting research

through updated policy systems aligned with scientific research activities.

The monitoring and assessment of research productivity requires robust technological infrastructure. Tarima et al. (2025) reported on integrated clinical research ensembles where faculty publication rates increased 72% after ICRE funding and future citation rates increased 150%, demonstrating that structured research management frameworks significantly enhance research output. This finding underscores the importance of systems that facilitate research collaboration and provide visibility into research outcomes.

At the university level, research management systems support strategic planning and resource allocation. Howell, Hogarth, and Anders (2002) developed a web-based mission-based reporting system enabling faculty to report activities in research, clinical service, education, and community service. The system facilitated objective demonstration of service value to administrators and stakeholders, aiding in resource justification and program assessment, though implementation success required addressing concerns about reliability and time requirements for completion.

Research output management systems demonstrate value in addressing research documentation and repository concerns. Noche et al. (2023) highlights how preprint servers and online journal systems serve dual purposes: facilitating open research access while providing organizational infrastructure for managing diverse research outputs. Such systems enhance the visibility of institutional research and support compliance with open science initiatives.

The assessment of research management system functionality reveals critical success factors. Bouasangthong (2024) identified that challenges in current research management systems include budget constraints, unstructured research guidance, monitoring gaps, and evaluation difficulties. The optimized system design with 61 indicators across input, process, output, and feedback components addresses these gaps, providing structured mechanisms for research management throughout the research life cycle.

Beyond institutional management, research management systems support individual researcher productivity. Harish and Rathod (2025) found that information literacy among faculty members correlates significantly with research output, publication rates, and citation impact. Systems that facilitate access to academic resources, utilize digital repositories, and enhance research effectiveness contribute measurably to research productivity outcomes.

The DMS and specialized RMS provide substantial practical value to universities through systematic organization of research documentation, facilitation of collaborative research activities, support for informed decision-making, and enhancement of research visibility and accessibility. Evaluation frameworks such as ISO/IEC 25010 ensure that these systems meet quality standards across technical, functional, and user experience dimensions, enabling universities to implement technology solutions that effectively support their core mission of advancing knowledge and research outputs.

Systems development and quality assurance foundations

The theoretical foundation of this study is grounded in the Systems Development Life Cycle (SDLC) and User-Centered Design (UCD) principles, guided by the ISO/IEC 25010 software quality model. The SDLC provides a structured and systematic framework for developing the Digital Management System (DMS) for research outputs, ensuring that each phase—from planning and analysis to design, implementation, testing, and evaluation contributes to a coherent and efficient system. Complementing this, User-Centered Design emphasizes the active participation of end users throughout the development process to ensure that the DMS addresses their real needs, preferences, and workflows.

This approach ensures that usability and functionality are prioritized to enhance user satisfaction and adoption. The ISO/IEC 25010 standard serves as the evaluative foundation of the study, defining essential software quality characteristics—functional suitability, performance efficiency, usability, reliability, and security. Together, SDLC, UCD, and ISO/IEC 25010 form a unified theoretical framework that ensures the DMS is developed systematically, evaluated thoroughly, and aligned with both user expectations and institutional goals.

METHODOLOGY

Research Design

This study utilized a quantitative, non-experimental research design to assess the usability, effectiveness, and overall quality of the UE RMS that was developed from this study. The primary objective was to collect measurable feedback from intended users—including faculty members, department chairs, college deans, and administrators regarding their experiences with the system following its development and deployment.

The evaluation framework was grounded in the ISO/IEC 25010 software quality model, which defines key quality characteristics for software products. The study focused on five major attributes.

- Functional Suitability – the extent to which the system's functionalities meet user needs
- Usability – the degree of ease of use, user interface design, and learnability
- Performance Efficiency – the system's responsiveness, resource utilization, and throughput
- Reliability – the stability, fault tolerance, and consistency of the system during use
- Security – the effectiveness of data protection, user authentication, and access control mechanisms

This research design provided a structured and systematic approach to evaluating the UE RMS, ensuring that findings were data-driven, measurable, and aligned with international software quality standards. In this study, research outputs refer to any scholarly or creative work produced by faculty members that contributes to institutional research productivity and knowledge dissemination. These include:

a. Journal Articles – peer-reviewed manuscripts published in academic or scientific journals.
b. Conference Papers – scholarly papers presented at research conferences and included in conference proceedings.
c. Theses and Dissertations – academic research works supervised by faculty, reflecting research mentorship and knowledge generation.

d. Books – full-length scholarly publications authored or co-authored by faculty, including textbooks, monographs, and edited volumes.
e. Book Chapters – scholarly contributions within edited books that showcase faculty expertise in specific research areas.
f. Patents – registered intellectual properties resulting from innovative or technological research with potential commercial value.
g. Posters and Presentations – visual or oral research dissemination materials presented at academic, scientific, or professional events.
h. Creative Works – non-traditional scholarly outputs such as artworks, performances, designs, or multimedia productions formally recognized as research or creative scholarship.

Project Development Method

The UE RMS was developed using a User-Centered Design (UCD) with Iterative Prototyping approach. This methodology prioritized stakeholder needs through continuous feedback loops and phased system refinement.

1. Requirement Analysis – Stakeholders were consulted through interviews and surveys to identify functional and non-functional requirements.
2. System Design – A modular architecture was developed, with role-based access, visual prototypes, and modules for research output submission, approval, and reporting.
3. Prototyping & Testing – Pilot versions of the system were tested by faculty and administrators. Feedback was used to refine interfaces, workflows, and functions.
4. Integration & Data Migration – Compatibility with existing UE platforms was ensured while migrating research data accurately.
5. Implementation & Training – The system was deployed in phases, supported by faculty orientation and documentation.
6. Maintenance & Improvement – Continuous upgrades, bug fixes, and new features were introduced based on user feedback and institutional needs.

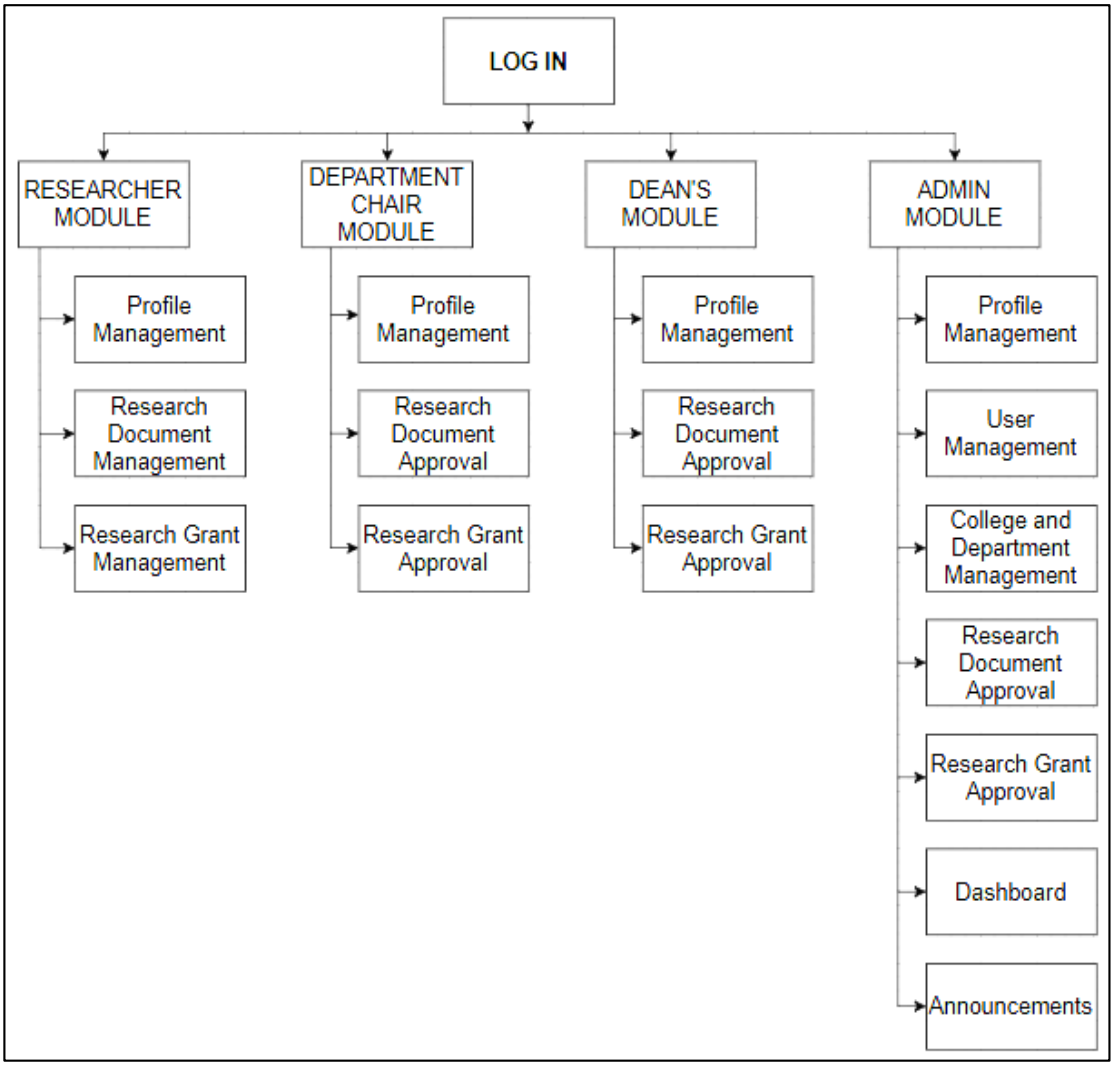
This iterative model guaranteed that the RMS was both technically and responsive to user expectations.

Project Structure

Figure 1 presents the Visual Table of Contents (VTOC) for the UE RMS. It outlined the hierarchical structure of system modules and user functionalities, starting from a common Log In page and branching out into role-specific interfaces. Each user role was given access to a defined set of features based on their responsibilities within the research management workflow.

Figure 1

Visual Table of Contents for the UE RMS

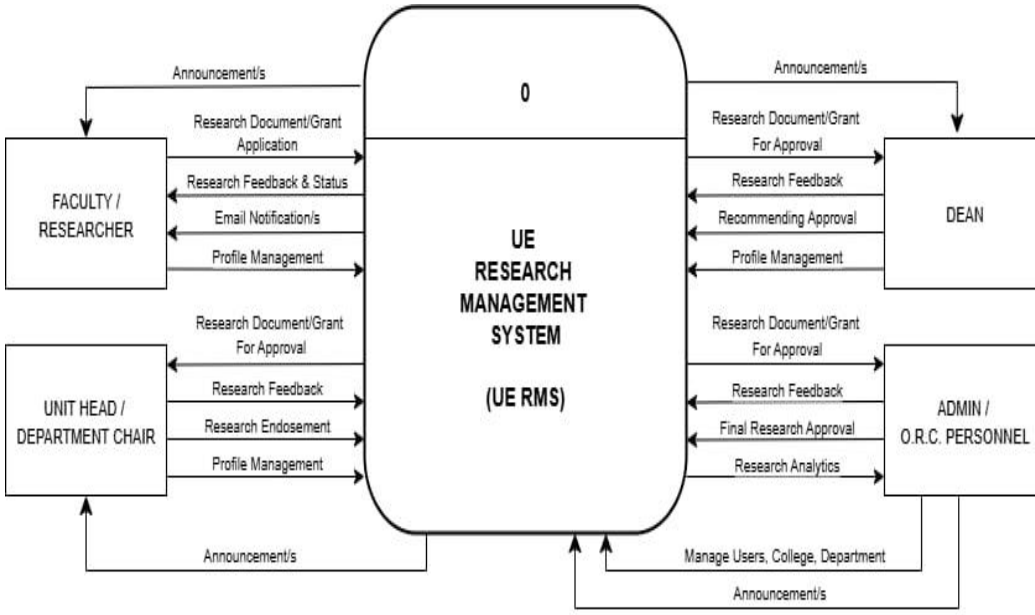


The system defined four main user roles with specific modules and functions. The Researcher/Faculty Member Module allowed faculty members to edit their profiles, view and submit research documents, and apply for research grants. The Department Head/Chairman Module had similar functions but included added privileges to approve research documents and research grants. The College Dean Module was focused on research oversight, with the ability to edit profiles and approve both research documents and grants. Lastly, the Administrative/Office of Research Coordinator (ORC) Module had the broadest access, managing users, colleges, and departments, approving research-related submissions, posting announcements, and sending automatic email notifications to researchers about their approved documents or grants, all supported by a centralized dashboard.

Figure 2 presented the Context Diagram of the UE RMS. It provided a high-level overview of the system's interaction with external entities, illustrating the main users, the information they exchanged, and how they interacted with the RMS.

Figure 2

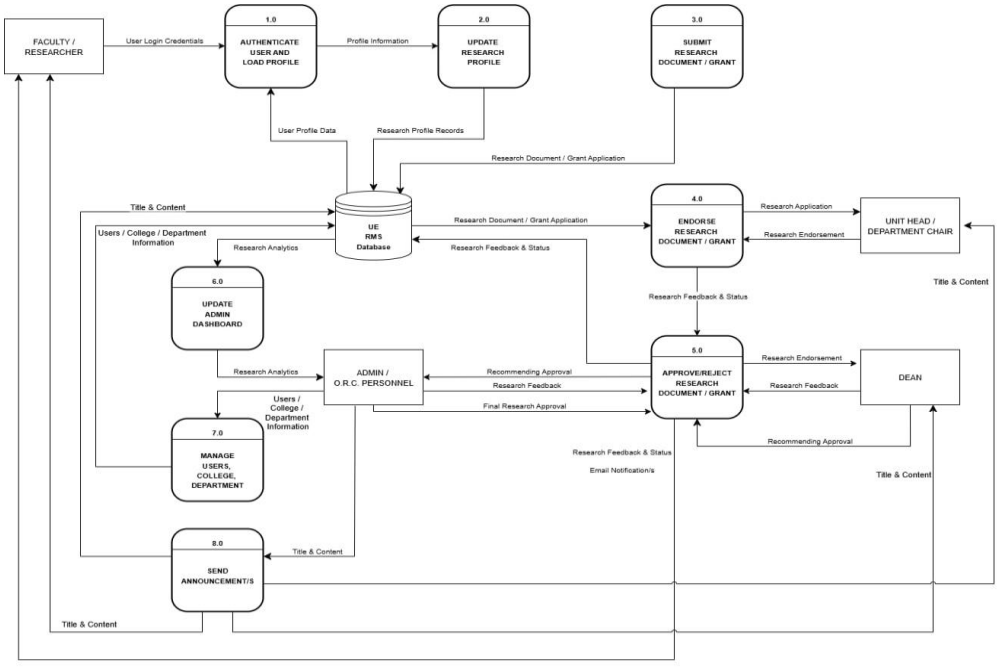
Context Diagram of the UE RMS



This Data Flow Diagram (DFD) illustrated the interaction between different user roles and the UE RMS as the central platform for managing research activities. Faculty or researchers used the system to submit research documents or grant applications, manage their profiles, and receive research feedback, status updates, email notifications, and announcements. The Department Chair inputted research endorsements and managed profiles, while also reviewing and approving submitted research documents and receiving feedback and announcements. The Dean interacted with the RMS by reviewing research documents and grant applications, recommending approvals, managing profiles, and receiving feedback and announcements. Finally, the Administrative or Office of Research Coordination (ORC) personnel had the broadest role, handling final research approvals, research analytics, user and organizational management (colleges and departments), as well as posting announcements. The system thus served as a hub, coordinating submission, approval, feedback, communication, and management across all roles.

Figure 3 presented the Diagram 0 of the UE RMS. It broke down the system into its major processes.

Figure 3
Diagram 0 of the UE RMS



The Data Flow Diagram (DFD) showed how the UE RMS managed research activities through different processes, external entities, and data flows. Faculty or researchers served as the primary users, logging in to update their profiles and submit research documents or grant applications. These submissions were first reviewed and endorsed by the Unit Head or Department Chair, then forwarded to the Dean for final approval or rejection, with feedback sent back to the researcher. Administrative or ORC personnel oversaw the system by managing the dashboard, users, colleges, and departments, as well as sending announcements. The central UE RMS database stored all essential data, including user profiles, research submissions, endorsements, approvals, feedback, and analytics. Information flowed between entities and processes in a step-by-step manner: authentication of users, profile management, submission, endorsement, approval, and feedback, with admins ensuring smooth system management. Ultimately, the RMS acted as a centralized platform for submission, review, approval, feedback, and institutional oversight of research activities.

Research Locale

The study was conducted at the University of the East, a private higher education institution in the Philippines with campuses located in Manila and Caloocan. The University's College of Computer Studies and Systems and College of Engineering, both actively engaged in research initiatives, provided an appropriate environment for testing the centralized system. This setting allowed for the evaluation of the system's effectiveness in improving research productivity, visibility, and reporting within an academic context.

Participants

The participants were drawn from academic and administrative units directly involved in research activities such as the following.

- Faculty Members who actively produced research outputs.
- Department Chairs who were responsible for research validation and monitoring.
- College Deans who oversaw research activities at the college level.

- The Office of Research Coordination (ORC), which managed institution-wide research documentation and reporting.

The participants were chosen because they represented the primary users and beneficiaries of the UE RMS. Their insights were essential in evaluating the system's usability, effectiveness, and alignment with institutional workflows.

Ethical Considerations

The study underwent ethical review by the University ERC and was granted clearance on November 20, 2024. Informed consent was obtained from all the respondents, and their identities and responses were treated with strict confidentiality and used solely for academic and research purposes.

Research Instruments

A structured survey questionnaire served as the main instrument used to evaluate the UE RMS. The questionnaire was designed according to ISO/IEC 25010 standards and measured the following attributes:

- Functional Suitability – adequacy of system features such as submission, approval, and reporting.
- Usability – interface design, navigation, and user learning curve.
- Performance Efficiency – speed, responsiveness, and stability.
- Reliability – consistency and error-free operations.
- Security – protection of data, user authentication, and access restrictions.

In addition to these attributes, the survey included:

- Overall Satisfaction – capturing users' general perception of the RMS.
- Open-Ended Questions – allowing respondents to provide qualitative feedback and recommendations.

The research instrument was structured according to the ISO/IEC 25010 quality model, with survey items distributed across six evaluation criteria to comprehensively assess system quality.

Functional Suitability and Usability were allocated the highest number of items, with four statements each, as these dimensions directly influence the users' ability to complete tasks effectively and comfortably when interacting with the system. For instance, sample Functional Suitability items include: "The system allows me to submit my research proposals easily," "All required features for research submission and tracking are present," "The system correctly saves and displays my research data," and "The system provides accurate notifications and status updates." Performance Efficiency and Reliability each contained two items, focusing on the system's speed, responsiveness, consistency, and error-free operation. Security was represented by three items to measure users' confidence that the system safeguards data integrity and protects sensitive information during usage. Finally, Overall Satisfaction included two items to gauge users' general perception of the system's usefulness and value.

The distribution of item counts reflects prioritization based on expected system impact on user experience. Dimensions that directly affect task completion and interaction smoothness received more instrument coverage, whereas technical qualities were measured concisely yet adequately. This balanced allocation ensured that the instrument captured comprehensive feedback without overwhelming respondents, enabling a rigorous evaluation of system quality with respect to ISO/IEC 25010.

The research instrument was developed based on the ISO/IEC 25010 software quality model and underwent a multi-stage validation procedure to ensure its accuracy and reliability. First, content validity was established through expert evaluation, wherein specialists in software quality and academic research assessed each item for relevance and alignment with ISO/IEC 25010 characteristics. The Content Validity Index (CVI) was computed, and only items meeting the acceptable threshold (I-CVI ≥ 0.78; S-CVI/Ave ≥ 0.90) were retained (Polit & Beck, 2006). Face validity was then conducted with representative respondents to ensure clarity, readability, and appropriateness of item wording, leading to minor revisions based on feedback. A pilot test followed, during which data collected from the target population were subjected to reliability analysis. Cronbach's Alpha values met or exceeded the acceptable benchmark of 0.70, indicating strong internal consistency across the instrument's constructs. Thus, the resulting

instrument was validated as both conceptually and statistically reliable for evaluating software quality based on ISO/IEC 25010.

Two measurement scales were employed during the validation of the research instrument. For content validation, experts evaluated each item using a 4-point relevance scale ranging from 1 = Not Relevant to 4 = Highly Relevant, which served as the basis for computing the Content Validity Index (CVI). Items rated 3 or 4 were considered acceptable and were retained in the instrument. For reliability testing and data collection, respondents rated each statement using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), enabling the computation of Cronbach's Alpha to assess internal consistency. The combined use of these scales ensured that the instrument was both conceptually valid and statistically reliable for assessing software quality in accordance with ISO/IEC 25010.

Data Collection Procedure

After system deployment, participants were invited to use the UE RMS and complete the evaluation questionnaire. Data collection was conducted in two phases:

1. Pilot Testing – A total of ten faculty members and one academic administrator evaluated the system to refine the survey items and ensure clarity.
2. Full Evaluation –The finalized questionnaire was administered to the target participants from the University of the East, specifically those participants in the College of Computer Studies and Systems in the Manila campus and the College of Engineering in the Caloocan campus.

Responses were gathered electronically to ensure convenience, accessibility, and accuracy of results. A total of 50 participants was selected through purposive sampling to ensure adequate representation across all key user roles. Data were collected using a five-point Likert scale, with response options ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The inclusion of 50 participants was methodologically justified within the framework of quantitative research. Because the total population size was not explicitly defined, the sample size determination did not rely on statistical formulas such as Slovin's

formula. Instead, a judgment-based approach was adopted, guided by established methodological recommendations in quantitative research design. According to Creswell (2014) and Bryman (2016), a sample size between 30 and 50 participants is generally appropriate for small-scale quantitative studies, as it provides adequate statistical power, representativeness, and reliability. Therefore, the selection of 50 participants was deemed sufficient to capture meaningful data trends while maintaining both feasibility and accuracy in data collection.

A total of 50 participants from the UE Manila and Caloocan campuses took part in the system evaluation. These included 21 faculty and researchers from the College of Engineering – Caloocan and 14 faculty and researchers from the College of Computer Studies and Systems – Manila. Additionally, seven department chairs participated, comprising two from the College of Engineering (Computer Science and Information Technology), two from the College of Computer Studies and Systems (Computer Science and Information Technology), and three representing other departments under the College of Engineering, including former department chairs. Five participants were part of the Deans' Module group, consisting of the Dean, Associate Dean, and College Secretary—three from the College of Engineering and two from the College of Computer Studies and Systems while three participants were Administrator or Office of Research Coordination (ORC) personnel. This distribution ensured representation from all key user roles across both campuses, providing a balanced and comprehensive assessment of the research management system's functionality and usability. Table 1 shows the distribution of the participants.

Table 1
Distribution of Participants

User Group	**COE (Caloocan)**	**CCSS (Manila)**	**Count**
Faculty Members	*21*	*14*	*35*
Department Chairs	*4*	*3*	*7*
Deans	*3*	*2*	*5*
Administrators	***Office of Research Coordination***		*3*
Total			***50***

The study, supported by the Office of Research Coordination (ORC), focused on developing a functional prototype of the research

management system within a limited timeframe. Demographic variables such as age, gender, research experience, and computer literacy were not collected, as the data gathering concentrated on technical performance metrics aligned with the study's quantitative and system-oriented objectives.

Data collection was carried out between June and July 2025, using a standardized research instrument administered uniformly to all participants comprising faculty members, department chairs, deans, and administrators to ensure methodological consistency, comparability of responses, and reliability of data across all user groups, with the process conducted through an online survey platform that ensured participant confidentiality and voluntary participation

Data Analysis Procedure

The collected data were analyzed using descriptive statistics. Mean scores were computed for each ISO/IEC 25010 quality attribute to summarize user feedback.

The formula was:

$$\text{Mean Score} = \frac{\sum scores}{n}$$

where:

- $\sum$ scores is the sum of all the individual scores
- n is the number of respondents

The qualitative responses from the two open-ended survey questions (1) "Is there any feature or function you expected but did not find in the system?" and (2) "Is there anything you want to suggest to improve the module?" were analyzed using thematic analysis following the procedures outlined by Braun and Clarke (2006). All narrative responses were first transcribed and read multiple times to ensure familiarization with the data. Initial codes were generated by identifying meaningful units of responses that reflected user expectations, concerns, and suggestions. These codes were then organized into broader themes through pattern recognition and comparison across participant responses. The themes were continually refined and reviewed to ensure internal coherence and distinction from one another.

Interpretation

Mean Scores were classified into categories as shown in Table 2:

Table 2
Mean Score Interpretations

Mean Score	Interpretation
4.21 – 5.00	*Strongly Agree*
3.41 – 4.20	*Agree*
2.61 – 3.40	*Neutral*
1.81 – 2.60	*Disagree*
1.00 – 1.80	*Strongly Disagree*

The interpretation of mean scores in this study followed the standard method for Likert-scale analysis, which divides the scale range into equal intervals to determine descriptive categories. The interval width was computed using the formula (*highest value – lowest value*)/*number of categories*, resulting in an interval size of 0.80. Accordingly, the following ranges were applied: 4.21–5.00 (Strongly Agree), 3.41–4.20 (Agree), 2.61–3.40 (Neutral), 1.81–2.60 (Disagree), and 1.00–1.80 (Strongly Disagree). This interpretation scheme ensures uniform distance among categories and aligns with established practices in quantitative descriptive research (De Vera, 2022; Joshi, Kale, Chandel, & Pal, 2015).

RESULTS AND DISCUSSION

Quantitative Results

The evaluation of the UE RMS yielded highly positive results across all ISO/IEC 25010 quality attributes. Using structured surveys with a Likert scale, the system's performance was assessed by faculty members, department chairs, deans, and administrators. Table 3 presented the overall results of the user acceptance testing.

Table 3

Overall Result of the User Acceptance Testing

SUMMARY	
CRITERIA	**MEAN**
Functional Suitability	4.57
Usability	4.64
Performance Efficiency	4.70
Reliability	4.62
Security	4.60
Overall Satisfaction	4.57
OVERALL MEAN	**4.62**
INTERPRETATION	***Strongly Agree***

- Functional Suitability: The system obtained an overall mean score of 4.57, indicating that users found it complete, correct, and appropriate for research submission and tracking. Respondents agreed that the platform accurately saved data, provided reliable notifications, and supported research activities effectively. These findings align with ISO/IEC 25010's emphasis on completeness and appropriateness, confirming the system's capacity to streamline research management.

- Usability: The overall mean score for usability was 4.64, the highest among all attributes. Users found the interface intuitive, navigation straightforward, and task completion simple. This confirms the system's strong learnability and understandability. Similar studies on user-centered academic systems (e.g., Cruz et al., 2022; Ramirez, 2021) reported that iterative prototyping significantly improved usability—consistent with the UE RMS findings.

- Performance Efficiency: Rated at 4.70, performance efficiency reflected rapid page loading, smooth uploads, and uninterrupted task completion. This demonstrates the system's capacity to optimize response time and resource usage. In comparison to legacy systems used in universities, which often suffer delays (Santos & Lee, 2020), UE RMS outperformed in responsiveness, reducing bottlenecks during peak usage.

- Reliability: With an overall mean of 4.62, users reported stable system performance without crashes or data loss. This suggests strong reliability and fault tolerance. These findings are comparable to those of Aquino et al. (2021), who emphasized that consistency is a primary factor in user trust toward digital academic systems.

- Security: Security scored an overall mean of 4.60, highlighting user confidence in data protection, proper access control, and automatic logout mechanisms. This reflects strong compliance with confidentiality and integrity standards. Compared to other academic platforms that lacked role-based access control (Garcia, 2019), the UE RMS provided stricter authorization measures, strengthening institutional trust.

- Overall Satisfaction: The system earned a 4.57 mean score, demonstrating that users were highly satisfied and willing to recommend the platform. This confirms that the RMS not only achieved technical effectiveness but also promoted user acceptance.

The research instrument was systematically developed to reflect the system's core functionalities and key user experience dimensions. The constructs of Functionality, Usability, Performance Efficiency, Reliability, Security, and Overall Satisfaction were thoughtfully aligned with the distinct responsibilities and patterns of interaction of each user group. For Faculty members, the dimensions of Functionality (Suitability and Accuracy) and Usability (Ease of Use and Learnability) were particularly relevant, as these users routinely engage with the system for instructional delivery and reporting tasks that demand intuitive navigation and accurate data outputs.

Department Chairs placed greater emphasis on Functionality and Performance Efficiency (Response Time and Resource Usage), given their need to monitor departmental activities and retrieve multiple data sets efficiently—making system responsiveness and reliability essential to their workflow. For Deans, Reliability (Stability and Fault Tolerance) and Security (Confidentiality and Access Control) were of primary importance, as they manage higher-level administrative operations requiring both uninterrupted system performance and secure handling of sensitive information.

Meanwhile, Administrators prioritized Security and Performance Efficiency, reflecting their responsibility for user management, data integrity, and overall system maintenance. Across all user categories, Overall Satisfaction served as an integrative construct, capturing users' holistic perception of system effectiveness, dependability, and alignment with institutional objectives. This multidimensional design ensured that the instrument was also contextually meaningful and applicable to the diverse roles represented in the study.

Standard deviations were also computed to reflect variability across user groups. Table 4 shows the mean for each user group and the standard deviation.

Table 4

Standard Deviation of the Overall Mean of each User Group

User Group	***n***	***M***	***SD***
Faculty Members	35	4.58	0.20
Department Chairs	7	4.19	0.37
Deans	5	4.78	0.60
Administrators	3	5.00	0.08
Overall	50	**4.64**	**0.34**

The overall mean rating across all user groups was 4.64 on a five-point Likert scale. Relative to this benchmark, Faculty Members (n = 35, *M* = 4.58) and Deans (n = 5, *M* = 4.78) provided ratings that were closely aligned with the overall mean, indicating strong agreement with the general perception of the system. Department Chairs (n = 7, *M* = 4.19) rated the system slightly lower than the overall mean, suggesting moderate reservations, whereas Administrators (n = 3, *M* = 5.00) rated the system higher, reflecting complete satisfaction with its features and functionality.

The computed standard deviation (*SD* = 0.34) indicated that these differences were minimal, demonstrating that despite minor variations, all user groups consistently evaluated the UE RMS positively and within a narrow range of high satisfaction.

Qualitative Results

Open-ended responses complemented the quantitative findings, revealing areas for improvement and user-driven suggestions:

- User Support – respondents recommended adding a chat or inquiry feature and a “Forgot Password” option to improve accessibility.

- Form Design & Data Entry – suggestions included clearer labeling of required fields, stricter validation rules, improved handling of multiple authors, and standardized formats for consistency.

- User Experience (UX) – users requested aesthetic improvements such as icons, better color schemes, dashboards with tracking features, and search functionality. Cross-device accessibility was also emphasized.

- Advanced Functionalities – participants proposed adding cancel options, auto-extraction of data from uploaded documents, and integration of scoring rubrics for grant evaluation.

Four major themes emerged from the analysis: User Support, Form Design and Data Entry, User Experience (UX), and Advanced Functionalities. Under User Support, respondents highlighted the need for additional assistance tools such as a chat or inquiry function and a “Forgot Password” feature. The theme Form Design and Data Entry captured feedback related to the clarity and structure of data fields, including suggestions for improved labeling of required fields, stricter data validation, standard formatting, and better support for multiple authors. The User Experience (UX) theme encompassed suggestions related to the visual and interactive aspects of the interface, including requests for improved color schemes, icons, search functionality, progress dashboards, and enhanced mobile or cross-device accessibility. Finally, the Advanced Functionalities theme reflected user expectations for more sophisticated features, such as cancel options, automated data extraction from uploaded documents, and integration of scoring rubrics for grant evaluation.

This thematic analysis enabled the researchers to systematically derive meaningful insights from the qualitative data, complementing and contextualizing the quantitative findings from the survey. The resulting themes provided actionable

recommendations for system refinement, highlighting user priorities and areas for future enhancement.

The findings confirm that the UE RMS successfully met its objectives of streamlining research processes and improving efficiency. High scores across all ISO/IEC 25010 quality attributes demonstrate that the system was not only technically complete but also user-friendly and secure. The UE RMS demonstrated higher usability and performance efficiency due to its iterative prototyping approach compared to earlier research systems in Philippine universities (e.g., Dela Cruz & Ramos, 2018).

Beyond just smoothing out daily operations, the system improved decision-making and ensured compliance with international standards like the FAIR (Findable, Accessible, Interoperable, Reusable) principles (Wilkinson et al., 2016). The implementation of these best practices provides UE with a structured approach to research oversight. This framework is intended to foster faculty output and align institutional processes with the criteria used in national and global research rankings.

The evaluation results of the UE RMS revealed a consistently high level of user acceptance across all ISO/IEC 25010 quality attributes, with an overall mean score of 4.62, interpreted as Strongly Agree. This indicates that the system was perceived by faculty members, department chairs, deans, and administrators as highly functional, reliable, secure, and user-friendly. The strong and uniform ratings across dimensions underscore the system's effectiveness in addressing institutional requirements and ensuring a positive user experience.

Among the criteria, Performance Efficiency obtained the highest mean rating (M = 4.70), emphasizing users' appreciation of the system's responsiveness and optimization in resource utilization. This result suggests that the UE RMS performs efficiently under varying workloads, maintaining system speed and stability even when handling large datasets and multiple user requests. Such performance characteristics are critical in academic settings that demand real-time access to records and administrative data. This finding aligns with prior research on software quality evaluations (Al-Qutaish, 2010; Behkamal et al., 2009), which identified performance efficiency as a key determinant of user satisfaction and system credibility.

Usability followed closely with a mean score of 4.64, reflecting that users found the system intuitive, accessible, and easy to navigate. The interface's design appears to have effectively minimized the learning curve, particularly for faculty members engaged in instructional and reporting functions. This aligns with Nielsen's (2012) usability heuristics and the ISO/IEC 9241-210 standard, which emphasize learnability, efficiency, and user satisfaction as central to system acceptance. High usability also enhances the likelihood of sustained use and user engagement over time.

Reliability (M = 4.62) and Security (M = 4.60) also received highly favorable evaluations. These results signify that users trusted the system's ability to perform consistently and securely, even under demanding operational conditions. Reliability was particularly valued by deans and department chairs who depend on the system for stable access to institutional data, while administrators prioritized data protection mechanisms such as authentication and access control. The high security rating indicates effective implementation of confidentiality and integrity safeguards, which are crucial for systems handling sensitive academic and administrative information.

Functional Suitability (M = 4.57) and Overall Satisfaction (M = 4.57) also received strong ratings, indicating that the system's functionalities were relevant and accurate for users' operational needs. Although slightly lower than other attributes, these scores suggest room for incremental enhancement, such as refining data validation features or expanding task-specific modules to better support diverse academic workflows. The close correlation between these two dimensions further implies that satisfaction is largely influenced by the extent to which system functions align with user expectations and institutional goals.

The analysis across user groups revealed meaningful differences in evaluative emphasis that correspond to their distinct operational contexts. Faculty members highlighted usability and task accuracy, department chairs prioritized performance efficiency, deans valued reliability and security, and administrators emphasized system integrity and data protection. This role-based differentiation confirms that the evaluation instrument effectively

captured user-specific priorities and operational realities, thereby reinforcing the validity of the assessment framework.

Overall, the results affirm that the UE RMS aligns well with the ISO/IEC 25010 software quality model, demonstrating maturity in functionality, reliability, and security, while maintaining high usability and performance efficiency. The system's strong evaluation across diverse user groups reflects its readiness for full institutional deployment and its potential to support data-driven academic management. The consistency of positive feedback indicates that the system not only meets technical standards but also fulfills the strategic objective of enhancing administrative transparency, efficiency, and decision-making within the university.

The qualitative feedback from the open-ended survey responses revealed four key areas for improvement: user support, form design and data entry, user experience, and advanced functionalities. Participants suggested adding support features such as a help or inquiry option and a "Forgot Password" function, indicating a need for greater guidance within the system. Users also recommended improvements in the form layout, including clearer required fields, validation rules, and better handling of multiple authors. Feedback related to user experience emphasized visual enhancements such as icons, improved color schemes, dashboards, and search capabilities along with the importance of cross-device accessibility. Finally, users expressed interest in more advanced features like cancel options, automatic extraction of information from uploaded documents, and integration of evaluation rubrics.

While results were predominantly positive, user feedback also highlighted areas that require further refinement. These issues suggest opportunities for iterative development to improve long-term sustainability. The inclusion of real-time chat support, better error handling, and additional functional tools could further strengthen user trust and satisfaction.

Significance and Implications

The results of this study carry several important implications:

- Institutional Impact – By providing a centralized research management platform, the UE RMS enhances productivity and reduces administrative workload.

- Research Culture Development – Strong usability and accessibility support faculty engagement in research, fostering a stronger research culture within the university.
- Scalability – The success of the UE RMS suggests that similar systems can be adapted by other higher education institutions in the Philippines and beyond.

Limitations of the Study

Despite its strong results, this study faced limitations:

1. Sample Scope – The evaluation was limited to selected faculty members eligible to apply for Type 1 and Type 2 research grants, along with administrators or ORC personnel from the University of the East. Faculty classified as Type 3 researchers—those whose projects involve student participation were excluded, as their processes were not covered by the system's current scope.

2. Deployment Scale – The system was evaluated in its initial deployment as a stand-alone platform. Full integration into the UE Portal may reveal additional technical and functional challenges.

3. Feedback Depth – While survey results quantified user satisfaction, deeper qualitative studies (e.g., interviews or focus groups) could provide richer insights into long-term user behavior.

CONCLUSION

The development and evaluation of the University of the East RMS demonstrated the system's effectiveness in directly addressing the challenges outlined in the Statement of the Problem.

The findings confirmed that the RMS ensured secure and role-based user management, which allowed faculty, department chairs, deans, and administrators to perform their tasks with well-defined access rights. It also incorporated features that supported the integration of external research profiles, enabling faculty members

to maintain updated academic and research records. The evaluation using the ISO/IEC 25010 quality model provided robust validation of the system's design and performance.

Overall, the results pointed to the UE RMS as an effective, efficient, and reliable digital solution for managing institutional research.

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