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Web-based File Management System for the Office of National Service Training Program

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ABSTRACT

Managing records such as student information and other forms that need to be organized is one of the major challenges of an office, especially in an institution with a great number of students like Sorsogon State University – Bulan Campus. The NSTP office uses the traditional method of managing records. Having 600-plus students every year holds too many files to manage. Moreover, having too many files to manage hurts the service that the NSTP Office can produce. Moreover, the documents need to be safe and accurate. To alleviate the problem mentioned above and improve file management of the NSTP Office, the proponent developed a Web-based File Management System for the Office of National Service Training Program of Sorsogon State University - Bulan Campus that manages the files automatically. A Web-based file management system is effective, centrally saves information, and facilitates faster retrieval of office files by offering a searchable database. A system that supports the general requirement of the NSTP Office, such as recording of students' data, generating modules that need faster results, and faster archival of records. By this system, the office of the National Service Training Program will have a secure and accurate file management system, resulting in a better-quality service that the office can provide. The proponent used the feature-driven development methodology for this system and used the ISO 25010 evaluation term for its evaluation.

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1. INTRODUCTION

Every institution needs a technological integration, especially in the field of Information systems, to support all of its operations and provide precise, stable, and clean data to users across all departments and business operations (Martin & Murphy, 2017). A system like this would make it feasible to run things effectively, make well-informed judgments, and give university students the finest learning experience possible. According to the study, investing in an electronic document management system can reduce inefficiencies caused by content growth, save employees time from searching for documents, and improve their filing practices (Dinneen & Julien, 2020). Transforming universities into an interactive and integrated institution when it comes to technological advancement is essential, thus it provides quality education and services. Information embedded in records supports business functions and is critical for the assessment of organizational performance. Records carry information created as the product of transactions carried out by organizations (Mukred *et al*., 2022).

Sorsogon State University - Bulan Campus (SorSU-BC) National Service Training Program (NSTP) is one of the offices in Sorsogon State University - Bulan Campus that needs to have technological integration. The NSTP office uses the traditional method of managing records. Having 600-plus students every year holds too many files to manage. Moreover, having too many files to manage hurts the service that the NSTP Office can produce. Moreover, the documents need to be safe and accurate. A document plays a vital role in most businesses. It serves as a piece of evidence in transactions or as a record of written contracts. It exists to ensure specific functions and processes, and it must be implemented properly (Estrera, 2017).

These functions and processes entail tracking, transferring, and monitoring of files. If in case the task is not properly managed, it becomes a problem. With this, managing records is one of the concentrations of the NSTP office. To keep the records organized, important documents need to be watched over and double-checked. Retrieval of these papers is done repeatedly if they are lost or misplaced as a result of carelessness in handling them. It is crucial to keep an eye on these crucial documents, especially in large piles of documents (Adhikari, 2023). Archiving files is also one of the problems of NSTP Office because it is time-consuming to find data in a pile of cabinets full of records, which also leads to misplacing some documents. Common concerns of manual procedures in NSTP Office were specified as follows; keeping the hard copy of documents in a storage box that tends to lose due to unpredicted disasters, keeping the soft copy of documents on a hard drive, personal computer, and flash drives aren't safe at all whereas, they can no longer retrieve the document when laptop and pc had been corrupted, this major concern of the office has not been given yet a solution (Rodrigues *et al.*, 2024).

To alleviate the problem mentioned above and improve file management of the NSTP Office, the proponent proposed a Web-based File Management System for the Office of National Service Training Program of Sorsogon State University - Bulan Campus that manages the files automatically. Effective file management is critical to maintaining order within any individual or organizational workflow. Web-based file management systems provide structured ways to organize files through folders, tags, and metadata, making it easy to categorize and retrieve documents. This organization reduces the time and effort spent searching for files, thereby enhancing overall efficiency. A Web-based file management system is effective, centrally saves information, and facilitates faster retrieval of office files by offering a searchable database. A system that supports the general requirement of the NSTP

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Office, such as recording of students' data, generating modules that need faster results, and faster archival of records.

By this system, the office of the National Service Training Program will have a secure and accurate file management system, resulting in a better-quality service that the office can provide. Web-based File management plays a crucial role in data security. By establishing protocols for storing sensitive information, organizations can mitigate the risk of data breaches or unauthorized access. This includes implementing access controls, encryption, and regular backups to safeguard against data loss. Moreover, proper file management helps maintain the integrity of files, ensuring that they are not inadvertently modified or corrupted. Compliance with industry regulations related to data storage and privacy is also facilitated through a structured file management system. It also emerged as an essential tool for individuals and organizations alike, offering a range of benefits that enhance productivity, collaboration, and security.

To make sure that the developed system is a quality product, ISO 25010 is used for evaluating the system. A system's quality is determined by how well it meets the explicit and implicit needs of its different stakeholders, adding value in the process (A.S. Shatyr, 2024). The ISO 25010 evaluation terms that have been used for this system are functional suitability, performance efficiency, reliability, and compatibility. The proponent used the Feature Driven Development methodology that emphasizes the gradual and iterative creation of software functionality. It is to produce high-quality software rapidly by segmenting the development process into manageable, smaller jobs, which makes the development of the system much easier to manage (Phakamach *et al*., 2023).

This project aims to:

(i) Develop a Web-based File Management System for the Office of the National Service Training Program of Sorsogon State University – Bulan Campus.
(ii) Carry out and deliver the system features that handle all the file management.
(iii) Validate the application in terms of performance efficiency, functional suitability, reliability, and portability.

2. METHODS

2.1. Research design, data collection procedures, and data analysis procedures

This study focuses on the development of a Web-based File Management System. Quantitative data will be collected to ensure that the development will be aligned with the needs of the client. Surveys and questionnaires will be conducted for the data gathering. However, in the system development stage, the study will employ the Feature Driven Development Methodology wherein which promotes continuous iteration of development and testing throughout the software development lifecycle of the project (Saeed & Abbas, 2024).

2.2. Informal and semi-structured interviews

Interviews with key informants will be conducted in an informal setting, and during these interviews, the researchers will only ask a select few questions that have been predetermined questions, while the remaining questions will be free-flowing.

2.3. Feature driven development methodology

The feature-driven methodology is well-suited for long-term projects that continually change and add features in a regular manner that works well with large-scale, long-term, or ongoing projects. This Methodology will be employed during the development of the system.

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The following are the phases: (i) Develop an overall model; (ii) Build a feature list; (iii) Plan by feature; (iv) Design by feature, and (v) Build by feature.

2.4. Respondents and sample population

The importance of the various factors in the software development process will guide the selection of the respondents. These are the Administrator, IT Experts, NSTP implementers, and NSTP Students of Sorsogon State University – Bulan Campus chosen at random. Moreover, the selection of respondents will be based on a Purposive Sampling population to ensure the quality of responses during the activities.

3. RESULTS AND DISCUSSION

The different modules comprising the system were tested for implementation, and taking into consideration all the required components were present and were presented to the different respondents, wherein the result is "Far more than what is expected". Moreover, an interval using a scale was used to show the description and interpretation of the average response in the system. **Table 1** presents the Table of Verbal Interpretation, and **Table 2** presents the Evaluation Rubric that was utilized to interpret and describe the user satisfaction level of the system's efficiency and effectiveness. By this, the thoughtful implementation of this evaluation across various contexts not only aids in evaluation but also enriches the learning and development experience for all stakeholders involved (Pratama & Mutiara, 2011). Evaluating the developed system using the assessment tools for a quality product plays a vital role in the development of the system, as it enhances the features and functionalities, and fixes the bugs and errors in the developed system.

Furthermore, during the testing phase, the system was evaluated and the evaluation was guided by an industry-accepted assessment model – ISO 25010. It is to make sure that the developed system is a quality product. ISO 25010 is used for evaluating the system that offers a comprehensive framework to evaluate and improve software product quality. The areas that were evaluated in the developed system were its functionality suitability, performance efficiency, reliability, and compatibility (Sarwosri *et al*., 2023). Thus, the results of the evaluation from the respondents were presented in a series of tables below. Moreover, the four (4) sets of respondents provided understandings on the overall quality of the system, these respondents were composed of five (5) Administrators, five (5) NSTP Implementers, fifty (50) NSTP Students selected from the school, and five (5) IT Experts.

The respondents evaluated the system using the five-point scale system, reflecting One (1) as the lowest and Five (5) as the highest. By this means, Software quality assurance can be approached holistically by the proponents to guarantee that the developed system has the solutions to satisfy technical requirements and provide end users with value and satisfaction (Souza *et al.*, 2021).

Table 3 shows the result of the evaluation of the different respondents for the Functional Suitability. With an overall mean of 4.88, the system is deemed to be "far more than what is expected" in terms of its functionality and Suitability. This feature indicates the extent to which a system or product fulfills explicit and implicit needs when utilized by predetermined guidelines.

Table 4 displays the results of the evaluation of different respondents to the system's Performance Efficiency. This characteristic indicates how well a product operates within predetermined time and throughput constraints and how resource-efficient it is when operating under predetermined settings. The respondents guaranteed that the system is "Far

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more than what is expected" when it comes to the system's Performance Efficiency, with an overall mean of 4.71.

Table 1. Table of verbal interpretation.

Mean	Verbal Interpretation
0 – 1.0	Absence of the expectation
1.1 – 2.0	Less than what is expected
2.1 – 3.0	Presence of the expectation
3.1 – 4.0	More than what is expected
4.1 – 5.0	Far more than what is expected

Table 2. The evaluation rubrics.

Interval Scale	Description	Interpretation
4.1 – 5.0	Highly Applicable	The system efficiently and effectively satisfied all quality model characteristics in terms of functionality suitability, reliability, usability, speed, and maintainability.
3.1 – 4.0	Very Applicable	The system efficiently and effectively satisfied some of the quality model characteristics in terms of functionality, reliability, usability, speed, and maintainability.
2.1 – 3.0	Applicable	The system minimally satisfied all quality model characteristics in terms of functionality, reliability, usability, speed, and maintainability.
1.1 – 2.0	Slightly Applicable	The system hardly satisfied the quality model characteristics in terms of functionality, reliability, usability, speed, and maintainability.
1.0 or less	Not Applicable	The system did not meet the quality model characteristics in terms of functionality, reliability, usability, speed, and maintainability.

Table 3. Functional suitability rates of the developed system

1.0	Functional Suitability	
	Respondents	**Mean**
	Administrators (5)	4.96
	NSTP Implementers (5)	4.92
	IT Experts (5)	4.88
	SorSU-BC NSTP Students (50)	4.76
	Overall Mean	4.88

Table 4. Performance efficiency rates of the developed system

2.0	Performance Efficiency	
	Respondents	**Mean**
	Administrators (5)	4.70
	NSTP Implementers (5)	4.72
	IT Experts (5)	4.70
	SorSU-BC NSTP Students (50)	4.72
	Overall Mean	4.71

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Table 5 reflects the results of the evaluation from different respondents regarding the system's reliability. The extent to which a product, system, or component can carry out a given task under a given set of circumstances and for a given amount of time. With an overall mean of "4.89", the respondents approved that the system is reliable and that it is "Far more than what is expected". This characteristic focuses on the dependability of the developed system in executing predefined functions under stipulated conditions.

Table 6 displays the result of the evaluation of the system's compatibility from the different respondents on which this evaluation term talks about how the system can exchange information with other products and mutually use the information that has been exchanged. The respondents determined that the system is compatible enough and it is "Far more than what is expected"; thus, the system met an overall mean of 4.80.

Table 7 displays the result of the evaluation from the Administrators of Sorsogon State University – Bulan Campus regarding the developed system's functionality suitability, performance efficiency, reliability, and Compatibility. With an overall mean of 4.873, the respondents concluded that the system is "Far more than what is expected."

Table 8 shows the result of the evaluation from the NSTP Implementers of Sorsogon State University – Bulan Campus regarding the developed systems' functionality suitability, performance efficiency, reliability, and Compatibility. With an overall mean of 4.905, the respondents concluded that the system is "Far more than what is expected."

Table 9 presents the result of the evaluation from the NSTP Students of Sorsogon State University – Bulan Campus regarding the developed system's functionality suitability, performance efficiency, reliability, and Compatibility. With an overall mean of 4.738, the respondents concluded that the system is "Far more than what is expected."

Table 10 shows the result of the evaluation from the IT Experts regarding the system's functionality suitability, performance efficiency, reliability, and Compatibility. With an overall mean of 4.761, the respondents concluded that the system is believed to be "Far more than what is expected."

Table 5. Reliability rates of the developed system

3.0	**Reliability**	
	Respondents	**Mean**
	Administrators (5)	4.93
	NSTP Implementers (5)	5.00
	IT Experts (5)	4.86
	SorSU-BC NSTP Students (50)	4.76
	Overall Mean	4.89

Table 6. Compatibility rates of the developed system

4.0	**Compatibility**	
	Respondents	**Mean**
	Administrators (5)	4.90
	NSTP Implementers (5)	5.00
	IT Experts (5)	4.60
	SorSU-BC NSTP Students (50)	4.72
	Overall Mean	4.80

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Table 7. Evaluation from the administrators of the developed system

	Quality Characteristics	Section Mean
1.0	Functional Suitability	4.960
2.0	Performance Efficiency	4.700
3.0	Reliability	4.932
4.0	Compatibility	4.900
	Overall Mean	4.873

Table 8. Evaluation from the NSTP implementers of the developed system

	Quality Characteristics	Section Mean
1.0	Functional Suitability	4.920
2.0	Performance Efficiency	4.720
3.0	Reliability	5.000
4.0	Compatibility	5.000
	Overall Mean	4.905

Table 9. Evaluation from the SORSU-BC NSTP students of the developed system

	Quality Characteristics	Section Mean
1.0	Functional Suitability	4.7552
2.0	Performance Efficiency	4.7200
3.0	Reliability	4.7576
4.0	Compatibility	4.7200
	Overall Mean	4.7380

Table 10. Evaluation from the it experts of the developed system

	Quality Characteristics	Section Mean
1.0	Functional Suitability	4.880
2.0	Performance Efficiency	4.700
3.0	Reliability	4.864
4.0	Compatibility	4.600
	Overall Mean	4.761

Furthermore, **Table 11** presents the overall evaluation of the system's quality characteristics from different respondents, thus, the result of the evaluation was "far more than what is expected", with an overall mean of 4.82. The respondents determined that the system is perceived to be "Far more than what is expected". ISO 25010 Assessment tools are used for evaluating the quality of the developed system, which is a quality attribute for the product that the institution will benefit from. The result of the conducted evaluation of the system developed is "highly applicable" and serviceable to the office of the National Service Training Program of Sorsogon State University – Bulan Campus. By adhering to established quality standards, organizations can ensure that their products are free from defects and perform as intended. By committing to a quality software product, the Office of the National Service Training Program of Sorsogon State University – Bulan Campus can secure a quality service and ensure that it consistently delivers services that meet or exceed customer expectations.

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Table 11. Overall evaluation of the developed system.

Characteristics	Administrator	NSTP Implementers	SorSU-BC Students	IT Experts	Mean	Interpretation
Functional Suitability	4.960	4.920	4.760	4.880	4.880	Far more than what is expected
Performance Efficiency	4.700	4.720	4.720	4.700	4.710	Far more than what is expected
Reliability	4.930	5.000	4.760	4.860	4.890	Far more than what is expected
Compatibility	4.900	5.000	4.600	4.720	4.800	Far more than what is expected
Mean	4.873	4.905	4.738	4.761	4.820	Far more than what is expected
Overall Mean			4.820			Highly Applicable

4. CONCLUSION

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

(i) The developed system is considered to be "Highly Applicable" as perceived by the different respondents. The developed system is serviceable to the office of the National Service Training Program of Sorsogon State University – Bulan Campus. The administrators, NSTP Implementers, and NSTP Students were the immediate beneficiaries. The system provides a much easier and manageable file management system.

(ii) The File Management System is successfully integrated into the system. The features of the File Management System are working successfully as the user's main functionality. The user will be able to manage all the records of the NSTP Students and even the Files that need to be submitted by the NSTP Implementers. By this, the Users will have an easy transaction with the Office of the NSTP and for the retrieval of the files using managing it in the database.

(iii) The developed Web-based File Management System for the Office of the National Service Training Program of Sorsogon State University Bulan Campus with an overall mean of 4.82 is "Highly Applicable" to the needs of the following clientele: The administrators, IT Experts, the NSTP instructors, and the student of Sorsogon State University – Bulan Campus. Therefore, the developed system has passed the ISO 25010 (which is concerned primarily with the definition of quality characteristics to be used in the evaluation of software products). Therefore, this developed system is serviceable to the needs of the Sorsogon State University – Bulan Campus.

(iv) Based on the conclusions, the following recommendations are hereby offered:

(v) The developed system from the perspective of the respondents turned out to be "More than what is expected" based on the overall mean of 4.386. Thus, the system is considered to be "Highly Applicable" in terms of Functional Suitability, Performance Efficiency, Reliability, and Compatibility. Therefore, the newly developed Web-based File Management System for the Office of the National Service Training Program of

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Sorsogon State University, Bulan Campus, may be deployed and used to improve the services.

(vi) Additional functionalities and improvements to the system may be studied and integrated in the new Web-based File Management System for the Office of the National Service Training Program of Sorsogon State University, Bulan Campus, to greatly improve the service offered.

(vii) The proponent's availability can be extended to the client or the Sorsogon State University – Bulan Campus to conduct necessary training for the users on how to use or implement the newly developed Web-based File Management System for the Office of the National Service Training Program of Sorsogon State University, Bulan Campus.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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