Rationalisation of Web Storage Technology (WST) Platform Usage by Faculty Members for Academic Activities in the Faculty of Education, Ahmadu Bello University, Zaria

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Abstract

This paper focused on rationalisation of WST Platform usage by Faculty Members for academic activities in the Faculty of Education, Ahmadu Bello University, Zaria. A quantitative research methodology was employed, a cross-sectional survey research design was used, and two (2) objectives were identified for this paper. The study comprised of 175 Faculty Members in the Faculty of Education, A.B.U., Zaria. This number excludes the staff on study leave, sabbatical, and secondment. A census sampling technique was adopted. A self-developed questionnaire was used. Descriptive statistics (frequency distribution, percentage, mean and standard deviation) were used to analyse the data collected from the respondents. This study discovered that the most common academic activities that Faculty Members in the Faculty of Education, A.B.U., Zaria, engaged in WST Platforms were document sharing and web communication. This study also revealed that accessibility and availability of Web Storage Technology Platforms was the most common rationale behind utilising WST Platforms by Faculty Members in the Faculty of Education, A.B.U., Zaria. The researcher recommends that; the management of ABU. Zaria, should encourage and motivate Faculty Members to engage all their academic activities in WST Platforms, especially web conferencing through sensitisation programs and other available means. Also, the WST Platforms service providers and management of A.B.U., Zaria, should join hands in creating awareness campaign on the rationales of utilising WST Platforms for academic activities, so that Faculty Members can take full advantage of WST Platforms.

Keywords*: Academic activities, Rationale, Technology Platform, Web Storage*

Introduction

Information and Communication Technology (ICT) is a versatile tool for running a smooth and efficient university system, giving support in all areas of academic and administrative activities. ICT and its by-products Web Storage Technology Platform inclusive are the sinesquanon for effective academic activities. WST Platform is a part of the broader definition of "Cloud Computing Technology". It is an aspect of Cloud Computing Technology which provides resources and services such as platform, software, infrastructure and data storage to online network platform users via a remote server hosted on the Internet. It can also be said to be an Internet-based platform where services are provided to users on remote servers in a pay per usage of resources and services (Jiehui, Jiyi, Jianqing, & Zhijie, 2011).

Different types of WST Platform are available for Faculty Members to use for their academic activities which include: Amazon Web Services (AWS), Microsoft Windows Azure, Google Cloud, IBM blue mix, Alibaba cloud, Rackspace, Hadoop, Softlater, and the like. WST Platform also possesses some features that make it suitable for users which are broad network access, resource pooling, on-demand self-service, measured service, rapid elasticity and multiple tenants. Such features enable the WST platform users to access and use resources and services available on the web anywhere and anytime using Internet-enabled devices (Srinivas, Venkata & Moiz, 2012).

WST Platforms does not require users to purchase hardware, software and other Internet infrastructure to perform their activities, and it only requires Internet-enabled devices. It offers tremendous benefits to users which provides efficient services and infrastructures without the need to acquire the required IT infrastructure. The technology is becoming increasingly popular because many organisations and educational institutions are moving to it due to the realised benefits of cost-saving, availability and accessibility, efficiency, security, among others.

Problem Statement

Web Storage Technology (WST) Platform is an Internet-based environment which uses the central remote storage and processing servers to support user applications and data. The WST platforms enable faculty members and researchers wherever to share their works with others, collaborate on assignments, and save documents on the web for access at school or home**.** It also provides greater mobility and flexibility in utilisation of information resources and the creation of personalised learning environments such as virtual teaching and learning. WST Platforms provide an opportunity for faculty members and other users access any information from anywhere using a device such as Smartphones, laptops, desktops, palmtops (Kurelovi, Rako & Tomljanovi, 2013). Furthermore, developing countries generally face challenges in terms of human and financial resources needed to harness the potential of ICT and its by-products successfully and effectively in education (Oyeleye, Fagbola, & Daramola, 2014)

The rationales for using WST Platform lure the faculty members and the like into taking it a full advantage for their academic activities, indisputably, the emergence of WST Platforms in an educational setting will indeed eliminate the challenges posed by the conventional method of conducting academic activities. Among the challenges are handling an outrageous number of students, financial constraint, loss of valuable documents, among others. Despite the numerous benefits of WST in organisations and educational institution, it has been observed that faculty members in the Faculty of Education of education ABU Zaria are not taking the advantages of SWT for academic activities, and thus are faced with the challenge of conventional method of conducting academic activities such as handling an outrageous number of students, loss of valuable documents, among others. Governmental institutions and university administrators helple ssly fight the provision of unlimited fundamental ICT facilities and support tool services and appli cations needed to facilitate significant academic activities in Universities. It is against this

backdrop that the study was conducted to find out the rationalisation for web platform usage by the faculty members in the Faculty of Education, Ahmadu Bello University, Zaria

Objectives

The following were the objectives of the study:

1. To find out the type of academic activities, faculty members engage in Web Storage Technology platforms, in Faculty of Education, Ahmadu Bello University, Zaria
2. To ascertain the rationale behind utilising Web Storage Technology platforms for academic activities by Faculty Members in Faculty of Education, Ahmadu Bello University, Zaria

Literature Review

Web Storage Technology Platforms could be used to engage in academic activities such as Collaboration, Collaborative Learning, Storing academic documents/File Storage, Web Communications.

Collaboration, in this case, refers to the ability of Faculty Members to work together simultaneously on a particular task. In the past, most document collaboration would have to be completed face to face. However, collaboration has become more complex, with the need to work with people all over the world in real-time on a variety of different types of documents, using different devices. While growth in the collaboration sector is still proliferating, it has been noted that the uptake of web collaboration services has reached a point where it is less to do with the ability of current technology, and more to do with the reluctance of workers to collaborate in this way. Academic collaboration is a 21st Century emerging way of sharing and co-authoring computer files through the use of Web Storage Technologies, whereby documents are uploaded to a central remote server for storage, where others can then access them. New web collaboration technologies have allowed users to upload, comment and collaborate on documents and even amend the document itself, evolving the document on the web (Barhate, 2015). Faculty Members can upload their class materials and tutorials, assignments, and tests on the webserver which students will be able to access all the teaching material provided by the teachers via the Internet using computers and other electronic devices both at home and college and 24/7.

Collaborative learning refers to a teaching strategy where the learners can form a learning group according to specific rules and learning objectives to improve personal and team learning achievements through communication, cooperation and collaborative knowledge construction. Each member of the collaborative learning team can share their information researched or found during learning with other members or other groups or the whole class. In this course, students can use dialogue, discussion, debate and other forms to prove the problems to achieve the learning objectives. Collaborative learning is beneficial to the development of individual students' thinking ability, enhance students' communication with others and improve their ability to tolerate individual differences (Huang & Liu, 2013). The following tools for collaboration were identified among others by (Kohgada, 2018): **1. Office 365 2. Gmail**: **3.** Cisco WebEx**4.** Yammer**5.** GoToMeeting**6.** Skype**7.** G. Suite (formerly Google Apps for Work) **8.** Prezi

Storing academic documents/File Storage Web Storage Technology platform portends a significant change in how to store information and run applications. Instead of running programs and data on an individual desktop computer, everything is hosted on the "Web" a nebulous assemblage of computers and servers accessed via the Internet. Web Storage Technology platform lets individuals store and access all teaching materials, documents and applications from anywhere in the world, freeing from the confines of the desktop and making it easier for group members in different locations to collaborate (Wu et al., 2010).

One of the primary uses of Web Storage Technology platform is for data storage. With Web Storage Technology platform, data can be stored on multiple third-party servers, rather than on the dedicated servers used in traditional networked data storage. Web Storage is a service where data is remotely maintained, managed, and backed up. The service is available to users over a network, which is usually the Internet. The technology allows users to store their data at remote disks space and access them anytime from any place. (Spoorthy, Mamatha, & Kumar, 2014). Certain tools are available which enable users to store their data on the web which include Box, Dropbox, IDrive, SugarSync, SpiderOak, Microsoft OneDrive, Microsoft SkyDrive, CertainSafe Digital Safety Deposit Box, Google Drive, Apple iCloud Drive.

Web communications are Internet-based voice and data exchange or sharing where telecommunication applications, switching and storage are hosted by a third-party outside the organisation using them, and they are accessed over the Internet. Web-based service is a broad term, referring primarily to data-centre-hosted services that are run and accessed over an Internet infrastructure. Until recently, these services have been data-centric, but with the evolution of VoIP (Voice over Internet Protocol), voice has become part of the Web Storage phenomenon (Kiryakova, 2017).

Web communication providers deliver voice and data communication applications and services, hosting them on servers that the providers own and maintain, giving their users access to the "Web." Because they only pay for services or applications they use, users have a more cost-effective, reliable and secure communications environment, without the headaches associated with more conventional Private Branch Exchange (PBX) system deployment. The web communication environment serves as a platform upon which all these modes can seamlessly work as well as integrate. Some of the web communication environments or tools are, Bitrix24, Zoho Cliq, CloudTalk, Freshcaller, Fuze, MiCloud Connect, Channelize.io, 4PSA VoipNow, CometChat, IMIconnect, Bizzyou, RestcommONE(Kiryakova, 2017)**.**

Virtual Teaching and Learning and research activities are other leading academic activities conducted on the Web Storage Technology Platforms.

Some of the rationales for utilising WST Platform as identified by (Almazroi, 2017**)**are as follows:

a. **Cost-saving**: Web Storage Technology platform is a cost-effective computing technology. This is one of the primary rationales of using Web Storage Technology platform, IT reduces and in most cases eliminates hardware and software procurement, implementation, and maintenance costs; and technical support provided by institutions. It

also reduces cost related to IT operation by centralising software, operating systems, hardware, and applications; and by sharing of equipment and solutions. The pay-per-use billing system lowers service cost since users only pay for the services used. Academic institutions waste resources due to underutilisation of infrastructure during off-peak academic period, hence deploying Web Storage Technology platform will improve resource utilisation since the resources will be consumed only on a pay-per-use model.

b. **Efficiency**: Web Storage Technology platforms guarantees instant software update to keep up with the current technologies, improves performance, and increases IT agility. It also allows infrastructure, services, and applications to be obtained, provisioned and deployed rapidly. Implementation becomes more comfortable since there is no need for hardware purchase, software licensing, and implementation of services.
c. **Sharing**: Skills, practices, applications, infrastructure, and teaching content can be shared to avoid duplication, thereby harmonising resources and promoting new ways of accessibility to education. Likewise, sharing of cost between the web service users improves infrastructure utilisation. The cost is further reduced as a result of sharing the infrastructure.
d. **Reliability**: This is the ability of the Web Storage Technology Platform to function as expected, involving guaranteeing a high quality of service, high transmission rate, minimum error rate, and faster recovery from error. Web Storage Technology infrastructure is more reliable than on-premise infrastructure.
e. **Portability**: Web Storage Technology Platforms can be accessed using any computing devices like PC, laptop, tablet, smartphone, and any other Internet-enabled devices. It eliminates document format incompatibility because documents are accessed from the web. It also gives room for moving data from one web application to another within different web environments with little cost and disruption.
f. **Flexibility (elasticity)**: Web Storage Technology Platforms uses various technologies like virtualisation and modularity of parts that promote flexibility and capability of responding to changes quickly. Web Storage Technology platform enhances mobility by permitting access to applications, services and resources from any location. The flexibility of learning and teaching content gives easy access to courses and content at anytime and anywhere; it allows students to learn outside school, outside school calendar and enables ongoing learning.
g. **Security:** Web Storage Technology Platforms provides and implement appropriate security policies and use the latest threat intelligence to ensure that users' data is protected. The data and other contents stored on the web-based platforms are usually accessed after authentication, so it is not easily accessible.
h. **Backup and recovery**: Web Storage Technology Platforms provides backup and recovery services so that users can easily backup and recover their data anytime in case of disaster or failure. One of the significant benefits of Web Storage backup and recovery is improving data protection. Since users' data is managed by the service provider and the

data is available and reliable, especially if proper measures are taken; therefore, data can be easily and quickly recovered. Usually, contents are automatically saved and remain on the web so that they can be easily and quickly restored.

Other rationales as identified by (Almazroi, 2017) are Green technology, availability and accessibility, Reduce processing and tasks time, Scalability, Enhance distance and mobile learning, Simplification and standardisation, Innovation, Access to top-end IT capabilities, Effectiveness, Collaboration.

Additionally, (Toutcha, 2017) also identified some of the rationales, which include Personalised learning, Economies, Elasticity and scalability, Accessibility, Reduced carbon imprint, standardisation.

Methodology

The quantitative research methodology was employed, and cross-sectional survey research design was used for this paper. The population of the study comprised of 175 faculty members in the Faculty of Education, A. B.U., Zaria, excluding staff on sabbatical, secondment and staff on study leave. Census sampling technique was adopted because the population is not too large. A self-developed open and close-ended questionnaire was used for the collection of data from the respondents. Descriptive statistics (frequency distribution, percentage, mean and standard deviation) were used to analyse the data collected. A benchmark of 3.0 mean score was adopted for the interpretation of the data analysed.

Table 1: Types of academic activities the faculty members in the Faculty of Education engage in Web Storage Technology Platforms

S/N	Academic Activities	Departments																		M	SD
		Arts and Social Science Education		Educational Foundations and Curriculum		Educational Psychology and Counseling		Home Economics		Human Kinetics and Health Education		Library and Information Science		Science Education		Vocational and Technical Education		Total			
		F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%		
1.	Academic collaboration	8	6.3	8	6.3	8	6.3	3	62.3	8	6.3	7	5.5	8	6.3	10	7.7	60	47.1	4.1	2.0
2.	Virtual Teaching and Learning	5	3.9	1	0.8	4	3.1	0	0 0.0	9	1.0	5	3.9	2	1.6	0	0	26	20.3	1.8	1.3
3.	Research activities	18	14.1	11	8.6	11	8.6	7	5.5	16	12.5	10	7.8	15	11.7	10	7.8	98	76.6	6.6	2.6
4.	Storing academic documents/file storage	12	9.4	7	5.5	9	7.0	8	6.3	14	10.9	10	7.8	11	8.6	6	4.7	77	51.2	5.4	2.3
5.	Assessing students' work	6	4.7	2	1.6	4	3.1	2	1.6	10	7.8	7	5.5	4	3.1	4	3.1	39	30.5	2.5	1.6
6.	Students' Supervision	8	6.3	3	2.3	7	5.5	4	3.1	8	6.3	4	3.1	6	4.7	5	3.9	45	35.2	3.1	1.8
7.	Academic discussion	10	7.8	9	7.0	6	4.7	4	3.1	9	7.0	6	4.7	8	6.3	2	1.6	54	42.2	3.6	1.9
8.	Document sharing	22	17.2	15	11.7	11	8.6	8	6.3	15	11.7	10	7.8	13	10.2	16	12.5	110	86	7.0	2.6
9.	Web Communication	32	25.0	17	13.3	11	8.6	8	6.3	15	11.7	7	5.5	7	5.5	13	10.2	110	86	7.0	2.6
10.	Web Conferencing	4	3.1	0	0	0	0	0	0	1	0.8	2	1.6	1	0.8	0	0	8	6.3	0.5	0.7

Findings and Results

Table 1 presented the types of academic activities the Faculty Members in the Faculty of Education engage in WST Platforms. A benchmark of 3.0 mean score was adopted for interpretation and decision making of the responses. The Table showed that: document sharing, web communication, research activities, storing academic documents/file storage, academic collaboration, academic discussion and students' supervision were the most common responses of the respondents because their mean values were above the benchmark adopted. Besides, the academic activities related to document sharing and web communication had the highest mean value of 7.0 each among the most common responses of the respondents. On the other side, academic activities such as: assessing students' work, virtual teaching & learning and web conferencing were the less common responses of the respondents because their mean values were below the benchmark adopted. However, web conferencing was the least among the less common responses of the respondents with a mean value of 0.5. it can be deduced from this finding that document sharing and web communication were the most common academic activities engaged by the Faculty Members in the Faculty of Education in WST Platforms. Whereas, web conferencing was the least academic activities engaged in WST Platforms by the respondents. This finding negates that of Hamidi and Rouhani (2018) which stated that "academics are increasingly using virtual teaching & learning instead of classroom-based learning. By implication, it can be said that Faculty Members in the Faculty of Education did not embrace WST Platforms fully for their academic activities and this will hamper their efforts to meet the international standard for teaching and learning.

Table 2: Rationales for utilisation of Web Storage Technology Platforms by Faculty Member for Academic Activities in the Faculty of Education, Ahmadu Bello University, Zaria

S/N	Rationales	Departments																M	SD
		Arts and Social Science Education		Educational Foundations and Curriculum		Educational Psychology and Counseling		Home Economics		Human Kinetics and Health Education		Library and Information Science		Science Education		Vocational and Technical Education		Total			
		F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%		
1.	Cost-savings	12	9.4	11	8.6	8	6.3	7	5.5	5	3.9	8	6.3	6	4.7	8	6.3	65	51.0	4.3	2.1
2.	Accessibility and Availability	23	18.0	15	11.7	9	7.0	9	7.0	15	11.7	11	8.6	15	11.7	11	8.6	108	84.3	7.0	2.7
3.	Enhance distance and mobile learning	11	8.6	5	3.9	9	7.0	1	0.8	6	4.7	4	3.1	5	3.9	3	2.3	44	34.3	2.7	1.6
4.	Elasticity and Scalability	5	3.9	4	3.1	5	3.9	0	0.0	5	3.9	2	1.6	3	2.3	0	0.0	24	18.7	1.5	1.2
5.	Efficiency	10	7.8	10	7.8	9	7.0	7	7.0	5	3.9	8	6.3	7	5.5	6	4.4	62	48.5	4.3	2.1
6.	Security	13	10.2	12	9.4	6	4.7	2	1.6	6	4.7	11	8.6	7	5.5	3	2.3	60	47.0	3.8	1.9
7.	Personalised learning	10	7.8	5	3.9	6	4.7	2	1.6	5	3.9	6	4.7	5	3.9	2	1.6	41	31.8	2.7	1.6
8.	Portability	8	6.3	9	7.0	5	3.9	1	0.8	5	3.9	4	3.1	4	3.1	8	6.3	44	34.3	2.8	1.8
9.	Academic collaboration	10	7.8	10	7.8	11	8.6	2	1.6	9	7.0	9	7.0	9	7.0	9	7.0	69	53.8	4.6	2.1
10.	Reliability	14	10.9	10	7.8	7	5.5	6	4.7	6	4.7	6	4.7	10	7.8	2	1.6	61	47.8	4.0	2.0

Table 2 presented the rationales for utilisation of the WST Platforms by Faculty Members for academic activities in the Faculty of Education, A.B.U., Zaria. Based on the benchmark of 3.0 mean score adopted for interpretation and decision making of the responses, this Table disclosed that: accessibility & availability, academic collaboration, Cost-savings, Efficiency, Reliability and Security were the typical rationales for the respondents to use the WST Platforms. However, accessibility & availability was the most common rationale, with average mean scores of 7.0. Besides, the less typical rationales for using the WST Platforms by the respondents were: portability, enhance distance & mobile learning, and personalised learning. Similarly, elasticity & scalability was the least rationale for using WST Platforms by the respondents with an average mean score of 1.5. It can, therefore deduce from the result that, accessibility and availability were the most common rationale for utilising the WST Platforms by the Faculty Members for academic activities in the Faculty of Education, A.B.U., Zaria.

On the other hand, elasticity & scalability was the least of the less typical rationales for utilising WST Platforms by them. This finding is in variance with what IBM (2011) reported that "flexibility and scalability are the major rationales/benefits for using WST Platforms". This infers that the Faculty Members in the Faculty of Education can benefit more from using WST Platforms for their academic activities.

Summary of the Findings

The following are the major findings of the study:

1. The most common academic activities that Faculty Members in the Faculty of Education, A.B.U., Zaria, engaged in WST Platforms were document sharing and web communication.
2. Accessibility & Availability of Web Storage Technology Platforms was the most common rationale for utilising WST Platforms by Faculty Members in the Faculty of Education, A.B.U., Zaria.

Conclusion

WST Platforms as a by-product of ICT paradigm in the 21st century will undoubtedly aid Faculty Members in the conduct of their primary responsibilities in order to maintain their relevancy in this digital age. To achieve this, Faculty Members must engage their academic activities on the WST Platform and its ICT related. Moreover, Faculty Members are using WST Platforms for a reasonable number of academic activities and rarely use it for web conferencing. Accordingly, various rationales motivated the Faculty Members to utilise WST Platform for their academic activities, but the most common one was accessibility and availability.

Recommendations

The following recommendations were made in line with the findings of the study:

1. The management of ABU. Zaria should encourage and motivate Faculty Members to engage all their academic activities in WST Platforms, especially web conferencing through sensitisation programs and other available means. Also, the design of WST Platforms should be made more appealing in order to attract the attention of the Faculty Members to utilise the technology.

2. The WST Platforms service providers and management of A.B.U., Zaria, should join hands in creating awareness campaign on the rationales of utilising WST Platforms for academic activities so that Faculty Members can take full advantage of WST Platforms.

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