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An Organization's Approach for The Implementation of An E-Learning Management System - The Case of Yitghana

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ABSTRACT

The purpose of this case study presents an organization's approach and reason for the implementation of an e-learning portal or learning management system. The organization that was used for this case study is Yitghana. Yitghana empowers the youth in Africa by helping shape their future through IT skills training. Information Technology has become an important career path that's ever-expanding and impacting the world, therefore Yitghana train and mentor youth with the requisite knowledge and skills to pursue future IT educational programs and careers. Yitghana decided to carry out an expansion project by extending its operations from Accra to other regions. Yitghana realized that the schools were many and it would take a very long time to be able to reach out to as many people as they wanted since the schools are scattered across the country in every region for that matter they would not be able to achieve their goal of making sure that every young person school benefits from this. This paper reports the general outlook of data for the case study and concludes with recommendations.

Keywords: Yitghana, E-Learning, Youths, organization, Portal, Approach, management System

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1. INTRODUCTION

E-learning is widely used as a method of learning that ultimately depends on the Internet in its execution. E-Learning systems epitomize computing systems and networks of the Internet generation.

These systems are complex and they aim to guarantee the satisfaction of the learner and maintain the good image of the learning process. There is clear evidence that innovative educational technologies, such as e-learning, provide unprecedented opportunities for students, trainees and educators to acquire, develop and maintain core skills and essential knowledge. However, e-Learning systems employ the Internet as a place to obtain all necessary information and knowledge. Unfortunately, the Internet has also become the venue for a new-fangled set of illegal activities, so-called cyber-crime. Information associated with the e-Learning environment, some of which might be personal, protected or confidential in nature, is then continuously exposed to security threats because e-Learning systems are open, distributed and interconnected.

E-Learning has gone through a spectacular development during the past years. E-Learning systems are diverse and widespread, with examples including Web CT, Moodle and Blackboard. They are large and dynamic with a variety of users and resources. The sharing of information, collaboration and interconnectivity are core elements of any e-Learning system. Data must then be protected in order to maintain confidentiality, integrity and availability. Protecting against data manipulation, fraudulent user authentication and compromises in confidentiality are important security issues in eLearning. Online courses are more susceptible to cyberattacks than conventional courses, particularly in terms of endpoint security, privacy, and process.

Cyber risk that can compromise the safety of online learners includes:

- Malicious software
- Hacking, ransomware and denial of service attacks
- Spoofing, fraud and data theft
- Confidentiality and integrity issues
- Human errors

These issues negatively affect productivity and could also become liabilities to educational institutions, if not curtailed.

1.1 Research Purpose

The purpose of this study is to explain how educational institutions in Ghana address security concerns after the adoption of e-learning platforms.

1.2 Research Objectives

- a. To explore factors influencing the adoption of e-learning system in Ghanaian education.
- b. To explain the security threats that Ghanaian educational institutions face when they adopt e-learning as part of their operations.
- c. To explain how Ghanaian educational institutions mitigate security threats in adopting e-learning as part of their operations.

1.3 Research Questions

- How can educational institutions in Ghana adopt e-learning platforms or solutions as part of their operations?
- How can e-learning aid educational institutions and their students in Ghana?

- What are some of the security concerns or threats associated with the operation of e-learning platforms in educational institutions?
- How can security threats associated with the adoption of e-learning platforms be mitigated?

2. RELETED WORKS

E-learning and Technology

Online learning is a term first used in 1995 when the web-based system WebCT became the first learning management system LMS was developed and later became Blackboard. In this context, online learning meant using an LMS or uploading texts and PDFs online (Bates, 2014). Since then, online learning has included various overlapping terms such as e-learning, blended learning, online education, and online courses. Online learning can be broadly defined as using the Internet to enhance teacher-student interaction. Online delivery includes both asynchronous forms of interaction such as assessment tools, delivery of web-based course materials, and synchronous interaction through conferencing tools such as e-mail, newsgroups, and chat groups. This includes both classroom learning and distance learning. Synonyms for online learning include 'web-based education' and 'e-learning' (Curtain, 2002).

More recently Miller, Topper and Richardson (2016) write that over time, as a result of the advent of new technologies has necessitated the use of new terminologies to distinguish between emerging forms of Distant education, such as online education/e-Learning and hybrid/blended education (Moore et al., 2011;Spector, 2001). When used interchangeably, online education/e-learning has generally been defined as using web-based technology to bridge the gap between teachers and students. (Lee, 2017; Moore et al., 2011; Ryan et al, 2016). Over the last decade, technology has had a firm-established role in education experience (Almahasees and Jaccomard, 2020). To deal with dramatic changes in technology, methods, techniques, and strategies of education have been revised.

There has been technological enterprises that have designed several online platforms, which are powered by the integration of technology in all walks of life (Al-Azawei et al., 2017; Englund et al., 2017; Santos et al., 2019). Technology has become part of our social, business, and educational life'. According Silva and Cartwright in 2017 the use of the Internet has a vital role in disseminating knowledge via online classes. Education has made great progress as the form of education has changed from teacher-centered education to student-centered education. In teacher-centered education, the teacher acts as the source of education and the student is the receiver of his knowledge. In contrast, student-centered education emphasizes the role of students in knowledge production in the classroom. In the student-centered approach, the teacher's role is "the student's facilitator, creating and enforcing their own rules. Teachers respond to student challenges and encourage students to provide alternative/additional answers. Student-centered instruction now benefits from many new technologies, such as the use of the Internet and other highly technological tools to share, transmit and amplify knowledge" (Hancock, 2002). Online learning has become part of the 21st century due to the use of online platforms.

The Internet and education have merged to provide users with the skills they need for the future (Haider and Al-Salman, 2020). A study by Stec et al., 2020 shows that there are three main approaches to online teaching: augmented learning, blended learning and online approaches. Enhanced learning leverages the extensive use of technology to ensure innovative and interactive instruction. Blended learning is a combination of face-to-face and online lessons. An online approach means that the course content is taught online. Online education is convenient for students because it provides 24-hour access to online materials (Stern, 2020). Online education transforms education into student-centered education. There, students participate in the learning process and teachers act as tutors and guides for students (Al-Salman et al., 2021). Most authors agree that technology is an important part of the definition, regardless of the terminology they use when talking about online learning. Many authors suggest different methods of communication between students and instructors, which usually involve electronic communication methods.

3. RESEARCH METHODS

Research Strategy

Based on the purpose of this research, some of the data was collected through interviews and others from secondary sources.

Research Data Collection

Table 2: Interview questions and response

Interview Date	Interview Question Asked	Respondent's Name and Designation	Direct Response
05/09/2022	Who were the founders?	Rita Adu - Secretary	The organization has two founders namely : George Rexford Benny and Christian Mensah
05/09/2022	What is/was the firm's business objective / vision and mission?	Rita Adu - Secretary	Yitghana's vision is to be a key facilitator and leader in promoting IT literacy for the youth and their mission is to empower the youth through skill acquisition in IT to shape their future
05/09/2022	How does the firm achieve the objective/vision and mission?	Rita Adu - Secretary	YITGHANA empowers the youth in Africa by helping shape their future through IT skills training

Interview Date	Interview Question Asked	Respondent's Name and Designation	Direct Response
05/09/2022	What's the management structure, and what's their background e.g. educational, experience?		The organization has the general assembly which comprises of board of directors, executive directors and advisers. This forms the top management. The top management are occupied with skilled and learned individuals from different backgrounds. Amongst all the general assembly members the least minimum education qualification is a Bachelor's degree. Managers are in charge of making sure that policies of the organization are adhered to and also supervise subordinates to carry out assigned tasks while employees are responsible for carry out the day to day activity of the organization
05/09/2022	What situation necessitated the introduction of the information system currently been used?	Isaac Adu - Head of training / Programs manager	We decided to carry on an expansion project by extending our operations from Accra to other regions. We realized that the schools were many and it would take a very long time to be able to reach out to as many people as we want since the schools are scattered across the country in every region

Interview Date	Interview Question Asked	Respondent's Name and Designation	Direct Response
05/09/2022	What decision was taken about the situation?	Isaac Adu - Head of training / Programs manager	I was in charge of the training unit who was a key member of the group that was tasked to look into the online learning platform was able to come up with a list online learning platforms for review and also help in acquisition of contacts of some software vendors and software developers we can reach out in case we want to develop from scratch or want an already custom one.
05/09/2022	How did staff and management take the final decision?	Isaac Adu - Head of training / Programs manager	The final decision was going to be implemented by first all exploring our options. We had to evaluate the feasibility, risks and implications of our plan towards implementation since implementing a decision requires a step-by step course of action in a reasonable time frame, otherwise, the whole process has been an exercise in futility. First all we had to inform all stakeholders about the choice that had been made.

4. CASE STUDY

4.1 Organization's Profile

The name of the organization for the case study is Yitghana. Yitghana was founded in the year 2020. Yitghana was founded by George Rexford Benny and Christian Mensah. Yitghana's vision is to be a key facilitator and leader in promoting IT literacy for the youth and their mission is to empower the youth through skill acquisition in IT to shape their future. We are raising the youth to acquire practical and employable skills, imparting IT literacy that equips the youth in Africa to shape the future and impact their communities positively. Yitghana empowers the youth in Africa by helping shape their future through IT skills training. Information Technology has become an important career path that's ever-expanding and impacting the world. We Train and Mentor youth with the requisite knowledge and skills to pursue future IT educational programs and careers. There are three business units within the organization. The Training unit is responsible for conducting classes and tutorials for participants.

The Sales and Marketing unit is responsible for promoting the organization and winning customers for the organization. The Operational Unit is responsible for seeing to the day to day activities of the organization and also forming policies for the organization. Their core mandate is to ensure that the organization is operation smoothly. The company has about 10 employees. Five of them are full time whiles the rest are part time workers. The organization has the general assembly which comprises of board of directors, executive directors and advisers. This forms the top management. The top management are occupied with skilled and learned individuals from different backgrounds. Amongst all the general assembly members the least minimum education qualification is a Bachelor's degree. Managers are in charge of making sure that policies of the organization are adhered to and also supervise subordinates to carry out assigned tasks whiles employees are responsible for carry out the day to day activity of the organization. The firm have partners and the role of partners is to provide funding for the various projects of the organization.

4.2 Situation Faced

The organization is into ICT training and advocacy. Periodically we do this by visiting various secondary schools and junior high schools to talk to about the various opportunities in IT and also help offer trainings to these young ones. So we write letters to the schools and then we schedule for a meeting and we both agree on when it will be appropriate to meet the students for the talk and also the training. Our operations were based in Accra. The workshop is usually a day and at the end of the program students who still want to have more practical session to enhance their knowledge and also gain digital skills are registered and handed over to our training facility so they can continue the program. We have variety of programs structured for JHS and SHS leavers where these participants are given on demand IT training such software development, mobile app development and Graphic design to equip them with a skill and also shape their career path before they go back to school. We decided to carry on an expansion project by extending its operations from Accra to other regions. We realized that the schools were many and it would take a very long time to be able to reach out to as many people as we want since the schools are scattered across the country in every region for that matter we would not be able to achieve our goal of making sure that every young person in school benefits from this.

The organization got to realize it was an opportunity because once we are able to come up with a solution it will help achieve almost 90% of our goal of making sure a lot of individuals will be able to benefit from the training program and also help reduce cost associated with going to the various schools to organize the workshop or training. The effect of the situation resulted in the reducing cost of operation. This cost reduction included cost in operations on the part of the organization and also participants where the cost of commuting was reduced. A general meeting was held to discuss about the situation and benefit it will come with if a solution is made available for it. Based series of presentations by members of the meeting the decision taken was to come up with an online learning means. Online learning is a form of education that takes place over the internet. It is usually referred to as “e-learning”. The difference between this type of learning and the classroom learning is that distance is not a barrier. A group of people were task within the organization to research into this online platform. These people were tasked to look into the various kinds of available on the market and also look at the cost involved in a developing one or buying one from a vendor.

Mr Isaac Adu who is in charge of the training unit who was a key member of the group that was tasked to look into the online learning platform was able to come up with a list online learning platforms for review and also help in acquisition of contacts of some software vendors and software developers we can reach out in case we want to develop from scratch or want an already custom one. A meeting was organized between staff and management and those that were charged with the duty to research into the online learning platform were asked to present their findings. The findings talk about three issues. The first area had to do with feasibility. Questions pertaining to whether it could be achieved or no was addressed. The second area had to do with effectiveness. This issue had to do with how well the proposed solution will solve the problem or savage the situation. The final area had to do with consequences. This area looked what will be the costs (financial and nonfinancial) to the organization. Upon series of deliberation amongst members the staff together with management agreed to go by the findings in the report since it was good.

The final decision was going to be implemented by first all exploring our options. We had to evaluate the feasibility, risks and implications of our plan towards implementation since implementing a decision requires a step-by step course of action in a reasonable time frame, otherwise, the whole process has been an exercise in futility. First all we had to inform all stakeholders about the choice that had been made. The next thing was to set times for the execution of the project .ie procuring the system and also making sure that the system is ready for the market. The final thing to was to organize training sessions to equip stakeholders about how the system works and provide all needed information about the system .

4.3 Organisation's Context

Yitghana operates within the education industry. The education industry consist of a variety of stakeholders namely, government, parents, teachers, schools, Administrators. The role of parents is to ensure that their wards are enrolled in school and their needs are catered for.

The role of government serves as a body to provide guidelines and policies aimed at shaping the industry towards an accepted standard. The role of teachers is to make sure they provide support and impart knowledge to students through teaching and mentoring so they can achieve their dreams. Schools are institutions that exist to provide the necessary resources which create an enabling and conducive environment to facilitate learning. Administrators are individuals who aim at planning and formulating policies in schools to facilitate learning. Parent's actions and inactions can restrict their wards from enrolling in an educational institution. The government can come up with policies that can affect educational institutions negatively or positively. Administrators can implement policies which can affect parents, students, the school and teachers. Political and legal factors have a significant effect on the organization. Government initiatives and policies go a long way to provide support and guidance to the organization so that it is in line with appropriate standards. Infrastructural factors have a significant effect on the organization. The existence and also construction of new school facilities by government goes along to ensure business continuity.

4.4 Cost Factor

The implementation of a new information system is more cost effective than the traditional approach. Unlike in-person education methods, online education tends to be more affordable. There's also often a wide range of payment options that let you pay in installments or per class. This allows for better budget management. Many of you may also be subject to discounts or scholarships, so the price is rarely high. You can also save money from the commute and class materials, which are often available for free. In other words, the monetary investment is less, but the results can be better than other options. Technological factor – Technology trends affect businesses on many levels. Technological environment of a business has changed the way in which businesses function. Advancements in information technology have almost taken over every department of the organization

4.5 Actions Taken

An official communication is delivered to staff and management about the decision and also to inform them about the various steps and plans to be executed to ensure that the decision will be implemented smoothly. First of all was setting of goals, task description and prioritizing the task. A worksheet was created and was used to prioritize and manage the respective tasks. There was resource allocation where teams were formed and were assigned specific roles to aid in the execution of the decision. Progress was measured based on the tasks assigned and the completion rate and some of the tasks had to be modified because of the addition of new knowledge.

An online learning management system was implemented. An online learning management system is a software specifically designed to help create, distribute and manage the delivery of educational content. It's a technology that can improve learning by making it faster, cost effective and also providing convenience and trackability of system user's performance especially on the part of students. The core functionality of the platform is to facilitate learning from anywhere. An online learning management system operates within a web-browser, behind a secure sign-on process.

This gives all students and instructors easy access to courses on the go while administrators have the mandate to monitor and measure student progress and make improvements and adjustments. The process for the implementation was done in some series of steps including planning, configuration, system integration, course and data migration and user acceptance testing. Planning was very critical since the unanticipated needs and challenges would emerge.

The next step was configuration. The system had to be configured to suit the requirement of the organization. A domain was bought and a cloud hosting space was also purchased for the deployment of the solution since it's an online platform. The next step was to provide some means of to accept payment via the company's digital channel of payment. The next step was data migration which involved uploading course materials and other relevant information onto the platform. The final step before the go live was user acceptance testing. This enabled us to fully test the system end to end to ascertain whether it serves the purpose for which the system was implemented for and also whether it meets all requirements.

The solution was implemented this way to reduce cost and also to reduce the situation whereby we had to manage certain technical aspect of it since our team didn't have the available resource to do that. Mr. Issac Adu was very key in the implementation of the information system since he had more expertise and was the project manager for this task. He was the mediator between the vendors and also the organization and coordinated the communication and tasks to be executed. The system was procured from a vendor. The organization had the opportunity to review multiple systems being provided by a different vendors. At the end of the day the system with the features that's in line with the needs of the organization and also cost effective to implement was chosen. After the deployment of the new information system, a meeting was held to inform employees and managers of the existence of the new system, the benefits it comes with and how important it was as compared the previous way of going about things.

Regular training sessions were organized for employees and management to equip them and update them with the latest knowledge on the use of the system. A test environment was setup for individuals so they can practice to familiarize themselves with the operation of the system. Employees were also given training materials such brochures to serve as a guide during their personal tutorials session.

The new information system is been used to facilitate learning by uploading courses and relevant information on the platform to aid students to be able to have access to it so they learn and get the requisite knowledge expected of them .A campaign which was geared towards promoting the use of the new information by employees by providing a reward scheme to those that are able to refer students and other people to use the platform was launched. This went a long way to promote the use of the system on the employee level. Prior to the implementation of the system employees and management thought the new information system was going to be difficult to use.

5. RESULTS ACHIEVED

The newly implemented information system has helped in the organization decision making. The system has helped management to make better and effective decisions since the delivers all the needed information and helps in modeling the results of the decision. Instead of having to replicate data and wait for information to be sent by employees, the new information system helped employees to rather focus and spend more time on tasks that will help the business to grow thereby increasing greater productivity. This goes a long way to reduce the chances or likelihood of human errors being made which leads to more accurate information available.

Secondly the existence of the information system ensured the availability of data or information in real time. This is essential for all elements of the organization ranging from marketing communications through to finance. Again it improved communication. Team members were able to communicate better through having the same information available to them at each time. This helped to take away mis-match data between systems and departments. The new information system helped solve the solved the situation. At the end of the day our ultimate goal to expand our reach to many students came through since our online platform made it possible to reach our targeted group of people and thereby reducing cost and work. The intended consequences of using the newly implemented information system had to do with security. Since the system houses business information alongside users information, it is important to ensure the integrity, confidentiality and available of the information. There are no unplanned outcomes after the implementation of the information system

The area in which the new system is impacting is customer retention and also value creation. The new information system is creating this impact by ensuring that customers or the platform users are able to gain support and feedback when they need and also the availability of the system irrespective of your location.

5.1 Lessons Learnt

There are so many lessons learnt from the implementation of the new information system. There are stories of successful implementation of information systems, and the key factor is the people involved. They must have a positive attitude as well as great courage in order to complete the task. It's inevitable that disagreements may arise during the software implementation process, but the team can work together to get over them. To ensure that the project is successful, the entire project management team must work as a catalyst.

Firstly there was an observation that many implementation tasks were found to be behind schedule as a result of internal permission which required for a range of decisions. One of the major causes of running behind schedule is this. The team should be aware of the complete procedure ahead of time. Permission from decision-makers should be secured well ahead of time so that the program can be implemented properly and on time. The process is frequently slowed by decision-making. To keep track of the entire procedure, you'll need a concrete timeline. The entire process should be explained to the entire team so that no crucial elements are overlooked.

Secondly choosing software requires much investigation and research. Speak to people who have already made this decision and have gone through the process. You must properly understand the software's technicalities and be aware of everything the software has to offer in order to simplify your project management capabilities. Project management might be time-consuming if you are unfamiliar with the software's capabilities. Again choosing a software only because it is inexpensive may end up costing you more. Because some of the needed functionalities may be lacking, it may necessitate additional charges on the backend. Because you get what you pay for, spend some money and have the company's consultants teach your train on the operating procedures. Conduct training sessions prior to the completion of the implementation phase to dispel any uncertainties. Working efficiently on the system requires more than just a little expertise. Spend extra time investigating the implementation process to identify potential stumbling blocks.

Furthermore a crucial step for the successful completion of a task is to have a full-proof plan. Every operation, from start to finish, requires a strategy to ensure that the implementation process proceeds well. However, having a strategy in place does not guarantee that there will be no problems. As a result, in order to avoid failure, you must carefully examine the plans and organize your contributions. Make required revisions ahead of time. Lastly one of the most beneficial components is recognizing the software's and your team's shortcomings. It enables you to identify areas that can be reinforced and work on them to achieve the desired results. To ensure a seamless implementation method, write down the weak points and pay attention to the concerns that have been handled. Prepare to improve your performance after implementing new software. Get all your queries and requirements cleared so that no difficulties are faced while working. Ensure that you make the right discovery to minimize problems during working

6. IMPLICATIONS

6.1 Implications for Practice

Firstly, there is the need to conduct regular employee training. Phishing emails sent to your employees are one of the typical methods criminal hackers get access to your database. Links in these emails are actually harmful virus that allows hackers to access user information, including login credentials. The fact that phishing emails appear real makes them difficult to spot. For instance, a hacker may send an email posing as an organization head and requesting personal information. The worker can wind up disclosing this information if they weren't given the required training. You must do cybersecurity awareness training because of this. Inform your staff on the main types of cybersecurity assaults and the effective defenses against them.

Secondly keep systems and software updated. Your cyber security and digital safety are significantly impacted by software and system updates. This is because they don't just bring new features; they also correct bugs and aid in patching exploitable security holes and vulnerabilities. Malicious hackers create code that they employ to take advantage of the flaws. The majority of the time, this code comes bundled as malware that can harm your entire system. Therefore, make sure you use a patch management system to automatically manage all updates and uphold information security.

Furthermore, there is also the need to pay close attention to physical security. The majority of organizational cyber risk management policies completely ignore their physical premises in favor of the digital side of cyber hazards. Determine whether your critical infrastructure is protected against security breaches by conducting a security assessment. Additionally, you ought to evaluate your data security policy and determine whether it has a data disposal plan. Imagine that your internet systems are secure from hackers, but you nevertheless experience a breach as a result of someone breaking into your offices and searching through your file cabinets. That would be terrible! There are also additional occasions where janitors dig through the trash and gather private information about clients and staff. Make sure high-value systems are used to protect any restricted places you have.

6.2 Implications for Policy

Therefore should be an e-learning information security policy that should be very generic, non-technical, and must be signed by the leadership of the institution. Ideally, before starting implementing e-learning systems, any institution should have an eLearning policy and in order to manage information security (IS) - an e-learning information security policy in place. Its primary purpose is to protect the institution's information assets from all possible threats. Just like any other policy, an e-learning IS policy should be a document that addresses the rules and regulations regarding e-learning within the institution and should directly relate to the institution's e-learning policy. The e-learning IS policy should be used as a guideline as to what must be managed, how this should be done and should address how security decisions can be made with regard to hardware, software, networks and ultimately information. It is essential that all institutions ensure that their e-learning IS policy is not only well designed but also properly implemented. If an e-learning IS policy is not implemented within the institution, it is just as bad as not having one at all. Such a policy has no value if it is just a piece of paper in a cabinet and is not used to secure information. The implementation of the e-learning IS policy should be assured by the IT technicians and eLearning instructors.

It is the responsibility of institutions' leadership and consists of several e-learning IS measures that should enforce the following six IS services:

- a. Confidentiality - is put in place to protect data from unauthorized access and to ensure that data stored in databases and transmitted over a network, cannot be read by unauthorized parties. An example of IS measure for confidentiality is encryption.
- b. Integrity - ensure that data stored in databases and transmitted over a network cannot be changed by unauthorized third parties, that information is still in its original form and that no tampering or alteration has taken place. An example of an IS measure that helps ensuring integrity is message authentication codes.
- c. Availability - ensures that all electronic resources and services are available to authorized users when they want to use such services; it means that data is available to authorized parties at any time. An example of an IS measure for availability is regular backups.
- d. Identification and authentication - ensure that a learner is properly identified and verified during the log-on process (only authorized users can gain access to the e-learning system). The first part of this service is called identification and is usually done by entering the user credentials into the system. The purpose is to determine whether

or not a person who is trying to gain access to a system is cleared for access. The second part of the service is called authentication - the system must ensure that the user is truly who he claims to be. It can be done by passwords, access cards or fingerprints. The IS measures for identification and authentication include unique credentials for each user.

- e. Authorization - ensures that the user has access only to that data which is relevant to him, and not to other data; involves determining whether or not the authenticated user has the right to access the requested information. An example of the IS measures for authorization is logical access control.
- f. Non-Repudiation - ensure that a user can be held individually responsible for any action performed on the system; ensures that no action taken that affects IS can be denied by the author. It is very hard to enforce, because learners are very inventive in exploiting some security issues and cannot be prevented from sharing their accounts. An example of an IS measure for non-repudiation is digital signatures. It is obvious that not all security services can be singularly used without applying other ones. A combination of these six secured IS services will have a significant effect on implementing and maintaining a good and secure e-learning environment.

7. RECOMMENDATIONS

First, a technological screening process needs to be developed. The use of digital tools, apps, and resources to teach students is one of the creative methods that educators use to deliver their courses online. Regarding the collection, usage, and sharing of data, each of these tools is subject to different privacy rules. So that they can be certain that each vendor's commitment to security and safety is as strict as their own, academic institutions need to have a comprehensive process in place for evaluating third-party platform providers.

In order to accomplish this, schools and institutions should be posing important questions like:

- Is security and compliance training provided to the entire staff? Is this vendor aware of and certified in best practices of what to do with the information?
- Is the entire company trained in compliance and security?

When it comes to educational technology, academic institutions need to be able to trust both the corporation that develops and distributes the online tools as well as the tools themselves in order to protect student data.

Secondly, there is a need to raise awareness of the value of privacy and security. Integrating privacy issues into everyday activities is the first step in fostering a culture of data privacy. This can be accomplished by offering faculty and staff training that emphasizes the significance of striking a balance between learning improvements and privacy and security responsibilities. Again the institution should prepare for a fundamental cultural change. The best practices and industry standards are being adopted by organizations as they create fit-for-purpose land administration systems that streamline their operational procedures.

Therefore, the institutional change brought about by implementation should enable managers at all levels to inspire their staff to "buy-in" to the new procedures. Use language that emphasizes eliminating pointless bottlenecks and laborious procedures. Cut through the "red tape" that may appear along the process and last for months.

Additionally, it's important to increase user capacity. It is acknowledged that many administrators might lack the skills and expertise necessary to operate computer systems. The availability of specialized hardware or Internet access may be restricted or nonexistent due to economical or other necessary considerations. Similar to how it is crucial to construct the necessary structure for any IT-related initiatives, all users must be trained and given the tools they need to interact with these systems. Having the necessary baseline knowledge to operate these recently introduced systems ensures that the system is easily accessible.

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