Librarians' Awareness and Perception towards the Adoption of Cloud-Based Technologies in Public University Libraries in South-South Nigeria

Achugbue I. Edwin

Department of Library and Information Science, Kabale University, Uganda

Abstract

This study investigated librarians' awareness and perception towards the adoption of cloud-based technologies in public university libraries in South-south, Nigeria and determine the perception of librarians towards the adoption of cloud-based technology in university libraries. The descriptive survey method was used for the study. The population of this study was 226 librarians in public university libraries in South-south Nigeria. Questionnaire was the instrument used for data collection and 226 copies of questionnaire were administered. In response, 188 copies were retrieved and found useable, thereby indicating a response rate of 83%. The data was analysed using descriptive statistics. The study established that the level of librarians' awareness and perception towards the adoption of cloud-based technologies in public university libraries in South-south, Nigeria is poor. The study also revealed that the perception of librarians towards the adoption of cloud-based technologies in the university libraries is poor. The study recommended that proper and adequate trainings, workshops and conferences should be organized to sensitize and improve librarians' knowledge and understanding of emerging technologies in libraries.

Keywords: Cloud Computing, Librarians' Cloud Technologies, University libraries, South-south, Nigeria.

Introduction

The library and Information Science world is currently experiencing great advancement especially in the area of information and communication technology (ICT). One aspect of ICT that has gained considerable attention in recent time in librarianship is the concept of "cloud computing or cloud-based technologies". Cloud computing is a kind of computing technology which facilitates the sharing of resources and services over the internet (cloud) rather than having these resources and services on local servers/ nodes or personal devices. The combination of servers, networks, connection, applications and resources is defined as 'cloud computing' (Kaushik& Kumar, 2013). According to Kamba (2017:1), "Cloud computing is a term used by third party technological providers to describe a utility package that delivers computing as a service rather than as a product, shared resources, software applications, data access/retrieval and information storage are provided to networked computers without the user knowing the location or architecture of the computing infrastructure". Seena and Sudhier (2013:14) also, defined cloud computing (CC) as "a technology that enable the migration of desktop application to web-based applications such as communication tools (Gmail, Google Calendar, Google Talk and Google+) and productivity tools such as (Google Docs: text files, spreadsheets, and presentations)".

Many libraries have in recent time embraced and used cloud-based technologies in rendering services to its users. The widely used web cataloging tools of OCLC and selective dissemination of information (SDI) are the most prominent examples of cloud-based technology in the library arena. Some notable cloud based-technology initiatives in library include but not limited to Google Apps (which allows migration from desktop to Web-accessible applications and storage of information and information resources), OCLC's Worldshare Management Services (WMS) (allows libraries to manage entire collection management life cycle in a cloud-based application), Ex-Libris(a leading library software vendor from USA), OSS labs (uses Amazon's elastic cloud computing platform in offering Koha ILS and DSpace institutional repository hosting and software maintenance subscription services for libraries), Duraspace (a collaboration of the Dspace digital library software and Fedora Commons), Dropbox (a file hosting service operated

by Dropbox), and Polaris (Polaris Library Automation System, provides standard acquisition and processing system).

The adoption of a cloud-based technology in libraries, has transformed library services and sharing of library resources particularly in the area of software applications, data access/retrieval and information storage. Kaushik and Kumar (2013) noted that cloud-based technology provide and enhance building of digital library/repositories, easy library data search, web hosting, searching scholarly content, improved file storage system as well as building community power. Libraries also use cloud computing for backing up of media collections, storage and maintenance and access to bibliographic data. In spite of the numerous the numerous benefits of associated with the adoption of cloud-based technologies in libraries, the adoption rates in public university libraries differ around the world (Tamuno, 2016). Most public university libraries in the western world have adopted cloud-based technologies in their libraries. For instance, libraries in western world widely-use web cataloging tools of OCLC which are the most prominent examples of cloud-based technology in library. However, the rate of adoption of cloud-based technologies in public university libraries in Africa, particularly in Nigeria is low as many of the libraries are yet to embrace the use of cloud-based technologies in the discharge of library services. Observation also reveals that most university libraries in Nigeria are yet to adopt the use of cloud-based technologies in libraries. Adeleye (2017) observed that university libraries in Nigeria still prefer saving library data through hardware technology with no cloud backup. Inview of the above, Alaba (2016) posited, that many librarians in Nigeria are not aware of the use of cloud based technology in libraries while the few who are aware do not have positive perception about the technology. With the numerous benefits associated with the adoption of cloud computing, it is very important for university libraries in South-south, Nigeria to adopt these emerging technologies if they are to keep up with the pace of technological advancement in libraries. It is on this premise that the researchers sought to examine librarians' awareness and perception towards the adoption of cloud computing technologies in public university libraries in South-south, Nigeria.

Research Objectives

The objective of this study is to :

1. ascertain the level of librarians' awareness of cloud-based technology in University libraries in South-south Nigeria;
2. determine the perception of librarians towards the adoption of cloud-based technology in university libraries in South-south, Nigeria;
3. examine the level of librarians' adoption of cloud-based technology in university libraries in South-south, Nigeria;
4. identify the perceived challenges associated with the use of cloud-based technology.

Research Questions

The following research questions guided this study:

1. What is the level of librarians' awareness of cloud-based technology in University libraries in South-south, Nigeria?
2. What is the perception of librarians towards the adoption of cloud-based technology in university libraries in South-south, Nigeria?
3. What is the level of librarians' adoption of cloud-based technology in university libraries in South-south, Nigeria?
4. What are the perceived challenges associated with the use of cloud-based technology?

Methodology

The descriptive survey method was employed for this study. The population of the study is 226 respondents and the total enumeration sampling technique was used to select all librarians in the public university libraries in South-South geopolitical zone of Nigeria. The total enumeration

sampling technique was adopted because the population is not large and the researchers had enough time to conduct the study Osuala (2008) that a researcher can adopt the entire population for the study when the population is of a manageable size. The university libraries comprise of six federal governments owned university libraries and seven state government owned university libraries. Questionnaire was used to collect data from the respondents. Two hundred and twenty-six (226) copies of questionnaires were administered. Data were analysed using descriptive statistics.

Table 1: Population and Response Rate

S/N	Name Of University	No. of Librarian	Questionnaire Returned	Response Rate (%)
1	University of Benin	25	21	84
2	University of Calabar	35	29	83
3	University of uyo	25	20	80
4	Federal university of petroleum resources, Effurun	21	15	71
5	Federal university, Otuoke	10	10	100
6	University of Port Harcourt	31	26	84
7	AkwaIbom State University of Technology, Uyo	15	11	73
8	Ambrose Alli University, Ekpoma	13	12	92
9	Cross River State University of Science &Technology, Calabar	12	9	75
10	Delta State University Abraka	14	12	86
11	River State University of Science and Technology	9	9	100
12	Edo university, Iyamho	3	2	67
13	Niger Delta University, Yenegoa	13	12	92
		226	**188**	**83**

DATA ANALYSIS AND DISCUSSIONS

Answering of the Research Questions

Research Question One: What is the level of librarians' awareness of cloud-based technology in University libraries in South-south, Nigeria?

Data in Table 2 provide answers to the above question.

Table 2: level of librarians' awareness of cloud-based technologies in university libraries

Item	SA		A		D		SD		Total	
Level of Librarians Awareness	N	%	N	%	N	%	N	%	N	%
I know what cloud-based technology is all about	61	32	54	29	51	27	22	12	188	100
cloud-based technology can be used to store information over a network	77	41	69	37	33	18	9	5	188	100
I have seen libraries using cloud-based technologies such as OCLC	21	11	39	21	81	43	47	25	188	100
I have a good understanding of how cloud-based technologies can be implemented in university libraries	22	12	17	9	94	50	55	29	188	100
Cloud-based technologies enables librarians to share information with other libraries over a network	68	36	57	30	41	22	22	12	188	100
Information stored with cloud-based technologies can be accessed in any part of the world.	81	43	65	34	39	21	3	2	188	100
Libraries can build community power through cloud-based technologies	52	28	44	23	69	37	23	12	188	100

Table 2 shows that 61(32%) strongly agreed that they know what cloud-based technology is all about, 77(41%) strongly agreed that cloud-based technology can be used to store information over

a network, while a mere 9% of the total respondents agreed that they don't have a good understanding of how cloud-based technologies can be implemented in university libraries, 50% of the respondents disagreed. While 43% of the total respondents strongly agreed that information stored with cloud-based technologies can be accessed in any part of the world. This implies that the level of librarians' awareness of cloud-based technologies in university libraries in South-south, Nigeria is below average.

Research Question Two: What is the perception of librarians towards the adoption of cloud-based technology in university libraries in South-south, Nigeria?
Data in Table 7 provide answers to this question.

Table 3: Perception of librarians towards the adoption of cloud-based technology in university libraries

Item	SA		A		D		SD		Total	
Perception of Librarians towards Cloud-based Technology	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
I understand that cloud-based technologies in libraries require high technical knowledge of computing	91	48	57	31	32	17	8	4	188	100
I possess the necessary skills required for the adoption and maintenance of cloud-based technologies.	12	6	23	12	79	43	74	39	188	100
I feel that the adoption of cloud-based technologies in libraries is not beyond the financial reach of most libraries	32	17	18	10	72	38	66	35	188	100
I know that the use of cloud-based technologies in libraries will make certain services easy.	68	36	61	32	47	25	12	7	188	100
I feel the adoption of cloud-based technologies in libraries enhances storage and preservation of information materials	53	28	72	38	55	29	8	5	188	100
I feel cloud-based is easy to maintain and adopt in libraries	9	5	17	9	92	49	70	37	188	100
I feel libraries can build a community power through cloud-based technologies	42	22	48	26	51	27	47	25	188	100
I know the adoption of cloud-based technologies in libraries will require the purchase of highly expensive hardware and software technologies.	75	40	64	34	31	16	18	10	188	100

Table 3 shows that 91(48%) of the respondents perception is that cloud-based technologies in libraries require high technical knowledge of computing, 75(40%) strongly agreed that the adoption of cloud-based technologies in libraries will require the purchase of highly expensive hardware and software technologies while 68(36%) of the respondents strongly agreed that the use of cloud-based technologies in libraries will make certain services easy, 8(5%) of the respondents strongly disagree that adoption of cloud-based technologies in libraries enhances storage and preservation of information materials while 92(49%) of the respondents disagree that cloud-based technology is easy to maintain and adopt in libraries. This implies that the perception of librarians towards the adoption of cloud-based technologies in the university libraries is poor (negative) and this can be attributed to poor understanding of what cloud-based technologies is all about by the librarians.

Research Question Three: What is the level of librarians' adoption of cloud-based technology in university libraries in South-south, Nigeria?

Data in table 8 provides answer to this question

Table 4: Level of librarians' adoption of cloud-based technology in university libraries

ITEM	AGREE		DISAGREE		TOTAL	
Level of Adoption of Cloud-based Technologies	**N**	**%**	**N**	**%**	**N**	**%**
I use OCLC's Worldshare Management Services in my library	2	1	186	99	188	100
I use Google Apps to migrate from desktop to web-accessible applications	11	6	177	94	188	100
I use Koha ILS and maintenance subscription offered by OSS labs (which uses Amazon's elastic cloud computing platform).	16	9	172	91	188	100
I use Polaris (Polaris Library Automation System) for standard acquisition and processing in the library	1	1	187	99	188	100
I use Dropbox (a file hosting service operated by Dropbox) to store data	13	7	175	93	188	100
I use duraspace (a collaboration of the Dspace digital library software and Fedora Commons) in the library	14	7	174	93	188	100
I use DSpace institutional repository hosting and software in the library	21	11	167	89	188	100
I use web-based applications such as Gmail, Google Calendar, and Google Talk as communication tools	172	91	16	9	188	100
I use cloud based technology such as Google Docs: text files, Google drive, spreadsheets, and presentations as productivity tools.	48	26	140	74	188	100

Table 4 reveals that 99% of the respondents disagree that they use OCLC's Worldshare Management Services in my library. The same percentage of respondents also disagree that they use Polaris (Polaris Library Automation System) for standard acquisition and processing in the library. 177(94%) of the respondents disagree that they use Google Apps to migrate from desktop to web-accessible applications, while 91% of the respondents disagree that they use Koha ILS and maintenance subscription offered by OSS labs (which uses Amazon's elastic cloud computing platform). However, 91% of the respondents agreed that they use web-based applications such as Gmail, Google Calendar, and Google Talk as communication tools. This implies that the level of librarians adoption of cloud-based technologies in the library is low, as many of the cloud-based technologies have not yet been adopted in the library as indicated by the respondents

Research Question Four: What are the perceived challenges associated with the use of cloud-based technology?

Data in table 5 provides answer to this question

Table 5: Perceived challenges associated with the use of cloud-based technology

ITEM	AGREE		DISAGREE		TOTAL	
Perceived Challenges	**N**	**%**	**N**	**%**	**N**	**%**
The cost of acquiring and maintaining cloud-based technologies is high	142	76	46	24	188	100
Cloud-based technology usage require high computing literacy	174	93	14	7	188	100
Epileptic power supply affects the use of cloud-based technologies	182	97	6	3	188	100
There is occasional system failure with cloud-based technology	102	54	86	46	188	100
Inadequate staff training opportunities is a challenge	185	98	3	2	188	100
Poor ICT infrastructural facilities is a challenge to use of cloud-based technologies	123	65	65	35	188	100
Poor maintenance culture of ICT equipment is a challenge	95	51	93	49	188	100
Frequent obsolescence of ICT hardware and Software hinders effective adoption and use of cloud-based technology	99	53	89	47	188	100
Lack of ICT policies hinders adoption and use of cloud computing	74	39	114	61	188	100

Table 9 shows the challenges associated with the use of cloud-based technology in university libraries in South-south, Nigeria. 142(76%) of the respondents agreed that the cost of acquiring and maintaining cloud-based technologies is high, 93% agreed that cloud-based technology usage require high computing literacy, 97% indicated that epileptic power supply affects the use of cloud-based technologies while 185(98%) of the respondents indicated inadequate staff training opportunities as a challenge to the adoption of cloud-based technologies in the library. on the other hand, 114(61%) of the respondents disagreed that lack of ICT policies hinders adoption and use of cloud computing. This therefore implies that there are numerous perceived challenges associated with the adoption and use of cloud-based technologies in university libraries in South-south, Nigeria.

Discussion

The study revealed that the level of librarians' awareness of cloud-based technologies in university libraries in South-south, Nigeria is below average. This finding is in agreement with Ajibola (2016) that many librarians in Nigeria are not aware of cloud-based technologies in University libraries. This finding also corroborates Oyegun's (2012) assertion that librarians in Africa lack full understanding of the concept of cloud computing and as a result, are not effective users of the different cloud-based technologies. The study showed that the perception of librarians towards the adoption of cloud-based technologies in the university libraries is poor (negative) and this can be attributed to poor understanding of what cloud-based technologies is all about by the librarians. This finding underlines the fact that majority of librarians in South-south, Nigeria lack good understanding of the concept of cloud-based technology. This finding is in agreement with Jones (2012) that many librarians in Nigeria do not have positive perception towards cloud-based technologies for a variety of reasons which includes low technical knowledge of the different cloud-based applications. However, this finding is contrary to the opinion of Annie's (2014) report that many librarians have a positive attitude towards the implementation and use of cloud-based technologies in the discharge of library services.

The revelation from the study indicated that the level of librarians' adoption of cloud-based technologies in the library is low, as many of the cloud-based technologies have not yet been adopted in the library. This finding reflects that libraries in South-south, Nigeria are yet to embrace the different technological innovations in libraries. This therefore corroborates Ajibola (2012) assertion that the level of implementation of cloud computing technology and services in libraries in Nigeria is very low. This is because many libraries are just embarking on the use of computers to render information services and have not gone to the stage of providing cloud based services. Also, the finding from this study supports Krubuand and Osawam's (2011) study that many libraries in Africa are gradually accepting the use web based tools to render effective services to their users. Although level of implementation of cloud computing technology in libraries in Africa is very low when compared to those in developed countries, where there is a widely-used web cataloging tools of OCLC which are the most prominent examples of cloud computing in the library arena.

The study revealed that there are numerous perceived challenges associated with the adoption and use of cloud-based technologies in university libraries in South-south, Nigeria. Prominent among them are high cost of acquiring and maintaining cloud-based technologies, high computing literacy required, epileptic power supply and inadequate staff training opportunities. This finding is in conformity with Dosumo (2015) thatthe adoption of cloud computing technologies has been stifled by different challenges such as lack of technical knowledge and support, cost of managing the technologies, poor infrastructure and poor staff development. The finding also agrees with Ajiboye (2017) that the cost of installing and managing cloud-based technology Nigeria is high.

Conclusion

With the adoption of cloud-based technologies, libraries undergo drastic changes and render more efficient and effective services. The adoption of cloud-based technologies in libraries aid the incorporation of digital services like library automation, web OPAC, library website, digital

reference service, chat, email and other cloud-based services, some transforming into digital library. The use of cloud-based technologies in libraries reduces time spent on technical issues and enables library staff to focus more on client-facing services. By introducing cloud-based services, libraries can establish a shared public cloud jointly which can have infinite storage capacity and computing power bringing obvious benefits to libraries. The challenging part will be how to re-shape our library and provide services according to patrons needs. However, the benefits associated with the use of cloud-based services in libraries cannot be enjoyed if librarians are not aware or do not have a good understanding, opinion and perception about the concept of cloud-based technologies. The awareness, views and perception of librarians are therefore very important if libraries are to render cloud-based services.

Recommendation

Based on the findings and the conclusion drawn from this study, the following recommendation were made

1. Proper training and retraining should be carried out periodically on the emerging trends and emerging technologies in librarianship. This should be made compulsory for all library staff as it will help improve their understanding of cloud-based technologies and other related technologies.
2. Adequate budgeting should be allocated to the E-library in order to curb some of the perceived challenges affecting the adoption of cloud-based technology.
3. Library management should embrace the adoption of cloud-based technologies in library service delivery as it enhances effective service delivery.
4. The Nigerian librarian association (NLA) should organize a sensitization workshops and conferences with the view of improving librarians knowledge and understanding of emerging technologies in libraries.

References

Adewara, C. (2014). Application of Digital Libraries and Electronic Technologies in Uganda.*African Journal of Library, Archival and Information Science,* 12, 145-154.

Afolabi, P. S. (2011*). Information Technology*: Basic Concepts. New Delhi: *BR* Publishing Corporations.

Ambrose, L., &Chiravuri, Y. (2010). The Community Library Anniance Based on Cloud Computing. *Procedia Engineering,* 13, 44-51

Annie, L, (2014). *Using Cloud Computing in Higher Education:* A Strategy to Improve Agility in Current Financial Crisis in Communication of IBIMA.*Procedia Engineering,13*, 44-51

Azubike, E. (2009). *Impact of training on information technology*: Attitudes of university faculty. http://www.tcet.unt.edu/research/dissert/gilmore/

Bullas, J. (2014). An exploratory study of Indian University students' use of social networking websites: Implications for the workplace. *Business Communication Quarterly, 72,* 105-110. http://www.scimagojr.com/journalsearch.php?q=19900192540&tip=sid&clean=0

Christian, R.O. (2008). Self-Efficacy and Use of Electronic Information as Predictors of Academic Performance.*Electronic Journal of Academic and Special Librarianship, 8(2).* http://southernlibrarianship.icaap.org/content/v08n02/tella_a01.html.

Daniel, S.M. (2009). Information use by economists: A Study. *Annuals of Library and Information Studies.9, 21-27.*

Erhabor, E. D. (2012). Using Cloud Services for Library IT Infrastructure. Retrieved from http://journal.code4lib.org/articles/2510

Eric, M. (2012).Winds of Change: Libraries and Cloud Computing.*Multimedia Information and Technology, 37, 24-28.*

Ezeani, I., & Igwesi.O. (2012).Using social media applications for educational outcomcollege teaching: A structural equation analysis.*British Journal of Educational Technology,* 44, 581–593.

Fayemi, Y. (2013). *Iaas Cloud Computing Services for Libraries*: cloud Storage and Virtual Machines Emerald Group Publishing Limited. 29, 87-100

Finlay, S. (2016) *User profiles for personalized Information*. Retrieved from http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf

Geoffrey, C. (2013). *IT applications for TQM and Library marketing*. New Delhi: EssEss Publications. http://www.theschool/run.com/articles/non-fiction-reading-children-842.

Greeger, R. (2009). The role of ICT in higher education for the 21st century: ICT as a change agent for education. http://efroud.scam.ecu.edu.au/0liver/2009/he 2/.pdf.

Hayes, R. (2008). Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility". *Future Generation Computer Systems,*10, 22-30.

Hoy, I. L. (2012). An overview of cloud computing and knowledge management. *Bulletin Scientific,* 1, 25-306.

Hutton, M. (2008). The work-diaries of Robert Boyle: A newly discovered source and its Internet publication. Notes Rec. R. Soc. *London, 55*, 373-390.

Jaatmaa, A.A (2010).Information access and usage by the students of University of Botswana.*African Journal of Library, Archival and Information Science,* 11, 97-107.

Johnson, B. (2011). *Shaping the Internet Age*. An Essay on the evolution of Internet and the Technologies that are helping connect people to Information, Resources and to each other. Presented at Internet Policy Institute.

Jordan, A. (2011). An overview of the security concerns in enterprise cloud computing. *International Journal of Network Security & Its Applications,* 11, p.20.

Jubril, R.S. (2011). *Library Institution*. Microsoft Encarta (CD). Redmond, WA: Microsoft Corporation. 12 -16.

Kavanaugh, S.C. & Solomon, R.K. (2013).Cloud computing: *Academic library in Orissa. VSRD-TNTJ, 12, 22-29.*

Kessler, A. (2013). Calculating the Cloud: Determing the True cost of Hosting services in the cloud.*EDUCAUSE Quarterly, 33,* http://www.educause.edu/educasequarterlymagazinevol

Kim, B. T. (2007). Information Needs, Information Seeking Behaviour and Users. New Delhi: *EssEss Publications.*

Kroski, E. (2009). Library Cloud Atlas: A Guide to Cloud Computing and Storage Stacking the Tech. http://www.libraryjournal.com/article/CA6695772.html

Lahey, R. Y. (2011). Information technology based services in a University Library: A user satisfaction survey. *Annuals of Library and Information Studies,* 10, 45-50.

Mark, J., & Shearer, N. (2016).Cloud computing for education: A new dawn International.*Journal of Information Management*, *51, 31-37.*

Mark, S. & Shearer, S. (2016). *Internet use in university libraries of Pakistan. Online Information Review, 24,* 154-160.

Martin, I., Snowden, J., & West, L. (2009). An overview of cloud computing and knowledge management, *Bulletin Scientific,24,* 154-160

Mavodza, T (2013). *Use of Cloud Computing:Indiana University Articles and Papers*. Retrieved from http://informationpolicy.iu.edu/resources/articles/cloud_computing

Mell, H. F., &Gance, P. (2011). An overview of virtual and cloud computing, OCLC Systems & Services*: International digital library perspectives. Journal of Academic Librarianship, 5,* 205-214. http: http://www.iclc.us/cliej/cl28NT.html

Nworgu, B.G. (2015). *Educational research: Basic issues and methodology* (2nd Edition). Ibadan: Wisdom Publishers Limited.

Oghene, E. &Bamgboye, C. (2006).*Introduction to research methodology: The millennium edition*. Enugu: African-EEP Pulisher Limited.

Olson, O.O. (2014). Scholarly communication and possible changes in the context of social media A Nigerian case study. *The Electronic Library, 29*, 762-776.

Oluwadamilare, N. (2012). Is cloud computing really ready for prime time Computer, *Library Philosophy and Practice.*9 (1). http://www.webpages.uidaho.edu/~mbolin/seth.htm

Ordi, A. (2006). Use of Electronic Information Resources and Services among the Teachers and Students Institute of Engineering & Technology, CCSU, Meerut. Pearl: *A Journal of Library and Information Science,* 12, 145-154.

Ossai-Ugbah, M. S. (2012). A social cognitive theory of Internet use and gratifications: Towards a new model of media attendance. *Journal of Broadcasting and Electronic Media, 48*, 358-377.

Oyekan, A. (2007). The usage of the intranet and its impact on organizational knowledge sharing: An exploratory investigation of a public hospital. http://epress.lib.uts.edu.au/research/bitstream/handle/10453/20028/02Whole.pdf?sequenc e=2

Penfield, V., & Yoon, T. (2012). Understanding information technology usage: A test of competing models. *Information Systems Research, 6,* http://ahero.uwc.ac.za/index.php?module=cshe&action=downloadfile&fileid=3680 7145012012560036285

Popoola, A. (2008). Computer anxiety and attitudes towards microcomputer use.*Nigerian Libraries* 10, 45-50.

Reid, S. (2007). Communication channels and the adoption of Web-based courses by university professors, *Journal of Interactive Online Learning, 6*, 142-158.

Saya, E. (2010). Application of Digital Libraries and Electronic Technologies in Uganda.*African Journal of Library, Archival and Information Science,* 12, 145-154.

Seena, A. &Sudhier, I. (2013).Microreviews, Types of Cloud Computing. *Library Philosophy and Practice.*Retrieved from http://www.webpages.uidaho.edu/~mbolin/safdar-mahmood-qutab.htm

Spreeuwenberg, S. (2012). How Worthy is Cloud Computing for Libraries. In:8th Convention PLANNER-2012, Sikkim University, Gangtok, INFLIBNET Centre, Ahmedabad.

Stroh, V. (2009). Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility. *Nigerian libraries,* 2, 45-51.

Swan, P., & Brown, M. (2015).Use of Information Technology in Library and Information Science. New Delhi: *EssEss Publications*.

Taiwo, C. (2008). Use and Impact of E-Resources at Guru Gobind Singh Indraprastha University (India): A Case Study. *Electronic Journal of Academic and Special Librarianship.* http://southernlibrarianship.icaap.org/content/v10n01/sharma_c01.html

Tuncay, M. (2010). Does level of knowledge impact librarians attitude toward Information Technology (IT) applications 2nd International CALIBER- 2010, New Delhi. 11-13 February. http://mjcs.fsktm.um.edu.my/document.aspx?FileName=276.pdf

Whong, J. (2014). A tenant-based resource allocation model for scaling Softwareas-a-Service applications over cloud computing infrastructures.*Future Generation Computer Systems, 9*. Retrieved from doi:10.1016/j.future.2011.06.017

Yahaya, S. K. (2009). Connecting minds: Computer–mediated communication and scientific work.*Journal of the American Society for Information Science, 51*, 295-305.

Yi, D., & Hwang, L. (2010). Computer self-efficacy, training effectiveness and user attitudes: An empirical study. *Library Philosophy and Practice*, 9, http://www.webpages.uidaho.edu/~mbolin/seth.htm

Yuvaraj, T. & Singh, A. (2013).Role of self-efficacy in e-library usage among librarians of a public university in Malaysia.*Malaysian Journal of Library & Information Science*, 9, 39-5