STUDENT SERVICES DIGITAL RECORDS MANAGEMENT SYSTEM FOR THE REGISTRAR'S OFFICE

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Abstract

In an era marked by technological advancements and the increasing digitization of administrative processes, educational institutions are continuously seeking innovative solutions to streamline operations and enhance services for students. The Student Services Digital Records Management System for the Registrar's Office at Veritas College of Irosin emerges as a pioneering initiative aimed at revolutionizing the management of student records and document transactions. With a specific focus on addressing the evolving needs of modern education, this study embarks on the development of a comprehensive online portal tailored to the unique requirements of Veritas College. The primary objectives of this system are multifaceted, encompassing the creation of an online portal to maintain detailed records of every student's credential and ensure timely document disbursement for compliance purposes. This includes crucial documents such as transcripts, diplomas, good moral certificates, honorable dismissals, and other pertinent certifications. Additionally, the study seeks to develop a module for report generation of requested documents, providing an intuitive interface for viewing and printing documents as needed. Furthermore, the integration of notification functionalities, such as email verification for student registration, is envisioned to enhance communication and administrative processes within the institution. Importantly, the study also aims to evaluate the software quality of the developed system based on ISO/IEC 25010:2011 standards, assessing factors such as portability, performance efficiency, compatibility, usability, reliability, security, and maintainability. Through a comprehensive exploration of these objectives, the Student Services Digital Records Management System endeavors to redefine administrative practices, foster efficiency, and elevate the student experience at Veritas College of Irosin.

Key Words: Academic Records, Accessibility Improvement, Administrative Efficiency, Aemilianum College Inc., Digital Management, Efficiency Enhancement, Information Management, Registrar's Office, Student Services, System Implementation, Technology Integration.

Introduction

In an increasingly interconnected world driven by technological advancements, educational institutions worldwide are continually seeking innovative solutions to streamline administrative processes and improve accessibility to essential resources. At the international level, universities and colleges are grappling with the challenges posed by traditional record-keeping methods, particularly within the Registrar's Office. As globalization expands educational opportunities across borders, the need for efficient and accessible management of student records becomes paramount (Smith & Johnson, 2022).

Educational policies and regulations often dictate the standards for record management within higher education institutions. However, the rapid evolution of technology has outpaced the capabilities of many existing systems, leading to inefficiencies and inconsistencies in record-keeping practices (Jones et al., 2021). Consequently, there is a growing demand for digital solutions that can centralize, organize, and streamline the management of student records to meet the evolving needs of educational institutions.

Individual universities and colleges face unique challenges in managing student records efficiently. Limited resources, outdated infrastructure, and manual processes hinder the Registrar's Office's ability to provide timely and accurate services to students, faculty, and staff (Garcia & Martinez, 2020). As academic institutions strive to uphold their reputation and accreditation standards, the need for a modernized approach to record management becomes increasingly urgent.

Against this backdrop, the development of a Student Services Digital Records Management System tailored specifically for the Registrar's Office emerges as a pressing necessity. Titled "Student Services Digital Records Management System for the Registrar's Office," this project aims to revolutionize the way academic records are stored, accessed, and managed within educational institutions. By leveraging cutting-edge technology and best practices in information management, this system seeks to address the inefficiencies and challenges inherent in traditional record-keeping methods (Brown & Williams, 2023).

The importance of this system cannot be overstated. Beyond merely digitizing paper-based records, it promises to enhance administrative efficiency, improve data accuracy, and increase accessibility to student records for all stakeholders. Furthermore, it aligns with the broader goals of educational institutions to embrace digital transformation and adapt to the changing needs of students and staff in an increasingly digital world (Chen et al., 2024). As such, the development and implementation of the Student Services Digital Records Management System for the Registrar's Office represent a significant step towards ensuring the continued success and relevance of educational institutions in the 21st century.

This digital credential and record management system is verily easy to use

while ensures students understand the online process. To alleviate lengthy paragraph to instruct and cluttered appearance of request forms due to erasures and improper filling of information. It facilitates simple sharing and cooperation between staff, instructors, and students by making digital papers completely searchable. Anyone who needs to access the documents can do so thanks to its access control features.

The purpose of the proposed title, Student Services Digital Records Management System for the Registrar's Office, is to provide seamless collaboration between the school registrar and its staff, right at your fingertips. It will aid in ease of access as students provide required evidence for accreditation and compliance.

The Student Services Digital Records Management System for the Registrar's office comprises legible information and factual content, utilizing modernized tools and methodologies to lessen the hassle of traditional documents and credential consolidation, serving as the main process in compliance with document retention and ensuring effortless compliance.

Specific Objectives

The development of this system specifically aimed to:
1. Develop an online portal that maintains a detailed record of every student's credential and ensures on time document disbursement for compliance:
    1.1. Student's Transcript of Records
    1.2 Diploma
    1.3 Good Moral Certificate
    1.4 Honorable Dismissal
    1.5 Other pertinent certifications and documents
2. Develop module for report generation of the request documents
    2.1. An interface for viewing the documents requested
    2.2. Printing of requested documents
3. Integrate notification
    3.1 E-mail verification of student registration
4. Determine the software quality based on ISO/IEC 25010:2011 in terms of:
    4.1   Portability
    4.2   Performance Efficiency
    4.3   Compatibility
    4.4   Usability
    4.5   Reliability
    4.6   Security
    4.7   Maintainability

Scope and Delimitations

This study focused on the development of a Web-based Student Services Digital Records Management System for the Registrar's office of Veritas College of Irosin. The targeted educational institution and its stakeholders were the only ones the suggested system concentrated on. The aim was to ease the anxious anticipation of the students regarding their current academic status with record tracking and document management to an entirely unprecedented level. The system also provides easy viewing of the documents requested in the office. Once the request has been prepared, a message will be received by the client through email notifying them that the documents are ready for pick-up.

The system was expected to be evaluated to establish software quality assurance for software projects ISO 25010 with ten (10) IT professionals, three (3) School Administrators, and ten (10) students. The system was restricted in providing online prompts for the following: transcript of records, diploma, good moral, honorable dismissal, and other pertinent certifications. Other than these mentioned, the system does not cover any additional functionalities.

Gap Bridged by the Study

The development of the Student Services Digital Records Management System for the Registrar's Office at Veritas College of Irosin addresses a critical gap in educational administrative processes by modernizing and streamlining document management and student record-keeping practices. Prior to this study, traditional methods of record management and document disbursement within the registrar's office often led to inefficiencies, delays, and challenges in maintaining accurate records. The absence of an integrated online portal tailored to the specific needs of Veritas College hindered communication, transparency, and accessibility for both students and administrative staff. By introducing a comprehensive digital records management system with features such as online document requests, report generation modules, and email notifications, the study bridges the gap between outdated manual processes and contemporary technological solutions, enhancing efficiency, accuracy, and user satisfaction within the registrar's office and contributing to the modernization of administrative practices in academic institutions.

Conceptual Framework

The Conceptual Framework for the Student Services Digital Records Management System for the Registrar's Office encompasses the Input, Process, and Output components. In the Input stage, the system aims to develop an online portal that maintains comprehensive records of student credentials, including transcripts of records, diplomas, good moral certificates, honorable dismissals, and other relevant documents. Additionally, modules for report generation of requested documents and notification systems via email are included to ensure timely document disbursement and communication with stakeholders. Furthermore, the system intends to determine software quality based on ISO/IEC 25010:2011 standards, covering functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.

In the Process phase, the Agile development methodology is adopted, comprising iterative steps such as planning, requirements gathering, user design, development, testing, and deployment. This methodology allows for flexibility and adaptability throughout the development process, ensuring that the system meets the evolving needs of the Registrar's Office and stakeholders. By employing Agile practices, including regular feedback loops and incremental updates, the development team can

address any issues or changes promptly, leading to a more efficient and effective system implementation.

Finally, the Output of the Conceptual Framework is the Student Services Digital Records Management System for the Registrar's Office. This system encompasses the developed online portal, modules for report generation and notification, and adherence to ISO/IEC 25010:2011 software quality standards. Through the implementation of this system, the Registrar's Office at Veritas College of Irosin can streamline document management processes, enhance accessibility to student records, improve communication with stakeholders, and ensure compliance with regulatory requirements. Additionally, the system aims to promote efficiency, reliability, and

Project Resources

Various technological components were outlined to support the development of the Student Services Digital Records Management System for the Registrar's Office. Initially, the hardware infrastructure consisted of servers, storage devices, and networking equipment, which were crucial for hosting the online portal and storing the vast amount of student data securely. The

security in managing student records, ultimately contributing to the overall success and well-being of students and the institution.

The discussion is presented in a clear paragraph format, with each component of the Conceptual Framework addressed sequentially. The Input stage outlines the key features and objectives of the proposed system, while the Process phase describes the methodology used for system development. Finally, the Output section highlights the expected outcomes and benefits of implementing the Student Services Digital Records Management System for the Registrar's Office. This structured format aids in conveying the overall framework and its components effectively.

selection of these hardware and software resources was based on their compatibility, reliability, and scalability to meet the functional requirements of the system. Furthermore, considerations were made regarding the integration of security measures to safeguard student information and ensure compliance with data protection regulations.

Table 3.1 - Hardware Requirement

Required Hardware	Recommendation Specifications
Pentium type Processor 4	I3 or i5
GB RAM 120 GB HDD	120 GB HDD
SDD	500 GB
Printer	HP printer or any ink jet printer

In the study, the hardware requirements were specified in Table 3.1, outlining the necessary components to support the

Student Services Digital Records Management System for the Registrar's Office. Initially, a Pentium-type Processor

4 was listed as the required processor, although it was recommended to use an I3 or i5 processor for optimal performance. Additionally, a minimum of 4 GB RAM and a 120 GB HDD were deemed necessary, while a solid-state drive (SSD) with a capacity of 500 GB was recommended for improved storage and faster data access. Moreover, the inclusion of a printer, specifically an HP printer or any inkjet printer, was essential for generating hard copies of requested documents. These hardware specifications were carefully selected to ensure the system's functionality and efficiency in handling the storage, processing, and printing requirements of the digital records management system. Furthermore, considerations were made to enhance the system's performance and user experience by recommending higher-spec components where possible, such as the upgraded processor and SSD for improved speed and responsiveness. Additionally, the choice of specific brands for the printer aimed to ensure compatibility and reliability in document printing, contributing to the overall effectiveness of the system. Overall, the hardware requirements were designed to meet the operational needs of the digital records management system while considering factors such as performance, storage capacity, and user convenience.

Table 3.2
Software Requirement

Required Software	Recommendation Specifications
Windows Operating System Windows 10	Windows 10 represents the concluding iteration of Windows that offers compatibility with 32-bit processors and devices featuring BIOS firmware.
MySqL Database Server PHP 7.2.0	MySQL, an RDBMS utilizing Structured Query Language (SQL), stands as a free and open-source software solution.
Web Server	A web server encompasses both software and hardware components, utilizing HTTP and various protocols to fulfill client requests transmitted via the World Wide Web. Its primary function revolves around presenting website content by storing, processing, and transmitting web pages to users.
FileZilla Server	FileZilla, an open-source software, serves as a free solution for both client and server FTP functionalities, distributed without charge.

Table 3.2 presents the software requirements for the developed system, along with their recommended specifications. Firstly, Windows 10 is highlighted as the preferred operating system, noted for its compatibility with 32-bit processors and devices incorporating BIOS firmware. Secondly, MySQL is recommended as the database server, specifically PHP 7.2.0, emphasizing its role as a free and open-source RDBMS utilizing SQL. Thirdly, the importance of a web server is underscored, described as a combination of software and hardware components responsible for responding to client requests on the World Wide Web, thereby facilitating the display of website content to users. Lastly, FileZilla Server is introduced as a free solution for both client and server FTP functionalities, emphasized for its open-source nature and cost-free distribution.

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Requirements Planning

For the "Student Services Digital Records Management System for the Registrar's Office," the primary focus is on identifying and defining the specific needs and objectives of the system. During this phase, extensive research is conducted to understand the current processes and challenges faced by the Registrar's Office at Veritas College of Irosin. Interviews are likely conducted with key stakeholders, including the VP of Registration, registrar office staff, and possibly students, to gather insights into their requirements and expectations from the new system.

The aim is to ascertain the feasibility and practicality of the proposed system by analyzing existing manual procedures and identifying areas for improvement. Additionally, the requirements planning phase involves finalizing the scope of the project and documenting the specific functionalities and features that the new system should encompass. This stage lays the foundation for the subsequent stages of system design, development, and implementation, ensuring that the final product aligns closely with the needs and objectives of the Registrar's Office.

User Design

The proponent meticulously reviewed all hardware and software requirements to ensure completeness. Every essential element necessary for development underwent thorough scrutiny. Similarly, the proposed project underwent careful and detailed design considerations.
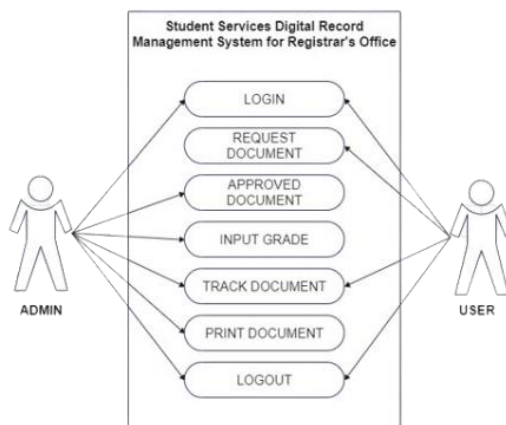
Use Case Diagram

Figure 4.1 Use Case Diagram

Figure 4.1 Use Case Diagram represents the functionalities of the system using actors and use cases. These use cases encompass set of actions,

services and functions that the system needs to execute. This diagram was crucial for identifying both internal and external factors influencing the system.

In Figure 4.1, the diagram depicted the Admin as the main user of the system, possessing complete control over the digitized records and requests. The responsibilities included was approving request, input of grades, tracking requested documents and printing pertinent data.
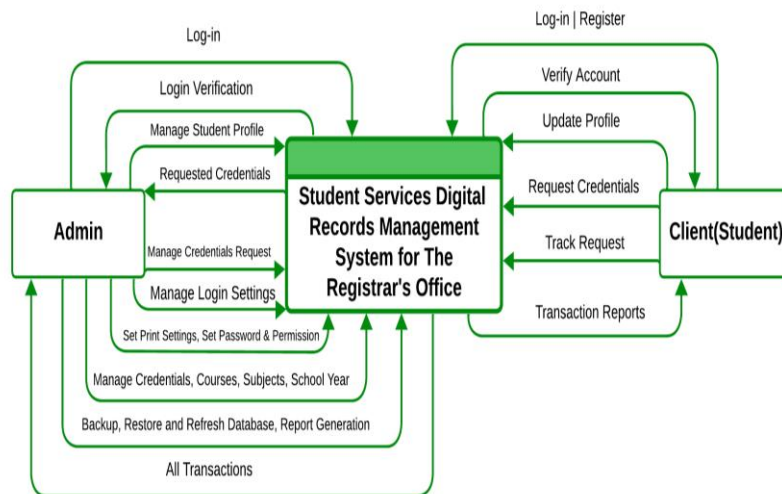

Figure 4. 2 – System Context Diagram

Figure 4.2 Showed the Zero Pictorial Diagram of Student Services Digital Records & Management Services for the registrar's office of Veritas College of Irosin. It portrays how the end-user and admin interact with the system.
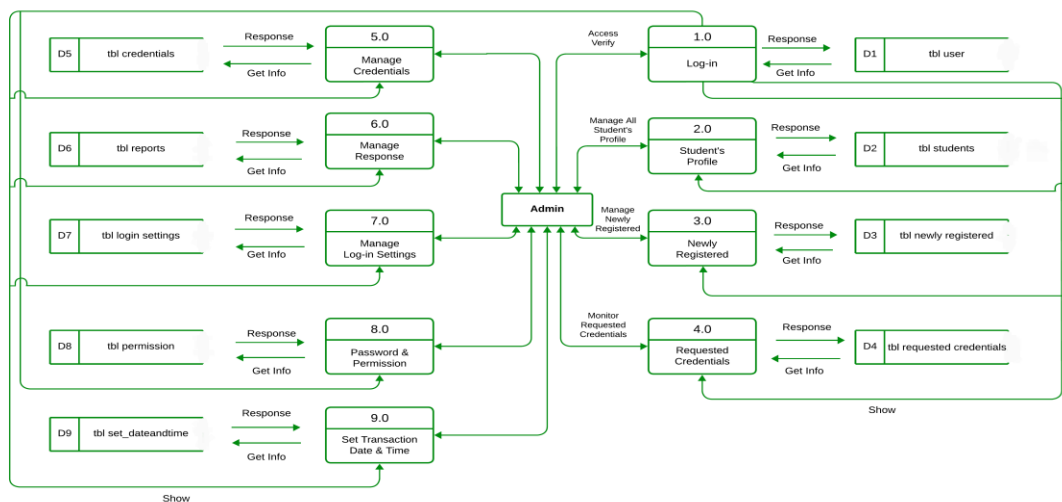
Figure 4.3 – System Data Flow Diagram

Figure 4.3 features the System Data flow Diagram of the proposed project that **Construction**

The construction phase of the proposed system was a meticulously planned and executed endeavor, encompassing nearly three months of intensive effort. Each minute dedicated to this phase was imbued with significance, as it served as the crucible in which ideas were forged into actionable solutions for the identified problems. Throughout this period, the project team navigated through challenges and triumphs, channeling their collective expertise and dedication towards achieving the desired outcomes. The outputs generated during this time basically conveys the overview of the system.

were not merely products of labor but manifestations of innovation and commitment, poised to address the intricacies of the project's objectives. Every decision made, every task completed, contributed to the evolution of the system, shaping it into a robust framework capable of meeting the demands of its intended purpose. This relentless pursuit of excellence underscores the ethos of the construction phase, where each moment was cherished as an opportunity to inch closer towards realizing the project's vision.
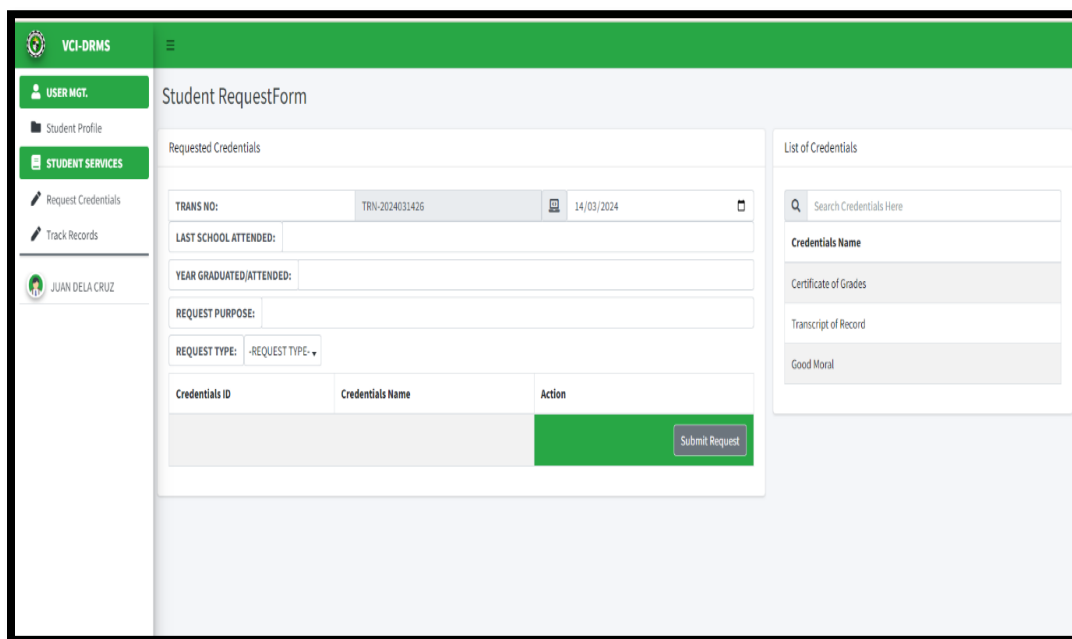

Figure 4.18 Student Document Request Form

Figure 4.18, the Student Profile Document Request Form, stands as a pivotal feature within the system, facilitating prompt and efficient document requests with seamless precision. This interface serves as the gateway for students to initiate requests

for crucial academic documents, empowering them with a streamlined and user-friendly experience. With intuitive design elements and clear prompts, this form epitomizes accessibility and convenience, guiding students through the process with ease. By centralizing document requests within a cohesive digital platform, it not only enhances the student experience but also optimizes administrative workflows within the registrar's office. As a cornerstone of the system's functionality, the Student Profile Document Request Form embodies the ethos of efficiency and excellence, ensuring that students can effortlessly access the documents they need to navigate their academic journey.

Cutover

The cutover phase of the study marks the final stage of the implementation process, where the newly developed digital records management system is transitioned into full operation. During this phase, the system undergoes rigorous testing to ensure its functionality and compatibility with existing processes. Any remaining issues or bugs are addressed, and final adjustments are made to optimize performance. Once the system is deemed ready for deployment, it is rolled out to users, and training sessions may be conducted to familiarize stakeholders with its features and functionalities. The cutover phase requires careful planning and coordination to minimize disruptions to ongoing operations and ensure a smooth transition to the new system. Additionally, measures are put in place to monitor the system's performance post-implementation and address any issues that may arise during the initial stages of operation.

The Student Services Digital Records Management System for the Registrar's Office was evaluated by three (3) sets of evaluators: ten (10) IT experts, three (3) School Administrators, and ten (10) students using industry software quality model – the ISO 25010 evaluation tool.

The numerical rate: (1) not applicable, (2) slightly applicable, (3) applicable, (4) very applicable, (5) highly applicable = Overall Satisfaction.

Table 4.11.- Overall Evaluation of the System

	Quality Characteristics	IT Experts	Administrators	Students	Average	Interpretation
1.0	Functional suitability	3	3.5	3.7	3.4	More than what is expected
2.0	Performance Efficiency	3	3.1	3.8	3.3	More than what is expected
3.0	Compatibility	3.5	4	4	3.8	More than what is expected
4.0	Usability	4	4.5	4.6	4.36	Far more than what is expected
5.0	Reliability	3.5	4	4	3.8	More than what is expected
6.0	Security	3.8	4	4	3.9	Far more than what is expected
7.0	Maintainability	4.6	4.75	4.70	4.69	Far more than what is expected
8.0	Portability	4.4	4.44	4.65	4.49	Far more than what is

					expected
Mean	**3.7**	**4.0**	**4.1**	**4.0**	
Overall Mean	**4.0**				**Far more than what is expected**

Table 4.11 provides a comprehensive overview of the overall evaluation of the system, presenting insights gathered from different stakeholders, including IT experts, administrators, and students. Each row in the table represents a specific quality characteristic of the system, such as functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.

The evaluation scores are provided for each stakeholder group, along with the average score and an interpretation of the results. For example, under the "Usability" category, administrators rated the system with a score of 4.5, while students rated it slightly lower at 4.6. The average usability score across all stakeholders is calculated as 4.36, indicating that the system's usability exceeds expectations.

Furthermore, the table includes mean scores for each quality characteristic, as well as an overall mean score. The overall mean score of 4.0 signifies that, on average, the system's performance across all quality characteristics is far more than what is expected. This suggests a high level of satisfaction and effectiveness of the system among stakeholders.

In summary, Table 4.11 serves as a valuable tool for assessing the system's performance across various quality characteristics and stakeholders, providing valuable insights for further improvement and development.

Findings

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

1. The developed system Student Services Digital Records Management System for the Registrar's Office of Veritas College of Irosin is a platform accessible for online usage. The system provides digitization for document transactions of pertinent documents such as TOR, Certificate of Grades, Diplomas, Honorable Dismissal and other pertinent certifications and documents. The stream-lined version of requesting pertinent document at Veritas College is a pioneer in this educational institution.

2. Student Services Digital Records Management System for the Registrar's Office offers a number of features that improves user experience and stake holders as a whole providing accessible module for report generation of requested documents both through hardcopy and an online preview in a user-friendly platform.

3. The developed system extends external communication with 3rd party platforms for notification and verifications of accounts.

4. ISO 25010, is an industry accepted software quality model which was applied in the evaluation of the developed system. The Portability, Performance, Efficiency, Compatibility, Usability, Reliability, Security, Maintainability has been evaluated by identified IT experts and selected stakeholders and passed the assessment.

Conclusions

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

1. After undergoing testing and review, the produced system was prepared to be accessed by various stakeholders of Veritas College of Irosin. It is currently available for usage or implementation.

2. An easy way to offer and manage results is to digitize the document requests transactions that make up the registrar's office's regular workload a commendable performance.

3. Upon presenting to the identified evaluators the developed system was obtained an over-all weighted average rating of 4.0 which was interpreted as far more than what is expected.

Recommendations

The conclusion drawn from the findings were the following:

1. For better online utilization, the system may add some features like toggle or pop-up notes for short description for users to understand briefly the interface they are navigating.

2. Linking this proposed system with other platforms catered to Veritas College of Irosin such as online grading and finance portals (if available) could developed a more interactive and transparent transactions with the said institution.

3. Maintain a focus on continuous improvement, user training, enhanced security measures, performance optimization, community engagement, and regular system audits to further enhance the system's effectiveness and satisfaction among stakeholders

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