

Streamlining Document Processing: Basis for an Online Document Management System

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Abstract: *This study addresses the critical need for an online document management system aimed at streamlining document submission, approval, and storing processes among the faculty and staff of Saint Michael College of Caraga (SMCC) located in Nasipit, Agusan del Norte, Philippines. By utilizing a mixed-methodology approach that integrates qualitative and quantitative techniques, the shortcomings and challenges of the current manual system were assessed through online survey and interviews. The research respondents, who were selected by convenience sampling, were primarily college instructors with 1 to 5 years of work experience. The investigation revealed significant inefficiencies in the current system, identifying key issues such as error-prone processes and delayed communication. The weighted mean scores indicated high level of agreement among the respondents for the proposed system that can potentially enhance process workflow, restructure communication channels, and promote transparency within the institution. The recommendations also include prioritizing primary functions such as user authentication, backup and recovery, and user training. Overall, it can be concluded the proposed online DMS can offer substantial improvements in document management practices, aligning with global trends and best practices in educational administration thus providing a potential model for other institutions facing similar challenges.*

Keywords: Document Management System (DMS), Online Document Submission, Automated Workflows, Digital Solutions, Global Trends in Education, Communication Enhancement

I. INTRODUCTION

The background of the study is grounded in the identification of unsatisfactory conditions and existing issues within the document processing system at St. Michael's College of Caraga (SMCC). These issues highlight gaps in the current procedures, leading to inefficiencies, delays, and challenges for college instructors and academic administrators. Recognizing the need for improvement, the study focuses on the research locale of SMCC, aiming to address these pressing concerns through the development of a more effective document management system.

The study is motivated by the necessity to streamline document submission and processing, reducing paper build-up, and enhancing overall efficiency and user experience within the college. It underscores the importance of designing and implementing a system software solution tailored to the specific needs of the institution, incorporating advanced algorithms, processes, and potentially an enterprise resource plan (ERP). Through this research endeavour, there is a desire to find a better way of handling document-related tasks and ultimately improving the current system shortcomings. By leveraging innovative technology and methodologies, the study seeks to offer practical solutions that not only address existing problems but also pave the way for a more streamlined and effective document management processing.

II. OBJECTIVES OF THE STUDY

The study aims to achieve the following objectives:

- To analyze the assessment of the college instructors and academic administrators in the submission and processing of SMCC documents.
- To propose an online document management system of Saint Michael College of Caraga.

- To formulate recommendations for further improvement of document processing at Saint Michael College of Caraga.

III. CONCEPTUAL FRAMEWORK OF THE STUDY

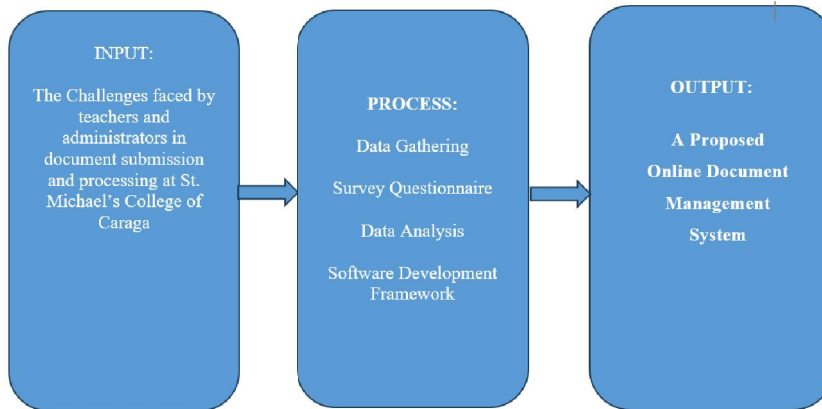


Figure 1.0 Conceptual Framework of the Study

The conceptual framework presented in Figure 1.0, outlined a structured approach to addressing document submission and processing challenges at St. Michael's College of Caraga. It revolved around implementing an online document management system. The challenges faced by teachers and administrators were identified on the first box – the Input Phase, while the central box details processes for system implementation, including feature integration, managing reactions, and gathering feedback. The third box, highlighted the expected outcome which is the proposed online DMS that can help improve efficiency, promote user experience, and system effectiveness. Overall, the framework offers a roadmap for enhancing document management processes at the college.

IV. RELATED LITERATURE

2.1 The Impact and Effectiveness of Document Management System

The findings and objectives outlined in the study of Saiful Farik Mat Yatin et al.'s [1] focused on investigating the usage and effectiveness of electronic document management systems (EDMS), albeit in different contexts. The authors specifically examined the Generic Office Environment-Electronic Government Document Management System (GOE-EGDMS) in Malaysia, utilizing the IS Effectiveness Model from DeLone and McLean. Through data collection via web surveys and analysis using various statistical methods, the study identifies significant correlations between service quality, information quality, user satisfaction, system usage, individual impact, and organizational impact. It emphasizes the importance of improving service and information quality to enhance user satisfaction and achieve organizational impact effectively. The study investigates the usage and effectiveness of EDMS, but perhaps in a different organizational or institutional setting. It also verifies the importance of improving service and information quality to enhance user satisfaction and achieve organizational impact effectively.

The study of Abacı & Medeni [2] explores about the effectiveness of Electronic Document Management Systems (EDMS) in enhancing job satisfaction and efficiency among civil servants. It shows a positive impact of EDMS applications on organizational performance, emphasizing the importance of these systems in improving document management processes and overall efficiency within organizations.

The works of Lim & Kim's [3] discussed the positive impact of online document submission on student learning outcomes and instructor workload in a blended learning environment. By using a mixed-methods approach, the study confirmed that online submission enhances student satisfaction and learning outcomes while also reducing the workload for instructors. It reinforced the importance of online document submission in improving learning experiences and efficiency in blended learning environments. Additionally, there were suggestions for future research directions, emphasizing the need for longitudinal studies to further explore the sustainability of these improvements over time. The

research findings support the existing body of literature by providing further evidence of the benefits of online document submission in higher education.

According to Wu et al.'s [4] there are factors that influence the adoption of online document submission systems in higher education. They emphasized the importance of perceived usefulness and ease of use in influencing adoption intentions among students and faculty members. Additionally, it also confirms the significance of these factors in promoting the adoption of online submission systems in educational contexts as well as in improving efficiency, enhancing job satisfaction, and facilitating document management processes in both organizational and educational settings. It shows the significance of online document submission systems in modern workplaces and academic institutions providing further evidence of the benefits of online document submission systems and offering valuable insights for practitioners and policymakers.

2.2 Issues and Challenges of Document Management System

According to Karwan Jacksi's study in 2015 [5], there were issues encountered in offline submission processes by designing and implementing online submission management systems. With this, the study proposed on developing a web-based article submission management system specifically tailored for the Journal of University of Zakho (JUOZ) to improve manuscript management, review processes, and the reputation of the university's research journals. The study was able to enhance the efficiency and effectiveness of document submission processes, albeit in a different context or setting. The study also highlighted the importance of incorporating modern web technologies and secure submission mechanisms to streamline the submission process and improve scholarly communication efficiency. The author was able to demonstrate the implementation of an online system that can contribute to the globalization of research journals in a specific region and the significance of technology in advancing academic publishing processes and enhancing the reputation of academic institutions and journals.

The works of Miles Romney IV and Gordon W. Romney's [6] addressed challenges associated with electronic delivery of student assignments, particularly focusing on the vulnerabilities of email submissions. They proposed a web- and file-sharing-enabled solution to enhance security and streamline the submission process. Through the development and implementation of a document handling system, the researchers tested the effectiveness in two Information Technology classes at Brigham Young University. The study resulted in the creation of a reliable, secure, and efficient document handling system, offering instructors a secure platform for managing assignments and enhancing workflow and productivity in academic settings. The study also provided a practical solution to challenges in online document submission, contributing to the improvement of the electronic delivery process for student assignments.

In addition, Sengol Mary J. [7] were able to identify the obstacles such as technical infrastructure deficiencies that may hinder the implementation of EDMS. By acknowledging these challenges and offering recommendations for overcoming them, the study was able to reinforce the importance of maximizing the benefits of EDMS to ensure successful adoption and utilization of these systems.

III. METHODOLOGY

3.1 Research Approach and Design

The research employed a mixed-methods approach, integrating both qualitative and quantitative methods to comprehensively assess the challenges faced by the instructors and administrators in the current document processing of SMCC. Qualitative methods include interviews and open-ended survey questions to gather insights into current processes and user preferences while quantitative methods involved structured online survey questionnaires to quantify respondents' perceptions. By combining qualitative and quantitative data, the study was able to provide a holistic evaluation of the document management system, facilitating improvements in communication, transparency, and administrative efficiency.

The descriptive research design was utilized in this study. The participants were selected using purposeful sampling method. Data collection includes in-depth interviews, open-ended survey questions, and structured questionnaires, supplemented by system usage metrics. Thematic and statistical analysis techniques was employed to analyze qualitative and quantitative data, respectively. The integration of findings provides a holistic understanding of the needs of the proposed system to enhance workflow efficiency and user experience at Saint Michael College of Caraga.

3.2 Survey Questionnaire

The survey gathered comprehensive data on the challenges and experiences of college instructors and academic administrators at Saint Michael College of Caraga (SMCC) regarding the current document submission and processing system. It aimed to identify specific issues and areas for improvement, with the ultimate goal of informing the design and development of an online Document Management System (DMS) to streamline these processes.

3.3 Participants of the Study

The study focused on the proposing of an online document management system tailored for Saint Michael College of Caraga. The primary users of this system are administrators and faculty members. Through surveys, interviews, and usability testing, the data were collected to evaluate the efficacy of existing document management processes and to understand the preferences and requirements of these two user groups. Findings from this research served as guide for the enhancement of the new document management system, aiming to improve communication, transparency, and administrative efficiency within the college.

3.4 Sampling Method

A convenience sampling method was employed to select participants from the pool of process owners at SMCC. This approach was chosen due to its practicality and efficiency in accessing individuals actively involved in accreditation-related activities at the institution. Process owners were directly contacted and invited to participate, aiming to capture insights from those possessing valuable knowledge and experiences relevant to the objectives of the research.

3.5 Data Gathering Procedure

The data gathering procedure for this study involved collecting primary data through surveys administered to respondents at Saint Michael College of Caraga. The surveys aimed to gather insights into the demographic profile, challenges in document submission and processing, and perceptions of the existing document management system. The survey questionnaire comprised both closed-ended and Likert scale questions to quantitatively assess respondent opinions and experiences. Additionally, secondary data may have been utilized to provide context and background information on document management practices and systems in educational institutions. This secondary data could have been obtained from academic journals, books, reports, and other relevant sources with the proper permissions and acknowledgments. The data gathering procedure encompassed both primary and secondary data collection methods to comprehensively understand the document submission and processing landscape at Saint Michael College of Caraga.

3.6 Data Analysis

The data analysis of the study employed various statistical techniques to analyze and interpret the data collected from surveys conducted at the college. Descriptive statistics were used to summarize the characteristics of the sample data. Frequency analysis revealed patterns and trends in the responses to survey questions, while weighted mean calculation and ranking prioritized functions and features of the document management system. These statistical methods facilitated a comprehensive analysis of the data, allowing for meaningful conclusions and insights to be drawn regarding document management practices at the college. Table 1.0 shows the verbal interpretation of the computed weighted mean that help assess the level of agreement among the respondents.

Table 1: *The Interpretation of Range of the Weighted Mean*

Range of the Weighted Mean	Interpretation
4.51 – 5.00	Strongly Agree (for the questions asked)
3.51 – 4.50	Agree (for the questions asked)
2.51 – 3.50	Moderately Agree (for the questions asked)
1.51 – 2.50	Disagree (for the questions asked)
1.50 and below	Strongly Disagree (for the questions asked)

IV. RESULTS AND DISCUSSION

This chapter presents the results of analysis and interpretation of gathered data. It aimed to validate the results meticulously to uncover potential solutions to the challenges faced by therespondents in the current document processing.

4.1 Demographic Profile of the Respondents

The table 2 presents key demographic characteristics of the respondents from Saint Michael College of Caraga.

Table 2 Demographic Profile of the Respondents

Position/Role	Frequency	Percentage
College Instructor	65	73%
Academic Administrator	24	27%
Total	89	100
Gender	Frequency	Percentage
Male	29	33%
Female	60	67%
Total	89	100
Year of Experience	Frequency	Percentage
1-5 years	64	71.9%
6-10 years	12	13.5%
10 years above	13	14.6%
Total	89	100%

As can be gleaned on Table 2.0, majority of the respondents were college instructors, comprising 73% of the total sample, while academic administrators represented 27% and most of them are females (67%). It also showed the level of years of experience in their current positions. There were 64 respondents, or 71.9%, have between 1-5 years of experience, 12 respondents, or 13.5%, have between 6-10 years of experience, and 13 respondents, or 14.6%, have 10 years or more of experience in their current positions. This implies that the majority of the respondents who participated in the survey have between 1-5 years of experience in their current positions.

Table 3 Profile of the Respondents in terms of Frequency of Document Handling

Frequency of document handling	Frequency	Percentage
Daily	38	42.7%
Weekly	31	34.8%
Monthly	20	22.5%
Total	89	

Table 3.0 presents the profile of the respondents in terms of the frequency of document handling. As seen in the table, 38 respondents, or 42.7%, frequently handle documents daily, 31 respondents, or 34.8%, frequently handle documents weekly, and 20 respondents, or 22.5%, frequently handle documents monthly. This implies that the majority of the respondents frequently use document handling on a daily basis.

4. 2 Assessment of the College Instructors and Academic Administrators in Submission and Processing of SMCC Documents

Table 4 *The Assessment of SMCC Document Submission and Processing*

No	Description	WM	Category Value	Description
EFFICIENCY OF SUBMISSION AND PROCESSING				
1	I find the process of submitting documents at Saint Michael College of Caraga to be efficient.	4.07	4.15	Agree
2	I believe the document processing procedures at Saint Michael College of Caraga are clear and well-defined.	4.22		
RESOURCES AND SUPPORT				
3	I believe there are sufficient resources (staff, technology, etc.) available to handle document processing efficiently at Saint Michael College of Caraga.	4.16	4.16	Agree
4	I feel adequately supported by the college in terms of document submission and processing.	4.15		
UNDERSTANDING AND CLARITY:				
5	I can easily understand the requirements for document submission at Saint Michael College of Caraga	4.27	4.29	Agree
6	I find the instructions provided for document submission at Saint Michael College of Caraga to be clear and easy to follow.	4.31		
ERROR-PRONE PROCESSES:				
7	I believe the manual data entry process at Saint Michael College of Caraga is prone to errors.	3.99	3.99	Agree
8	I have not encountered errors or inaccuracies in my documents processed by the college.	3.98		
DELAYS AND OVERLOAD:				
9	I feel that the paperwork overload at Saint Michael College of Caraga contributes to delays in document processing.	4.07	4.05	Agree
10	I can process any documents at Saint Michael College of Caraga easily and quickly.	4.02		
COMMUNICATION:				
11.	I believe that the communication channels between students and administrative staff regarding document submission at Saint Michael College of Caraga is clear and adequate.	4.10	4.11	Agree
12.	I am satisfied with the level of communication	4.12		

No	Description	WM	Category Value	Description
	regarding document submission and processing at Saint Michael College of Caraga.			
SECURITY CONCERNS:				
13.	I feel that the information during document processing at Saint Michael College of Caraga is safe and secured.	4.33	4.30	Agree
14.	I feel confident that my personal information is secure during document processing at Saint Michael College of Caraga.	4.26		
DIGITAL SOLUTIONS:				
15.	I believe implementing digital solutions (online forms, document management systems, etc.) could help address the challenges in document processing at Saint Michael College of Caraga.	4.33	4.37	Agree
16.	I will be supportive to the college's adoption of digital solutions to improve document submission and processing	4.40		
Overall Weighted Mean			4.18	Agree

The weighted mean scores shown on Table 4.0 indicate high agreement levels across various aspects, affirming their positive assessment with submission efficiency, resources, clarity, communication, and security at Saint Michael College of Caraga, while recognizing concerns about manual error-prone processes and the potential benefits of adopting digital solutions.

4.4 The Proposed Document Management System of Saint Michael College of Caraga

Table 5 ranked the functions and features of the proposed document submission and processing from highest to lowest based on frequency distribution. The respondents believed that the proposed system should prioritize user authentication and access control (75.3%), followed by backup and disaster recovery (56.2%), user training and support (55.1%), document upload and creation (52.8%), document sharing and collaboration (47.2%), document repository (46.1%), document indexing and search (40.4%), document approval workflows (40.4%), document security and compliance (38.2%), document tagging and metadata management (34.8%), audit trail and logging (32.6%), and integration with other systems (32.6%)

Table 5 Functions and Features of the Proposed Document Submission and Processing of SMCC

Functions and Features of the Document Submission and Processing of SMCC	Frequency	Percentage	Rank
User Authentication and Access Control	67	75.3%	1
Backup and Disaster Recovery	50	56.2%	2
User Training and Support	49	55.1%	3
Document Upload and Creation	47	52.8%	4
Document Sharing and Collaboration	42	47.2%	5
Document Repository	41	46.1%	6
Document Indexing and Search	36	40.4%	7
Document Approval Workflows	36	40.4%	7
Document Security and Compliance	34	38.2%	8
Document Tagging and Metadata Management	31	34.8%	9
Audit Trail and Logging	29	32.6%	10
Integration with Other Systems	29	32.6%	10

4.4 The System Development Process of the Proposed Document Management System of Saint Michael College of Caraga

The proposed DMS for Saint Michael College of Caraga will be developed using a structured and meticulous methodology, adhering to the Software Development Life Cycle (SDLC) process, presented in Figure 2.0. This approach enables the project team to systematically address each aspect of system development, from initial requirements gathering to long-term maintenance

The *Requirement* Phase aims to identify deficiencies in current procedures and determine where enhancements are most needed. The goal is to compile all relevant criteria from academic administrators, teachers, and other staff members through surveys, workshops, and interviews. These activities will uncover existing challenges in document processing and help specify the functional and non-functional requirements of the Document Management System (DMS). Use case scenarios and workflow documentation will be created, culminating in a comprehensive Requirements Specification Document detailing all system and user requirements.

Using the gathered requirements, the *System Design* phase focuses on developing a detailed design for the DMS. Key actions include creating the system architecture, including both software and hardware components, and designing the database structure and data models. Detailed workflows for the user experience and user interface will be developed, and system integrations with existing college systems will be planned. Data protection and security procedures will be outlined, resulting in a System Design Document containing UI/UX designs, data models, and architecture diagrams.

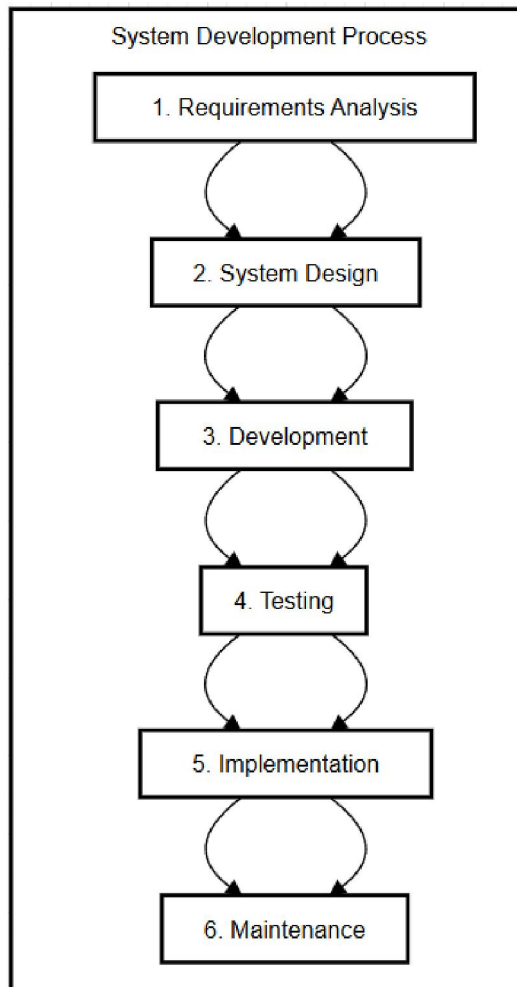


Figure 2.0 System Development Process of the Proposed Document Management System of Saint Michael College of Caraga

The goal of the *Development* phase is to build the system in accordance with the design guidelines. Development activities involve configuring tools and environments, writing and integrating front-end, back-end, and database code, and implementing essential features such as document repositories, search functions, user authentication, and indexing. Unit tests will be performed on individual components to ensure they function correctly. The output will be fully developed system components ready for testing and integration.

The *Testing* phase ensures that the system functions correctly and meets all requirements. Activities include performing unit tests on individual components, conducting integration tests to ensure component interoperability, and executing system tests to validate the entire system against the requirements. User Acceptance Testing (UAT) will gather feedback from end-users, and any identified bugs or issues will be addressed. The result will be a fully tested and validated DMS ready for deployment.

The goal of *Implementation* phase is the deployment and operational testing of the DMS in a live production environment. Actions involve developing and executing a deployment strategy, configuring the infrastructure and production environment, and providing user training and access to documents. Initial system monitoring and prompt issue resolution will be conducted. The output will be a successfully deployed DMS with operational support and trained users.

The *Maintenance* phase aims to provide ongoing support and enhancements for the DMS. Activities include monitoring system performance, responding to user feedback, addressing technical issues, and applying necessary patches, upgrades, and updates. Regular backups, security evaluations, and system audits will be conducted. The output will be a regularly updated and maintained DMS, ensuring long-term reliability and user satisfaction.

Following these phases increases the likelihood that the final product will meet user needs, be reliable, secure, and easily maintained and enhanced over time.

V. CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the findings of this study illuminate the challenges and preferences surrounding document processing at Saint Michael College of Caraga, particularly emphasizing the significant reliance on document handling among college instructors and administrators. While positive perceptions regarding submission efficiency, resources, and support were noted, concerns regarding clarity, error-prone processes, delays, and communication were raised. However, there was confidence in data security and strong support for implementing digital solutions. The weighted mean scores indicated overall satisfaction yet highlighted areas for improvement, notably in clarity enhancement, error reduction, and communication streamlining. Recommendations include developing an Online Document Management System (DMS) with user-friendly interfaces and robust security features, conducting comprehensive user training, establishing clear document submission guidelines, implementing automated workflows, enhancing communication channels, ensuring data security and compliance, monitoring system performance, and promoting continuous improvement. Additionally, future investigative avenues such as user experience research, integration with Learning Management Systems (LMS), and impact assessment studies are suggested to further optimize document processing efficiency and enhance operational effectiveness across the institution.

VI. ACKNOWLEDGEMENT

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