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Development and Evaluation of Integrated Academic Operations and Faculty Management System

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Abstract: *This study focused on the development and evaluation of an integrated academic operations and faculty management system designed to enhance the administrative functions of Program Chairpersons in higher education institutions. Using a Developmental Research Design, the study was conducted at Agusan del Sur State College of Agriculture and Technology with 60 respondents consisting of 48 end-users and 12 technical experts. Data were collected through researcher-made survey questionnaires that underwent validation and reliability testing to ensure accuracy and consistency. The investigation revealed that existing administrative tasks, particularly in faculty workload management, class and room scheduling, academic reporting, and performance monitoring, were largely manual and inefficient. In response, a web-based system integrating artificial intelligence features and centralized data management was developed to streamline these processes and improve administrative efficiency.*

The evaluation findings indicated that the developed system was highly adaptable and suitable for institutional implementation, receiving "Strongly Agree" and "Highly Observed" ratings across indicators of contextual adaptation, stakeholder involvement, capability building and training, and policy alignment. Alpha testing based on ISO 25010 standards demonstrated high levels of acceptability in functionality, reliability, efficiency, security, and user interface and experience, yielding an overall grand mean of 4.34. Similarly, beta testing grounded on the Technology Acceptance Model (TAM) showed strong user acceptance in terms of perceived usefulness, ease of use, facilitating conditions, and behavioral intention to use, with an overall grand mean of 4.43. Statistical analyses using frequency count and percentage, median, and ordinal rank further revealed consistent evaluations among respondents regardless of demographic characteristics and testing phase. Overall, the results confirmed that the AI-Based Academic Performance Management System is reliable, efficient, user-friendly, and capable of improving academic administrative operations within higher education institutions.

Keywords: development and evaluation of integrated academic operations and faculty management system

I. INTRODUCTION

Program Chairpersons in higher education institutions (HEIs) carry critical administrative, managerial, and academic responsibilities that directly influence faculty operations, curriculum quality, student services, and institutional performance. Despite this pivotal role, many HEIs—particularly in developing contexts—continue to rely on manual, fragmented, and paper-based administrative processes, resulting in inefficiencies such as duplicated tasks, delays, inconsistent reporting, and limited decision-support data. Existing studies highlight the potential of smart systems and automation in improving higher education governance; however, very few frameworks specifically address the administrative needs of Program Chairpersons, who often experience the highest workload but have the least technological support.

Program Chairpersons perform the following duties and responsibilities, assist the Dean in the enforcement of admission, retention and graduation requirements for students, assist the Dean in the assignment of teaching loads and preparation of class programs, coordinate with the Dean on matters related to curriculum and quality assurance of the academic program, facilitate the review, updating and approval of course syllabi as well as the preparation of instructional materials.

Furthermore, while global research emphasizes the integration of digital tools in academic administration, a major gap persists: the lack of technology transfer strategies in adopting and localizing existing smart administrative technologies for HEIs. Technology transfer literature notes that innovations fail not because of system design flaws, but due to poor adaptation, limited institutional readiness, inadequate user involvement, and misalignment with local organizational processes. In Philippine State Universities and Colleges (SUCs), technology transfer is often viewed narrowly—focused on patents, commercialization, or research outputs—leaving a gap in administrative technology transfer that supports governance and academic leadership.

Another critical gap lies in the absence of a structured framework that integrates technology transfer principles with systematic system development models. While some studies have designed automated administrative tools, they commonly overlook (1) knowledge transfer mechanisms, (2) capacity-building processes for users, (3) institutional adaptation strategies, and (4) sustainability measures. As a result, many deployed systems become underutilized or abandoned once initial project funding ends. There is therefore a need for a technology management–oriented framework that ensures not only system development, but also adoption, institutionalization, and long-term usability.

In addition, existing smart administrative systems rarely incorporate data analytics, workload forecasting, and evidence-based decision-support tools tailored to academic programs. This gap limits Program Chairpersons' ability to make informed decisions regarding faculty assignments, scheduling, performance monitoring, and compliance reporting. Without integrated analytics, administrative leaders continue to depend on intuition, manual computation, or isolated spreadsheets—practices that reduce accuracy and hinder strategic planning.

Thus, this study responds to four major research gaps namely: The absence of an integrated, smart administrative management system specifically designed for Program Chairpersons and their unique workload, decision-making needs, and departmental responsibilities. The lack of a technology transfer–driven approach for adopting, localizing, and institutionalizing smart systems in higher education administrative contexts. The insufficient integration of systematic development models (e.g., ADDIE) with technology management frameworks, resulting in systems that lack user alignment, scalability, and organizational sustainability. Limited availability of data-driven administrative tools that provide real-time analytics and decision-support capabilities for program-level leadership.

Addressing these gaps, the study proposes the Technology Transfer–Driven Development and Implementation of a Smart Administrative Management System for Program Chairpersons, which integrates automation, digital workflows, analytics, and validated technology transfer processes to ensure effective adoption and long-term sustainability. By grounding the system development in both technology management principles and user-centered design, this dissertation contributes to the modernization of administrative leadership, enhances institutional efficiency, and supports evidence-based governance across higher education institutions.

II. STATEMENT OF THE PROBLEM

This study aimed to develop and evaluate AI Based Smart Administrative Management System that was designed to support the administrative functions of Program Chairpersons in the Chartered Higher Education Institutions.

Specifically, the study answers the following sub- problems:

1. What system design specifications are required for AI-based academic performance management system?
2. What system prototype can be developed following the design specifications for the AI-based academic performance management system?

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3. What is the level of acceptability of the developed system during alpha testing phase using ISO 25010 parameters in terms of:

3.1 functionality;
3.2 reliability;
3.3 efficiency; and
3.4 security?

4. What is the level of acceptability of the developed system based on actual user experience during beta testing using TAM construct parameters in terms of:

4. 1 perceived usefulness;
4. 2 perceived ease of use;
4. 3 facilitating conditions; and
4. 4 behavioral intentions to use?

5. Is there a significant difference between level of acceptability of the developed system during alpha testing phase using ISO 25010 parameters and level of acceptability of the developed system based on actual user experience during beta testing using TAM construct parameters?

III. METHODS

Research Design

This study employed a Developmental Research Design (DRD), specifically focusing on the design, development, and implementation of a Smart Administrative Support **System** for program chairpersons the study involves creating a functional system to address existing administrative challenges and evaluating its effectiveness in a real-world academic environment**.**

Research Environment

The research was conducted at Agusan del Sur State College of Agriculture and Technology, Bunawan, Agusan del Sur.

Research Respondents

There were 60 respondents of the study that comprised of 48 end-users that includes the Program Chairpersons, Deans, Faculty, admin staff and the 12 experts as technical validators of the system at Agusan del Sur State College of Agriculture and Technology, Bunawan, Agusan del Sur. They were chosen based on their expertise:

- **Primary Respondents:** Program Chairpersons from selected departments, as they are the main end-users of the smart administrative system.
- **Secondary Respondents:** Academic Deans, faculty members, and administrative staff who collaborate with or provide supporting inputs to Program Chairpersons.
- **Technical Validators:** IT experts, system developers, and technology transfer officers who will assess the system's technical quality, security, and compliance with institutional standards.

Research Instruments

This study utilized qualitative instruments to gather comprehensive data on the system's functionality, usability and effectiveness.

The study will use a survey questionnaire created by the researcher to determine the gaps that currently exist. These tools will create to gather information regarding present design of smart administrative support system for Program Chairpersons. With the help of the **Survey instrument,** technical, operational, and accessibility indicators, the researchers will be able to identify gaps in the current systems, especially about real-time data collecting data, and system responsiveness.

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Data Analysis

To ensure a comprehensive evaluation of the design and implementation of a smart administrative support system for program chairperson using technology transfer approaches, the following statistical tools was used to analyze the collected data, aligned with each phase of the ADDIE Model:

- **Frequency Count and Percentage** – Used to determine the respondents' demographic profile, including age, educational background, and familiarity with photovoltaic installation and maintenance. This helps assess the need for the trainer and identify skill gaps.
- **Frequency Median** – Determines the central tendency of responses related to the trainer's usability, ease of assembly, and functionality. This ensures that the trainer meets industry and educational requirements.
- **Ordinal Rank** – Used to rank key features of the trainer based on their perceived importance, such as cost-effectiveness, durability, and accessibility.

IV. RESULTS AND DISCUSSIONS

System Design Specifications are required for AI-based Academic Performance Management System

System design specifications are required for AI-based academic performance management system in terms of functional requirements, system architecture and interface design and data analytics and reporting features.

Functional Requirements

Software

Figure 1. Software Requirements of eLP System

Hardware

Hardware	Recommended System Requirements
Processor	Intel Core i5 (10th Gen or higher) / AMD Ryzen 5 equivalent
Memory (RAM)	4 GB minimum, 8 GB recommended for smoother multitasking
Disk Space	256 GB SSD minimum (512 GB SSD recommended for faster performance and storage of documents)
Bandwidth Transfer Rate	At least 10 Mbps stable internet connection (25 Mbps or higher recommended for seamless uploads, downloads, and video conferencing)

Figure 2- Server Hardware Requirements

This figure outlines the recommended system specifications for running the application smoothly. It suggests a **processor** of at least Intel Core i5 (10th Gen or higher) or AMD Ryzen 5 equivalent, ensuring efficient performance. For **memory**, a minimum of 4 GB RAM is required, though 8 GB is recommended to support multitasking and responsiveness. In terms of **storage**, a 256 GB SSD is the minimum, with 512 GB SSD recommended for faster

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performance and sufficient space for documents and records. Finally, the **bandwidth transfer rate** should be at least 10 Mbps for stable connectivity, with 25 Mbps or higher recommended to handle uploads, downloads, and video conferencing seamlessly.

System architecture and interface design

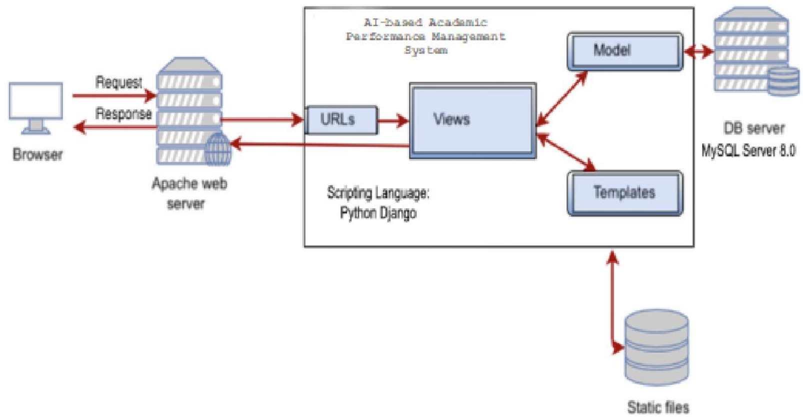

Figure 2. System Architecture and Interface Design

The system architecture is designed to integrate various modules—such as dashboard, document management, submission tracking, announcements, teaching load, and evaluation—into a unified platform. It follows a **client-server model**, where the client interface provides user-friendly windows (dashboard, profile, schedule, etc.), while the server manages data storage, processing, and security. The interface design emphasizes clarity and accessibility, with each window dedicated to a specific function (e.g., checklist, submission history, evaluation). This modular approach ensures scalability, ease of navigation, and efficient communication between users and administrators.

Developed System prototype for the AI-based Academic Performance Management System

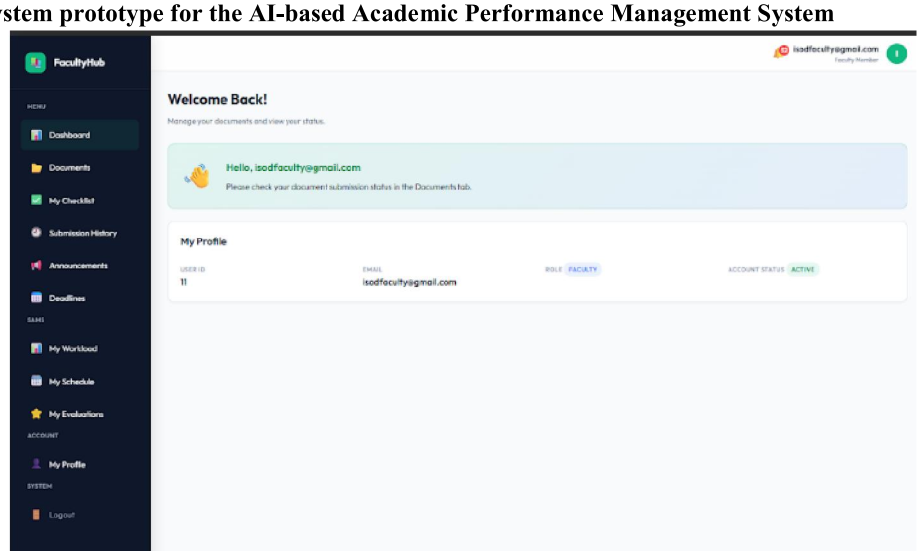

Figure 1 - Dashboard Window

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The dashboard window serves as the central interface of the system, providing users with quick access to key features and tools. It typically displays an overview of activities, shortcuts to important modules, and a summary of relevant information, making navigation efficient and user-friendly.

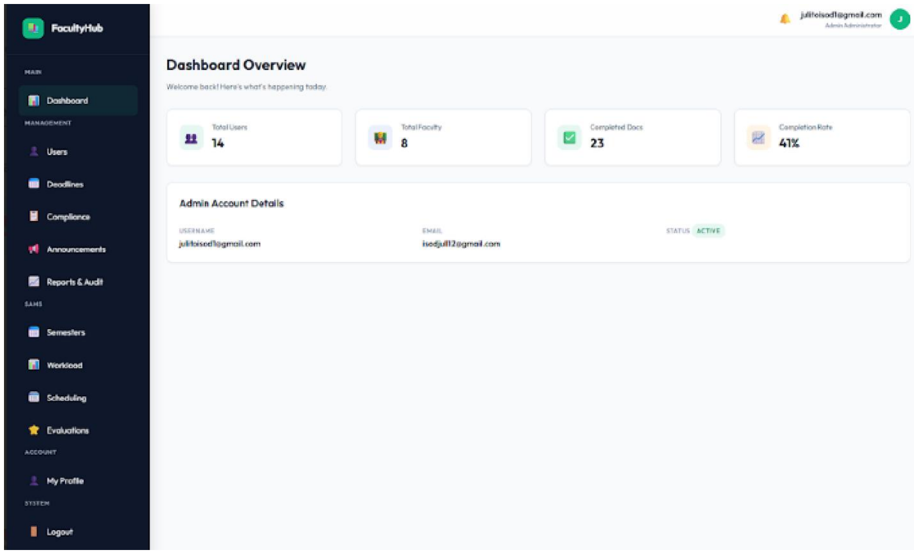

Figure 2. Dashboard overview

The dashboard overview expands on the main dashboard by presenting a broader snapshot of system activity. It consolidates data such as recent submissions, announcements, and schedules, allowing users to monitor multiple aspects of their academic or administrative tasks at a glance.

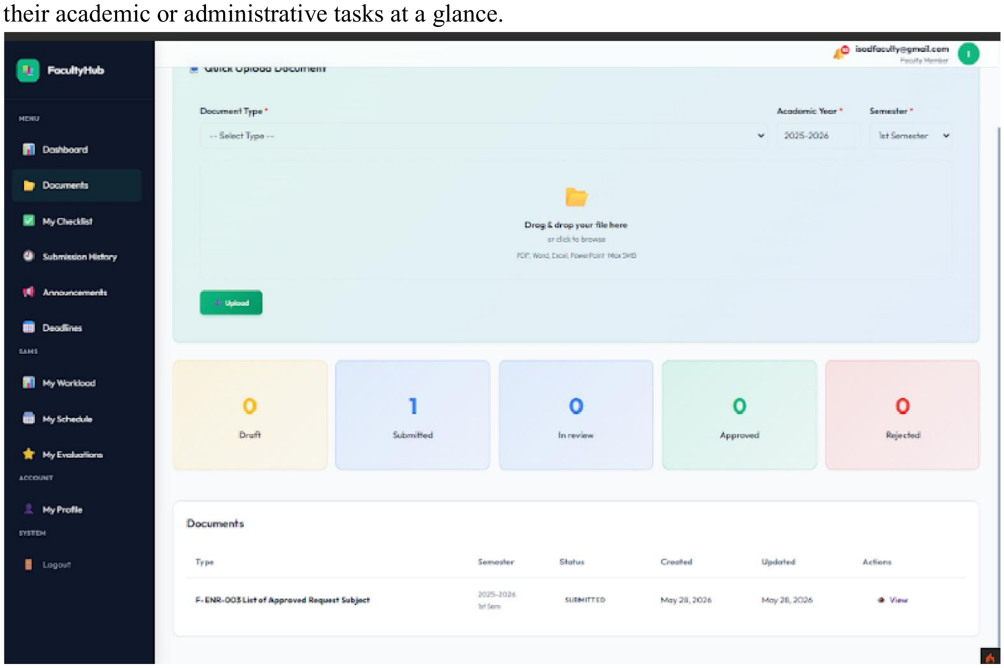

Figure 3. document window

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The document window is designed for managing files within the system. It enables users to upload, view, and organize documents, ensuring that academic or administrative records are easily accessible and properly maintained.

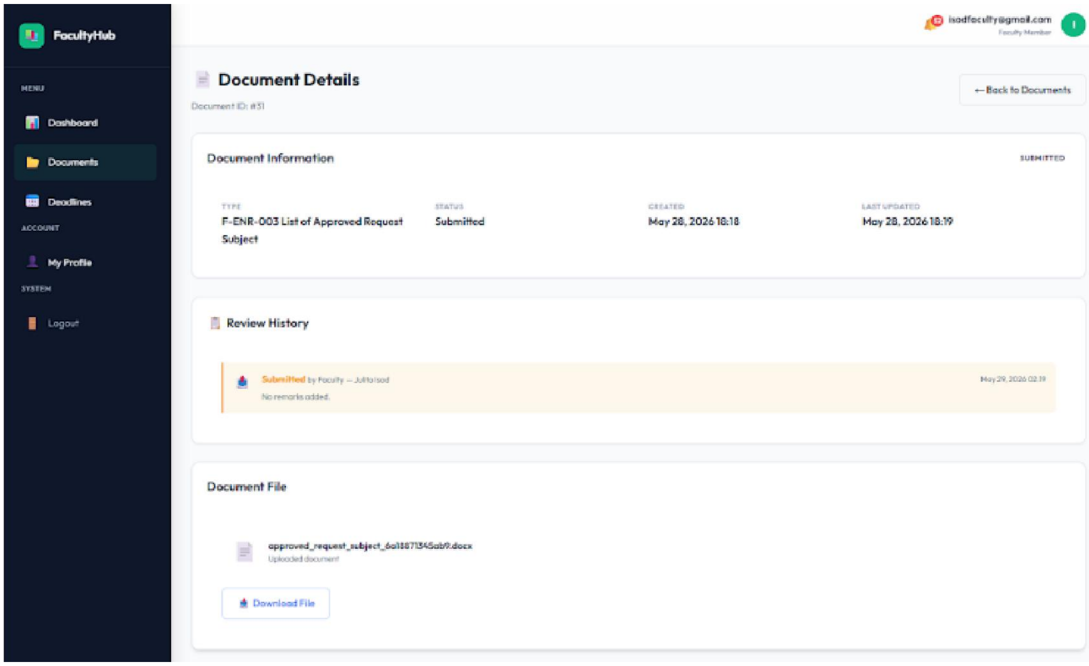

Figure 4. document details

The document details window provides specific information about individual files. It displays metadata such as submission dates, authorship, and status, helping users track and verify the accuracy and completeness of their documents.

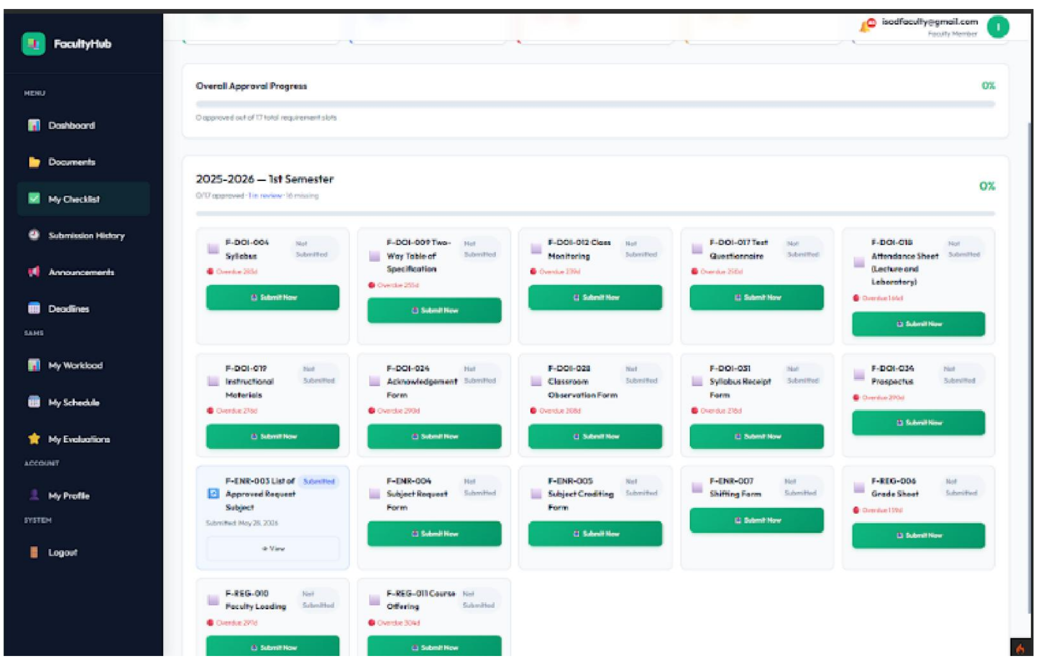

Figure 5. Checklist Window

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The checklist window functions as a task management tool, allowing users to monitor progress on required activities. It ensures accountability by listing pending, ongoing, and completed tasks, guiding users toward timely completion of responsibilities.

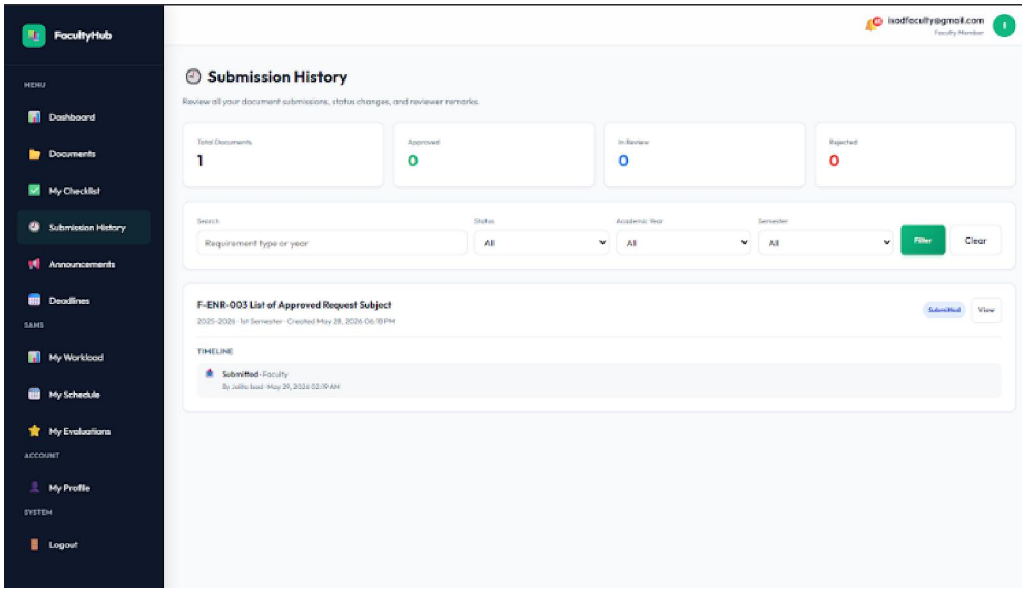

Figure 6. Submission history window

The submission history window records all past submissions made by the user. It provides a chronological log of documents or tasks submitted, making it easier to review past work and confirm compliance with deadlines.

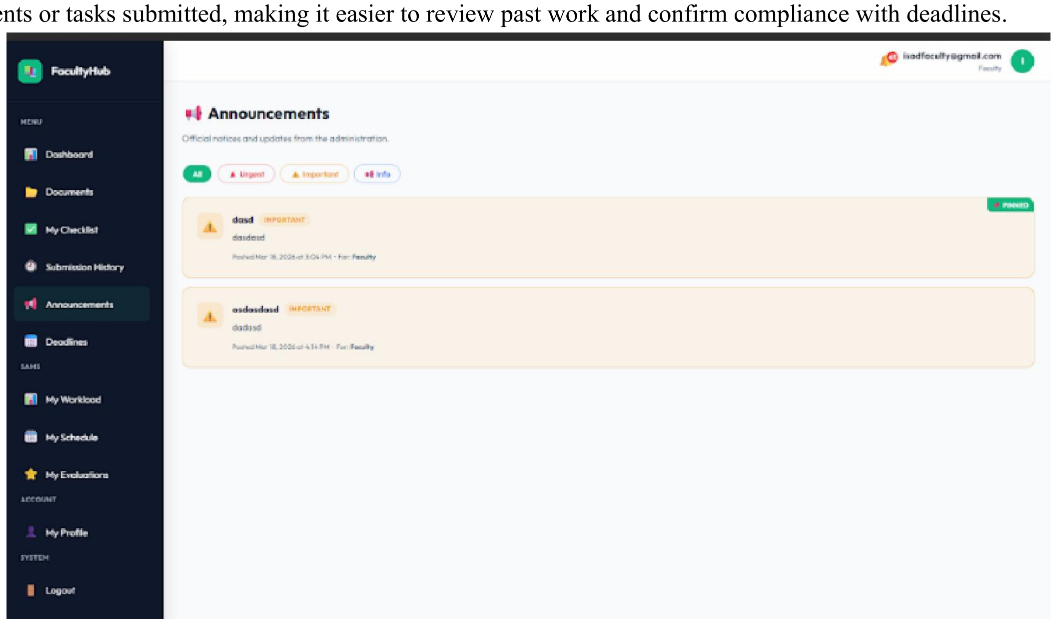

Figure 7. Announcement window

The announcement window serves as a communication hub where administrators or faculty can post important updates. It ensures that users are informed about schedules, events, or policy changes, fostering transparency and engagement.

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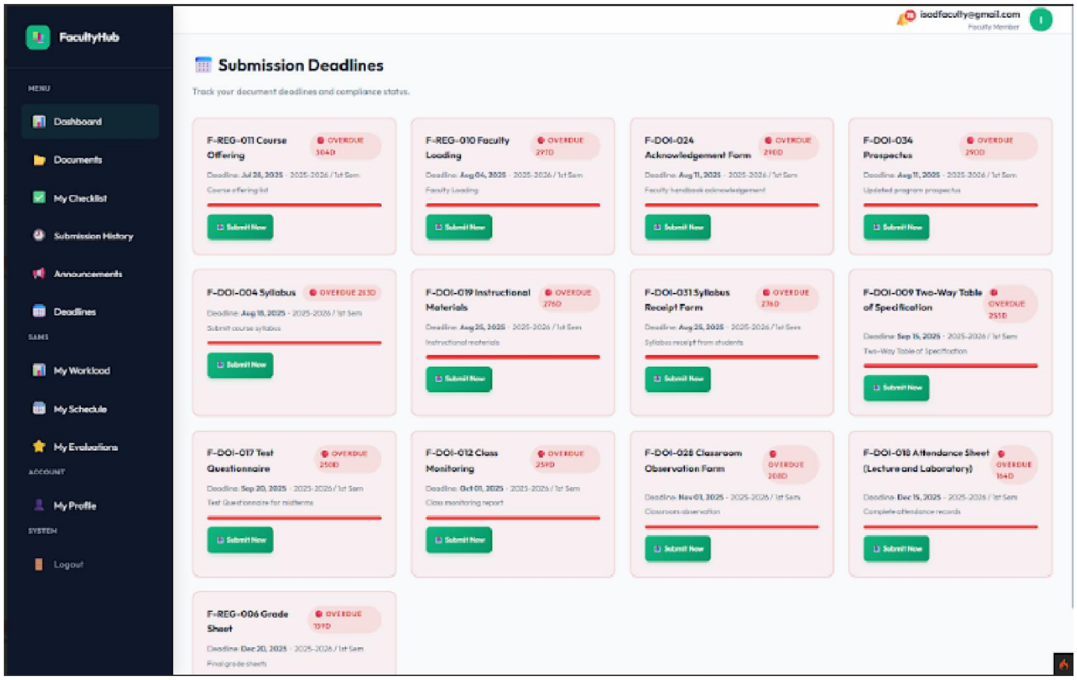

Figure 8. Submission details window

The submission details window offers a closer look at individual submissions, including feedback, status, and evaluation results. This feature helps users understand the outcome of their work and identify areas for improvement.

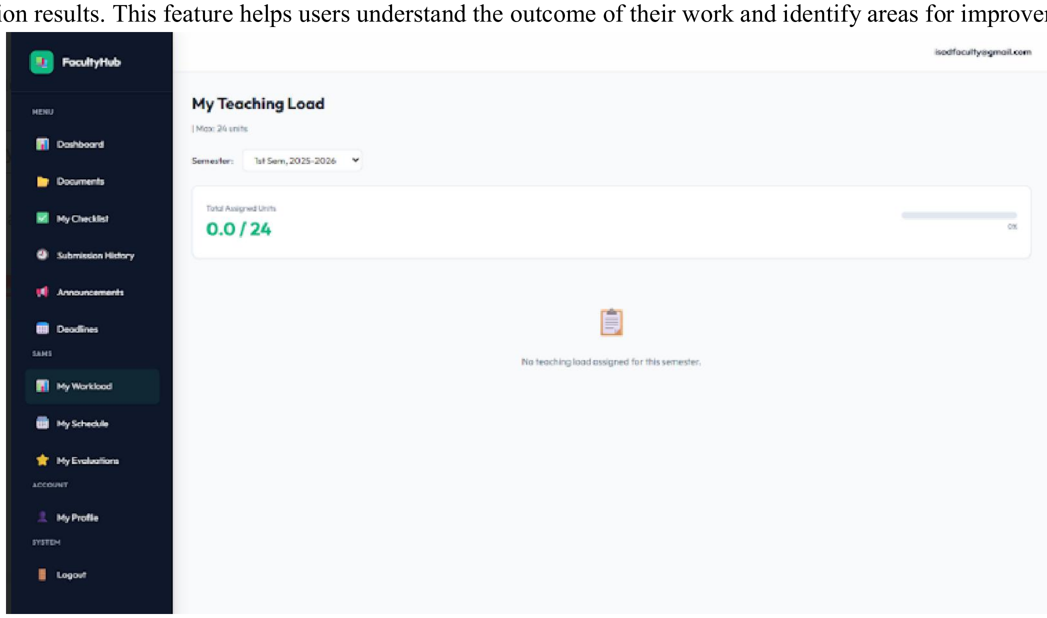

Figure 9. Teaching Load window

The teaching load window provides faculty members with a clear view of their assigned subjects and workload. It organizes teaching responsibilities, ensuring that schedules and assignments are balanced and manageable.

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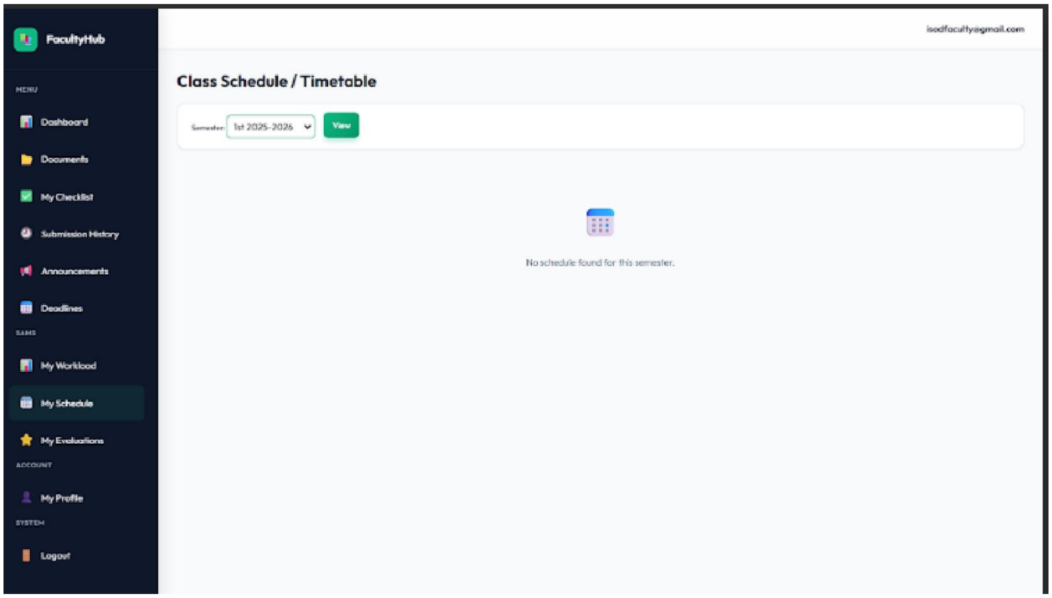

Figure 10. Calss schedule window

The class schedule window displays the timetable of classes, including subjects, times, and venues. It helps both students and faculty manage their academic routines effectively by offering a structured view of daily and weekly schedules.

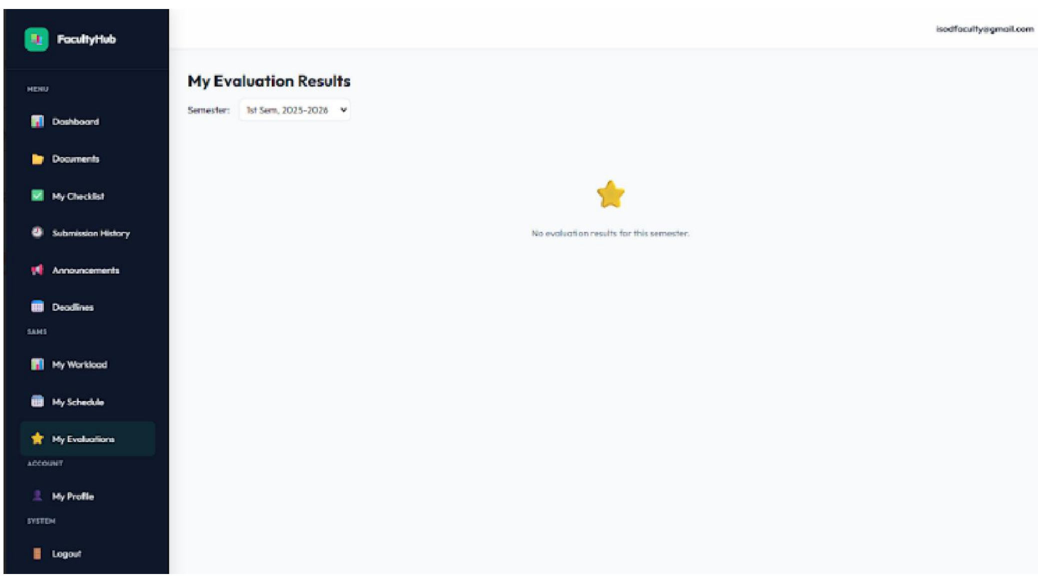

Figure 11. Evaluation window

The evaluation window is used for assessing performance, whether of students, faculty, or administrative processes. It provides structured feedback and results, supporting continuous improvement and accountability.

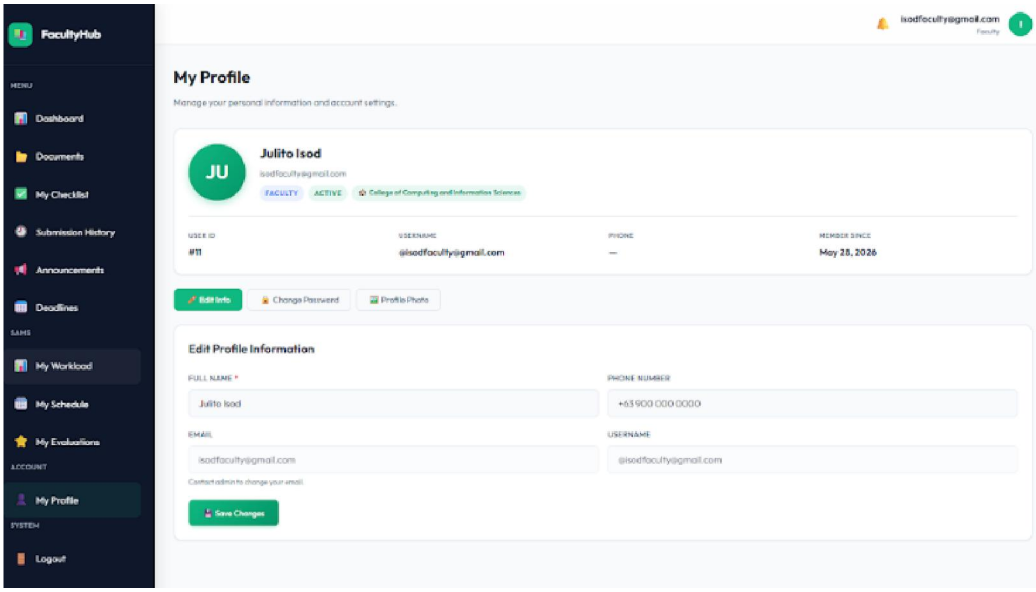

Figure 12. Profile window

The profile window contains personal and academic information about the user. It typically includes details such as name, contact information, and role within the institution, serving as a personalized space for identity and record management.

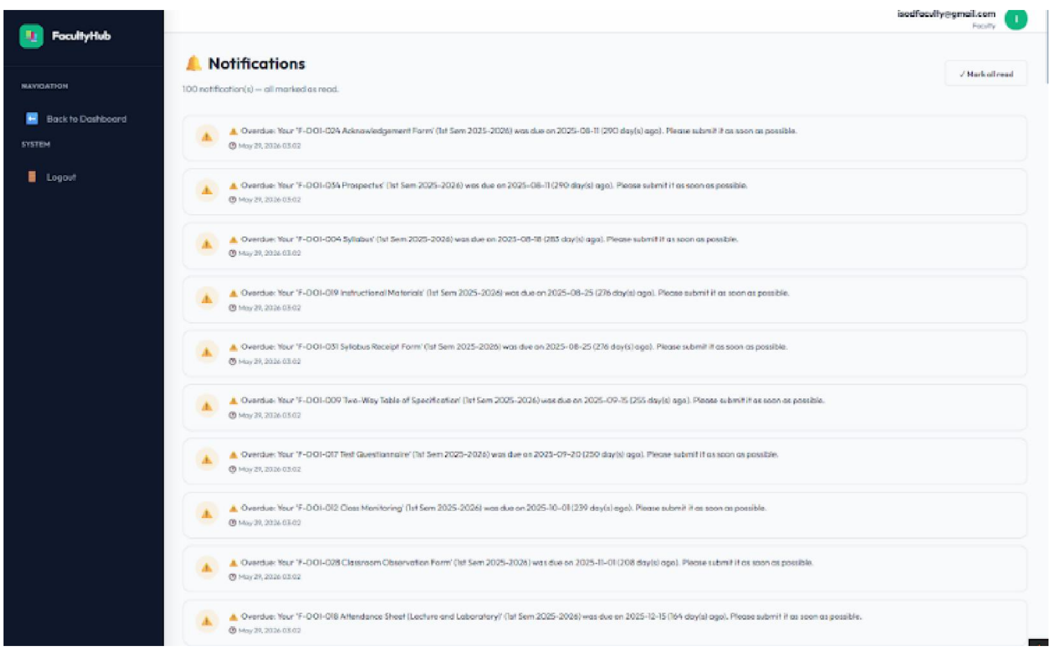

Figure 13. Notification window

Level of Acceptability of the developed system during Alpha testing phase using ISO 25010 parameters

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Table 1 presents the level of acceptability of the developed system during alpha testing phase using ISO 25010 parameters in terms of functionality, reliability, efficiency and Security.

Table 1.

Level of acceptability of the developed system during alpha testing phase using ISO 25010 parameters in terms of functionality, reliability, efficiency and Security.

Functionality	**Mean**	**SD**	**Verbal Description**	**Qualitative Interpretation**
1.The system provides the necessary administrative functions required by academic administrators.	4.38	0.55	Strongly Agree	Highly Observed
2.The system features effectively support institutional administrative requirements.	4.26	0.53	Strongly Agree	Highly Observed
3.The system accurately processes academic administrative tasks and records.	4.38	0.55	Strongly Agree	Highly Observed
4.The system effectively supports workflow management and administrative coordination.	4.26	0.53	Strongly Agree	Highly Observed
5.The system satisfies the operational needs of academic administration.	4.30	0.54	Strongly Agree	Highly Observed
Over all mean	4.32	0.54	Strongly Agree	Highly Observed
Reliability			Strongly Agree	Highly Observed
1.The system operates consistently with minimal operational failures.	4.3	0.6	Strongly Agree	Highly Observed
2.The system maintains stable and reliable performance during continuous use.	4.27	0.51	Strongly Agree	Highly Observed
3.Data and reports generated by the system are accurate and dependable.	4.38	0.53	Strongly Agree	Highly Observed
4.System errors rarely occur during normal administrative operations.	4.26	0.53	Strongly Agree	Highly Observed
5.The system can recover efficiently from technical failures or interruptions.	4.30	0.55	Strongly Agree	Highly Observed
Over all mean	4.30	0.54	Strongly Agree	Highly Observed
C. Efficiency			Strongly Agree	Highly Observed
1. The system process administrative transactions within an acceptable response time.	4.30	0.6	Strongly Agree	Highly Observed
2. The system minimizes delays in administrative task processing.	4.27	0.58	Strongly Agree	Highly Observed
3. The system responds promptly during system operation.	4.38	0.55	Strongly Agree	Highly Observed
4. The system maintains efficient performance during administrative operations.	4.26	0.53	Strongly Agree	Highly Observed
5. The system efficiently utilizes available computing and administrative resources.	4.30	0.54	Strongly Agree	Highly Observed

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Over all mean	4.30	0.56	Strongly Agree	Highly Observed
D. Security			Strongly Agree	Highly Observed
1. The system protects academic and academic and administrative records from	4.25	0.53	Strongly Agree	Highly Observed
unauthorized access.	4.30	0.6	Strongly Agree	Highly Observed
2.User authentication and access control are properly implemented within the system.	4.27	0.51	Strongly Agree	Highly Observed
4. Stored academic data is protected against unauthorized modification, loss, or cyber threats.	4.26	0.53	Strongly Agree	Highly Observed
5. Access levels are properly managed based on user roles.	4.30	0.58	Strongly Agree	Highly Observed
Over all mean	4.28	0.55	Strongly Agree	Highly Observed

Legend:

Scale	Parameter	Verbal Description	Qualitative Interpretation
5	4.21 – 5.00	Strongly Agree	Highly Observed
4	3.41 – 4.20	Agree	Observed
3	2.61 – 3.40	Neutral	Moderately Observed
2	1.81 – 2.60	Disagree	Least Observed
1	1.00 – 1.80	Strongly Disagree	Not Observed

Table 1 reveals that the developed system is highly acceptable during the alpha testing phase across all ISO 25010 quality parameters, as reflected in consistently high mean scores ranging from 4.28 to 4.44, all interpreted as “Strongly Agree” and “Highly Observed.” In terms of functionality (M = 4.32), respondents affirmed that the system effectively meets administrative requirements and supports workflow management. Similarly, reliability (M = 4.30) and efficiency (M = 4.30) results indicate that the system performs consistently, processes tasks promptly, and maintains stable operations. The security dimension (M = 4.28) further confirms that the system adequately protects academic records through user authentication and access controls. Notably, user interface and experience (M = 4.36) obtained a high rating, suggesting that the system is intuitive and user-friendly, which is essential for user acceptance.

Moreover, the system demonstrated strong performance in accuracy of workload and scheduling (M = 4.44), indicating its effectiveness in reducing errors and improving organization, while speed and efficiency of reporting (M = 4.34) highlights its capability to streamline reporting and data retrieval processes. Finally, overall administrative productivity (M = 4.39) shows that the system significantly enhances efficiency, planning, and decision-making. These findings align with studies emphasizing that system quality dimensions such as functionality, reliability, usability, and efficiency are critical determinants of information system success and user satisfaction. Furthermore, research suggests that systems that are easy to use, accurate, and responsive contribute positively to organizational performance, improved decision-making, and successful digital transformation initiatives. (Potter, K., & Stilinski, D. (2024)).

Summary of the Level of Acceptability of the developed system during Alpha testing phase using ISO 25010 parameters

Table 2 presents the summary of the Level of acceptability of the developed system during alpha testing phase using ISO 25010 parameters in terms of functionality, reliability, efficiency and Security.

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Table 2.

Summary of the Level of acceptability of the developed system during alpha testing phase using ISO 25010 parameters in terms of functionality, reliability, efficiency and Security

Domain	Mean	SD	Verbal Description	Qualitative Interpretation
Functionality	4.32	0.54	Strongly Agree	Highly Observed
Reliability	4.30	0.54	Strongly Agree	Highly Observed
Efficiency	4.30	0.56	Strongly Agree	Highly Observed
Security	4.28	0.55	Strongly Agree	Highly Observed
Grand mean and SD	**4.34**	**0.56**	Strongly Agree	Highly Observed

Table 2 presents the overall acceptability of the developed system during the alpha testing phase based on ISO 25010 quality parameters, with a grand mean of 4.34 (SD = 0.56), interpreted as "Strongly Agree" and "Highly Observed." This indicates that the system meets high standards of software quality across all evaluated domains. Among the indicators, accuracy of workload and scheduling obtained the highest mean (M = 4.44), suggesting that the system effectively reduces errors and improves the precision of administrative processes. This is followed by overall administrative productivity (M = 4.39) and user interface and experience (M = 4.36), which reflect the system's ability to enhance efficiency and provide a user-friendly environment.

Other domains such as functionality (M = 4.32), reliability (M = 4.30), efficiency (M = 4.30), and speed of reporting (M = 4.34) also received strong agreement ratings, indicating that the system performs consistently, processes tasks efficiently, and delivers timely outputs. Meanwhile, security (M = 4.28), although slightly lower, still demonstrates that the system adequately protects data and ensures controlled access. These results are consistent with the ISO/IEC 25010:2023 standard, which emphasizes that software quality is determined by key characteristics such as functionality, reliability, usability, efficiency, and security, all of which contribute to user satisfaction and system effectiveness. (Pacific Certifications. (2025, May 10). QMII. (2024, December 17).

Furthermore, research highlights that usability and user interface quality significantly influence productivity, reduce errors, and enhance overall system performance, supporting the high ratings observed in user experience and administrative productivity. Overall, the findings confirm that the developed system demonstrates high acceptability in terms of both technical performance and user-centered design, making it a reliable and efficient solution for academic administrative management. (Vizcarra, A., Quiroz, G., & Cornejo, J. (2026). Kruger, R., Brosens, J., & Hattingh, M. (2020).

Level of Acceptability of the developed system based on actual user experience during Beta testing using TAM construct parameters

Table 3 presents the level of acceptability of the developed system based on actual user experience during beta testing using TAM construct parameters in terms of perceived usefulness, perceived ease of use, facilitating conditions, and behavioral intention to use

Table 3.

Level of acceptability of the developed system based on actual user experience during beta testing using TAM construct parameters in terms of perceived usefulness, perceived ease of use, facilitating conditions and behavioral intention to use.

A. Perceived Usefulness	Mean	SD	Verbal Description	Qualitative Interpretation
1. The system improves administrative performance.	4.48	0.56	Strongly Agree	Highly Observed
The system increases work productivity.	4.36	0.64	Strongly	Highly

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			Agree	Observed
3. The system supports data-driven administrative decision–making.	4.48	0.58	Strongly Agree	Highly Observed
4. The system reduces administrative workload.	4.46	0.65	Strongly Agree	Highly Observed
5. The system provides significant benefits to academic management.	4.34	0.58	Strongly Agree	Highly Observed
Over all mean	**4.42**	**0.60**	**Strongly Agree**	**Highly Observed**
B. Perceived Ease of Use				
1. Learning to use the system is easy.	4.35	0.48	Strongly Agree	Highly Observed
2. System interaction is clear and understandable.	4.46	0.65	Strongly Agree	Highly Observed
3. The system functions are easy to understand and operate	4.58	0.65	Strongly Agree	Highly Observed
4. Users can quickly learn how to use the system effectively.	4.26	0.53	Strongly Agree	Highly Observed
5. Overall system operation is simple and convenient.	4.54	0.55	Strongly Agree	Highly Observed
Over all mean	**4.44**	**0.57**	**Strongly Agree**	**Highly Observed**
C. Facilitating Conditions				
1. Adequate technical resources are available for system use.	4.48	0.56	Strongly Agree	Highly Observed
2. Users receive sufficient technical assistance.	4.34	0.58	Strongly Agree	Highly Observed
3. Institutional support encourages system adoption.	4.55	0.65	Strongly Agree	Highly Observed
4. Available internet connectivity and hardware resources adequately support system operation.	4.26	0.53	Strongly Agree	Highly Observed
5. Training programs adequately prepare users for effective system utilization.	4.3	0.54	Strongly Agree	Highly Observed
Over all mean	**4.39**	**0.57**	**Strongly Agree**	**Highly Observed**
D. Behavioral Intention to Use				
1. I intend to continue using the system regularly.	4.58	0.65	Strongly Agree	Highly Observed
2. I would recommend the system to other users.	4.24	0.57	Strongly Agree	Highly Observed
3. I believe the system is suitable for institution –wide implementation.	4.26	0.6	Strongly Agree	Highly Observed
4. I am willing to integrate the system into daily administrative tasks.	4.24	0.68	Strongly Agree	Highly Observed
5. I support the continuous and long-term use of the system	4.37	0.60	Strongly	Highly

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within the institution.			Agree	Observed
Over all mean	**4.52**	**0.51**	**Strongly Agree**	**Highly Observed**

Legend:

Scale	Parameter	Verbal Description	Qualitative Interpretation
5	4.21 – 5.00	Strongly Agree	Highly Observed
4	3.41 – 4.20	Agree	Observed
3	2.61 – 3.40	Neutral	Moderately Observed
2	1.81 – 2.60	Disagree	Least Observed
1	1.00 – 1.80	Strongly Disagree	Not Observed

Table 3 indicates that the developed system is highly acceptable during the beta testing phase based on the Technology Acceptance Model (TAM) constructs, as reflected in consistently high mean scores across all dimensions. In terms of perceived usefulness (M = 4.42), respondents strongly agreed that the system improves administrative performance, increases productivity, supports data-driven decision-making, and reduces workload, demonstrating its practical benefits in academic management. Similarly, the high rating for perceived ease of use (M = 4.44) shows that users find the system easy to learn, operate, and understand, which is essential for encouraging system adoption. These findings support the Technology Acceptance Model, which states that users are more likely to accept and use a system when they perceive it as useful and easy to use. (Potter, K., & Stilinski, D. (2024).

Furthermore, the results for facilitating conditions (M = 4.39) indicate that adequate technical resources, institutional support, and training contribute to effective system utilization, while the high rating in behavioral intention to use (M = 4.52) confirms users' willingness to continue using, recommend, and integrate the system into daily tasks. This is consistent with the Unified Theory of Acceptance and Use of Technology (UTAUT), which emphasizes that facilitating conditions and user intention significantly influence actual system use. In addition, the dimension of transparency and data accessibility (M = 4.37) highlights that the system enhances access to records, improves reporting efficiency, and promotes transparency in administrative processes. Overall, the findings demonstrate strong user acceptance, confirming that the system meets key determinants of technology adoption such as usefulness, ease of use, support, and behavioral intention. (Havelka, D., & Rajkumar, T. M. (2019).

Summary of the Level of Acceptability of the developed system based on Actual user experience during Beta testing using TAM construct parameters

Table 4 presents the summary of the Level of acceptability of the developed system based on actual user experience during beta testing using TAM construct parameters in terms of perceived usefulness, perceived ease of use, facilitating conditions and behavioral intention to use.

Table 4.

Summary of the Level of acceptability of the developed system based on actual user experience during beta testing using TAM construct parameters in terms of perceived usefulness, perceived ease of use, facilitating conditions and behavioral intention to use.

Domain	**Mean**	**SD**	**Verbal Description**	**Qualitative Interpretation**
Perceived Usefulness	4.42	0.60	Strongly Agree	Highly Observed
Perceived Ease of Use	4.44	0.57	Strongly Agree	Highly Observed
Facilitating Conditions	4.39	0.57	Strongly Agree	Highly Observed

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Behavioral Intention to Use	4.52	0.51	Strongly Agree	Highly Observed
Grand mean and SD	**4.43**	**0.57**	**Strongly Agree**	**Highly Observed**

Table 4 presents a summary of the level of acceptability of the developed system based on user experience during beta testing, showing an overall grand mean of 4.43 (SD = 0.57), interpreted as "Strongly Agree" and "Highly Observed." Among the domains, behavioral intention to use obtained the highest mean (M = 4.52), indicating that users are highly willing to adopt, continue using, and recommend the system. This is followed by perceived ease of use (M = 4.44) and perceived usefulness (M = 4.42), suggesting that users find the system both beneficial and easy to operate. These findings strongly align with recent studies on the Technology Acceptance Model (TAM), which emphasize that perceived usefulness and ease of use are key determinants influencing users' intention to adopt and continuously use a system. (Lewis, J. R., & Sauro, J. (2023).

Furthermore, the high rating for facilitating conditions (M = 4.39) indicates that institutional support, resources, and training contribute positively to system utilization. Research confirms that facilitating conditions significantly influence technology adoption, as adequate infrastructure and support enhance user confidence and actual system use. Meanwhile, the domain of transparency and data accessibility (M = 4.37) highlights that users value systems that allow easy access to information and promote openness in administrative processes. This is consistent with recent findings that transparent and accessible data systems improve trust, collaboration, and efficiency in organizational and research environments. (Du, S., Hashim, N., & Kamarudin, S. (2024),

Overall, the results of Table 16 demonstrate a very high level of system acceptability, indicating that the developed AI-based academic performance management system meets essential user expectations in terms of usability, usefulness, support, and transparency, all of which are critical factors for successful technology adoption and sustained use.

Significant difference between level of acceptability of the developed system during alpha testing phase using ISO 25010 parameters and level of acceptability of the developed system based on actual user experience during beta testing using TAM construct parameters

Table 5 presents the significant difference between level of acceptability of the developed system during alpha testing phase using ISO 25010 parameters and level of acceptability of the developed system based on actual user experience during beta testing using TAM construct parameters.

Table 5.

Significant difference between level of acceptability of the developed system during alpha testing phase using ISO 25010 parameters and level of acceptability of the developed system based on actual user experience during beta testing using TAM construct parameters.

Variables		F-value	P-value	Decision on Ho	Interpretation
Perceived Usefulness	**Functionality**	1.718	0.151	Not Rejected	Not Significant
	Reliability	1.263	0.289	Not Rejected	Not Significant
	Efficiency	0.556	0.695	Not Rejected	Not Significant
	Security	0.362	0.814	Not Rejected	Not Significant
Perceived Ease of	**Functionality**	1.346	0.258	Not	Not Significant

Use				Rejected	
	Reliability	2.217	0.086	Not Rejected	Not Significant
	Efficiency	1.119	.351	Not Rejected	Not Significant
	Security	1.143	.341	Not Rejected	Not Significant
Facilitating Conditions	**Functionality**	0.264	0.914	Not Rejected	Not Significant
	Reliability	0.760	0.528	Not Rejected	Not Significant
	Efficiency	0.722	0.523	Not Rejected	Not Significant
	Security	0.824	0.524	Not Rejected	Not Significant
Behavioral Intention to Use	**Functionality**	0.230	0.237	Not Rejected	Not Significant
	Reliability	0.818	0.528	Not Rejected	Not Significant
	Efficiency	1.992	0.101	Not Rejected	Not Significant
	Security	1.346	0.258	Not Rejected	Not Significant
	Efficiency	1.903	0.115	Not Rejected	Not Significant
	Security	2.552	0.063	Not Rejected	Not Significant

*Significant at $\alpha < 0.05$

Table 5 shows that there is no significant difference between the level of acceptability of the developed system during the alpha testing phase (ISO 25010 parameters) and the beta testing phase (TAM constructs), as all computed p-values are greater than the 0.05 level of significance and the decisions consistently indicate "Not Rejected." This implies that the system's quality, as evaluated through technical standards such as functionality, reliability, efficiency, and security, is consistent with users' actual experiences in terms of perceived usefulness, ease of use, facilitating conditions, and behavioral intention. In other words, the high system quality observed during alpha testing is sustained when evaluated by end-users in real-world conditions.

This finding supports existing research which emphasizes that system quality characteristics (e.g., reliability, usability, and efficiency) are closely linked to user acceptance and satisfaction; systems that meet quality standards are more likely to be perceived as useful and easy to use. Similarly, the Technology Acceptance Model (TAM) asserts that perceived usefulness and perceived ease of use strongly influence users' intention to adopt and continue using a system, reinforcing the alignment between technical performance and user perception. The absence of significant differences therefore indicates that the developed system is both technically sound and user-acceptable, demonstrating stability, consistency, and reliability across testing phases. Overall, the results confirm that the system successfully meets both engineering quality standards and user expectations, which is a critical factor for successful implementation and long-term adoption. (Du, S., Hashim, N., & Kamarudin, S. (2024), QMII. (2024).

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V. CONCLUSION

1. The respondents involved in both alpha and beta testing represented diverse yet relevant groups capable of evaluating the developed system effectively.
2. Existing academic administrative processes in faculty workload management, scheduling, reporting, and performance monitoring were highly manual, time-consuming, and inefficient, creating the need for an automated academic management solution.
3. The identified system design specifications were essential in developing a functional, efficient, responsive, and data-driven AI-Based Academic Performance Management System.
4. The developed system successfully addressed the identified administrative challenges by providing automated, centralized, and intelligent academic management functions.
5. The system demonstrated high adaptability and compatibility with institutional processes, policies, and operational requirements, making it suitable for implementation in higher education institutions.
6. The developed system was highly acceptable during alpha testing based on ISO 25010 quality standards in terms of functionality, reliability, efficiency, security, and user interface and experience.
7. The developed system was highly acceptable during beta testing based on the Technology Acceptance Model constructs, indicating that users perceived the system as useful, easy to use, well-supported, and suitable for continuous institutional use.
8. The level of acceptability of the developed system did not significantly differ when respondents were grouped according to profile variables, indicating that the system was consistently acceptable across different user groups.
9. The developed system demonstrated consistent levels of acceptability during both alpha and beta testing phases, confirming its reliability, usability, and effectiveness for institutional academic management.
10. Therefore, the AI-Based Academic Performance Management System is a reliable, efficient, user-friendly, and institutionally adaptable solution that can significantly improve academic administrative processes in higher education institutions.

VI. RECOMMENDATIONS

1. Higher education institutions may adopt the AI-Based Academic Performance Management System to improve efficiency in faculty workload management, scheduling, reporting, and academic performance monitoring.
2. Institutions should provide continuous training, technical assistance, and capability-building programs to ensure effective utilization of the system by academic personnel.
3. Future developers may further enhance the system by integrating advanced artificial intelligence features such as predictive analytics, automated recommendations, and real-time decision-support tools.
4. Institutions should strengthen their ICT infrastructure, including internet connectivity, server capacity, and hardware resources, to support smooth system implementation and operation.
5. Continuous monitoring, evaluation, and updating of the system should be conducted to maintain software quality, security, and usability standards.
6. Stakeholder participation should be continuously encouraged during future system improvements to ensure that the system remains responsive to users' administrative needs.
7. Institutional policies and procedures may be aligned further with digital transformation initiatives to maximize the benefits of automated academic management systems.
8. Future researchers may conduct similar studies using larger populations, different institutional settings, and additional evaluation models to validate and expand the findings of this study.

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