

Assessment of Enhanced Online Documents Repository Service

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Abstract— The study assessed the enhanced online document repository service for school records management of Matnog I District and sought to determine the current existing online records management system of the school; what could be enhanced for school records management; assessed the enhanced online document repository along Graphical User Interface (GUI), Accessibility, Usability, and Security. The research applied a descriptive-survey method. The primary sources of data are the teacher respondents of twenty-three (23) schools in Matnog I District. The research used survey questionnaires as the main instrument in gathering data needed in this study. Frequency count, percentage, rank, weighted mean, one sample chi-square, and one sample binomial test were statistical tools used to analyze the data. Majority of respondent-schools or workstations have no existing online records management system. The study introduced enhanced online document repository services, such as standalone execution, network adaptability, cross-site scripting prevention, and one-time password functionality. The respondents assessed these enhancements and reported a strong level of agreement with the indicators of Graphical User Interface, accessibility, usability, and security. The results showed no significant difference in the respondents' perception along GUI, accessibility, usability and security.

Keywords— accessibility, assessment, enhancements, repository, security

I. INTRODUCTION

Introduction. Globally, the Information and Communication Technologies (ICT) has become fully involved in all institutions such as hospitals/healthcare, business, education and the like, (Brown, 2020). Document Management System is one of the most indispensable digital tools in today's technologically advanced world. Every document in an institution is vital in managing the business and plays a crucial role to its overall success. According to the study of Fernando, Seneviratne, & Wickramasinghe, (2019), electronic document management system is beneficial in any organization. They mentioned that its advantages are, security of files, data visualization, ease of use or friendly-user system, lessen the expenses for paper documents and space needed for storage, and it significantly increases the quality of work, (Andriansyah, Abdullah, Ramadhani, 2020).

The problem is when documents are accumulating. It doesn't just eat up all the space in the office, it also consumes all the time when retrieving the files, (Kittanah, Alshawi & Irani, 2016). In some cases, documents were not able to be retrieved probably because of unfortunate natural disasters or totally lost due to unorganized stockpiling of files. The organization of digital files can also be chaotic especially when your superior asks for particular files and you cannot find it on time. Organizing an unstructured digital mess is not

an easy task but this is the reason why document management system has become very popular.

Al-Mudimigh, Ullah, & Alsubaie, (2011) states that document management system is like a traffic cop that organizes an influx of documents. Its main functions are to record, supervise and recover electronic documents. This will eliminate the traditional stockpiling of paper documents which wastes both time and energy.

Due to COVID-19 outbreak, movement and productivity has been limited more particularly in the sector of education which was guided by the limitations referred in the Constitution (Article VI, Section 23) and Republic Act 11469 of 2020 also known as "Bayanihan (United Efforts) to Heal As One Act", effective for three months. Almost all establishments and institutions were closed and skeleton workforce were implemented which was adapted also by DepEd as stipulated in DepEd Order No. 11, s. 2020 and DepEd Memorandum No. 043, 2020, reiterating alternative working arrangements. Corollary to this, transactions in the education sector have greatly affected since the conventional way of submitting and receiving of documents is still widely observed in the country. Hence, the Department of Education has implemented and utilized the DepEd Document Management System as adaptation to the "new normal" during this public health emergency. Furthermore, the objectives of DepEd DMS includes: a) promotes paperless transactions to prevent the virus

from spreading through face-to-face contact; b) secure and guarantee accurate and complete documentation which are traceable whether they are accepting or transferring files; c) allow authorized users to access and retrieve documents in the DMS. This can help the agency to lessen the delay of each transaction since close contact is prohibited.

Several countries have established a recognized agency and carry out ICT in education. During the early period of introducing ICTs in education, the Philippine government abstained from this idea but education policymakers, educators and stakeholders explored other alternatives, (De Dios, 2016).

The Philippines has been using a repository for several years already and even our government utilized an online document repository when Republic Act 9470 was enacted. It is also known as the “National Archives of the Philippines Act of 2007, an Act which strengthened the administration and management system of archival records”. Based on the said act, section III, article 14, the National Archives of the Philippines shall establish a comprehensive program for the registration and accreditation of public archives nationwide. In addition, article 15 also reiterates that all government offices shall conduct an inventory of public records. This has been supported by the DepEd through DepEd Memorandum No. 133, s. 2016 also known as the National Inventory of Records in order to have a systematic and accessible tracking of documents or records.

Online Document Repository requires computer or laptop and network but not necessarily internet. Since most teachers own a computer and all schools have at least one or more computers through the DepEd Computerization Program as stipulated in DepEd Order No. 78 s, 2010, implementing an online repository will be easy and relevant. In fact, the Sorsogon Division Office, released Division Memorandum No. 09, s. 2022 to turn over ICT equipment (laptops) to teachers which is guided by Bayanihan II from R.A. 11494.

Rationale. The conduct of this study is based on the conscientious observation of the researcher that the document management system using ICT is still not being practiced by public schools even if computers or laptops are already made available by DepEd. In addition, teachers are already giving so much time in retrieving information due to non-teaching workloads which put the quality of education at stake. To address

the OSSC (out-of-school-children) and the substandard quality of education receive in many public schools they tapped the human resources allocations in DepEd which can fill administrative tasks including, secretarial work, accounting jobs and reporting, registration and records keeping, and other additional non-teaching assignments but it still not given attention in majority of public schools in the Philippines.

The researcher’s goal is to lessen the burden of teachers when it comes to recording, managing and retrieving files especially when monitoring and evaluation of (School-Based Management) SBM documents has arrived. Some teachers are having difficulty recovering files needed for SBM and it is one of the most frustrating times for teachers who needs to tend more jobs such as Learning Activity Sheets (LAS) writing, distribution and retrieval of LAS, checking of LAS, monitoring student-learning, recording of scores, providing reading materials and other remediation materials, and reading sessions especially with pupils in frustration level.

SBM is one of the most indispensable governance framework of DepEd as stated in R.A 9155 of 2001 otherwise known as Governance of Basic Education Act, School First Initiatives (SFI, 2005) and Basic Education Sector Reform Agenda (BESRA, 2006) to promote the inclusion of stakeholders especially learners, parents and the community in making decisions to address the local needs of the school. In addition, it increases the accountability of teachers to their shared responsibilities.

Based on the above premises, the researcher is persuaded to provide solutions to the present problem of public schools in Matnog I District. Specifically, this will determine the current existing online records management in the respective workstation of respondents; will reveal the enhancements of online document repository service for school records management; assessed the enhanced document repository services as perceived by the respondents in terms of a) GUI (Graphical User Interface; b) Accessibility; c) Usability; and d) Security in an effort to provide proposal determined by the results of the study. Matnog I District is one of the two (2) districts in Matnog, Sorsogon.

It is composed of 20 elementary schools, 1 integrated school and 2 high schools namely: Banogao, Banuang-Daan, Bon-Ot Big, Bon-Ot Small, Calayuan, Culasi, Gadgaron, J. Frencillo, Lajong, Mambajog, Manurabi,

Matnog Central School, Paghuliran, Poropandan, Santa Isabel, Sinalmacan, Sinebaran, Sua, Tablac, Vicente Dorotan Elementary School, Calintaan IS, Culasi and Sua National High School. 12 are located in coastal areas, 3 are in remote areas, and 8 are situated in inland areas. Given the number, it reveals that most schools are prone to flood or any other natural catastrophes that might inflict serious damage in schools including the important files/ documents. This district is under the supervision of Elvis Romeo G. Zuñiga, Office-In-Charge- Public Schools District Supervisor. Based on the outcomes of this study, the researcher proposed actions in enhancing the records management in public schools especially that movements are limited due to pandemic, an easy access to documents is a must to enable teachers to work efficiently and effectively.

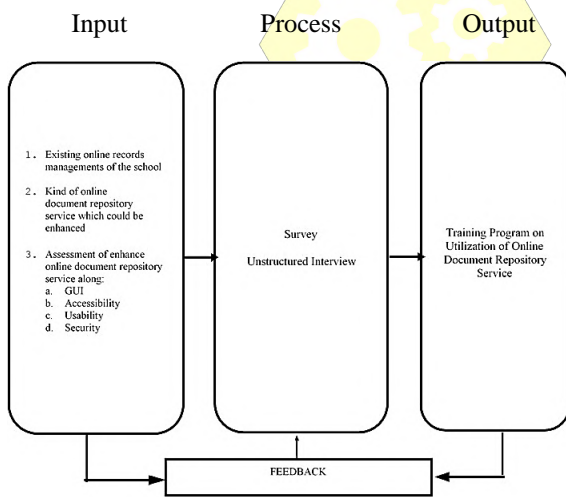


Fig. 1. Conceptual Paradigm

TABLE 1
The Respondents

Respondents	Frequency	Percentage
School Heads	23	36%
ICT Coordinators	17	27%
Disbursing officers	24	37%
TOTAL	64	100%

Purposive sampling was used to select the study respondents based on their school's designation or position. The respondents were personnel who directly utilized the document repository, prepared the documents for digitalization, uploading, and downloading to and from the repository, and trained others in their respective schools for such operations to maximize self-service during the preparation and acquisition of documents or files from the document

repository. School heads, ICT coordinators, and disbursing officers were also included in the study since they handle most of the school's data or documents that need archiving, such as students' records and financial records for various purposes.

TABLE 2

Number of Schools with Existing Online Records Management System

Responses	Frequency	Percent
None	19	92%
Private network through intranet distribution	1	2%
Purchased online document records management system	3	6%
Total	23	100%

Table 2 presents the frequency and percentage of responses of participants. Majority answered none which has a frequency of 19 or 92%. It is followed by, "private network through intranet distribution" which has a frequency of 1 or equivalent to 2% while "purchased online document records management system" has 3 frequencies or 6%.

Based on the results above, it appears that the majority of schools in Matnog I District are still not using online management systems to digitally organize and manage their documents. This implies that most public schools in Matnog I are still adhering to the conventional way of storing data which is a paper-based document management system.

This is probably because the online document management system is expensive. Craven, (2016), states that when an institution goes for paperless transactions, a large amount of money is substantial. With an enhanced document management system comes heavy cost. To seamlessly work with the files while preventing digital transgression, schools need more advanced systems but such computer-generated equipment is unreasonably expensive and not every public school can afford it. In addition, this calls for maintenance when there are technical issues and software glitches which are additional expenses for the school.

It can be gleaned from the table above that 3 schools were able to purchase an online document management system. Consequently, this belongs to big schools only which have way larger amounts of School Maintenance and Other Operating Expenses (MOOE) funds.

It cannot be denied the fact that in our education sector in the Philippines, teachers are handling immense clerical jobs such as managing student records, various forms, employee files, coordinatorship files and financial reports which are stored in an archive room to keep them safe and secured.

Enhanced Online Document Repository Service. This section presented the enhancements done with the online document repository service from the study, “Systems Development for Records Archiving and Digital Documents Repository: A Case Study” by Gamba, Ocbian, Gamba, (2014).

The said web-based application had been enhanced in the following features:

Execution. Based on the software output of Document Repository and Records Archiving (Gamba, Ocbian, Gamba, 2014), it had to be installed in a dedicated machine that would handle the server-based operations. Each software application's dependencies had to be installed and configured individually to ensure that they could communicate with each other and properly handle data requests and render documents based on the original file format during uploads.

The enhanced document repository software along its software's dependencies are not anymore required to be installed in a laptop or desktop computer that serves as the web-server to cater its internal algorithms in order to process the uploaded file for internal storage and transmit the requested file to the end user. The web-based application is now allowed to run in a USB drive since the dependencies had been encapsulated and packaged in the web-application itself.

Network Adaptability Configuration. Hosting a web-based application could be accessed as an intranet and internet-based application. However, the internet-based application provided a constant uniform resource locator because it depended on the public Internet Protocol (IP) address assigned by the Internet Service Provider (ISP). The previous document repository software provided an interface for the administrator to manually encode the intranet and public IP addresses, which became more complicated for non-IT personnel to determine those IP addresses, as most routers nowadays provide dynamic IP addresses to enhance security.

The enhanced document repository can now capture the internal network address of the local host server machine. The new IP address assigned by the router and the dynamic IP address forwarded by the internal Dynamic Naming System (DNS) via the ISP will be internally captured and saved as the new reference Uniform Resource Locator (URL). This approach significantly reduces the administrator's workload in continuously identifying the machine's IP address that

handles data requests especially when the router's restart.

Cross-Site Scripting Prevention. In recent times, the use of tunnels has become increasingly popular due to their high availability and minimal configuration requirements. This has made it possible for non-IT personnel to set up alternatives to digital certificates, thus replicating website interfaces with ease. However, this ease of access has also led to an increased risk of malware and phishing attacks. Even those with minimal knowledge of the setup can now establish such attacks, which can have serious consequences.

This flaw in security has been observed in previous software outputs, which highlights the need for enhancements to address this issue. It is crucial to ensure that the security protocols in place are robust enough to counter such attacks, and the users are educated about the potential risks involved.

The web-based application had been enhanced to utilize the same uniform resource locator (URL) based on the identified URL as stored or saved in its backend database. The stored URL serves as the fixed website link to simplify the configuration of digital certificates in website identification over the internet sites. This solution prevents the copying or duplication of the website link to expose the users' credentials like username and password. Every time an end user accesses the website link, the web application validates or checks all of its link from images, pages, and alike to prevent especially crafted link that will expose the content of the data that is being sent over the internet and stored its content in the altered link.

Passwords. Username and password-based authentication have been the most common method of verifying user identity. However, this method is prone to several flaws and vulnerabilities, especially when used as login credentials for a document repository. The main issue with username and password-based authentication is that they are easily guessable or hackable. Passwords that are easy to remember are often easy to guess, while complex passwords are difficult to remember and tend to be stored in insecure locations, making them vulnerable to theft. Moreover, most people tend to use the same password across multiple platforms, which further increases the risk of security breaches.

Another issue is that passwords can be intercepted by attackers using a technique known as 'sniffing'. This involves monitoring network traffic to capture login

credentials as they are transmitted over the network. Attackers can also use social engineering techniques to trick users into revealing their passwords, making it easy for them to access sensitive information.

TABLE 3A

Assessment of the Graphical User Interface (GUI) of the Enhanced Online Document Repository Service

INDICATORS	Mean	Description
1. The online document repository is effective in helping me complete the tasks especially in retrieving files.	4.86	Strongly Agree
2. Retrieval/ recovery of files is easy.	4.84	Strongly Agree
3. I find it easy and manageable to use.	4.80	Strongly Agree
4. It is easy to learn and manipulate the online document repository service. It is user-friendly.	4.78	Strongly Agree
5. The user is being guided on the next step by clicking next, submit, or ok.	4.76	Strongly Agree
6. Online Document Repository Service helped me work efficiently.	4.73	Strongly Agree
7. I enjoyed using the online document repository system.	4.73	Strongly Agree
8. I feel confident using the online document repository service.	4.71	Strongly Agree
9. Words used are easy to understand by the majority.	4.71	Strongly Agree
10. I believe I am working effectively and efficiently using the online document repository service.	4.69	Strongly Agree
11. Generally, I am satisfied with how easy it is to operate the online document repository service.	4.69	Strongly Agree
12. The online document repository exceeded my expectations in terms of its capabilities and functions.	4.67	Strongly Agree
13. I am redirected to flashing "You are here" words when I forgot to click other commands before completing the procedure.	4.65	Strongly Agree
14. I perceived that computer capabilities such as color and graphics are used appropriately.	4.65	Strongly Agree
15. I did not experience bugging all throughout the process.	4.49	Agree
Overall, WM	4.72	Strongly Agree

Graphical User Interface (GUI). After the online training workshop in the utilization of online document repository and records archiving, the perceived assessment of the GUI based on the following indicators were reflected in Table 3A.

The indicator "The online document repository is effective in helping me complete the tasks especially in retrieving files" yields a weighted mean of 4.86 which is perceived as strongly agree by the respondents.

By implication, the mentioned indicator accumulated the highest weighted mean because the teachers experienced how it is convenient to carry out a task or accomplish work using the GUI of the system. Visual Representations of interface is more effective in retrieving data especially if the GUI has mental models that consist of patterns to easily comprehend the structure and process which are present in the repository. This result was supported by Kirschner, Sweller & Clark, (2014), that mental models and visual representations are important for easier comprehension and effective utilization of the system. They added that mental maps are effective, which is present in the repository by familiarizing how other commonly-used apps are being used by the users. Through this, they will automatically understand what to click next. Furthermore, Ho, Vaidyanathan, & Honavar, (2016) that Graphical user Interface (GUI) has a strong effect on the user's performance in completing the intended job to be accomplished.

Another implication is that the use of an online document repository is beneficial for completing tasks,

particularly in terms of file retrieval. This means that this system can improve productivity and efficiency. By allowing users to access and retrieve files from a central location, this system can save time and reduce the need for physical file storage and organization. Ozkaya & Kilic, (2015), found that the use of online document repositories can significantly improve the efficiency of document-based work processes, particularly when combined with other organizational tools such as metadata and search functionality.

Likewise, an online document repository can improve collaboration and communication among team members. By allowing multiple users to access edit real-time, this system can facilitate the sharing of ideas and information, leading to more effective teamwork and decision-making. Wang, Li & Wang (2016), stated that the use of online document repositories can significantly enhance teamwork and reporting among team members, especially when used in combination with other collaborative tools such as instant messaging and video conferencing.

The respondents agree on the indicator such as "I did not experience bugging all throughout the process" as it yields the lowest weighted mean of 4.49. The respondents only agree on this specific indicator because during their training/workshop, they were not able to open the assigned link for their school because of several issues such as 1) internet connectivity issues; 2) some internet service provider (ISP) like Philippine Long Distance Telephone (PLDT) company and Smart Communications automatically block unregistered websites or subdomains wherein, the researcher provided a solution to this by giving instructions to the respondents to download Tor browser to bypass such internet blocking algorithms; and 3) the web-app itself employed its own security measures for cross-site scripting instead of using only one same link all the time and not the referred link or forwarded link as it has its own URL validations using the enhanced algorithms for cross-site scripting.

To avoid phishing, the researcher instructed the respondents to manually type the link in a browser instead of doing the copy-paste operation. These issues that respondents experienced affected the efficiency of work and security of the online repository system. This was supported by Koziarski & Cabaj, (2020), that weak internet connection is the main culprit when errors occur while opening a link in a browser. PLDT stated that a website cannot be opened because it is down or the user

is using a proxy server since purchasing a public IP will cost three to four times the residential type internet connection service. Since the repository is using a proxy server, those respondents who are using PLDT or Smart, are instructed to open and type the link manually in a Tor browser.

They probably find this inconvenient knowing that some teachers are lacking technological know-how. However, it is a positive implication and may encourage users to continue using it or recommend it to others. Baker, (2018) stated that the service's reliability and lack of technical issues, such as glitching or bugging may increase satisfaction levels of users of online document repository services.

TABLE 3B
Accessibility of the Enhanced Online Document Repository Service

INDICATORS	Mean	Description
1. Overall, I am satisfied with how easy it is to access the link.	4.78	Strongly Agree
2. The school files are easy to retrieve, view, and upload repeatedly.	4.76	Strongly Agree
3. I found perceivable words and user interface components are orderly (methodically arranged) to users in ways they can easily understand.	4.69	Strongly Agree
4. I can access or open the repository to any of these gadgets/devices (smartphone, androids, laptops, desktops, iPad, and tablets)	4.69	Strongly Agree
5. It is easy for me to access the files needed for reporting purposes even without the presence but with permission of the school head or teachers or vice versa.	4.69	Strongly Agree
6. It did not take me too long to load the online document repository service.	4.65	Strongly Agree
7. Online document repository service assists me to navigate and determine where I am.	4.63	Strongly Agree
8. I can access the link with different browsers.	4.63	Strongly Agree
9. I can access the online document repository even if several users are logged in too.	4.55	Strongly Agree
Overall WM	4.67	Strongly Agree

Accessibility. The respondents strongly agree on the indicator "Overall, I am satisfied with how easy it is to access the link" which yields a weighted mean of 4.78.

After instructing the participants to use TOR browsers, the process of using the repository went smoothly. Proxy servers were also used to speed up access to a resource through caching. This was supported by Fang & Chan, (2016), that using a proxy server serves as a web filter and firewall, provides shared network connections and cache data to speed up requests.

In addition, this online repository is accessible whenever they need to since it has its own IP which means, when they need to download or upload a file, they were able to do so, making the job more efficient due to its accessibility.

Luo & Jiang, (2020), mentioned that digital repository allows users to access information anytime and from wherever they are. Web access technology has ensured that data are available.

The respondents strongly agree on indicators "I can access the link with different browsers" and "I can access the online document repository even if several users are logged in too", as they assessed the accessibility of the online document repository and records archiving, which they yield the weighted means of 4.55 and 4.63, respectively. The link of the repository can be opened with any browsers such as Microsoft Edge, Safari, and Internet Explorer but easier and faster access to it can be achieved using Mozilla Firefox and Google Chrome. It does not limit its access to any browsers, it can also be opened in any devices such mobile phones, iPad, tablet, laptop, and desktop computers.

Gamba, Ocbian and Gamba (2014), stated that this repository can be deployed effectively using Mozilla Firefox and Google Chrome. He also mentioned that its functions and operations are extended to other devices such as mobile phones that either run on android or IOS and other devices which have a web-browser installed in it.

There are several implications on this indicator. One implication is that the online document repository has a system in place for handling multiple users accessing the same documents simultaneously. This could be achieved through the use of version control, which allows multiple users to make changes to a document at the same time without overwriting each other's changes, (Pauw, Koehn, Patitsas, and Buytaert, 2014). It could also be achieved through the use of locks, which allow one user to edit a document while preventing other users from accessing it until the first user is finished, (Chan, Goben & Graham, 2017).

TABLE 3C
Usability of the Enhanced Online Document Repository Service

Indicators	Mean	Description
1. I believe that its user interface navigations and components are operable, usable and functional.	4.80	Strongly Agree
2. I could easily search for the content I was looking for.	4.76	Strongly Agree
3. I am pleased with how efficient and easy it is to manipulate and navigate the system.	4.75	Strongly Agree
4. It is simple to use the online document repository service.	4.75	Strongly Agree
5. I am pleased using the interface of this repository service.	4.75	Strongly Agree
6. 100% of tasks needed to be accomplished were completed.	4.73	Strongly Agree
7. I am confident that using this system can help me retrieve important files especially when badly needed.	4.73	Strongly Agree
8. I am fully engaged in completing the tasks until the very last step of using the repository service.	4.73	Strongly Agree
9. The repository service gives clear instant warnings and pop up instructions when I commit errors to fix the problems.	4.73	Strongly Agree
10. Its capabilities and functions exceeded my expectations in using this online document repository service.	4.73	Strongly Agree
11. Overall, I am satisfied with how it helps me to efficiently complete the task in just a short period of time.	4.73	Strongly Agree
12. I quickly accomplished my work objectives using the online document repository.	4.71	Strongly Agree
13. I can locate specific information in just a short period of time.	4.71	Strongly Agree
14. I feel productive using the repository service.	4.71	Strongly Agree
15. I could easily redirect to other icons based on the purpose I need to accomplish.	4.69	Strongly Agree
16. I don't need personal help from other people to be able to use this repository service.	4.31	Agree
Overall WM	4.70	Strongly Agree

Usability. The respondents strongly agree on the indicator “I believe that its user interface navigations and components are operable, usable and functional.” which yields a weighted mean of 4.80.

Due to the fact that this online repository is accessible to several devices including smart phones, the respondents find it operable, usable and functional. Sarker and Kabir, (2016) stated that repository provides good usability when accessed from a range of mobile devices.

The indicator "I believe that its user interface navigations and components are operable, usable, and functional" suggests that the user interface (UI) has been designed and implemented in a way that allows users to navigate through it effectively and use its various components successfully in order to accomplish their goals, Finstad, (2016).

There are several implications of this indicator. First, it implies that the user interface has been designed with usability in mind, which means that it takes into account the needs and abilities of the users and provides clear and intuitive ways for them to interact with the system. Second, the statement implies that the UI has been tested and evaluated to ensure that it meets the necessary standards of operability, usability, and functionality.

TABLE 3D
Security of the Enhanced Online Document Repository Service

Indicators	Mean	Description
1. Overall, I am satisfied with the measures of this repository service.	4.78	Strongly Agree
2. Permission set by an administrator is observed to allow definite privileges to users. Whether they are allowed to view, download, or edit the file—this will depend on the administrator or reviewer.	4.75	Strongly Agree
3. Files uploaded were encrypted at 128 bit to maintain the confidentiality and security of the documents.	4.71	Strongly Agree
4. To validate legitimate connection, repository servers can only be accessed through the software gateway.	4.67	Strongly Agree
5. The decrypted file can only be viewed, downloaded, and edited by the authorized users.	4.65	Strongly Agree
6. The administrator reviews the uploaded files first before giving the approval to its users to maintain the confidentiality of the files.	4.65	Strongly Agree
7. Username and passwords are hashed through a customized encryption algorithm to prevent brute force attack and username and password guessing.	4.65	Strongly Agree
8. Anonymous users are prevented by strictly organizing the files and selecting users who can only view, download and edit the file.	4.63	Strongly Agree
9. To avoid MITM (Man In The Middle) attack, before file upload, a key file is being generated with a purpose of securing the original properties of files including its original author and size.	4.61	Strongly Agree
10. Data contents are built inside the archiving algorithms. Meaning, file contents are scrambled. Only authorized personnel or users can decrypt using the correct username and password upon login.	4.57	Strongly Agree
Overall WM	4.66	Strongly Agree

The respondents agree on the indicator, “I don’t need personal help from other people to be able to use this repository service”, which yields the lowest weighted mean of 4.31. This implies that the user finds the service easy to use and self-explanatory, which can lead to increased productivity and satisfaction. In addition, this

can be perceived as a user-friendly UI since it allows users to easily access and utilize the features and functions of the system. Corollary to this, it reduces the need for personal assistance or support, as users are able to navigate and use the service independently. Dey, Lee and Hong, (2016), stated that a user-friendly interface can lead to increased efficiency and productivity for users. Moreover, Jose & Rajan, (2018), found that a positive experience can lead to increased customer satisfaction and loyalty.

Security. The respondents strongly agree on the indicator, “Overall, I’m satisfied with the measures of this repository service” which yields a weighted mean of 4.78. This implies that the users are pleased with measures that the online document repository system has in place to protect the privacy and security of its users and their documents in the educational context. In addition, security is an important consideration for any online service, especially those that handle sensitive documents such as an online document repository system in education. Educational institutions often have a large amount of sensitive and confidential information that needs to be protected, such as student records and grades. If users do not feel that their documents are secure, they may be less likely to use the service and may even choose to switch to a different service or platform.

Mallory, Daughterty & Lu (2014), found that security is a significant predictor of student satisfaction with online courses. Consequently, security is a significant predictor of student retention in online degree programs, (Lwin, Vijayaraman, & Sutarso, 2017). Maintaining the levels of security is important for educational institutions in order to ensure that they are meeting the needs and expectations of students and to protect sensitive and confidential information. This repository has not just been widely-used in the education system but also in the business industry. Liu, Liao & Shih, (2014), stated that security is a significant predictor of customer satisfaction in the online banking industry. Similarly, Wang, Fan & Wang, (2017), mentioned that security is a significant predictor of customer loyalty in the online retail industry.

The respondents strongly agree on the indicator, "Data contents are built inside the archiving algorithms. Meaning, file contents are scrambled. Only authorized personnel or users can decrypt using the correct username and password upon login" which yields the lowest weighted mean of 4.71.

It implies several implications in the field of cybersecurity, including the protection of data confidentiality and integrity, as well as the potential for difficulties in accessing the data for authorized personnel or users. One implication is that it helps to protect the confidentiality of the data. Encrypting data using an archiving algorithm makes it unreadable to anyone who does not have the proper decryption key or login credentials. This helps to prevent unauthorized access to the data, protecting it from potential cyber threats such as hacking or data breaches. Wu, Zhang, Chen, Hu, and Zhang, (2018), found that encryption is an effective method for protecting data confidentiality, particularly when combined with other security measures such as access controls and authentication protocols.

As shown in table 4, the variables such as General user interface, accessibility, usability, and security of the document repository and records archiving web application had been statistically treated with Kruskal-Wallis(H) Test to determine if the perceptions of respondents' group differs from each other. The statistical test utilized the parameters such as significant level at 0.05, 95% for confidence interval, critical value of 5.991 and number of respondents of 51.

The H-test for General User Interface was conducted with the respondents, and the result was H-test (51,0.05) = 0.395 with a p-value of 0.821. This implies that there was no significant difference in the perceptions of each group of respondents along this variable.

Thus, the null hypothesis for this variable accepted. It denotes that the three groups of respondents had similar perceptions about the general user interface of the web-application.

usability and accessibility guidelines, resulting in a similar perception among respondents from different user groups. This implies that the interface provides a consistent user experience, regardless of the users' backgrounds or abilities. Usability and accessibility are crucial aspects of user interface design. Usability focuses on creating an interface that allows users to accomplish their goals effectively, efficiently, and with satisfaction. Accessibility, on the other hand, aims to ensure that the interface is usable by people with diverse abilities, including those with disabilities, older adults, and those with temporary impairments. By following established usability and accessibility guidelines, designers can create an interface that caters to the needs and expectations of a wide range of users. This enables more people to interact with and benefit from the product or system, promoting inclusivity and equal access to digital resources.

The test statistic for accessibility of the web application was calculated as H-Test (51,0.05) = 0.459 with a p-value of 0.795. The results indicate that there was no significant difference in the respondents' perceptions along the indicators of this variable. Therefore, we accept the null hypothesis for this variable, which means that the respondents' perceptions of accessibility were similar across all groups. It can be concluded that the group of respondents had the same perception about the accessibility of the web-application.

Several implications may explain the lack of significant difference in respondents' perceptions of accessibility. Similar demographic factors, such as age, education, and professional background, among the respondents might influence their perceptions of accessibility in a consistent manner (Saldanha & Brown, (2017). People within the same demographic group are more likely to share common experiences and cultural norms, which can lead to similar expectations and judgments regarding accessibility (Kortum & Sorber, 2015).

The test statistic for usability of the web application was calculated as H-test (51,0.05) = 1.344 with a p-value of 0.511. This result indicates that there was no significant difference in the perceptions of usability among the three groups of respondents. Therefore, we accept the null hypothesis for this variable, which means that the respondents' perceptions of usability were similar across all three groups.

There are no significant differences in the perceptions of usability among the three groups of respondents because

TABLE 4
Hypothesis testing for Significant Difference of mentioned Variables

Statistical Bases	VARIABLES			
	General User Interface	Accessibility	USABILITY	SECURITY
Sig. Level	0.05	0.05	0.05	0.05
Conf. Interval	95%	95%	95%	95%
N	51	51	51	51
Test	H-Test	H-Test	H-Test	H-Test
Critical Value	5.991	5.991	5.991	5.991
Statistic	0.395	0.459	1.344	1.447
p-value(2-sided)	0.821	0.795	0.511	0.485
Decision on Ho	Accepted	Accepted	Accepted	Accepted
Conclusion	Non-Significant	Non-Significant	Non-Significant	Non-Significant

The result implies that the Graphical User Interface (GUI) has been designed in accordance with established

the design of the web application may be consistent and user-friendly, and the feature set may be appropriate for the needs of its target audience.

This is supported by the study on user-centered design and usability testing, which emphasizes the importance of designing web applications that meet the needs of a broad range of users (Brown & Smith, 2017).

Effective usability testing can also help identify common usability issues across different user groups, and guide the development of design solutions that are inclusive and user-friendly (Lee & Kim, 2015).

The indicators for the security of the web application were analyzed and yielded a statistic of H-test ($51,0.05$) = 1.447 with a p-value of 0.485. This indicates that there was no significant difference in the respondents' perceptions along the indicators of this variable. Therefore, we accept the null hypothesis for this variable, which means that the respondents' perceptions of the security of the web application were similar across all groups.

The result implies that perceptions of web application security were consistent across different groups of respondents. This similarity in perception may indicate that user education and awareness campaigns have been effective in standardizing user understanding (Vishwanath, Herath, Chen, Wang, & Rao, 2015), suggesting that continuing such efforts can contribute to maintaining a consistent understanding of web application security risks.

II. CONCLUSION

Based from the findings, the following conclusions are drawn: majority of respondent-schools or workstations have no existing online records management system; the study introduced enhanced online document repository services, such as standalone execution, network adaptability, cross-site scripting prevention, and one-time password functionality; the respondents assessed these enhancements and reported a strong level of agreement with the indicators of Graphical User Interface, accessibility, usability, and security; he results showed no significant difference in the respondents' perception along GUI, accessibility, usability and security; and A proposed training program designed to implement the Enhanced Online Document Repository Service can be utilized for efficient and secure management of school or workstation records.

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REFERENCES

- [1] B. Brown, The role of technology in education today and tomorrow, *World Journal of Education*, 10(1), 1-7.
- [2] H. Fernando, M. Seneviratne, & R. Wickramasinghe, Evaluation of Electronic Document Management (EDM) systems for Organizations, *IEEE*. doi: 10.1109/MERCon.2019.8818768. Moratuwa Engineering Research Conference (MERCon). 2019. 273-278
- [3] R. Andriansyah, A. Abdullah, & S. Ramadhani, Analysis of the Effect of Electronic Document

- Management System, Organizational Commitment and Work Satisfaction on Employee Performance PT. Graha Fortuna Purnama, International Journal of Innovative Science and Research Technology, 5(8), 2020, 1182-1188.
- [4] K.S. Kittanah, S. Alshawi, & Z. Irani, The Impact of Electronic Documents Management on Performance, Global Journal of Management and Business Research: E Marketing, 16(1), 2016, 1-8.
- [5] A.S. Al-Mudimigh, Z. Ullah, & T. Alsubaie, An effective document management for decision support systems, International Journal of Computer Science Issues, 8(5), 2011, 225-232.
- [6] B. Vergel de Dios, Building and Sustaining National ICT/Education Agencies : Lessons from the Philippines, SABER-ICT Technical Paper Series;. © World Bank, Washington,DC. <http://hdl.handle.net/10986/26262> License: CC BY 3.0 IGO, 2016.
- [7] L. Craven, A Paperless Classroom: Benefits and Challenges, The Asian Conference on Language Teaching and Technology in the Classroom, American University of Sharjah, UAE, 2015.
- [8] M.P. Gamba, M.M. Ocbian, M. M. & M.N. Gamba, Systems Development for Records Archiving and Digital Documents Repository: A Case Study, JPAIR Institutional Research Journal, 4(1), 2014, 2-17.
- [9] P.A. Kirschner, J. Sweller, & R.E. Clark, Cognitive Load Theory: Implications for medical education: AMEE Guide No. 86. Medical Teacher Journal, 36(5), 2014, 371-384.
- [10] C.H. Ho, K. Vaidyanathan, & V.G. Honavar, The Impact of Interface Affordances on Human Ideation, Problem Solving, and Inferential Reasoning, ACM Transactions on Interactive Intelligent Systems Journal, 6(3), 2016, 23.
- [11] N. Ozkaya & O. Kılıç, The effects of online document repository use on the efficiency of document-based work processes, Journal of Information Science, 41(4), 2015, 437-450.
- [12] Y. Wang, Y. Li, & D. Wang, Collaboration support for distributed software development: An empirical study of the effects of online document repository, International Journal of Information Management, 36(1), 2016, 95-107.
- [13] M. Koziarski, & K. Cabaj, User experience with the Tor browser: A case study. Journal of Network and Computer Applications, 152, 2020, 102501.
- [14] J. Baker, Evaluating online document repository services for small businesses, Journal of Small Business Review, 14(2), 2018, 32-38.
- [15] L. Fang, & S. Chan, Performance evaluation of a web proxy server for web caching, filtering and optimization, International Journal of Computer Applications, 134(13), 2016, 22-30.
- [16] L. Luo & X. Jiang, A Cloud-Based Digital Repository System for Large-Scale Data Management and Analysis, Journal of Imaging, 6(9), 2020, 89.
- [17] C. Pauw, J. Koehn, E. Patitsas, & K. Buytaert, A taxonomy of open data challenges, Journal of Information Science, 40(5), 2014, 619- 630.
- [18] E.K.F. Chan, A. Goben & M.W. Graham, The Scholarly Communication Landscape: A Review of the Literature, Journal of Information Science, 43(4), 2017, 498-523
- [19] I.H. Sarker, and M.A. Kabir,. Investigating the impact of usability on mobile applications. 2016 IEEE Region 10 Humanitarian Technology Conference (R10-HTC), Dhaka, Bangladesh, 2016.
- [20] K. Finstad, The System Usability Scale and non-native English speakers. Journal of Usability Studies, 11(4), 2016, 185-197.
- [21] A.K. Dey, D.T.K. Lee and J.H.P. Hong, The impact of user-friendly interface design on user satisfaction and system usage, International Journal of Human-Computer Studies, vol. 94, 2016, 52-60.
- [22] M.E. Jose and K.M. Rajan, Impact of user interface design on user satisfaction and loyalty in e-commerce websites, Journal of Retailing and Consumer Services, vol. 42, 2018, 149-158.
- [23] M.L. Mallory, M.R. Daugherty, & C. Lu, Factors that influence student satisfaction with online courses: A multivariate analysis. Journal of Education for Business, 89(5), 2014, 228-234.
- [24] M. Lwin, B.S. Vijayaraman & Y. Sutarso, A Model of Student Retention in Online Degree Programs, International Journal of Management and Commerce Innovations, 5(1), 2014, 401-407.
- [25] Y. Liu, C. Liao, H. Shih, H. The impact of security on customer satisfaction in online banking, Journal of Computer Information Systems, 54(4), 2014, 36-44.
- [26] Y. Wang, W. Fan & D. Wang, How security affects customer loyalty in online shopping: A study of the mediating role of trust, Journal of

- Management Information Systems, 34(3), 2017, 815-838.
- [27] J. Wu, L. Zhang, J. Chen, J. Hu, & H. Zhang, A survey of encryption techniques for secure data storage in cloud computing, *Journal of Cybersecurity*, 4(1), 2018, 7-23.
- [28] N. Saldanha & E. Brown, The Effect of Demographic Factors on the Accessibility of Web-Based Applications, *Journal of Accessibility and Design for All*, 7(1), 2017, 1-26.
- [29] P. Kortum, & M. Sorber, Measuring the Usability of Mobile Applications for Phones and Tablets, *International Journal of Human Computer Interaction*, 31(8), 2015, 518-529.
- [30] J. Brown & K. Smith, User-centered design in web application development, *Journal of User Experience*, 5(2), 2017, 45-56.
- [31] J. Lee & S. Kim, The impact of user interface design on users' perception of usability in web applications, In *Proceedings of the 2015 ACM Conference on Human-Computer Interaction*, ACM, 2015, 345-356).
- [32] A. Vishwanath, T. Herath, R. Chen, J. Wang, & H.R. Rao, Why do people get phished? Testing individual differences in phishing vulnerability within an integrated, information processing model, *Journal Decision Support Systems*, 51(3), 2015, 576-586.

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