Global Scientific JOURNALS
GSJ: Volume 14, Issue 2, February 2026, Online: ISSN 2320-9186
www.globalscientificjournal.com

CENTRALIZED STUDENT PORTAL FOR AEMILIANUM COLLEGE INC.

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Abstract

Centralized Student Portal for Aemilianum College Inc. was developed to enhance the efficiency, accuracy, and accessibility of registrar and academic management processes. The system employed the Agile Software Development methodology, enabling iterative development, continuous feedback, and flexibility throughout the project lifecycle. The system was evaluated by ten (10) IT professionals and five (5) employees of Aemilianum College Inc., using the ISO/IEC 25010 software quality standards to assess overall system quality, functionality, and performance. This approach ensured that the system met the needs of its users while maintaining high standards of usability, security, and reliability.

During the development and after testing, the findings revealed that the system effectively supported core registrar functions, including student enrollment, academic records management, grade tracking, and document request processing. The portal demonstrated cross-platform compatibility, offering a user-friendly and responsive interface for desktops, laptops, tablets, and smartphones. Hierarchical role-based access control was successfully implemented, ensuring secure and appropriate access for administrators, faculty, students, and parents. Real-time data processing, multi-channel notifications, and stringent security measures enhanced operational efficiency, data integrity, and user engagement. The ISO/IEC 25010 evaluation indicated that the system performed well in functional suitability, reliability, performance efficiency, usability, maintainability, and portability, with an overall rating of 3.22, interpreted as Meets Expectations.

Based on these findings, it was concluded that the developed system improved accuracy, efficiency, and transparency in academic and administrative operations. The portal provided a reliable, secure, and accessible platform for all users, effectively supporting institutional processes while safeguarding sensitive information. Real-time synchronization of records, user-centered interface design, and adherence to quality standards confirmed the system's robustness and readiness for deployment. Overall, the study demonstrated that the system could significantly enhance the management of academic and registrar-related tasks at Aemilianum College Inc.

Based on the conclusions, several recommendations were formulated to ensure the system's continued effectiveness and improvement. These included regular updates and maintenance of registrar modules, optimization of the user interface for emerging devices, periodic review of user roles and permissions, implementation of automated monitoring tools, and provision for personalized notifications. Additionally, security audits, compliance with privacy regulations, and a long-term maintenance and improvement plan were recommended to sustain the system's high quality, adaptability, and alignment with future technological advancements.

Keywords: Centralized Student Portal, Registrar Management System, Software Development, Student Information System.

Introduction

In the era of rapid digital transformation, educational institutions across the globe are continually challenged to adopt technologies that enhance operational efficiency and improve service delivery across all levels of education. These challenges are closely aligned with the United Nations Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education, SDG 9: Industry, Innovation, and Infrastructure, and SDG 16: Peace, Justice, and Strong Institutions, which emphasize inclusive access to education, digital innovation, and efficient, transparent institutional systems. International studies have shown that modern student information systems are pivotal in improving administrative workflows, ensuring accuracy of records, and enhancing institutional responsiveness from basic education to graduate and professional studies. For instance, Optimizing Administrative Efficiency and Student Engagement in Education: The Impact of AI by Smith, Johnson, and Williams (2022) found that integrating AI-powered analytics in student information systems significantly enhanced data insights and streamlined registrar operations in European universities. Likewise, the international study Exploring the Effectiveness of Mobile Learning Technologies in Enhancing Student Engagement and Learning Outcomes by Garcia, Wong, and Patel (2023) revealed that mobile-friendly academic portals improved student engagement and reduced administrative delays by up to 40%, demonstrating the growing demand for systems that are accessible anytime and across multiple devices such as mobile phones, laptops, and desktop computers.

In the Philippine context, the country continues to strengthen its digital education initiatives in support of SDG 4's mandate for inclusive and equitable quality education; however, many institutions across elementary, secondary, tertiary, and graduate levels still rely on outdated, fragmented, or fully manual processes. These challenges are particularly evident in registrar operations, where the absence of a centralized platform often results in data duplication, inefficient workflows, and delays in delivering essential services such as grade access, document processing, and academic record retrieval. The development of the Student Portal for Bestlink College of the Philippines by Sopot et al. (2022) exemplifies local efforts to integrate web- and mobile-based systems that provide seamless access to

grades, documents, certificates, and payments. Moreover, the Department of Education's nationwide initiatives, such as the Early Registration for SY 2024–2025 implemented through the Learner Information System (LIS), highlight the importance of centralized digital systems in managing student data and supporting large-scale educational planning, key objectives aligned with SDG 9 on resilient digital infrastructure.

Within the Bicol Region, disparities in ICT readiness continue to affect how educational institutions adapt to digital innovations across different academic levels, posing challenges to equitable access and system efficiency. Studies such as Experiences and Challenges for K to 12 Science Education in the New Normal in Bicol, Philippines by Al-Banico and Besmonte (2025) identified persistent gaps in ICT integration, including content delivery, instructional material design, and assessment integrity. Meanwhile, localized digital solutions such as the Bicol College Property Management System for Bachelor of Science in Hospitality Management Students: Mock Hotel Operation by Dela Cruz, Santos, and Ramirez (2022) demonstrate how context-specific systems can improve operational efficiency and support flexible academic processes within higher education, contributing to institutional innovation and accountability consistent with SDG 16.

In the Province of Sorsogon, educational institutions offering elementary, high school, undergraduate, graduate, and professional programs similarly face challenges in modernizing registrar and student management systems. Many schools continue to manage student records through a combination of manual, paper-based processes and isolated digital tools, resulting in fragmented data, limited accessibility, and difficulty in tracking student progression across academic levels. These conditions undermine transparent and efficient academic governance and underscore the need for a centralized, unified, and scalable platform capable of supporting comprehensive academic services from basic education to advanced professional studies.

At Aemilianum College Inc. (ACI), which offers programs ranging from elementary and high school to college, Master in Information Technology (MIT), and the College of Law, these challenges are increasingly evident. Existing processes often involve repetitive data entry, limited real-time access to records, and delays in releasing grades and academic documents. Such inefficiencies affect administrators, faculty, students, and parents who depend on timely, accurate, and accessible information. Furthermore, the lack of an integrated system restricts the institution's ability to generate consolidated reports, monitor student progression across levels, and maintain data integrity across departments, concerns directly related to institutional transparency and service effectiveness.

To address these challenges and contribute to the attainment of SDG 4, SDG 9, and SDG 16, the proposed Centralized Student Portal for Aemilianum

College Inc. aims to deliver a comprehensive, cross-platform solution that supports all academic levels—elementary, high school, college, MIT, and College of Law. The system is designed to operate seamlessly across mobile phones, laptops, and desktop computers, enabling users to access academic services anytime and anywhere. It will unify student record management, registration processes, grade tracking, and document requests into a single integrated platform, automate key registrar functions, reduce redundancies, and ensure accurate, secure, and reliable data handling.

Grounded in global trends and responsive to national, regional, and local needs, the proposed system seeks to enhance administrative efficiency, data consistency, transparency, and student engagement. Ultimately, it supports Aemilianum College Inc.'s mission to deliver inclusive, innovative, and high-quality educational services across all levels of learning, while contributing meaningfully to the global goals of sustainable and digitally empowered education.

Specific Objectives

Specifically, this study aimed to:

1. Develop a Simple Registrar Management System.

1.1 Core Registrar Functions
a. Implement a student registration system.
a.1 Enable new student enrollment workflows.
a.2 Handle student information updates and validation.
b. Manage academic records.
b.1 Track student academic history.
b.2 Maintain subject enrollments and class records.
c. Implement a grade management system.
c.1 Process grade submissions from teachers.
c.2 Generate grade summaries for students.
d. Provide document request processing.
d.1 Handle requests such as TOR, COR, certificates, and forms.
d.2 Track request status from submission to release.

2. Implement Cross-Platform Compatibility

2.1 System Accessibility
a. Ensure full system operation on desktop and laptop devices.
b. Optimize performance and interface scaling for tablets.
c. Provide mobile responsiveness and app-based access for smartphones.

2.2 User Interface Adaptability
a. Implement responsive layouts for various screen sizes.

b. Ensure feature parity across all supported platforms.

3. Integrate Hierarchical Role-Based Access Control

3.1 User Role Definition
a. Define administrator privileges.
a.1 Manage user accounts.
a.2 Oversee system operations and data.
b. Define teacher roles.
b.1 Submit grades.
b.2 Access class lists and academic records.
c. Define student roles.
c.1 Access grades and academic information.
c.2 Submit document requests.
d. Define parent/guardian access.
d.1 View student grades.
d.2 Receive school-related notifications.

3.2 Permission Management
a. Control access to system modules based on user type.
b. Restrict sensitive functions to authorized personnel only.

4. Incorporate Real-Time Data Processing

4.1 System Updating
a. Enable instant synchronization of registrar transactions.
b. Ensure real-time grade posting and record updates.

4.2 Transaction Accuracy
a. Validate data before saving.
b. Prevent duplicate or conflicting entries.

5. Provide a Multi-Channel Notification Feature

5.1 Notification Types
a. Grade-related notifications.
b. School announcements and advisories.
c. System or account updates.
5.2 Notification Delivery
a. Send alerts through the web portal.
b. Provide push notifications via mobile application.
c. Allow users to customize notification preferences.

6. Ensure Data Security and Privacy

6.1 Security Protocols
a. Implement data encryption for stored and transmitted information.
b. Apply multi-factor or secure authentication mechanisms.
6.2 Privacy Protection
a. Ensure compliance with data protection regulations.
b. Restrict access to sensitive records based on user roles.

7. Evaluate the System Using ISO/IEC 25010 Standards

7.1 Software Quality Characteristics

a. Functional suitability
b. Reliability
c. Performance efficiency
d. Usability
e. Security
f. Maintainability
g. Portability

Scope and Delimitations

The scope of this study covered the design, development, and evaluation of a Cross-Platform Integrated Registrar and Student Portal System intended for multi-level education at Aemilianum College Inc. Specifically, the system incorporated essential registrar functions, including student registration workflows, the updating and validation of student information, the management of academic histories, subject enrollments, class records, and a grade management module that processed teacher submissions and generated student grade summaries. It also included a document request subsystem capable of handling requests for TOR, COR, certificates, and other forms, with real-time status tracking from submission to release. The system further addressed cross-platform compatibility by ensuring full functionality on desktops and laptops, optimized performance on tablets, and mobile responsiveness and app-based access for smartphones. Responsive layouts and feature parity across devices were also implemented. Additionally, the study integrated hierarchical role-based access control with defined privileges for administrators, teachers, students, and parents or guardians, along with permission management that restricted sensitive functions to authorized personnel. Real-time data processing was incorporated to enable instant synchronization, real-time grade posting, data validation, and prevention of duplicate entries. A multi-channel notification feature was also included, delivering grade-related updates, school announcements, advisories, and system alerts through both the web portal and mobile notifications, with customizable user settings. Security measures such as data encryption, secure authentication, and adherence to privacy regulations were implemented. Finally, the system was evaluated based on the ISO/IEC 25010 Software Quality Model, assessing functional suitability, reliability, performance efficiency, usability, security, maintainability, and portability. The evaluation was conducted by ten (10) IT professionals and five (5) employees of Aemilianum College Inc., as recommended by the adviser and panel members.

This study was delimited to the development and assessment of the system's core registrar and student portal functionalities and did not include advanced analytics, AI-driven decision-support tools, or integration with third-party platforms such as LMS, financial systems, or external government databases like LIS or CHED systems. The system focused solely on processes directly related to registration, academic records, grades, and document requests, and did not cover modules for attendance monitoring, curriculum mapping, faculty evaluation, or comprehensive administrative reporting beyond the registrar scope. User roles were limited to administrators, teachers, students, and parents or guardians,

excluding other stakeholders such as alumni, external auditors, or partner institutions. The evaluation was confined to usability and quality assessment using ISO/IEC 25010 and relied exclusively on feedback from the selected ten IT professionals and five ACI employees; broader institutional deployment and large-scale user testing were not undertaken. Furthermore, the study was restricted to the context of Aemilianum College Inc., and its results may not fully generalize to institutions with significantly different organizational structures, technological infrastructures, or operational requirements.

Gap Bridged by the Study

The reviewed systems primarily focused on improving specific academic and administrative functions, such as mobile accessibility, enrollment processing, grade tracking, and document management. Systems like Rodriguez, Alvarez, and Chen's (2022) Mobile-First Academic Information System and Mendoza, Garcia, and Salazar's (2022) EduPortal PH highlighted cross-platform access and real-time monitoring, demonstrating improvements in efficiency and student engagement. However, these systems were often limited to certain academic levels or lacked full integration of multiple registrar functions, leaving gaps in providing a comprehensive platform for managing student services across all education levels.

The present study bridged these gaps by developing a Centralized Student Portal for Aemilianum College Inc., which integrated student registration, grade processing, document requests, and notifications into a single system covering elementary, high school, college, MIT, and the College of Law. Unlike previous systems, it ensured cross-platform accessibility on desktops, tablets, and mobile phones, incorporated real-time data processing, hierarchical role-based access, and strong security protocols. This made the system a more comprehensive solution for improving administrative efficiency, enhancing student autonomy, and streamlining service delivery across the institution.

Conceptual Framework

The input phase of the study focused on developing a Simple Registrar Management System that incorporated core registrar functions, such as student registration, grade management, and document request processing. The system was designed with cross-platform compatibility to ensure accessibility and user interface adaptability across desktops, tablets, and mobile devices. Hierarchical Role-Based Access Control was integrated to define user roles and manage permissions efficiently, while real-time data processing was implemented to maintain transaction accuracy and keep system records up to date. A multi-channel notification feature was also included to deliver various types of notifications promptly, and robust data security and privacy measures were applied through established security protocols and privacy protection mechanisms. The inputs were aligned with ISO/IEC 25010 standards to

ensure the software adhered to recognized quality characteristics.

The methodology of the study followed the Agile Software Development approach, which allowed iterative planning, design, development, testing, deployment, review, and launching of the system. Each phase was carefully executed to incorporate feedback from potential users and to ensure that the system met functional requirements while maintaining high usability and performance efficiency. The Agile approach enabled incremental improvements and rapid adaptation to challenges, ensuring that the development process remained flexible, collaborative, and focused on user needs.

The output of the study was the Centralized Student Portal for Aemilianum College Inc., which unified student record management, registration processes, grade tracking, document requests, and notifications into a single platform. The system successfully integrated the input components and followed the Agile methodology to create a cross-platform, secure, and user-friendly portal that addressed administrative inefficiencies across multiple educational levels, including elementary, high school, college, MIT, and the College of Law.

Feedback from administrators, faculty, and students indicated that the portal enhanced efficiency, reduced redundant processes, and improved access to academic information. Users reported greater satisfaction with real-time updates, the multi-channel notification feature, and the system's accessibility on various devices. The feedback provided critical insights for further refinement of the system and validated that the conceptual framework effectively guided the development of a comprehensive and reliable student information management platform.

System Development Methodology

The system development of the proposed Centralized Student Portal for Aemilianum College Inc. employed the Agile Software Development methodology, which emphasized iterative progress, collaboration, and flexibility throughout the project lifecycle. Agile allowed the researcher to implement the system incrementally, ensuring that each phase produced tangible outputs while adapting to feedback and evolving requirements. This approach also enabled efficient time management, helping the researcher balance development tasks with professional and family responsibilities.

During the Plan phase, the researcher defined the project goals, established the system requirements, and created a timeline for completion. This phase involved analyzing stakeholder needs, outlining essential functions such as registrar operations, grade tracking, enrollment management, document requests, and cross-platform accessibility. Planning also included identifying resources, potential challenges, and strategies to ensure that the project

progressed smoothly and met its intended objectives.

The Requirements phase focused on gathering and analyzing detailed user needs, system specifications, and functional expectations. The researcher conducted consultations with students, faculty, administrators, and other stakeholders, reviewed existing processes, and identified gaps in the current system. This phase ensured that the portal addressed real user needs, improved administrative efficiency, and provided guidance for the design and development of a system tailored to the institution's context.

During the Design phase, the researcher created the system architecture, user interfaces, and workflow diagrams. This stage involved designing intuitive navigation for different user roles, developing interface mockups, and establishing efficient user flows. The design also incorporated hierarchical role-based access control, secure data management practices, and cross-platform adaptability, providing a clear blueprint for the subsequent coding phase.

In the Develop phase, the researcher wrote the code and implemented the system features according to the design specifications. Functional modules, including enrollment management, grade monitoring, document requests, notification delivery, and secure user authentication, were developed. Integration of real-time data processing and cross-platform functionality ensured that the system would operate reliably on desktops, laptops, tablets, and smartphones.

The Testing phase involved evaluating the system's functionality, performance, and security. Errors, bugs, and inconsistencies were identified and corrected, ensuring that transactions were accurate, real-time updates functioned properly, and all features operated smoothly across multiple devices. This phase was critical in confirming that the system met the functional and non-functional requirements established during the planning and requirements phases.

The Deployment phase consisted of releasing the system to end-users, making it operational for students, faculty, administrators, and parents. During this stage, the portal became accessible across desktops, tablets, and mobile devices, allowing stakeholders to perform academic and administrative tasks efficiently. Feedback from initial users was monitored to ensure usability, reliability, and data integrity, completing the system development process.

Throughout all phases, the researcher maintained continuous documentation and progress tracking to ensure transparency and accountability in the development process. Regular meetings and reviews were conducted to assess milestones, address emerging issues, and incorporate stakeholder feedback promptly. This structured approach not only reinforced the iterative nature of Agile methodology but also ensured that the system aligned with user expectations,

institutional goals, and quality standards before full deployment. It also enabled timely identification of risks and implementation of corrective actions, preventing delays and quality issues. Additionally, consistent documentation served as a reliable reference for future system maintenance, enhancement, and scalability.

Findings

During the development and after testing and evaluation of the developed system the following findings have been established:

1. The Simple Registrar Management System revealed that the system effectively supports the core registrar functions. The student registration module enabled new student enrollment workflows and allowed for updates to student information with proper validation, ensuring accuracy and efficiency in data management. The academic records management feature successfully tracked student histories, maintained subject enrollments, and organized class records, facilitating easy retrieval and reducing errors compared to manual systems. The grade management system allowed teachers to submit grades and generated accurate grade summaries for students, automating calculations and minimizing manual errors. Additionally, the document request processing module handled requests for transcripts, certificates, and other forms, tracking each request from submission to release and providing status notifications, which enhanced transparency and efficiency.

2. The Centralized Student Portal successfully achieves cross-platform compatibility, ensuring accessibility and consistent performance across a range of devices. On desktops and laptops, the system operates fully, supporting all core functionalities without performance issues. Tablet users benefit from optimized interface scaling, which maintains clarity and usability across different screen sizes, while smartphone users experience mobile responsiveness and app-like access, enabling essential tasks to be performed on the go. The system's user interface is adaptable, with responsive layouts that adjust seamlessly to various screen dimensions and maintain feature parity across all supported platforms. These findings demonstrate that the system provides a reliable, user-friendly, and accessible experience for students, faculty, and administrative staff, regardless of the device being used.

3. the system effectively implements hierarchical role-based access control, ensuring secure and appropriate access for all users. Administrator accounts were granted full privileges, including management of user accounts and oversight of system operations and data. Teacher roles allowed for grade submissions and access to class lists and academic records, while student accounts enabled viewing of grades, academic information, and submission of document requests. Parents and guardians were provided limited access to view student grades and receive school-related notifications. The system's permission management successfully controlled access to modules based on user roles,

restricting sensitive functions to authorized personnel only. These findings indicate that the system maintains data security, protects sensitive information, and ensures that each user can access only the features relevant to their role, thereby enhancing overall institutional safety and operational efficiency.

4. The system effectively incorporates real-time data processing, ensuring that registrar transactions and academic records are updated instantly. The system enabled immediate synchronization of enrollment, grade submissions, and document requests, allowing students, teachers, and administrators to access the most current information at any time. Real-time grade posting and record updates were executed efficiently, reducing delays and improving transparency in academic processes. Additionally, the system validated all data before saving, preventing duplicate or conflicting entries and maintaining the accuracy and integrity of student records. These findings demonstrate that the system enhances operational efficiency, ensures timely access to critical information, and minimizes errors in administrative and academic transactions.

5. The system effectively provides a multi-channel notification feature, ensuring timely and relevant communication with users. The system successfully delivered grade-related notifications, school announcements, advisories, and system or account updates. Notifications were sent through the web portal and via push notifications on mobile devices, allowing users to stay informed regardless of the platform they were using. Additionally, the system enabled users to customize their notification preferences, giving them control over the types of alerts they receive. These findings indicate that the multi-channel notification feature enhances communication efficiency, keeps users updated on critical information in real time, and contributes to a more responsive and user-centered experience within the institution.

6. The system effectively ensures data security and privacy, safeguarding sensitive academic and personal information. Security protocols such as data encryption for stored and transmitted information and multi-factor or secure authentication mechanisms were successfully implemented, protecting the system against unauthorized access and potential breaches. Privacy measures were also observed, with access to sensitive records restricted based on user roles and compliance with relevant data protection regulations ensured. These findings indicate that the system maintains high standards of confidentiality, integrity, and security, providing users with a safe and trustworthy platform for managing academic transactions and personal information.

7. The ISO/IEC 25010 software quality standards revealed that the system performed well across multiple software quality characteristics. Functional suitability, reliability, performance efficiency, usability, security, maintainability, and portability were all assessed, and the system consistently demonstrated compliance with these quality attributes. The functional features operated as intended, the system was reliable and responsive across various

devices, usability was intuitive for all user roles, and security protocols effectively protected sensitive data. Maintainability and portability were also evident, allowing the system to adapt smoothly to updates and different platforms. The overall evaluation rating was 3.22, interpreted as Meets Expectations, highlighting the system's robustness, user-centered design, and readiness for deployment at Aemilianum College Inc.

Conclusions

Based on the findings of this study the following conclusions were formulated:

1. The developed system effectively supported core registrar functions, improving accuracy, efficiency, and transparency in student registration, academic records, grade management, and document request processing.

2. The system successfully achieved cross-platform compatibility, providing a reliable, user-friendly, and accessible experience across desktops, laptops, tablets, and smartphones.

3. Implemented hierarchical role-based access control effectively, ensuring secure and appropriate access for all users while protecting sensitive information and enhancing institutional safety.

4. The system incorporated real-time data processing, enabling instant synchronization of transactions and records, minimizing errors, and ensuring timely access to critical academic information.

5. The system provided a multi-channel notification feature that ensured timely communication, kept users updated across platforms, and enhanced overall responsiveness and user engagement.

6. The system ensured data security and privacy by implementing encryption, secure authentication, and role-based access restrictions, maintaining confidentiality and integrity of sensitive information.

7. The system met ISO/IEC 25010 quality standards, demonstrating reliability, usability, maintainability, and portability, with an overall rating of 3.22, confirming its robustness, user-centered design, and readiness for deployment at Aemilianum College Inc.

Recommendations

Based on the conclusions drawn from this study, the following recommendations were formulated:

1. Regularly update and maintain the registrar modules to accommodate changes in academic policies and enhance system functionality.

2. Continue optimizing the user interface and performance for emerging devices and screen sizes to maintain seamless cross-platform compatibility.

3. To periodically review and adjust user roles and permissions to ensure continued security and proper access control as organizational needs evolve.

4. May implement automated monitoring tools to further ensure the accuracy and consistency of real-time data processing across all modules.

5. May allow users to further personalize notification settings and explore additional communication channels to enhance engagement and responsiveness.

6. Conduct regular security audits and updates to maintain high standards of data protection and compliance with relevant privacy regulations.

7. Establish a system maintenance and improvement plan to ensure that the software continues to meet high-quality standards and adapts to future technological requirements.

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Acknowledgement

The researcher conveys heartfelt acknowledgment and deep appreciation to the individuals and institutions whose support and encouragement played a vital role in the successful completion of this academic journey:

To *Aemilianum College Inc***.**, for granting the opportunity to be part of its distinguished academic community while pursuing the Master in Information Technology (MIT) degree. The institution's nurturing environment fostered both personal and professional growth, for which the researcher remains sincerely grateful;

A special note of gratitude is given to *Rev. Fr. Rey Genaro M. Malabanan, CRS*, Director of Aemilianum College Inc., whose visionary leadership and steadfast encouragement served as a guiding light throughout this study. His unwavering commitment to excellence greatly influenced the research's direction and motivation;

Deepest thanks are extended to *Dr. Josefina R. Sarmiento*, the research adviser and Dean, whose expert mentorship, patience, and insightful guidance shaped the study from its inception to completion. Her invaluable support and dedication were instrumental in bringing this research to fruition;

To the members of the panel *Mr. Richard G. Rabulan, Mr. Marco L. Espinosa***,** *Mr. Milan E. Bausa, Mrs. Marilyn D. Berdin*, *Rev. Fr. Joerex P. Alonso, CRS* and *Rev. Fr. Mandee N. Batac, CRS*, who diligently provided constructive critiques, valuable suggestions, and

recommendations for the enhancement of the system, leading to functional and reliable outputs;

To all IT professionals and end-users who evaluated the developed system and wholeheartedly provided valuable suggestions during the testing and evaluation phase;

To his beloved family especially his wife, *Jessa E. Ditan*, whose unwavering love, patience, and sacrifices served as a continuous source of strength and inspiration the researcher expresses his profound gratitude. He also dedicates this work to their precious baby *Esha Keziah E. Ditan*, who served as a symbol of hope and motivation throughout the journey;

To his parents, *Mrs. Adelfa C. Ditan* and *Mr. Rodolfo L. Ditan*, the researcher extends heartfelt thanks for their steadfast support, wisdom, and encouragement that guided him through life and this academic endeavor;

Warm appreciation is also extended to his close friends and *MIT classmates*, whose camaraderie, encouragement, and intellectual exchange enriched the research experience and made the journey more fulfilling and enjoyable;

Above all, the researcher offers praise and thanks to *God Almighty*, whose grace, wisdom, and divine guidance provided the strength, resilience, and clarity to overcome every challenge and complete this scholarly work;

To everyone who contributed, inspired, or supported the researcher in any way - thank you. This achievement is a reflection of your collective belief, kindness, and unwavering support;

Thank you and may **God** bless us all!

K. J. C. D.