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CLOUD BASED INFORMATION RESOURCES AND SERVICES AMONG ACADEMIC LIBRARIANS IN SOME UNIVERSITY IN SOUTHWEST, NIGERIA

Okusaga Tajudeen O., Ogungbo Wakilu O., Ekeh Esther Motunrayo, Olafimihan Cecilia Oyebola.

Abstract

Cloud based information resources and services are resources and services that are available for academic librarians in some university in Southwest, Nigeria. Despite their being important, there is the need to find out the types of resources and services available for use and how they are effectively used by academic librarians in some university libraries in Southwest, Nigeria. The study examines the cloud based information resources and services among academic librarians in Nigerian Universities. A total enumeration of 80 academic librarians from six universities in Southwest, Nigeria, comprising of three public and three private universities formed the sample for the study. A descriptive survey approach was adopted using questionnaire as the only data collection instrument on respondents. Five research questions were formulated as guide to the study. The results show that majority of the respondents strongly agree and agree that Gmail, facebook, internet, yahoo, cloud based sharing services, cloud based social networking and cloud based storing services, are some of the cloud based information resources and services available for academic librarians in Nigeria universities. However, majority of respondents were not highly inclined to lack of awareness, lack of skills and lack of trained personnel as constraints to the use of cloud based information resources and services. The study concludes by recommending that librarians make optimal use of the cloud based information resources and services in other to be more relevant in the face of information technology driven world.

Keywords: Cloud computing, Information resources, Cloud resources, Cloud services, Academic librarians, University libraries

INTRODUCTION

In recent years, with the advent technology, the cost of computation, application hosting, content storage and delivery has reduced drastically through the use of cloud. Cloud computing is receiving a great deal of attention, both in publications and among users, from individuals at home and at any location. It is a subscription-based service where people obtain networked storage space and computer resources. For example email like Yahoo, Gmail, Hotmail, and so on, takes care of housing all the hardware and software necessary to support the personal email account and when one wants to access the email, he/she opens his/her web browser, go to the email client, and log in as long as there is Internet access. The email is not housed on physical personal computers or phones but it can be accessed through the Internet connection anywhere in the world.

According to Fang (2016), with the rapid development of Information Communication Technology processes, network services now require large scale of computing and resources, and a particular single computer cannot be configured to meet the needs of current information resources of libraries. In order for librarians to meet up with the different users' needs, cloud is integrated for it offers huge scale of storage capabilities and calculations.

Cloud system, is a computing pattern, where a large pool of systems are connected in private or public networks, to provide dynamically scalable infrastructure for application, data and file storage. The reason for cloud computing is based on a very fundamental principle of reusability of IT capabilities. Access to software and hardware is greatly enhanced through cloud technology.

Cloud computing as defined by Adegbilero-iwari and Hamza (2017),is a platform that can progressively provide, configure and reconfigure computer servers to handle a wide range of information needs, which ranges from scientific research to e-commerce. This infrastructure resides in a large data center which is managed by a third party, responsible for the provision of computing resources which can be accessed by anyone, anywhere provided there is an Internet connection.

The purpose of this paper is to investigate the issues involved in academic librarians' effective use of the modern information environment, where the relevance of cloud computing is inevitable. This entails the shift from the demands of both softwares and hardwares storage and

organization of data, to the issues of information access.This is necessitated by the fact that libraries are faced with information sources explosion and other constraints which libraries limited space cannot host. This has necessitated libraries opting for the cloud alternative.

Statement of the Problem

Cloud computing are widely applied to the various IT applications which aid in solving data issues and of data. It is fast becoming a very important service offered via the Internet. There are wide varieties of cloud based information resources and services that are available for librarians in the present information communication technology driven environment. Whether librarians make use of these cloud based information resources and services, what and how they use it for, is what this paper sets out to investigate.

The Objectives of this paper are to;

1. find out the types of cloud based information resources and services that are available for use in academic libraries in Southwest, Nigeria;
2. examine the purpose of use of cloud based information resources and services in academic libraries in Southwest, Nigeria;
3. find out the extent to which librarians use cloud based information resources and services in academic libraries in Southwest, Nigeria;
4. ascertain the level of competence of librarians using cloud based information resources and services in academic libraries in Southwest, Nigeria; and
5. identify the major constraints to the use of cloud based information resources and services in academic libraries Southwest, Nigeria.

Research Questions

1. What are the types of cloud based information resources and services that are available for use in academic libraries in Southwest, Nigeria ?
2. What purposes are cloud- based information resources and services used for in academic libraries for ?
3. To what extent do the librarians use cloud-based information resources and services in academic libraries?

4. What is the level of competence of librarians in the use of cloud-based information resources and services in academic libraries?
5. What are the major constraints to the use of cloud based information resources and services in Nigeria academic libraries?

Literature Review

Cloud computing is a new technology which collects large quantities of information and resources stored in personal computers, mobile phones and equipment and store them in the cloud (public) to serve users. (Sanchanti and Kulkami, 2011).It is a model which enables on demand and convenient access to a shared configured resources such as network, application, storage, servers, services and many more with rapid and minimal effort.(Kumar, 2014). Cloud computing is a style of computing that uses massive scalable and elastic IT driven capabilities delivered as service to external customers through the Internet.(OCLC, 2010).

Furthermore, cloud provides an open service oriented architecture with application programmes interfaces (AIPs). Vendors and third party will not be depended on to provide services and technologies. APIs are being used in existing library system and are connected to external services using the cloud. This provides an open cloud solutions to the library community and help to create extensions to sharing services and resources amongst communities using cloud. This creates opportunities for libraries to concentrate on building their collections and attending to their clients. Periodic replacement of servers, maintenance of local systems and compatibility of systems during upgrading is no more a major concern.

There are different types of cloud based information resources available for use in academic libraries. One of them is Software as a service (SaaS). Software services are provided to clients through the net; the customer is allowed to register and access the software locally through service providers. This can be done on per use basis. Platform as a service (PaaS) on the other hand, operates on an existing software to build own applications. For an example facebook, It provides an operating system, database and web saver. There is no need to buy or manage software and hardware by a customer. It can be operated in a particular area or geographic location. An operating system is provided to the end user on a monthly basis or rental payment. Examples are Amazon, Microsoft, and Google. Infrastructure as a service (IaaS) is another type

of cloud-based information resources. It is the most basic cloud service that provides computers, switches, routers and network. Users have to install operating system as well as application software. Cloud computing vendors provides infrastructure as a service on an agreed terms for a specified period of time.

There are some cloud based services available in academic libraries in Nigeria. Some of them include ready to use services that are available to be accessed using the web browser in the library. The software and relevant data are hosted centrally on the cloud. Such Services includes: WWW service model, file transfer protocol (FTP) model, bulletin board services, unified search service, consulting services, access services, and knowledge sharing services.

World Wide Web (WWW) is a client service model with browsing systems that uses HTML and hypertext protocol to provide information on the web. Servers link web pages in order to provide information and requests. It seamlessly connects vast amount of resources and services with high degree of integration. People can share and receive information. File transfer protocol (FTP) model allows users copy file from different hosts by using a command. Users can obtain information by connecting through their e mail addresses. This improves users' services in the library.Librarians with the aid of bulletin board services, communicate with one another and users on the internet. Electronic information is shared and users can share their thoughts or information about the board. It provides quick responses to needed information.

The unified search service (Public cloud) has improved the conservation of library resources. Through Online public access catalogue(OPAC) libraries provide integrated library resources and uniform access. Also inter-library loan service is made easier. Consulting services have improved the reference section of academic libraries. Co–operative digital reference services are provided in sharing technology, resource, experts, and services. This has brought convenience to the library operations and handling of users' queries. Furthermore access services has opened up opportunities to read electronic journals, databases, and e-resources. Libraries can share public cloud and not be burdened with hardware cost and repeated purchase of electronic databases .Users can visit the resources of other libraries using the internet and other terminal equipment. Also, libraries through knowledge sharing services,now provides efficient and effective transmission of information and knowledge through networking (Sanchanti, and Kulkami, 2011).

Dhnushraja (2014) states the purpose of cloud computing to include, creating an integrated and efficient ecosystem where resources are pooled together. It accesses data from anywhere easily, quickly and less costly. It builds cooperation and unified presence on the web. Most libraries are built on pre web technology and pre web technology are not easy to integrate, hence the need for cloud computing. Cloud computing creates the need for rapid elasticity, which services can be rapidly released to scale in and out and can be purchased in any quantity.

Multitenancy is another purpose of cloud computing. It enhances the need for policy driven, enforcement, segmentation, isolation and governance for consumers. It provides measured service and this entails a more transparent and optimal resource use.Disaster recovery allows business of various sizes invest in disaster recovery to avoid any mishap or loss of information. Automatic software update is another of its purpose that suppliers use to take care of regular updates, no waste of time maintaining the system.It also cuts down on high cost of procuring hardware. Simply pay as you go and enjoy the subscription. Security is a major feature of cloud computing, it reduces loss of sensitive data even with loss of machines. Furthermore, it is environmental friendly.

Yuvraj (2013) conducted a survey to find how librarians in Indian Central Universities were using cloud computing tools in their daily library services and the result showed that librarians were heavily dependent on cloud computing tools and majority of them are using various devices and want to imply the same to improve library services.

Abid et.al (2012) conducted a survey on four different universities of Faisalabad, Pakistan to determine the perception and usage of cloud computing by IT administrators and the findings showed that majority of the participants were familiar with cloud computing but lack the needed resources.

According to Mahalakshmi and Ally (2012), a study was conducted to identify the awareness and applications of cloud computing by librarians of engineering colleges of Coimbatore district and found that most of the respondents (98.2%) were aware of the term cloud computing and 87.7% of the respondents were aware of the application of cloud computing in libraries. Mavodza(2013), posits that the libraries have stepped and are increasingly stepping into the realm of digital librarianship as well as platforms that extend its existing capabilities, and this extensively depends on using the cloud.

Hoy (2012), observed that majority of cloud computing applications and infrastructure are built with the assumption that users will access them from the Internet either on multiple platforms and from anywhere in the world. Ambrose andChiravuri (2010) studied the factors that influence the use of cloud computing and realised that two factors which are age and experience are major drivers of a person`s intention to use cloud computing. Sayaet. al. (2010) on the other hand discovered that the characteristics of cloud computing like scalability, cost effectiveness, accessibility and lack of security are principal factors in growth, abandonment and deferral. Community colleges researchers (2011) examined the acceptance level of cloud computing technology by the students and found that it is easier for students to adopt cloud computing if it is easy to use and requires little training.

Ghosh (2012) shed more light on cloud computing, forms of cloud computing and its effective implementation for an average organisation and also attempted to explore how cloud computing can extend Library services for better sustainability. According to Padhy and Mahapatra (2012) cloud computing involves the reduction of in-house data centres and the delegation of a portion or all of the Information Technology infrastructure capability to a third party.

METHODOLOGY

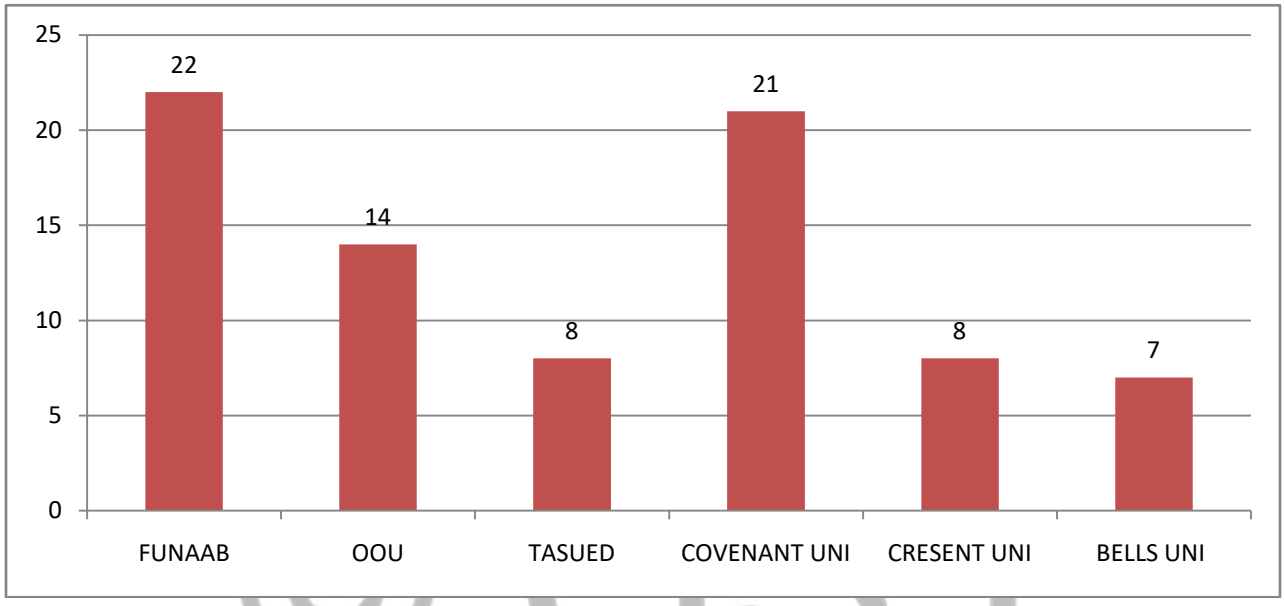
Questionnaire was used as the only data collection instrument for the survey. A total enumeration of the sample size was used and a total number of 80 questionnaire were distributed to all academic librarians in the academic libraries under survey namely; Federal University of Agriculture Abeokuta (FUNAAB), Olabisi Onabanjo University (OOU) Ago-Iwoye, and Tai Solarin University of Education (TASUED) Ijebu-Ode, Covenant University Ota, Cresent University, Abeokuta and Bells University Ota, all in Ogun State, Nigeria. The questionnaires were administered directly to the Librarians in their offices and this made it possible to reach out to all the respondents. The questionnaire comprised of six sections. Section one includes the demographic information and distribution of all the respondents. Other sections includes types of cloud based information resources, purpose and extent of use of cloud based information resources and services, librarians competence on the use of cloud based information resources and services and constraints to the use of cloud-based information resources and services. The results of the study were analyzed using simple percentage, average calculations, mean (x) and

standard deviation (SD). The data were collected during the first semester of 2019/2020 university academic session.

DATA PRESENTATION AND ANALYSIS

Respondents' Demographic Information

Institutions Demographics



Gender

Male	57	
Female	43	
Total	80	

Qualification

	BLIS/Bsc/BA	7	8.75
	MLS/Msc	59	73.75
	PhD	8	10
	Others (MPhil)	6	7.5
Total		**80**	**100**

Age

	21 – 30	4	5
	31 - 40	15	18.75
	41 – 50	37	46.25
	51 – 60	21	26.25
	61 – Above	3	3.75
Total		**80**	**100**

Length of work			
	1 – 5	6	7.5
	6 – 10	13	16.25
	11 – 15	23	28.75
	16 – above	38	47.5
Total		**80**	**100**

Table 2: Types of cloud based information resources and services

S/N	ITEM	x	SD
1	Yahoo	3.39	0.58
2	Gmail	3.74	0.20
3	Facebook	3.58	0.56
4	Google forms	3.11	0.54
5	Twitter	3.25	0.89
6	Slide share	3.36	0.72
7	Google drive	3.44	0.51
8	Youtube	3.67	0.25
9	Google preseantation	2.98	0.66
10	Googledocs	3.19	0.57
11	linkedIn	3.12	0.63
12	Internet	3.78	0.23
Cloud based services			
1	Cloud based sharing services	3.87	0.63
2	Cloud based social networking	3.71	0.81
3	Cloud based software and application	3.09	0.69
4	Cloud based calendar services	3.34	0.56
5	Cloud based storing services	3.62	0.45

Table 2 sought to know the types of cloud based information resources and services available to academic librarians. All the listed cloud based information resource were accepted. These ranged from internet 3.78±0.23, Gmail 3.74±0.20, youtube 3.67±0.25, facebook 3.58±0.56, googledrive 3.44± 0.51, yahoo 3.39±0.58, slideshare 3.36±0.72, among others. Similarly, all the cloud based services were also accepted. These services ranged from cloud based sharing services 3.87±0.62, cloud based social networking 3.71±0.81, cloud based storing services 3.62±0.45, cloud based software and application 3.34±0.56 and cloud based calendar services 3.09±0.69. This implies that Gmail, facebook, youtube, linkeld, etc, are all cloud based information resources. It also implies that cloud based library services includeservices like cloud based sharing services, networking, software and application, calendar services and storing services.

Table 3: Purpose for the use of cloud based information resources

S/N	ITEM	Communication	Research	Jon Enhancement	Leisure
1	Yahoo	99	95	89	94
2	Gmail	100	91	89	94
3	Facebook	100	64	69	100
4	Google forms	96	61	73	100
5	Twitter	82	84	68	72
6	Slide share	78	86	75	76
7	Google drive	82	79	69	91
8	Youtube	78	83	82	100
9	Google preseantation	89	80	65	99
10	Googledocs	94	74	77	97
11	linkedIn	98	94	88	92
12	Internet	100	96	94	100

Table 3 shows that all respondents agreed that Gmail is used for the purpose of communication (100%), research (91%), job enhancement (89%) and leisure (94%). Facebook also had a response rate of 100% for communication, 64% research, 69% for job enhancement and 100% for leisure. Yahoo had a response of 99% communication, 95% research, 78% job enhancement

and 94% leisure. Linkedln had a response rate of 98% communication, 94% research, 88% job enhancement and 92% leisure.

Furthermore, Twitter and googledocs had a response of 98% and 96% communication, 61% and 74% research, 73% and 77% job enhancement and 100% and 97% leisure respectively. This implies that cloud based information resources tools are used by librarians to perform multiple tasks such as communication, research, job enhancement and leisure.

Table 4: Extent of use of cloud based information resources by Librarians

S/N	ITEM	x	SD
1	Yahoo	3.85	0.14
2	Gmail	3.83	0.17
3	Facebook	3.92	0.11
4	Google forms	3.67	0.38
5	Twitter	3.26	0.66
6	Slide share	2.95	0.92
7	Google drive	3.37	0.76
8	Youtube	3.72	0.24
9	Google preseantation	2.76	1.17
10	Googledocs	3.13	0.67
11	linkedIn	3.21	0.61
12	Internet	3.89	0.16

Table 4 sought to findout the extent to which librarians use cloud based information resources. The responses ranged from, Facebook 3.92±0.11, internet 3.89±0.16, Gmail 3.85±0.14, Yahoo 3.83±0.17, youtube 3.72 ±0.24, twitter 3.67 ±0.38, google drive 3.37 ±0.76, google forms 3.26 ±0.66, linkedln 3.21 ±0.61, googledocs 3.13 ±0.67, slide share 2.95 ±0.92 and google presentation 2.76 ±1.17. This implied that librarians made effective use of cloud based information resources.

Table 5: Librarians' ability to use cloud based information resources and services

- HS= Highly skilled, SK= skilled, NS= Not skilled

S/N	ITEM	Highly skilled	Skilled	Not skilled	Total
1	Yahoo	92	18	-	100
2	Gmail	98.2	11.8	-	100
3	Facebook	96.5	3.5	-	100
4	Google forms	25.2	64.8	10	100
5	Twitter	19	23.7	57.3	100
6	Slide share	25.2	64.8	10	100
7	Google drive	16.3	29.1	54.6	100
8	Youtube	94.1	3.4	2.5	100
9	Google preseantation	9.8	55.5	34.7	100
10	Googledocs	31.8	68.2	-	100
11	linkedIn	19.5	69.3	11.2	100
12	Internet	45.1	54.9	-	100

Table 5 shows librarians' competence in the use of cloud based information resources and services. A total of 98.2% respondents are highly skilled while 1.8% are skilled and in the use of Gmail. Facebook recorded librarians' competence in its use as 96.5% were highly skilled and 3.5% skilled. 94.3% of librarians were highly skilled in the use of youtube; 3.4%were skilled while 2.5% did not know how to use this tool. Surprisingly, only 9.8% librarians were highly skilled in the use of Google presentation; 55.5% were skilled while a large percentage of 34.7% were incompetent in the use of Google presentation. This study found out that most librarians had competence in the use of cloud base resources such as Gmail, facebook, youtube and yahoo. A lot of librarians were found to be incompetent in the use of Twitter (57.3%), slideshare (54.6%) and Google presentation (34.7%).

Table 6: Challenges to the use of cloud based information resources and services

Challenges	X	SD
low speed internet connection	3.51	0.25
Administrative constraints	2.83	0.51
Loss of control	2.92	0.54
Security of Data	3.26	0.48
Lack of awareness	2.45	0.67
Lack of trained personnel	2.49	0.72
Lack of skill	2.31	0.87
Poor power supply	3.36	0.23
Lack of privacy	3.47	0.25
Obsolete equipment	3.28	0.21
Emerging technology	3.11	0.36
Individual differences	3.28	0.20

Table 6 revealed the challenges facing librarians in the use of cloud based information resources and services. The table revealed that majority of the respondents consider most of the listed factors as challenges to the use of cloud based information resources and services. The implication is that low speed internet connection, lack of privacy, erratic power supply are according to the table are the major factors some of the factors that affects the effective use of cloud based information resources and services by librarians.

DISCUSSIONS OF THE FINDINGS

(i) The study established that there are various types of cloud based information resources and services that are available for librarians in academic libraries.

(ii) It is further revealed that low speed in internet connection, lack of privacy, erratic power supply are some of the major factors that affects the effective use of cloud based information resources and services by librarians. On the other hand, the study revealed that factors such as lack of awareness, lack of trained personnel and lack of skills are minor constraints to the use of cloud based information resources and services.

(iii) The study also revealed that librarians use the various cloud based information resources to perform multi tasks as communication, job enhancement, research and leisure. This supported the survey conducted by Yuvraj (2013) which found out that librarians use cloud based information resources to provide services to users.

(iv) The study further revealed that librarians are competent in the use of cloud based information resources such as facebook, Gmail, yahoo, googledocs and internet. On the contrary, a large number of librarians are not as competent as expected in the use of twitter and slide share as cloud based information resources.

CONCLUSION

There are various cloud based information resources and services available for use by librarians in academic libraries. This study identified these resources and services, what they are used for and how effective they are used by librarians.

The limitation of this study lies in the fact that it is focused on cloud based information resources and services among academic librarians in Southwest, Nigerian. As a result, it represents a starting point for investigating cloud based information resources and services among academic librarians in Southwest, Nigerian .

Despite the limitation, the findings provided important insights to some of the uses of cloud based information resources and services among academic librarians. The empirical analysis of this study also contributed to knowledge in the area of cloud computing, Information Resources (IR) and library services. The findings will also be useful to librarians, library manager and managers of academic institutions.

Academic librarians should embrace and make optimal use of cloud based information resources and services in order to be more relevant in the present and future information technology driven world.

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