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Awareness and Adoption of Cloud Computing in Digital and University libraries for Effective Service Delivery

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Abstract*— The study investigate the Awareness and Adoption of Cloud Computing in Digital and University libraries for Effective Service Delivery The study adopted descriptive Survey design. The area of study is North- West geo-political zone of Nigeria. The instrument for the collection of data for the study is structured questionnaire called "Awareness and Adoption of Cloud Computing by Library Staff for Effective Service Delivery in the Federal University Library in North West Nigeria: Observation Check-List (AACCLSESFULNWN) developed by the researcher. A trial-testing procedure was used to establish the reliability of the instrument. The questionnaire was administered directly by the researcher and with the help of two research assistances on each and every one of the respondents and collected likewise to ensure an accurate return rate of the questionnaire. The used of mean and standard deviation in analyzing research questions one to eight The benchmark for acceptance level of mean score of 2.50 and above was used for acceptance level Any mean score below the benchmark was rejected while t-test analysis were used in testing the stated hypothesis at 0.05 level of significance. Recommendations: Seminars and /or workshops should be organized for Librarians, Para- Professionals, ICT Professional and Technical / Clerical staff on Online exhibition, publishing, and marketing, Need to update their dissemination of information in the area of modern technology to enable them discharge their library duties effectively, Librarians, Para-Professionals, ICT Professional and Technical / Clerical staff should be re-training at every opportunity, encourage librarians and users to embrace technology, Continuous training of library professionals on emerging technologies as it relates to library services, Adequate funding of library for training and retraining of staff to embrace new technology.

***Index Terms*— University libraries, Electronic Library, Digital libraries, Cloud computing and Cloud Services application.**

I. INTRODUCTION

University libraries are always actively searching for a new means of increasing efficiency and reducing cost, for preservation and dissemination of knowledge to clientele. University library is the focal point around which scholarship revolves; it is a requisite instrument for intellectual development. Roberson (2005) defined university library as an institution that support the educational need of the host institution and manages the intellectual products and processed them in such a manner that the individual can gain access to them readily. Popoola (2008) stated that university libraries by their very nature are expected to acquire, process into retrievable form, and make available the much needed information to the academic community and the public at large who may require them for their various teaching and research activities. Brophy, (2001) opined that at the start of the 21st century, university libraries explore new services development to support a series of new scenarios new modes of study, including ICT and digital based for distance learning, with which libraries had little involvement in the past.

Electronic Library, service, is broadly defined as "service which enables library users to directly access electronic data via telecommunications networks. Nweke, Yakub and Omale (2012), define E-library as a collection of documents in organized electronic form, available on the Internet. According to Ugwuanyi, Okwor, and Ezeji (2011), there is a migration from print to electronic resources, from the library as a place to the virtual library as a result of the21st century era of information economy. Due to the changes in technologies and the way libraries now operate, it is pertinent for libraries to adopt a shift from paper-based current awareness to electronic and virtual method of current awareness creation in academic libraries. Kiscaden (2014). Therefore, university library has been the heart of the academic environment that caters for the host institution educational need, has to explore more of ICT base modes like cloud computing to enjoy the economy, global awareness and most importantly shared resources for effective service delivery.

Effective service deliveries are services offered by university library that has to do with ICT base modes to satisfy the host institution program effectively. Moghaddam, (2009) notes that one ofthe vital elements of effective services and dynamism is specialized human resources. LaRue (2012) firmly believes that the library most powerful asset and effective services is its professional staff. According to the author, librarians have the power to change lives and build community but to do this, they have to leave their desks, leave their buildings and be global to show the community what a powerful tool they are. Tanawade (2011) observed that it is time to publicize ourselves, our professionalism, and the skills people have to offer. Librarian of the 21st century is no longer one that sits behind the reference desk answering mere reference questions but rather an active marketer who sells the library's products and services through online medium to the outside community at every opportunity. Omekwu

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(2003), mentions basic knowledge of computers and their capabilities; Competency with search engines; internet facilities; e-mail; internet navigator tools, web browsers and web file formats; database software; internet development and management know-how a librarian most possessed to be able to offer effective service delivery.

Service deliveries are quality information services offered by university libraries. The emergence of ICT has redefined the library role and services. Print materials are no longer sufficient to store information and served the entire client effectively. CD-ROM databases, electronic document delivery, automated cataloguing, circulation systems, Online Information Retrieval (OIR) and of recent cloud computing has become the order of the day. Moghaddam (2009) admits that the advent of the internet, digitization and the ability to access library and research materials from remote locations have also created dramatic changes Globally. Therefore, for university library to offer an effective service professional librarian are the most powerful asset, and they have to be train and retrain to deliver effective services on ICT, computer, internet, search engines, web and digital information.

Digital libraries are opened to the wide public and as such they offer many possibilities of inclusion of their content in formal and informal learning. Calhoun (2014) investigated social roles of digital libraries which also include teaching, learning and the advancement of knowledge. For formal education, digital libraries can offer the following services: specialized educational digital libraries, portals for teachers or students, integration with learning management systems and access to primary sources (Calhoun, 2014). For progress of knowledge digital libraries offer the following services: self-archiving, deposit incentives; mandatory deposit, open access journals. libraries as publishers, digital libraries of theses and dissertations, cross-repository services. Object reuse and exchange services, workflow-based content creation and management. data curation and researcher profiling services. Calhoun (2014), digital information resources usable on different electronic devices, library services for information discovery, course materials, exhibits, and cloud computing.

Cloud computing operations and services are software used to provide cloud services. Mell &Grance, 2011) listed some of the Google educational cloud as thus: Google Mail: one of the key components to Google Apps is Google Mail, also called Gmail which are administered by the organization's IT administrator in the institution, schools and universities. It has 7GB of storage per user, built-in chat, and IMAP capability that frees students from concerns about email quatas or spam: Google Sites is easy-to-use let students to create and publish information and media, without having to learn any programming languages. Google Video: provides secure and private video sharing for faculty and students: Google Calendar is a shared calendar management that puts everyone on campus "on the same page when it comes to organizing schedules: Google Talk is the Instant Messaging (IM) component of Google Apps IM is helpful for immediate, limited conversation with a colleague in remote location in the classroom: Google Docs Package: a real-time collaboration on documents, spreadsheets, and presentations that lets researchers and students work together across campus or around the world.

Awareness of cloud computing potentials are models, characteristics and deployment models necessary for the adoption of cloud computing. Microsoft and Google are in hot competition as the main rivals. Both companies are happy to give educational institutions free cloud email and collaboration services. Cloud Computing promises scalability of resources and on-demand availability of resources (Shimba, 2010). Grance, (2010) listed five characteristics of cloud computing as On Demand Self-Service Which Allows for provisioning of computing resources automatically as needed: Broad Network Access: Resource Pooling: Rapid Elasticity and: Measured Service. Ahronovitz, (2010) also describedthree common service models for offering Cloud Computing services. These models are Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). Shimba (2010) mention the basic deployment models as thus: public cloud, private cloud, community cloud, and hybrid cloud. Therefore, librarians need to be acquainted with all the listed above to be considered to be aware with cloud computing.

Cloud Services application to Library System through the collection of different resources. The way new additions are made in the library, it is very difficult to manage everything with traditional management system. New technologies are available to manage & distribute the resources. According to Yuvaraj (2014) Cloud computing uses the concept of centralizing the data on the internet further making it available to user, anytime anywhere. Virtualized shared resources allow multiple users to access the resources simultaneously. It reduces the dependency of installation, maintenance, failure of ICT infrastructure etc. Web repositories like E-journals & digital libraries etc are created so that users can access the global resources, helping the researcher's educational professionals. (Breeding, 2011). Posits that the newly designed integrated library system is designed with the cloud in mind that is based on SaaS model Online Computer Library Centre OCLC is also one of the cloud computing vendors, providing a platform to access information. It"s a research organization designed to reduce the cost of accessing information available globally. In this the Centralized data is managed by the cataloguing tools over the Internet. By maintaining a centralized data source of catalog, multiple libraries can access the resources simultaneously, increasing the sharing of resources, hence reducing the time spent in individual IJRET: International Journal of Research in Engineering and Technology cataloguing of new material. Another example of cloud computing architecture maintaining common catalog is World Cat.

II. Statement of the Problem

Library is really a growing organism that acquires information resources everyday to be able to serve the changing needs of its user community effectively. In other words, libraries, particularly the academic type are increasingly becoming complex institution due to rapid

growth in both print and electronic information resources. Thus, the university library collection is becoming huge, the physical space becoming tight, while the budget estimates are always high. This trend has necessitated the future libraries to shift focus from maintaining huge collection building to networked resources and services. In addition, university libraries are suffering from under funding as such cannot regularly deploy digital infrastructures such as computers, servers, or even subscribe to data bases for enhancement of their service delivery. Moreover, maintenance of ICT infrastructures has been a difficult task in most university libraries in Nigeria.

The professional librarians and non-professional librarians as the frontiers of knowledge disseminations are not aware of cloud computing that will cut cost in university libraries, have secured information against corrupt and virus attack. The applications are not known and cannot be used. Librarians are not in clear picture of benefits like networked service for sharing information resources that are readily accessible at any point in time. However, there are inhibiting factors for the adoption of cloud computing that are hidden to many librarians. In view of the above, there is the urgent need to address this gap of knowledge to enhance effective service delivery. It is against this background that this study seeks to investigate the level of awareness and adoption of Cloud computing for effective service delivery among university libraries in North-west Nigeria.

III. Research Questions

The following research questions were formulated to guide this study:

1. To what extent are library staffs aware of the potentials of cloud computing?
2. What are the cloud computing operations and services adopted in your library?

Hypotheses

The following Null Hypothesis were formulated to guide the study and were tested at 0.05 level of significance:

H_{01} There will be no significant difference between the mean responses of professional and nonprofessional librarians on the cloud computing awareness and adoption in federal university libraries in North West Nigeria.

H_{02} There will be no significant difference between the mean responses of male and female librarians on the cloud computing awareness and adoption in federal university libraries in North West Nigeria.

IV. Research Method

The study adopted descriptive Survey design. The area of study is North- West geo-political zone of Nigeria. The instrument for the collection of data for the study is structured questionnaire called "Awareness and Adoption of Cloud Computing by Library Staff for Effective Service Delivery in the Federal University Library in North West Nigeria: Observation Check-List (AACCLSESFULNWN) developed by the researcher. A trial-testing procedure was used to establish the reliability of the instrument. The questionnaire was administered directly by the researcher and with the help of two research assistances on each and every one of the respondents and collected likewise to ensure an accurate return rate of the questionnaire. The used of mean and standard deviation in analyzing research questions one to eight The benchmark for acceptance level of mean score of 2.50 and above was used for acceptance level Any mean score below the benchmark was rejected while t-test analysis were used in testing the stated hypothesis at 0.05 level of significance.

Research Question One

To what extent are library staffs aware of the potentials of cloud computing?

Table 1: Means and Standard Deviation of to what extent are library staff aware of the potentials of cloud computing

	FACILITIES	Mean	S D	Rmks
A	***Computer Networks***			
1.	Local Area Network (LAN)	3.43	0.50	AF
2.	Computer Area Network (CAN)	3.71	0.69	AF
3.	Wide Area Network (WAN)	3.12	0.70	AF
4.	Storage Area Network (SAN)	3.68	0.63	AF
5.	Network	3.68	0.60	AF
6.	Personal Area Network (PAN)	3.51	0.76	AF
7.	Virtual Private Network (VPN)	3.64	0.76	AF
8.	Enterprise Private Network (EPN)	3.82	0.58	AF
9.	Metropolitan Area Network (MAN)	3.74	0.66	AF
10.	Internet Service	3.82	0.56	AF
B	***Computer Devices***			
11.	Desktops	3.54	0.85	AF
12.	Laptops	3.60	0.79	AF
13.	Palmtops	3.72	0.68	AF
14.	I pad	3.74	0.66	AF
15.	Notebooks	2.85	1.03	AF
16.	Tablets	3.47	0.58	AF
17.	Radio Frequency	3.42	0.65	AF
18.	Printers	3.47	0.64	AF

19.	USB stick	3.41	0.67	AF
20.	Keyboard	3.40	0.68	AF
21.	Mouse	3.38	0.71	AF
22.	IPhone	3.30	0.75	AF
23.	Modem	3.38	0.51	AF
24.	Scanners	3.37	0.51	AF
25.	Projector	3.16	0.79	AF
26.	Network ports	3.44	0.52	AF
	Telecommunication Technology			
27.	Land phones	3.13	0.37	AF
28.	Mobile /Smart phones	3.27	0.75	AF
	Storage Technology Devices			
29.	CD/ DVD drives	3.33	0.74	AF
30.	Media USB/HD cable	3.21	0.85	AF
31.	Flash drive	3.59	0.60	AF
32.	Memory card	3.28	0.98	AF
33.	Micro film	3.30	0.67	AF
C.	***Cloud Services***			
34.	Infrastructure as a Service (IaaS)	3.55	0.66	AF
35.	Software as a Service (SaaS)	3.58	0.63	AF
36.	Platform as a Service (PaaS)	3.46	0.72	AF
37.	Application as a Services (AaaS)	3.52	0.73	AF
38.	Storage as a services (StaaS)	3.60	0.68	AF
39.	Desktop as a service (DaaS)	3.52	0.74	AF
40.	Test environment as a service (TEaaS)	3.60	0.58	AF
41.	Monitor as a service (MaaS)	3.45	0.70	AF
42.	Security as a services (SECaaS)	3.38	0.82	AF
43.	Communication as a service (CaaS)	3.58	0.62	AF

Table 1 shows mean of 2.85 to 3.74 that items all items are above 2.50 meaning the items are available and functional while standard deviation ranges from 0.50 to 1.03 meaning there is close relationship in the responses.

Research Question Two: What are the cloud computing operations and services adopted in your library?

Table 2: Means and Standard Deviation on the cloud computing operations and services adopted in your library

		Mean	SD	
A	***Acquisition***			
1.	Online Selection	2.87	0.93	HA
2.	Online exhibition	3.25	0.75	LE
3.	Online publishing	2.23	0.82	LE
4.	Online marketing	2.30	1.35	LE
5.	Online purchase of E-books	3.35	0.48	HA
6.	Online purchase of E-journal	3.58	0.52	HA
7.	Online purchase of database	3.43	0.50	HA
8.	Online purchase of E-catalogue	3.51	0.50	HA
9.	Online Order	3.54	0.50	HA
B.	***Organization of Knowledge and Resources***			
10.	KOHA Open Source Integrated Library System	3.32	0.64	HA
11.	OPAC	3.57	0.61	HA
12.	Library Congress Online Catalog	3.45	0.50	HA
13.	OCLC	3.46	0.59	HA
14.	Evergreen Software	3.53	0.57	HA
15.	E-dictionary	3.46	0.50	HA
16.	Short Message services (SMS)	3.60	0.49	HA
17.	E – encyclopedias	3.43	0.68	HA
18.	Instant Messaging	3.39	0.60	HA
19.	Really Simple Syndication (RSS)	3.40	0.49	HA
20.	Current Awareness services	3.49	0.50	HA
21.	Selective Dissemination of Information	3.05	1.00	HA
22.	Online referral service	2.87	0.96	HA

D.	***Circulation***			
23.	Integrated Library System (IIS)	2.90	0.96	HA
24.	Online book lending	3.11	1.00	HA
25.	Online Library Registration	2.85	0.99	HA
26.	Cloud based library reservation	3.10	0.88	HA
27.	Student Registrations Portal	2.22	0.82	**LE**
28.	Current Awareness Services (CAS)	2.17	1.24	**LE**
29.	Selective Dissemination of Information (SDI)	2.69	0.95	HA
30.	Online eBook reservation	3.27	0.96	HA
31.	Inter- Library Loan services (ILS)	2.80	0.94	HA
32.	Social Network Service (SNS)	3.08	0.99	HA
E.	***Serials Control***			
33.	E- Thesis	3.10	1.00	HA
34.	E- Journal	2.98	1.00	HA
35.	E- Textbooks	3.46	0.86	HA
36.	E-Dictionaries	3.12	1.00	HA
37.	E-Encyclopedia	3.15	0.99	HA
38.	Cloud Based Serial	3.22	0.98	HA
39.	E-Newspaper	2.91	1.00	HA
40.	E-Bulletin	3.15	0.99	HA
41.	E-Journal	3.17	0.93	HA
42.	Database	3.50	0.58	HA
F	***E-Library Service***			
43.	YouTube	3.30	0.66	HA
44.	Skyp Video	3.58	0.65	HA
45.	IMO Video	3.43	0.53	HA
46.	Whatsapp Video	3.44	0.64	HA
47.	Vimeo	3.53	0.57	HA
48.	Instagram Video	3.46	0.51	HA
49.	Screen Cast	3.59	0.49	HA
50.	Google Presentation	3.43	0.69	HA
51.	Tele conferencing	3.40	0.60	HA
52.	Scanning images with scanner	3.40	0.50	HA
53.	Download PDF document	3.49	0.51	HA
54.	Ability accessing full text e-resources	3.07	1.00	HA
55.	Locating e-resources with search engines	2.90	0.97	HA
56.	Ability to attach file messages to an email	2.91	0.96	HA
57.	Ability to access information on the internet	3.12	0.99	HA
58.	Ability to combine Boolean operators for search	2.86	0.99	HA
59.	Ability to post and share file	3.10	0.88	HA
G	***Library Administration***			
60.	E- Transcript	2.24	0.84	**LE**
61.	Cloud based online library notification of job creation	2.18	1.24	**LE**
62.	Cloud Based Electronic Newsletter	2.69	0.95	HA
63.	Electronic Email	3.28	0.96	HA

Table 2 shows mean of 2.23 to 3.39 that items number 1, 5,67,8,9,10, 11,12,13,14,15,16, 17, 18 19,20 21 ,22, 23, 24, 25, 26, 28, 30, 31. 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, 59, 60, 61, 62, and 63 were above 2.50 meaning the items are adopted. Only items number 2, 3, 4, 27, 29, 60 and 61 is below 2.50 meaning it is not adopted. While standard deviation ranges from 0.50 to 1.24 meaning there is close relationship in the responses.

Hypotheses

The following Null Hypotheses was formulated and tested at 0.05 level of significance:

H_{01} There is no significant difference between the mean responses of professional and nonprofessional librarians on the cloud computing awareness and adoption in federal university libraries in North West Nigeria.

Table 3: t-test Analysis of Mean Response on of professional and nonprofessional librarians on the cloud computing awareness and adoption in federal university libraries in North West Nigeria.

	FACILITIES	Mean	S D	T test	Rmks
A	***Computer Networks***				
1.	Local Area Network (LAN)	3.43	0.50	0.01	Not Sig
2.	Computer Area Network (CAN)	3.71	0.69	0.03	Not Sig
3.	Wide Area Network (WAN)	3.12	0.70	0.43	Sig
4.	Storage Area Network (SAN)	3.68	0.63	0.29	Sig
5.	Network	3.68	0.60	0.00	Not Sig
6.	Personal Area Network (PAN)	3.51	0.76	0.90	Sig
7.	Virtual Private Network (VPN)	3.64	0.76	0.10	Sig
8.	Enterprise Private Network (EPN)	3.82	0.58	0.47	Sig
9.	Metropolitan Area Network (MAN)	3.74	0.66	0.01	Not Sig
10.	Internet Service	3.82	0.56	0.77	Sig
B	***Computer Devices***				
11.	Desktops	3.54	0.85	0.00	Not Sig
12.	Laptops	3.60	0.79	0.09	Sig
13.	Palmtops	3.72	0.68	0.19	Sig
14.	I pad	3.74	0.66	0.17	Sig
15.	Notebooks	2.85	1.03	0.92	Sig
16.	Tablets	3.47	0.58	0.50	Sig
17.	Radio Frequency	3.42	0.65	0.93	Sig
18.	Printers	3.47	0.64	0.94	Sig
19.	USB stick	3.41	0.67	0.41	Sig
20.	Keyboard	3.40	0.68	0.80	Sig
21.	Mouse	3.38	0.71	0.48	Sig
22.	IPhone	3.30	0.75	0.75	Sig
23.	Modem	3.38	0.51	0.17	Sig
24.	Scanners	3.37	0.51	0.33	Sig
25.	Projector	3.16	0.79	0.23	Sig
26.	Network ports	3.44	0.52	0.52	Sig
	Telecommunication Technology				
27.	Land phones	3.13	0.37	0.75	Sig
28.	Mobile /Smart phones	3.27	0.75	0.13	Sig
	Storage Technology Devices				
29.	CD/ DVD drives	3.33	0.74	0.78	Sig
30.	Media USB/HD cable	3.21	0.85	0.42	Sig
31.	Flash drive	3.59	0.60	0.32	Sig
32.	Memory card	3.28	0.98	0.31	Sig
33.	Micro film	3.30	0.67	0.45	Sig
C.	***Cloud Services***				
34.	Infrastructure as a Service (IaaS)	3.55	0.66	0.78	Sig
35.	Software as a Service (SaaS)	3.58	0.63	0.04	Not Sig
36.	Platform as a Service (PaaS)	3.46	0.72	0.73	Sig
37.	Application as a Services (AaaS)	3.52	0.73	0.72	Sig
38.	Storage as a services (StaaS)	3.60	0.68	0.61	Sig
39.	Desktop as a service (DaaS)	3.52	0.74	0.13	Sig
40.	Test environment as a service (TEaaS)	3.60	0.58	0.13	Sig
41.	Monitor as a service (MaaS)	3.45	0.70	0.04	Not Sig
42.	Security as a services (SECaaS)	3.38	0.82	0.37	Sig
43.	Communication as a service (CaaS)	3.58	0.62	0/94	Sig

Table 3 shows that the calculated t value for item number 1, 2, 5, 11, 36 and 41 is below 0.05. this indicates that there is no significant difference in the mean response of the professional and nonprofessional librarians on the item. Therefore, the null hypothesis was upheld. However, items 3, 4, 6, 7, 8, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 40, 42 and 43 had their calculated t-value above 0.05. Therefore, there is significant difference in the mean responses of the

respondents on those items. The null hypothesis was therefore rejected or those items.

H_{02} There will be no significant difference between the mean responses of male and female librarians on the cloud computing awareness and adoption in federal university libraries in North West Nigeria.

Table 4: t-test Analysis of Mean Response on of male and female librarians on the cloud computing awareness and adoption in federal university libraries in North West Nigeria.

Male =102
Female =88

	FACILITIES	Mean	S D	T test	Rmks
A	***Computer Networks***				
1.	Local Area Network (LAN)	3.43	0.50	0.93	Sig
2.	Computer Area Network (CAN)	3.71	0.69	0.31	Sig
3.	Wide Area Network (WAN)	3.12	0.70	0.47	Sig
4.	Storage Area Network (SAN)	3.68	0.63	0.00	Not Sig
5.	Network	3.68	0.60	0.95	Sig
6.	Personal Area Network (PAN)	3.51	0.76	0.00	Not Sig
7.	Virtual Private Network (VPN)	3.64	0.76	0.04	Not Sig
8.	Enterprise Private Network (EPN)	3.82	0.58	0.00	Not Sig
9.	Metropolitan Area Network (MAN)	3.74	0.66	0.16	Sig
10.	Internet Service	3.82	0.56	0.74	Sig
B	***Computer Devices***				
11.	Desktops	3.54	0.85	0.08	Sig
12.	Laptops	3.60	0.79	0.38	Sig
13.	Palmtops	3.72	0.68	0.00	Not Sig
14.	I pad	3.74	0.66	0.00	Not Sig
15.	Notebooks	2.85	1.03	0.42	Sig
16.	Tablets	3.47	0.58	0.01	Not Sig
17.	Radio Frequency	3.42	0.65	0.01	Not Sig
18.	Printers	3.47	0.64	0.00	Sig
19.	USB stick	3.41	0.67	0.78	Sig
20.	Keyboard	3.40	0.68	0.05	Not Sig
21.	Mouse	3.38	0.71	0.15	Sig
22.	IPhone	3.30	0.75	0.91	Sig
23.	Modem	3.38	0.51	0.83	Sig
24.	Scanners	3.37	0.51	0.41	Sig
25.	Projector	3.16	0.79	0.16	Sig
26.	Network ports	3.44	0.52	0.12	Sig
	Telecommunication Technology				
27.	Land phones	3.13	0.37	0.53	Sig
28.	Mobile /Smart phones	3.27	0.75	0.44	Sig
	Storage Technology Devices				
29.	CD/ DVD drives	3.33	0.74	0.43	Sig
30.	Media USB/HD cable	3.21	0.85	0.93	Sig
31.	Flash drive	3.59	0.60	0.02	Not Sig
32.	Memory card	3.28	0.98	0.88	Sig
33.	Micro film	3.30	0.67	0.76	Sig
C.	***Cloud Services***				
34.	Infrastructure as a Service (IaaS)	3.55	0.66	0.00	Not Sig
35.	Software as a Service (SaaS)	3.58	0.63	0.11	Sig
36.	Platform as a Service (PaaS)	3.46	0.72	0.34	Sig
37.	Application as a Services (AaaS)	3.52	0.73	0.02	Not Sig
38.	Storage as a services (StaaS)	3.60	0.68	0.00	Not Sig
39.	Desktop as a service (DaaS)	3.52	0.74	0.25	Sig
40.	Test environment as a service (TEaaS)	3.60	0.58	0.05	Not Sig
41.	Monitor as a service (MaaS)	3.45	0.70	0.05	Not Sig
42.	Security as a services (SECaaS)	3.38	0.82	0.45	Sig
43.	Communication as a service (CaaS)	3.58	0.62	0.01	Not Sig

Table 4 shows that the calculated t value for item number 4, 6, 7, 8, 13, 14, 16, 17, 20, 31, 34, 37, 38, 41, 41, and 43 were

below 0.05. this indicates that there is no significant difference in the mean response of the professional and nonprofessional librarians on the item. Therefore, the null hypothesis was upheld. However, items 1, 2, 3, 12, 15, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 35, 39, and 42 had their calculated t-value above 0.05. Therefore, there is significant difference in the mean responses of the respondents on those items. The null hypothesis was therefore rejected or those items**.**

V. Discussion of the Findings

The findings show that online Exhibitions refers to an exhibition whose venue is cyberspace to generate more interest and to save production cost. It is also an online public display of industrial or commercial products or artifacts. Which is according to Koon, (2008) had stated that online exhibitions present a practical and cost effective solution to the limitations of physical exhibitions. They are no longer limited in time, distance and space. Instead of being open to the public at certain times of the day, they are available round the clock via the Internet. An additional advantage is that students need not travel all the way to the exhibition site to see it Ramaiah. (2008) opined that online exhibitions provide many benefits to institution such as Enhance learning and scholarship by providing more detailed information on cultural and heritage issues of a country, to meet the needs of different categories and levels of visitors; broaden access to the content as the exhibition materials used for teaching and learning, stimulating and enriching the experience of visitors; teachers so combine the online resources in their curriculum, while students use the resources for their assignments or project work

E- Transcript in the findings reveals how students access a transcript is an inventory system that holds records of courses and grades earned by all students throughout their course of study. A transcript is an academic record detailing a student's academic performance while at the University or higher institution of learning. It includes details of all programs/courses in which the student has had an effective enrolment and the marks/grades achieved in the courses undertaken. Teytelman, (2013). Therefore, it is the easiest way of compiling students' academic record and relief from manual dealing of backloads of papers prone of a lot of errors

Based on the findings of the study, the researcher desires to offer the following

VI. Recommendations:

1. Seminars and /or workshops should be organized for Librarians, Para- Professionals, ICT Professional and Technical / Clerical staff on Online exhibition, publishing, and marketing
2. Need to update their dissemination of information in the area of modern technology to enable them discharge their library duties effectively.
3. Librarians, Para- Professionals, ICT Professional and Technical / Clerical staff should be re-training at every opportunity, encourage librarians and users to embrace technology, Continuous training of library professionals on emerging technologies as it relates to library services,
4. Adequate funding of library for training and retraining of staff to embrace new technology.

VII. Conclusion

The conclusion of this study shows that Cloud Computing is an exciting development and significant alternative in today's educational sector. Cloud computing is faster in accessing various application platforms and resources through the web pages on-demand and most importantly its economy. Cloud computing automatically reduces the cost of organizational expenses and offers more powerful functional capabilities. Beginning with the outsourcing of email service seems attractive. The gradually removal of software license costs, hardware costs and maintenance costs respectively provides great flexibility to the university/corporate management.

The analysis of this study shows that librarians, ICT staff, and Technical staff in Federal universities in North West Nigeria are aware of various cloud computing activities. They show strong adoption to cloud computing technology in the libraries. Irrespective of computer literacy & age they are using various devices to harness the cloud computing tools. Librarians are using various cloud computing tools which include: Online exhibition, Online publishing, Online marketing, Current Awareness Services (CAS) Selective Dissemination of Information (SDI), Inter- Library Loan Services among others, which are dedicated to library services. Librarians support the idea of introducing cloud computing into the library and are desirous of various services that can be implemented on the cloud platform. Although, cloud computing is more economic and cost-saving than the traditional computing methods. However, the study identifies the problems that cripple its implementation. The question of trust over the cloud service provider, data protection and broadband accessibility hinders its implementation on a larger scale.

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