Knowledge and perception of Librarians towards cloud-based technology in academic libraries in Southwest, Nigeria

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Abstract

This paper investigated knowledge and perception of librarians towards cloud-based technology in academic libraries in Southwest, Nigeria. The population comprised all professional and non- professional librarians in academic libraries in Southwest, Nigeria. One hundred and thirty-two (132) librarians from Southwest, Nigeria were selected using simple random sampling technique. Four research questions were answered. A structured questionnaire titled "QKPLCTLSN" was used for data collections. The reliability coefficient of the instrument yielded r = 0.76 and r =0.82. The findings of this research revealed that, librarians in academic libraries in Southwest, Nigeria have knowledge about cloud-based technology and they have been using one or more applications in academic libraries but their perception towards the use of cloud-based technology was negative. In view of this, the following recommendations were made; librarians should embark on staff development programs that would enable them keep pace with the latest technology, library management should encourage librarians to attend seminars, conferences and workshops that would enhance their technological skills, there should be adequate funding from the government and provision of stable power.

Keywords

academic libraries, Librarians, cloud-based technology.

Introduction

The 3rd and 4th Industrial Revolutions ushered in change and growing of information at a tremendous speed due to information explosion brought by Information Technology (IT). IT brought about the emergence of the web-based technologies which is also known as cloud-based or cloud computing globalization of networks and internet. With the advent of IT, more libraries become automated as the basic need towards advancement and many libraries now have virtual library units. Further development in libraries is characterized by the emergence of e-books, e-journals, internet usage, web tools application, consortium, and so on. Among the emerging area within the field of information technology is cloud-based technology. Cloud based technology is the movement from desktop application to web applications. The latest technology trend in the field of librarianship is the use of cloud-based technology for achieving library functions and services like managing collections and moving from desktop to web- based services

to mention just few. It is, therefore, necessary for the professionals to be aware of it and be able to apply it in the library. Cloud computing is a web- based technology which facilitates the sharing of resources and services over the internet rather than having these resources and services on desktops and local servers. Kaushik and Kumar (2013) described cloud-based technology as the combination of servers, networks, connections, applications and resources. Kamba (2017) described it as a utility package that delivers computing as a service rather than as a product, shared resources and 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.

Cloud computing provides computing service over the internet which has completely changed the way one can use the power of computers irrespective of geographical location. Cloud computing provides a shared pool of resources, including data storage space, networks, computer processing power, and specialized corporate and user applications. It helps peoples to access their e-mail, social networking site or photo services from anywhere in the world, at any time, at minimal or no cost (Swapna and Biradar, 2017). United States National Institute of Standards and Technology (2012) defines cloud computing as a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources like networks, servers, storage, applications, and services that can be rapidly provisioned and released with minimal management effort or service provider interaction. Seena and Sudhier (2013) defined cloud computing as a technology that enables the migration of desktop application to web-based applications such as communication tools like, Gmail, Google Calendar, Google Talk and Google+ and productivity tools like Google Documents such as text files, spreadsheets, and presentations.

Cloud-based technology services in the library: Pros and cons

Academic Libraries are now using cloud-based technology as data/information storage device in order to preserve their data and information so as to have access to them anywhere and anytime. Academic libraries are libraries attached to post-secondary schools. They exist in Universities and Colleges of Education, Polytechnics and Nursing Schools. Some notable cloud-based technology used in the academic libraries are Online Computer Library Center's Worldshare Management Services (WMS) which allows libraries to manage entire collection management life cycle in a cloud-based application, Google Apps, which allows migration from desktop to web-accessible applications and storage of information and information resources, OSS labs uses Amazon's elastic cloud computing platform in offering KOHA Integrated Library Software and DSpace institutional repository hosting and software maintenance subscription services for libraries, Duraspace is a collaboration of the Dspace digital library software and Fedora Commons, it is an open source repository application that allows capturing, storing, indexing, preservation, and distribution of digital materials including text, video, audio and data. Dropbox is designed as an invisible application. It automatically backs up and syncrotinizes files across all devices and keeps files in the cloud so it can be accessed from computers anywhere in the World. They are not limited to these alone.

Library services have been experiencing transformation with the use of cloud- based technology application in many areas like, software application, data access, storage and retrieval, building digital

library/repositories, file storage, library automatic and housekeeping activities, library websites hosting, building community power through social networking, searching library data and searching scholarly content (Achugbue, (2018) and Swapna and Biradar, (2017). A number of authors including Muhammad and Abddullah (2021), Annie (2004) Lazarus and Euchanu (2021) and Achugbue (2018) claim that many librarians in Nigeria are aware of cloud computing and that it could be accessed anywhere. Cloud- based technology according to Sahu (2015) has the capacity to increase and decrease hardware or software resources consumption. Libraries only paid for what they used, storage is been controlled by the service provider hence, it can be adjusted according to the needs of the library and extend it to various services, resources could be accessed anywhere and test and evaluation of resources is possible, sharing of resources of one or more libraries is possible with Online Public Access Catalogue (OPAC). Cloud-based technology also keeps software up-to-date that is, whenever the server is updated, any library using the service will be updated automatically. Moreover, Musungwini (2016) reported that GoogleDocs can be used by academics in various ways; it has ability to work on files anywhere, anytime and provide quick feedback from people simultaneously. Abidi and Abidi (2012) maintained that using cloud-based technology minimizes library expenses as capital expenditure done on infrastructure will mainly be converted into operational expenditure. Saving the time of the users is paramount in the library, Hussaini, Vishstha, Garba and Jimah (2017) affirmed that using cloud-based technology saves the time of the users and service providers. Alhami and Khaparde (2014) and Mcmanas (2016) asserted that librarians have been using one or more cloud- based technology to access and store information for future usage regardless of locations.

Challenges/constraints with the usage of cloud-based technology

Challenges of cloud-based technology include the following: Many libraries and individuals are scared of using cloud- based technology because of privacy and security issues. Since libraries do not have ownership of the servers that housed them definitely information may be prone to theft and loss Yuvaraj, (2015), Hussaini, et.al (2017), Agandi & Gull (2013) and Sahu, 2013). Pal (2013) asserted that if data managed through cloud- based technology are lost, a library also lost physical or local back up. Another challenge is unstable internet connection or inadequate internet subscriptions, it is not possible for academic libraries to implement cloud –based technology without adequate internet connection and subscription and all these require huge costs (Nasir & Bashis (2013), Agandi & Gull (2013), (Swapna & Biradar (2017), and Hussaini, et.al (2017). Cost is another issue in implementing cloud-based technology. Hussaini et.al (2017) corroborated this, that budget constraint in some libraries is an impediment. Funds are needed to purchase equipment and other infrastructural facilities for implementation but may not be available to some libraries. Technical know-how on the part of librarians is also a major challenge; some librarians in Africa still prefer traditional ways of doing things. Some have phobia for using technology. This, to a greater extent, is an impediment to the use of cloud – based technology in academic libraries.

Statement of the problem

As academic libraries continue to acquire resources almost every day in order to provide services for their users, it has been observed that traditional ways of providing services coupled with the use of desktop services are inadequate in this forth industrial revolution. More so, these types of practices have been

affecting librarians because it is time consuming and duplication of efforts in the library. It is pertinent for librarians to keep pace with cloud – based technology in solving aforementioned challenges. Cloud-based technology is seen as evolving paradigm with a lot of benefits that can assist librarians and non-professional librarians to provide timeless services to users at any time. It offers great opportunities to librarians to keep and maintain records of data and also rendering efficient services. It is against this backdrop, the researcher investigates knowledge and perception of librarians towards cloud-based technology in academic libraries in Southwest, Nigeria.

Purpose of the study

The main purpose of the study is to investigate knowledge and perception of librarians towards cloud – based technology in academic libraries in Southwest, Nigeria.

Research questions

The following research questions were answered in this study.

1. What is the level of knowledge of librarians towards cloud-based technology in academic libraries in Southwest, Nigeria?
2. What is the perception of librarians towards cloud-based technology in academic libraries in Southwest, Nigeria?
3. What is the level of usage of cloud-based – technology by librarians in academic libraries in Southwest, Nigeria?
4. What are the challenges facing librarians towards the use of cloud – based technology in academic libraries in Southwest, Nigeria?

Methodology

The descriptive survey method was adopted. The population of the study covered all librarians in public academic libraries in Southwest, Nigeria. It cut across both Professional and Para-professional librarians. Simple random sampling technique was used to select one hundred and thirty-two (132) respondents. Research instrument used for data collection was questionnaire. Instrument titled "QKPLCTLSN" was used for data collection. The data collected were analyzed using simple percentage and frequency counts to indicate the number of respondents who strongly agree/agree to positive statements and disagree/strongly disagree to negative statements.

The reliability co-efficient of the knowledge of cloud-based technology was pilot-tested among computer lecturers in Emmanuel Alayande College of Education, Oyo who were not part of the real respondents and it yielded r = 0.76 while the reliability of the perception yielded r = 0.82 using test-retest reliability. The raw data collected were later analysed using simple percentage.

Results

This deals with the results of the analysis which will be discussed below.

Research Question 1: What is the level of knowledge of librarians towards cloud-based technology in academic libraries in Southwest, Nigeria?

Information collected from respondents on librarians' knowledge was subjected to descriptive analysis of simple percentage in order to answer research question1.

Table 1: This shows the results of the level of the knowledge of the Librarians towards Cloud-based Technology

S/N		SA		A		D		SD	
		N	%	N	%	N	%	N	%
1.	I am aware of cloud-based technology	121	91.7	11	8.3	00	00	00	00
2.	Information can be stored using cloud-based technology	128	97	04	3	00	00	00	00
3.	I have seen many libraries using cloud-based technology	126	95.5	06	4.5	00	00	00	00
4.	Cloud-based technology is easy to use and manage	101	76.5	31	23.5	00	00	00	00
5.	Information stored with cloud-based technology can be accessed anywhere and anytime.	130	98.5	02	1.5	00	00	00	00

Table 1 above shows responses of librarians towards their knowledge of cloud-based technology. As could be seen in item in table 1, all the librarians have knowledge of cloud-based technology. This was indicated by 91.7% and 8.3% respectively. 97% and 30% of the librarians agreed that cloud-based technology can be used to store information. Moreso, 95.5% and 4.5% believed strongly that many libraries in Nigeria are now using cloud-based technology. The librarians also believed that the implementation of cloud-based technology is easy to use and manage. This was indicated by their responses of 76.5% and 23.5%. Going through the table in item 5, 98.5% and 1.5% of librarians believed information stored with cloud-based technology can be accessed anywhere and anytime. The results revealed that the librarians have knowledge of cloud-based technology.

Research Question 2: What is the perception of librarians towards cloud-based technology in academic libraries in Southwest, Nigeria?

Table 2: Shows the results of the perception of the Librarians towards Cloud-based Technology

S/N		SA		A		D		SD	
		N	%	N	%	N	%	N	%
1.	High-technical knowledge is required for cloud-based technology in libraries	101	76.5	28	21.2	03	2.3	00	00
2.	I feel cloud-based technology can be used to build community power	93	70.5	39	29.5	00	00	00	00
3.	I feel most academic libraries can afford the cost of using cloud-based technology.	42	31.8	24	18.2	66	50	00	00
4.	Cloud-based technology is easy to maintain and use in academic libraries	02	1.5	18	13.6	26	19.7	86	65.2
5.	I feel cloud-based technology will enhance storage and preservation of information resources	89	67.4	29	22	14	10.6	00	00
6.	Cloud-based technology can be trusted	28	21.2	16	12.1	64	48.5	24	18.2

Table 2 above shows the perception of librarians towards cloud-based technology. In item 1 above, the librarians believed that cloud-based technology requires high technical knowledge in academic libraries. This has shown that 76.5% and 21.2% of them agreed to this statement while 2.3% did not agree. Also, the librarians are of the view that cloud-based technology can be used to build community power because 70.5% and 29.5% agreed to this statement. Average librarians believed most academic libraries can afford the cost of using cloud-based technology because 31.8% and 18.2% agreed while 50% disagreed.

In item 4, 1.5% and 13.6% librarians believed that cloud-based technology maintenance is not difficult while 19.7% and 65.2% disagreed with this statement. More so, 67.4% and 22% agreed that cloud-based technology will enhance storage and preservation of information resources but 10.6% did not support this idea. Whether cloud-based technology can be trusted, 21.2% and 12.1% believed cloud-based technology can be trusted while 48.5% and 18.2% disagreed with the statement. In view of the above statements and the results, it was concluded that the perception of librarians toward cloud-based technology in academic libraries is negative, this can be attributed to librarians' belief that cloud-based technology requires high technical technology and cannot be trusted.

Table 3: Shows the level of the usage of Cloud-based Technology among Librarians

S/N		SA		A		D		SD	
		N	%	N	%	N	%	N	%
1.	I use Google Apps to migrate from desktop to web-based technology in the library	61	46.2	22	16.7	31	23.5	18	13.6
2.	I use KOHA software for storage and preservation of materials in the library	40	30.3	44	33.3	21	15.9	27	20.5
3.	I use Drop box to store data/information in the library	12	9.1	34	25.8	26	19.7	60	45.5
4.	I use Dspace software in the library	06	4.5	14	10.6	62	47.1	50	38.8
5.	Polaris library automation system is not new to me as storage device	02	1.5	02	1.5	78	59.1	50	37.9
6.	I use cloud-based technology such as Google Docs like Gmail, Google drive, text files, spreadsheet to store information in the library	88	66.7	44	13.2	00	00	00	00

Table 3 above shows the level of usage of cloud-based technology by librarians in academic libraries. In item 1, many librarians have been using Google Applications to migrate from desktop to cloud-based technology in academic libraries. This has shown that 46.2% and 16.7% agreed with this statement while 23.5% and 13.6% disagreed with this statement. Also, the librarians were of the view that they use Koha software for storage and preservation of materials in academic libraries because 30.3% and 33.3% of them agreed to the statement, while 15.9% and 20.5% disagreed. 9% and 25.8% agreed that they have been using dropbox to store data/information while 19.7% and 45.5% disagreed with this statement. Few libraries use Dspace with responses of 4.5% and 10.6% while 47% and 38% of them disagreed with the statement.

In item 5 only 15% and 1.5% believed Polaris Library Automation System (PLAS) is not new to them as storage device in academic libraries while 59.1% and 37.9% disagreed with the statement. Many librarians agreed that they have been using cloud-based technology such as Google Documents, like Gmail, Google drive, text files, spreadsheet, text files to store information in the library. The above result showed that many librarians have been using one or more cloud-based technologies in academic libraries in Nigeria.

Table 4: Shows the challenges of the Cloud-based Technology among Librarians

S/N		SA		A		D		SD	
		N	%	N	%	N	%	N	%
1.	Maintaining cloud-base technology requires huge cost	78	59.1	48	36.4	06	45	00	00
2.	Lack of policy as regards cloud-based Technology	45	34.1	81	61.4	06	4.5	00	00
3.	Technical know-how and inadequate in-house expert.	56	42.4	74	56.1	02	1.5	00	00
4.	Poor maintenance culture	110	83.3	22	16.7	00	00	00	00
5.	Erratic power supply	123	93.2	09	6.8	00	00	00	00
6.	Unwillingness on the part of librarians to embrace change.	99	75	33	25	00	00	00	00
7.	Phobia for technology	89	67.4	19	14.4	24	18.2	00	00
8.	Poor ICT infrastructural facilities.	77	58.3	45	34.1	10	7.6	00	00

Table 4 above revealed perceived challenges associated with the use of cloud-based technology by librarians in Nigeria. 59.1% and 36.4% of the respondents agreed that the maintenance of cloud-based technology is high while 4.5% disagreed with the statement. 34.1% and 61.4% agreed that lack of policy as regards cloud-based technology is one of the challenges while 4.5% disagreed with the statement. 42.4% and 56.1% indicated that technical know-how and inadequate in-house experts affect the use of cloud-based technology. 83.3% and 16.7% of the respondents believed poor maintenance culture is an issue with cloud-based technology. Erratic power supply was considered as major challenge with 93.2% and 6.8% of the respondents agreeing with this statement. 75% and 25% believed that unwillingness to embrace change affects cloud-based technology. 67.4% and 14.4% of the respondents are of the view that phobia for technology is one of the challenges associated with cloud-based technology while 18.2% of the respondents disagreed with the statement. 58.3% and 34.1% believed that poor Information and Communication Technology infrastructural facilities affect the use of cloud-based technology. This results and findings, therefore, indicate that there are a lot of challenges militating against the use of cloud-based technology in academic libraries in Nigeria.

Discussion

Research question one revealed that the level of librarians' knowledge towards cloud-based- technology

in academic libraries in Southwest, Nigeria is high. This finding is in agreement with Muhammad and Abdullah (2021) who did a study on awareness and adoption of cloud computing and reported that many librarians in Nigeria are aware of cloud computing. This finding also corroborates Annie (2014) study who that many librarians have a positive attitude towards cloud-based technology. The finding is in agreement with Lazaru and Eucharia (2021) who found out that the librarians are highly aware of cloud-based technology. However, the finding is in contrary to finding of Achugbue (2018) who revealed that the level of librarians' awareness of cloud-based technology in universities libraries in South-South, Nigeria was below average.

Result from research question 2 revealed that librarians' perception of cloud-based technology is negative. This finding corroborates the finding of Achugbue (2018) who reported that the perception of librarians towards the adoption of cloud-based technologies in university in Nigeria is poor as a result of poor understanding of the concept. This finding is in agreement with Lazarus and Eucharia (2021) who reported that higher percentage of librarians in Nigeria do not have positive perception towards cloud-based technology, as a result of low technical knowledge of the different cloud-based applications. However, this finding is in contrary opinion to Muhammad and Abdullahi (2021) who reported that librarians' perception towards cloud computing is high irrespective of computer literacy and age.

Findings also revealed that librarians have been using one or more cloud-based technologies and found it easy to use and it enhances library services. This finding corroborates the views of Alhami and Khaparde (2014), Achugbue (2018) and Mcmarus (2016) that revealed librarians are using one or more of cloud-based technologies to access information and to store information for later retrieval anytime and anywhere. Also, this finding is in consonance with the study of Lazarus and Eucharia (2021) who found out that librarians have been using these cloud-based technologies to access information, enrich their social knowledge, easy to use and enrich their skills in solving academic challenges. Swapna and Birader (2017) study revealed that librarians have not been using some cloud-based technologies like drop-box, Polaris software and others which this finding also corroborates.

The study also revealed that there are a lot of challenges towards the use of cloud-based technologies by librarians in academic libraries in Nigeria which include, poor maintenance culture, erratic power supply, high cost of purchasing equipment, lack of policy as regards cloud-based technology technical know-how, phobia for technology, unwillingness to embrace change and the like. This finding corroborates finding of Achugbue (2018) and Dosumu (2015) that the cost of inserting and managing cloud-based technology in Nigeria is high and other challenges revealed by this study. The finding is in line with the finding of Nazir and Rashis (2013) who found out that there are lots of impediments which have made cloud-based technology vulnerable to security threats.

Conclusion

Cloud-based technology has been seen as paradigm shift from traditional ways of storing information to online storage and preservation of data /information. Librarians need to integrate cloud-based technology into library operations system and ensure its maximization in providing resources for users' satisfaction. Provision of quality services to users at all times regardless of locations can only be achieved if the

librarians can keep abreast of cloud-based technology in this forth industrial revolution.

Recommendations

The following recommendations were emerged;

i. It was recommended that staff development programs should be embarked upon by librarians in order to enable them keep abreast of cloud-based technology and other new developments.

ii. Library management should encourage librarians to keep pace with technologies that can help library operations and be ready to sponsor librarians to seminars, workshops and conferences that can help develop information technological skills.

iii. Adequate funding to be taken serious by government of Nigeria. This will enable librarians to equip libraries with equipment and other facilities needed for the growth of new technology.

iv. In order to implement cloud-based technology there should be adequate power supply. Nigeria government should ensure uninterrupted power supply and in the absence of this, library management should make provision for alternative power supply.

v. Policy on the usage of cloud-computing should be developed.

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