Online Request of Credentials for Saint Michael College of Caraga

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Abstract

The Registrar's Office at Saint Michael College of Caraga (SMCC) is essential in managing student records and issuing academic credentials. However, its manual processes for requesting documents, such as transcripts, certifications, and diplomas, are time-consuming, error-prone, and inconvenient for students, alumni, and staff. To address these challenges, this study developed and evaluated the Online Credentials Request System (OCRS), a web-based platform designed to streamline credential requests and processing. The system enables users to submit requests, upload required documents, track progress, and receive notifications via their Gmail accounts. OCRS was assessed using the ISO 25010 Software Product Quality Standards, focusing on functional suitability, usability, and performance efficiency. Results showed high scores in functional suitability (3.60) and usability (3.67), reflecting its effectiveness and ease of use. Performance efficiency scored 3.57, indicating good responsiveness with minor areas for improvement. With an overall mean score of 3.61, OCRS significantly improves the operational efficiency of the SMCC Registrar's Office and offers a scalable model for digitalizing academic credential services.

Keywords: *Online Credential Request, Web-Based System, Real-Time Tracking, System Usability, Functional Suitability*

INTRODUCTION

The Office of the Registrar plays a vital role in supporting students, faculty, staff, and alumni with various academic tasks such as maintaining student records, processing transcripts, managing registration, and ensuring institutional compliance. At Saint Michael College of Caraga (SMCC), the Registrar's Office continues to process academic credential requests; however, this has become increasingly burdensome due to the manual nature of the process and the growing volume of requests. These outdated procedures result in delays, errors, and administrative overload, which hinder operational efficiency and customer satisfaction.

According to Devika and Bhakthavatchalu (2021), educational institutions frequently must provide academic transcripts and certificates upon student request, as these documents are essential for applying to new programs and job placements. Doing this manually can be time-consuming and require much work. Also, fulfilling requests on the agency side can be just as frustrating as asking for them on the constituent side (Capeloto, 2019). In today's digital era, technological advancements are essential in shaping credential management, as mentioned by Khairuddin et al. (2024). Additionally, Abang et al. (2022) stated that in any bustling institution,

it is essential that each accomplished student's request be prompt and efficient. To cope with these challenges, they need to grab the opportunities that technology can offer and test innovations that are not only in response to the global threat challenges but also to the future (Lillibeth & Wong, 2022). Thus, making a system that provides an online requisition of credentials is wiser. In this case, embracing more effective methods in today's advancing technological landscape can aid in maintaining organization and improving productivity (Abang et al., 2022).

At SMCC, credential requests are still processed manually, requiring students and alumni to submit physical forms in person. This approach is not only time-consuming but also prone to processing errors and inefficiencies. To resolve this issue, the researchers propose the development of a web-based Online Request for Credentials System (ORCS). This system aims to digitize the credential request process by enabling users to submit and track requests online, thus reducing paperwork and administrative burden. By automating request verification, clearance, and approval workflows, the system will offer a streamlined, transparent, and user-friendly experience for both staff and requesters.

Implementing this system holds significant value for institutional efficiency and user satisfaction. It will modernize administrative processes, improve access to services for students and alumni, and promote accuracy, transparency, and convenience. For the SMCC Registrar's Office, this shift from a manual to a digital platform will optimize workload management, reduce errors, and foster a more organized and responsive service environment. This study contributes to the broader educational landscape by showcasing how technology can effectively address long-standing inefficiencies in academic credential processing.

Theoretical Framework

The shift to online systems in educational institutions reflects broader theoretical underpinnings in digital transformation and user-centric design. According to Flanagan (2023), digital credentials expand opportunities for efficiency and innovation but simultaneously introduce security and privacy challenges. These must be managed through robust frameworks that address data sensitivity and trust among stakeholders.

Similarly, Hamidi (2019) and Avram et al. (2021) emphasized the need for biometric and secure authentication in identity verification to ensure system integrity. Alsulaiman (2014) introduced the idea of integrating user-centric platforms to promote intuitive system navigation, reducing user error and supporting compliance with security protocols.

Keck et al. (2020) proposed a framework for evaluating credential systems' effectiveness based on sustainability, usability, and adaptability, crucial for long-term institutional digital transitions. The need to maintain interoperability and ensure global

recognition, as noted by Chakroun and Keevy (2018), highlights the theoretical importance of standardization and data transparency.

Additionally, concepts of blockchain and distributed ledger technologies, discussed by Mishra et al. (2021), Kaneriya and Patel (2023), and Revathi et al. (2024), reflect a decentralized approach to verification that aligns with theories of transparency and fraud prevention in academic ecosystems.

Literature Review

Numerous institutions have transitioned from manual to digital credentialing systems to address inefficiencies and administrative bottlenecks. Abang et al. (2022) and Alegado et al. (2022) showcased how systems like the one used at the City College of Tagaytay and NUEST helped streamline academic document processing, reduce staff workload, and enhance student satisfaction.

Gune et al. (2003) and Chiahsin and Wu (2024) explored the technical workflow of request approvals, categorization, and the role of service providers in secure verification. Gaikwad et al. (2021) and Rassameeroj et al. (2022) emphasized system automation and error reduction as major benefits of these digital platforms.

Technological integrations, including facial recognition and NFTs for document validation, have been increasingly studied. Gujar (2023) and Delgado-von-Eitzen et al. (2024) discussed the application of these technologies in ensuring authenticity and compliance with legal standards like the GDPR.

On the administrative side, Espinosa (2024) and Frisch et al. (2023) reviewed file validation techniques, stressing the importance of backend security during document uploads. Avram et al. (2021) and Schmitt et al. (2016) found that streamlined upload and verification features enhanced user experience while reducing identity fraud risks.

Studies by Askhatuly et al. (2024) and Mohanraj and Meenakshi (2024) highlighted emerging threats in digital systems, including adversarial attacks and breaches, advocating for stronger authentication protocols.

Finally, case-specific research, such as that by Matkin (2020), emphasized that institutions must balance student needs with employer demands, adapting systems to meet evolving digital credentialing complexities.

Objectives of the Study

This study aims to design, develop, and implement a web-based system for the Registrar's Office of Saint Michael College of Caraga, titled Online Request for Credentials

System. The primary objectives of the project are to streamline the credential request process by allowing students and alumni to submit and track their requests online; to integrate a tracking feature that enables real-time monitoring of request statuses by both users and key personnel such as the Cashier, Head of the LRC, Dean/Principal, and Registrar Staff; and to establish a secure validation process for uploaded identification documents to ensure the authenticity of each request. This system is designed to minimize manual workload, reduce processing time, and enhance the efficiency, transparency, and reliability of academic service delivery.

RESEARCH METHODS

This section provides an in-depth analysis of the technical components involved in designing and developing the proposed system, including the software and hardware requirements specifications. Additionally, it presents a comprehensive overview of the functionalities of the Online Request for Credentials System (ORCS). The system was evaluated using the ISO 25010 Software Product Quality Standards, focusing on functionality, performance efficiency, and usability. To validate its effectiveness, the system was tested by its primary end users: students, alumni, registrar and cashier staff, the dean, the principal, and the librarian of Saint Michael College of Caraga.

System Architecture

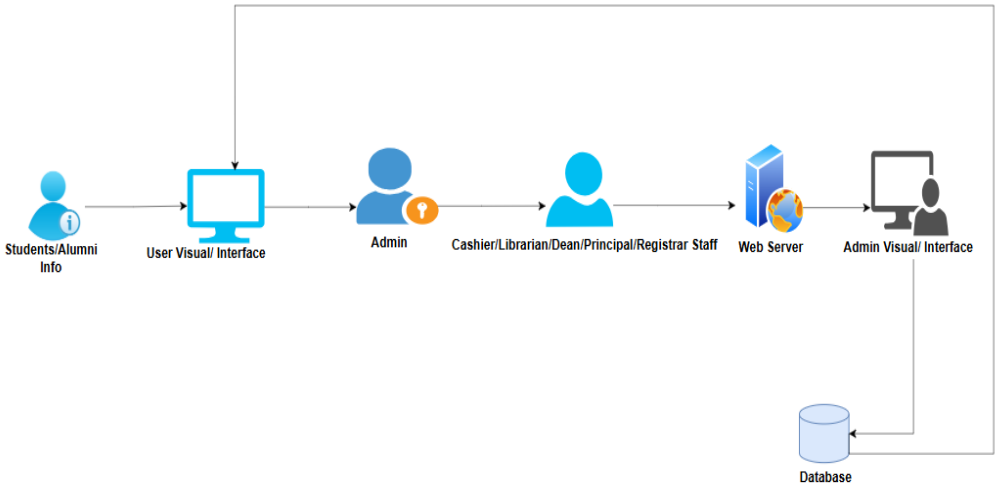


Figure 1: *Systems Architecture*

Figure 1 illustrates the core process of the Online Request for Credentials System (ORCS), which enables interaction among various users: students, alumni, registrar staff, the cashier, the head of the LRC, the dean/principal, and the administrator, through an internet-based platform. Students/Alumni must create an account to access the system. Credential requests undergo review and clearance by the appropriate personnel, while the administrator ensures that all user requirements are validated and approvals are properly completed.

Input-Process-Output Diagram

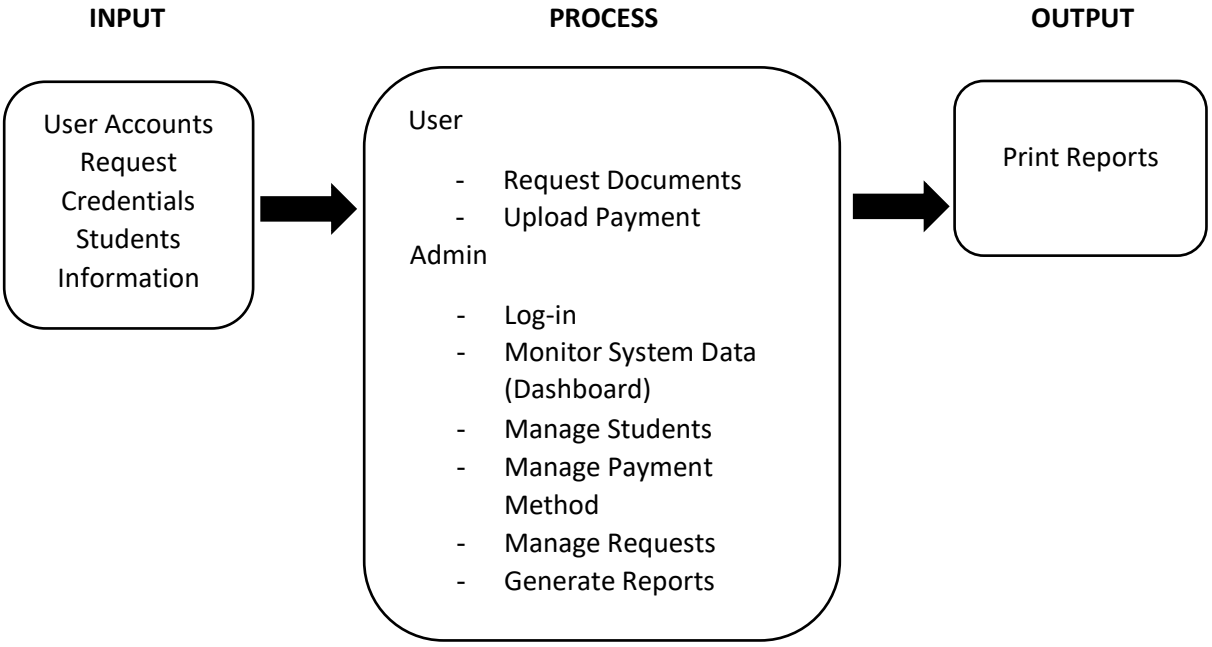


Figure 2: *Input-Process-Output Diagram*

Figure 2 shows the input-process-output diagram and illustrates the orderly software development process of the Online Request of Credentials for Saint Michael College of Caraga.

Conceptual Diagram

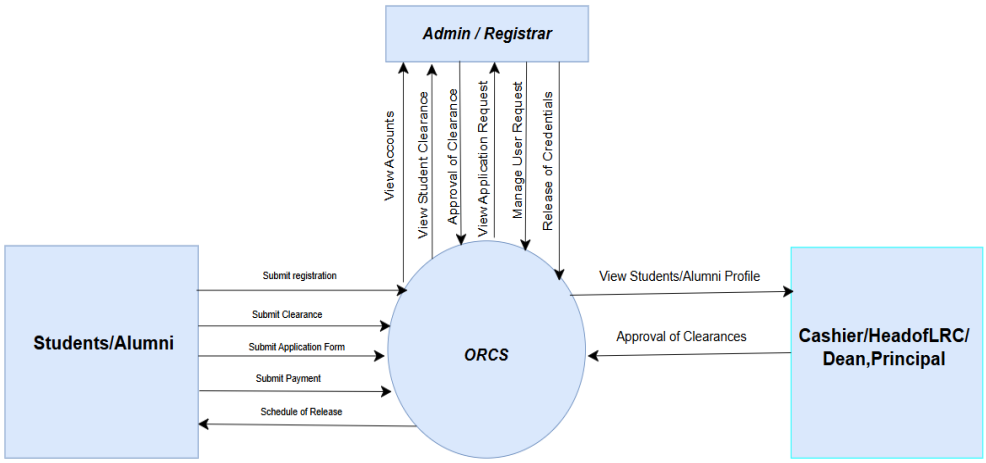


Figure 3: *Conceptual Diagram (DFD level 0)*

Figure 3 illustrates the operational capabilities assigned to different users within the ORCS architecture. The admin has the authority to review and manage the credential requests submitted by students and alumni. Additionally, they can perform functions such as validating

requirements. Conversely, the Cashier and other offices are responsible for maintaining a list of individuals who have requested credentials and their associated duties within the ORCS.

Use Case Diagram

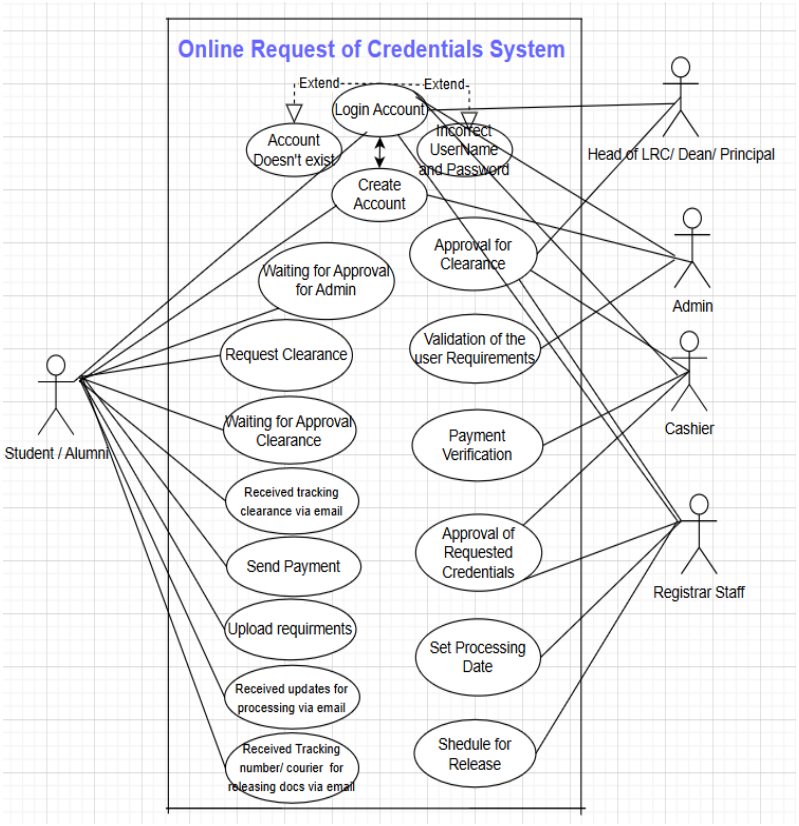


Figure 4: *Use Case Diagram*

Figure 4 outlines the key features available to each type of user, along with their roles within the system. The administrator is responsible for validating user requirements and creating accounts for system users such as the Cashier, Head of the LRC, Dean/Principal, and Registrar Staff, as they do not have self-registration privileges. Students and alumni must create an account before logging in and are responsible for completing their request forms. The Registrar Staff manages the approval and release of the requested documents. The system also generates a schedule for issuing credentials, with appointments available from Monday to Friday. The Cashier is responsible for verifying clearance and payment for the requested credentials. Similarly, the Head of the LRC and the Dean/Principal are tasked with reviewing and confirming requests that have incomplete or pending requirements for clearance purposes.

RESULTS AND DISCUSSION

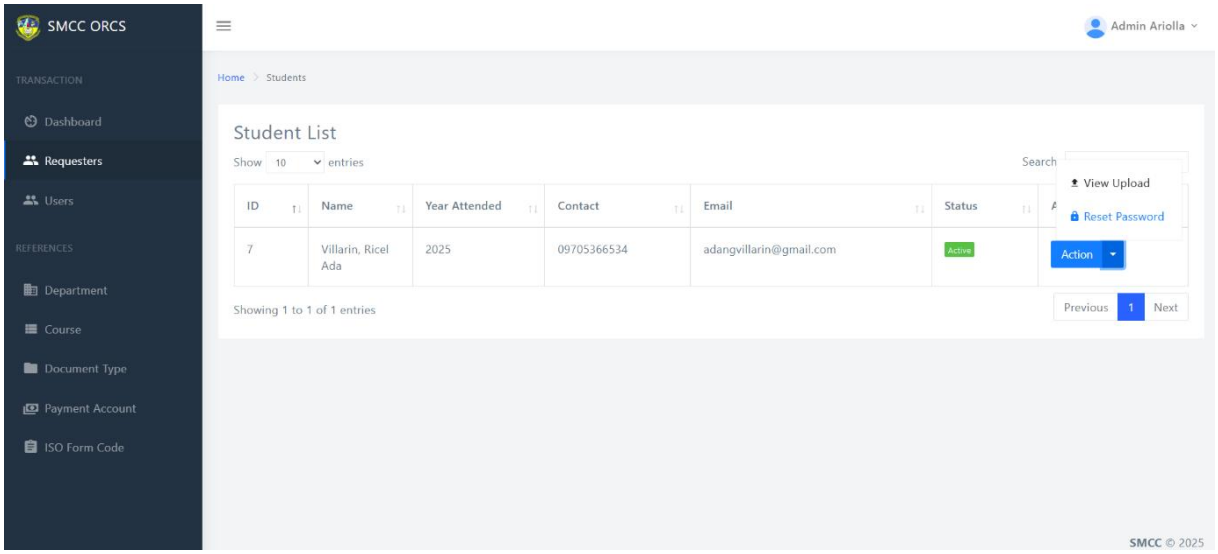


Figure 5: *Admin Side – View Uploaded Identification Document*

Figure 5 shows the View Upload feature, which ensures proper validation of requester identities by allowing administrators to review uploaded identification documents. This supports the system's document verification component during the sign-up process.

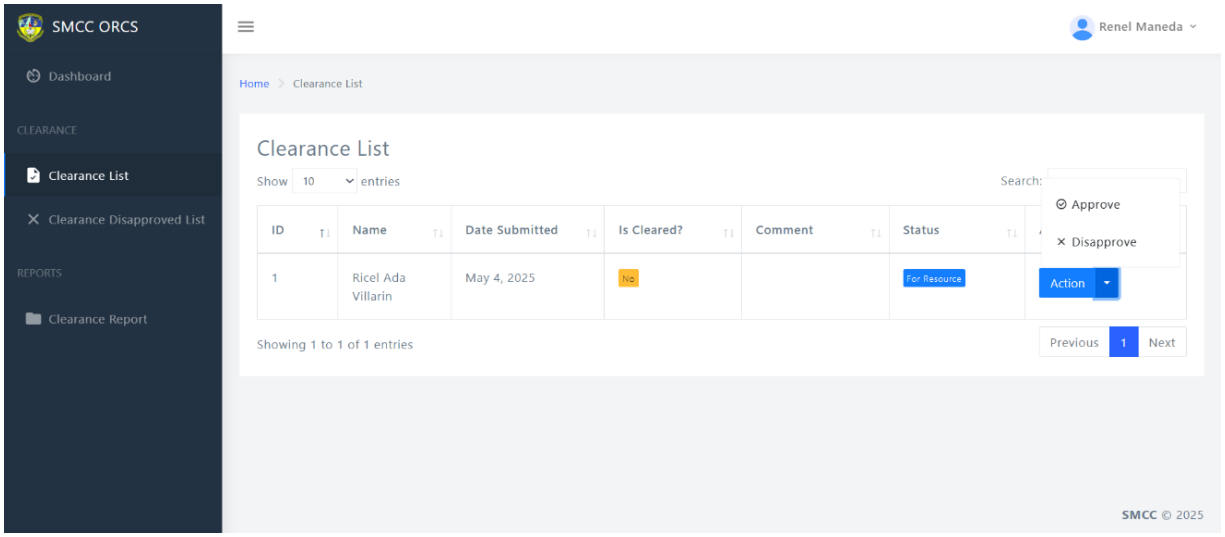


Figure 6: *User (Key Personnel) Side – Approval of Clearance*

Figure 6 shows the clearance list for the Cashier, Head of LRC, Dean, or Principal, displaying a list of students requesting clearance. If a student or alumnus has completed all necessary requirements and no issues are found, the clearance can be approved following validation.

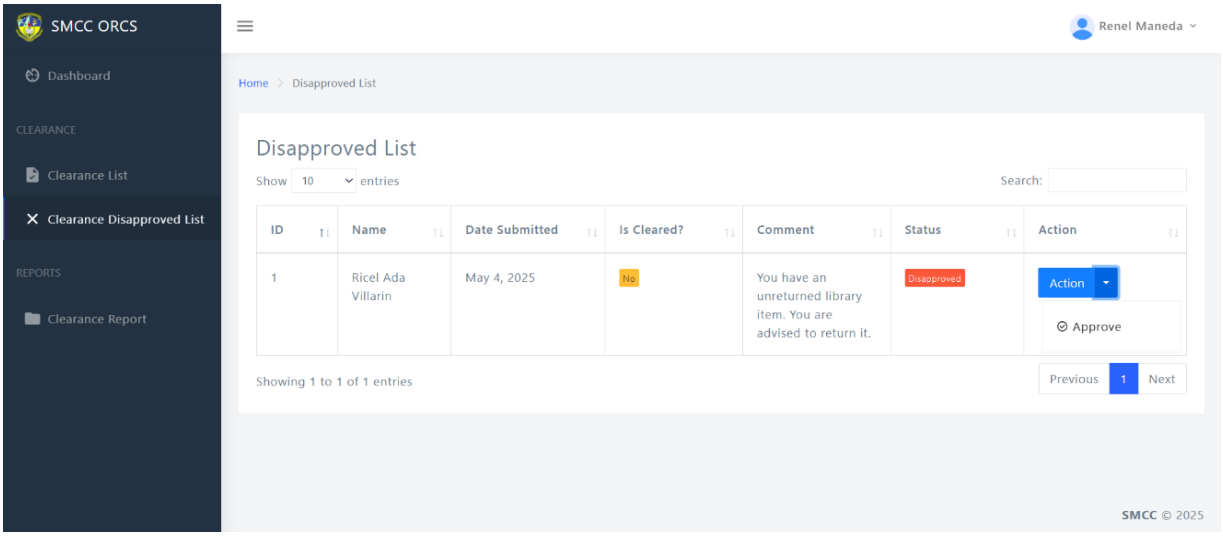


Figure 7: *User (Key Personnel) Side – Disapproval of Clearance*

Figure 7 shows the disapproved clearance section page displays clearance requests that have been disapproved and are pending student compliance with specific requirements.

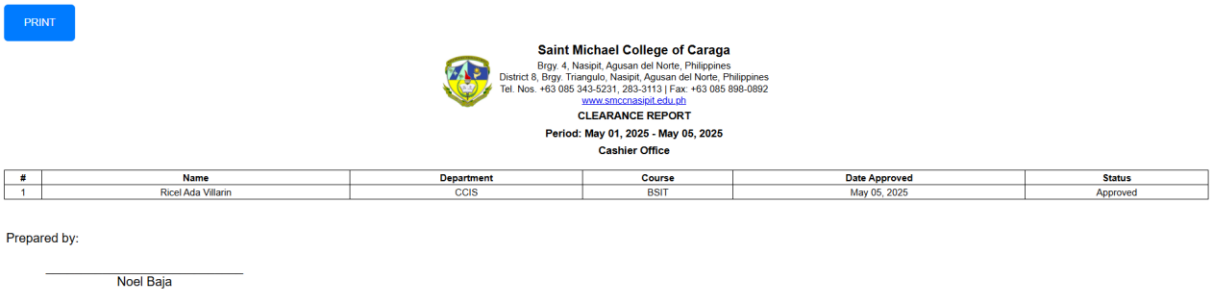
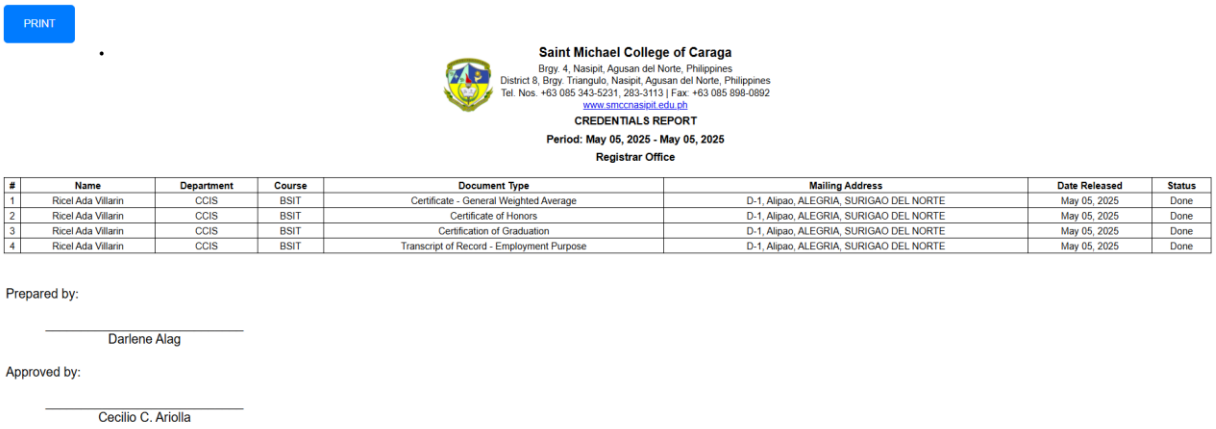


Figure 8: *User (Key Personnel) Side – Print Report for Clearance*

Figure 8 shows the interface for completed clearances accessible to the Cashier, Deans, Principals, or Head of the LRC. It enables users to filter approved clearance records by date and department, displaying key details such as name, department, course, approval date, and status for efficient monitoring.



PRINT

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CREDENTIALS REPORT
Period: May 05, 2025 - May 05, 2025
Registrar Office

#	Name	Department	Course	Document Type	Mailing Address	Date Released	Status
1	Ricel Ada Villarin	CCIS	BSIT	Certificate - General Weighted Average	D-1, Alipao, ALEGRIA, SURIGAO DEL NORTE	May 05, 2025	Done
2	Ricel Ada Villarin	CCIS	BSIT	Certificate of Honors	D-1, Alipao, ALEGRIA, SURIGAO DEL NORTE	May 05, 2025	Done
3	Ricel Ada Villarin	CCIS	BSIT	Certification of Graduation	D-1, Alipao, ALEGRIA, SURIGAO DEL NORTE	May 05, 2025	Done
4	Ricel Ada Villarin	CCIS	BSIT	Transcript of Record - Employment Purpose	D-1, Alipao, ALEGRIA, SURIGAO DEL NORTE	May 05, 2025	Done

Prepared by:

Darlene Alag

Approved by:

Cecilio C. Ariolla

Figure 9: *User (Registrar Staff) – Print Report for Requested Credentials*

Figure 9 shows the 'Requested Credentials Report' page used by registrar staff. It enables users to generate reports by filtering requests through date range, department, document type, and student name.

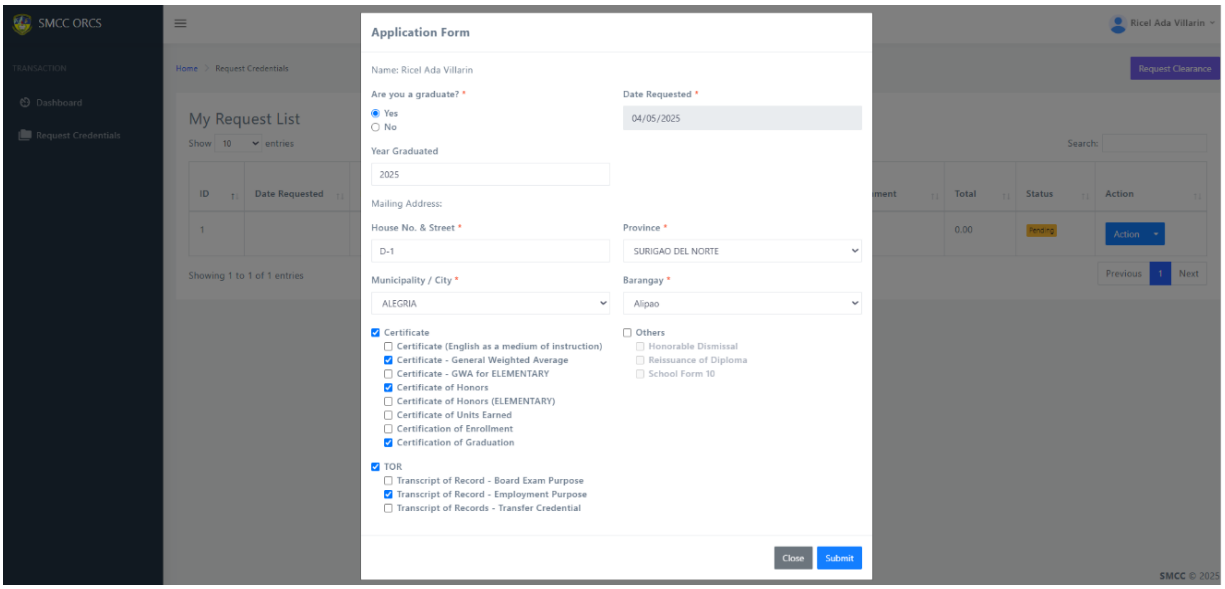

Figure 10: *Students/Alumni Side – Application Form*

Figure 10 displays the 'Application Form' interface used by students or alumni to request credentials. Requesters can specify whether they are graduates or not, enter their personal and address details, and select the type of credentials they need, such as certificates or transcripts, along with the purpose for each request before submitting the form.

Table 1

Functional Suitability

A. Functional Suitability	MEAN	VERBAL INTERPRETATION
1. Functional completeness - Degree to which the set of functions covers all the specified tasks and user objectives	3.60	VF
2. Functional correctness - Degree to which a product or system provides the correct results with the needed degree of precision.	3.60	VF
3. Functional appropriateness - Degree to which the functions facilitate the accomplishment of specified tasks and objectives.	3.60	VF
Weighted Mean	**3.60**	**VF**

Legend:

VF – Very Functional (3.50 – 4.0)

F – Functional (2.50 – 3.49)

MF – Moderately Functional (1.50 – 2.49)

PF– Poorly Functional (1.0 – 1.49)

Table 1 presents the mean distribution and verbal interpretation of Functional Suitability, with a total weighted mean of 3.60, categorized as "Very Functional" (VF). This indicates that the system is perceived by users as highly effective in fulfilling its intended functions.

Each functional aspect—completeness, correctness, and appropriateness—received an equal mean score of 3.60, signifying that the system comprehensively meets user objectives, provides accurate results, and facilitates task accomplishment efficiently.

The results suggest that the system delivers a seamless and user-friendly experience, making it highly accessible and reliable for users in performing their tasks, managing data, and generating reports. The high rating in Functional Correctness further reinforces that the system consistently produces precise and accurate outputs, ensuring trust in its performance.

Table 2

Performance Efficiency

B. Performance Efficiency	**MEAN**	**VERBAL INTERPRETATION**
1. Time behavior - Degree to which the response and processing times and throughput rates of a system, when performing its functions, meet requirements.	3.60	VE
2. Resource utilization - Degree to which the amounts and types of resources used by a system, when performing its functions, meet requirements.	3.60	VE
3. Capacity - Degree to which the maximum limits of a product or system parameter meet requirements.	3.50	VE
Weighted Mean	**3.57**	**VE**

Legend:

VE – Very Efficient (3.50 – 4.0)

E – Efficient (2.50 – 3.49)

ME – Moderately Efficient (1.50 – 2.49)

PE – Poorly Efficient (1.0 – 1.49)

Table 2 presents the mean distribution and verbal description of "Performance Efficiency," with a total mean of 3.57, classified as "Very Efficient." Both "Time Behaviour" and "Resource Utilization" achieved the highest mean of 3.60, indicating that the system efficiently delivers responses, processes data, handles workloads within the required time constraints, and optimally utilizes resources.

Table 3

Usability

C. Usability	MEAN	VERBAL INTERPRETATION
1. Appropriateness recognizability - Degree to which users can recognize whether a system is appropriate for their needs.	3.70	VU
2. Learnability - Degree to which a system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.	3.70	VU
3. Operability - Degree to which a system has attributes that make it easy to operate and control.	3.70	VU
4. User error protection - Degree to which a system protects users against making errors.	3.60	U
5. User interface aesthetics - Degree to which a user interface enables pleasing and satisfying interaction for the user.	3.60	VU
6. Accessibility - Degree to which a system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.	3.70	VU
Weighted Mean	**3.67**	**VU**

Legend:

VU – Very Usable (3.50 – 4.0) **MU** – Moderately Usable (1.50 – 2.49)

U – Usable (2.50 – 3.49) **PU** – Poorly Usable (1.0 – 1.49)

Table 3 presents the mean distribution and verbal description of "Usability," with a total mean of 3.67, classified as "Very Usable." The highest scores were in "Appropriateness Recognizability," "Learnability," "Operability," and "Accessibility," all with a mean of 3.70.

This indicates that the system is highly usable, allowing users to recognize its suitability, learn and operate it efficiently, and access it regardless of their characteristics and capabilities.

Table 4

Summary Table of the Over-all Mean and Grand Distribution of the Acceptability Level

Acceptability Level of the System in terms of:	**Over-all Mean**	**Rating**
Functional Suitability	3.60	SA
Performance Efficiency	3.57	SA
Usability	3.67	SA
Grand Mean	**3.61**	**SA**

Legend:

SA – Strongly Acceptable (3.50 – 4.0)
A – Acceptable (2.50 – 3.49)
U – Unacceptable (1.50 – 2.49)
SU – Strongly Unacceptable (1.0 – 1.49)

The system demonstrates strong overall acceptance, particularly in Usability, which received the highest rating of "Strongly Acceptable." Both Functional Suitability and Performance Efficiency also fall under "Strongly Acceptable," reflecting the system's effectiveness and efficiency. With a Grand Mean of 3.61, the system is well-received, though there may still be room for further refinements to enhance user experience.

RECOMMENDATION

To further improve the system's overall performance and user satisfaction, it is recommended to focus on capacity optimization. This involves enhancing the system's ability to handle more users and requests during peak times, ensuring consistent performance and responsiveness without resource strain. Additionally, efforts should be made to enhance the user experience by refining error-handling mechanisms and improving interface aesthetics. Providing users with better visual cues, streamlined navigation, and error feedback will make the system more intuitive and reduce the likelihood of mistakes during use. Integrating advanced features such as real-time request tracking, automated notifications, and analytics dashboards can add value to the user experience and administrative oversight. These enhancements would not only improve operational efficiency but also support data-driven decision-making, ensuring the system remains relevant, sustainable, and scalable in the long term. Future researchers are encouraged to explore areas such as mobile optimization, integration with other academic systems (e.g., student information systems), and the application of artificial intelligence for

predictive analytics. These directions will help ensure the system's continuous growth, relevance, and adaptability in supporting academic operations.

CONCLUSION

In conclusion, the Online Request of Credentials system for Saint Michael College of Caraga demonstrated strong functional suitability, high performance efficiency, and excellent usability, making it a highly valuable tool for its intended purpose. The system effectively delivered accurate results, handled requests promptly, and provided a user-friendly interface that supported students and staff in processing credential requests. Furthermore, all the objectives set for the development and implementation of the system were successfully met, confirming its effectiveness and alignment with institutional goals.

The evaluation results affirmed that the system met its functional requirements, utilized resources efficiently, and was easy to learn and operate. These strengths made the system highly reliable and convenient for users. However, despite these strengths, areas could be improved further to enhance the system's overall quality and user satisfaction.

Specifically, capacity management needed to be optimized to ensure stable performance during peak usage. Additionally, usability enhancements such as improving operability, interface aesthetics, and user error protection would have contributed to a smoother and more intuitive experience. Despite these minor areas for improvement, the system remained highly effective, dependable, and well-suited to meet the needs of its users.

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