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Winter 12-13-2021

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Jafaru Shinkafi, Aliyu; Adamu, HASSAN; and Abubakar, MUHAMMAD Bande, "APPLICATION OF ICT FOR RESOURCES ORGANIZATION AND SERVICE DELIVERY IN ACADEMIC LIBRARIES IN BAUCHI STATE, NIGERIA" (2021). *Library Philosophy and Practice (e-journal)*. 6738.

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**APPLICATION OF ICT FOR RESOURCES ORGANIZATION AND SERVICE DELIVERY IN
ACADEMIC LIBRARIES IN BAUCHI STATE, NIGERIA**

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Abstract

This study is designed to determine the utilization of ICT for resources organization and service delivery in academic libraries in Bauchi State, Nigeria. The specific objectives and research questions cover the ICT facilities for resources organization, the areas in which ICT are applied for resource organization, the extent of use of ICT in organization of library resources, the challenges associated with utilization of ICT facilities in academic libraries in Bauchi state, and strategies for enhancing the effective use of ICT facilities for effective resources organization and service delivery in academic libraries in Bauchi State, Nigeria. The population of the study consists of one hundred and fifteen (115) professional and Para-professional library staff in the academic libraries under study, as follows: Abubakar Tafawa Balewa University, 32; Bauchi; Bauchi State University, Gadau, 22; Abubakar Tatari Ali Polytechnic, Bauchi, 13; Federal Polytechnic Bauchi, 24; Bauchi State College of Agriculture, 5; A.D Rufa'i College of Legal and Islamic studies, Misau, Bauchi state 7; College of education Kangere, 5, and Aminu Saleh College of education, Azare, Bauchi state, 7. The researcher used all the population since it is manageable. As such, it does not require sample and sampling technique. The instrument used for data collection for the study are questionnaire and observation check list. Percentages and mean were used for data analysis. The major findings of the study revealed that out of 21 ICT resources relevant for resource organization, only 16 were available for use; five resources are not available in the academic libraries in Bauchi state. The available ones include networked computers, standalone computers, printers, scanners, Internet facilities, e-mail, CD ROM Technology, DVD ROM, Online Public Access Catalogue (OPAC), projectors, library based software, and flash drives, Local Area Network (LAN), Wireless Internet Access, and Tele-facsimile equipment. The study recommended among others, making it mandatory for library personnel to be ICT oriented, increasing funding as well as training and re-training of professional and para professional staff. Good networking and maintenance culture should also be exhibited for effective utilization of ICT for resources organization and service delivery in academic libraries.

Key words: Resources Organization, Application of ICT, Services Delivery, Academic Libraries

Introduction

Academic libraries in its generic term refer to all the libraries that exist in institutions of higher learning. The primary objectives of the academic library is to support teaching, learning and research. An academic library is considered as the heart of any academic institution without it, no institution can survive (Boakye, 2018). An academic library is expected to provide materials for courses, research projects and institutional academic activities to satisfy the information needs of the clientele like faculty members, students, researchers, administrators and etcetera.

Organizing is a systematic process and procedure in which an organizations, institutions among others followed in ensuring both human and material resources are in order with aim at running the organization smoothly to attain predetermined objectives. Howorka (2013) described organizing as arrangement of the activities of an organization in such a way that they systematically contribute to the achievement of the organizational goals and objectives. In libraries and information centres, Ekere and Mole (2014) posited that organization of material or object is essential in any human setting, especially those that are frequently used. Without such organization, it would be difficult to locate a particular material, especially materials that are many in the library. Nwalo (2003) stated that library materials are organized in a manner that will make the user find way among the collection with relative ease. Organization of information stems from the need to ease the retrieval of needed information from a mass of them. This is necessary as they are contained in different types of format, either in printed and non-printed format without limitation to location, source and time. Essentially, the basic objective of any type of information organization should be centered on ease of retrieval/search and access. To some extent, it could be argued that there is no limitation as to the way information, a set of it or rather an information resources and source should be arranged/organized (Taylo and Joudry, 2009). The need for organization is driven by the general explosion of knowledge and exponential growth in publication. There are specific organizational activities necessary to accomplish the planned library's goals. Effective organization provides for effective retrieval and use of the resources. Well-organized information centres enable researchers find information in their fields and make the library a clearinghouse for information. When Information resources are effectively organized, it promotes efficiency and user confidence in information provision services (Onwuchekwa, 2011).

It is no doubt that the advent of Information and Communication Technology (ICT) to library has drastically changed the traditional library system and services to modern one. Likewise, resource organization for effective services delivery in libraries is not an exception to that changes. Agbo (2015) as cited in Ekpo noted that ICT have been used to simplify availability and access to information and they encompasses the following complementary technologies: telephone, software technologies for distribution of information process, web-browser and servers, multimedia systems, and peripherals. These technological tools and resource are used to communicate, create, process, disseminate, share, store and manage information. Similarly, according to Anyakoha (2005), ICT revolution has taken

librarianship to some dizzy heights, as tools that libraries used to serve their patrons have changed with the increasing application of modern technology. These tools and equipment can be utilized for the following library operation: resources sharing, digitized circulation services, current awareness services, information subscription and ordering, acquisition of information materials, creation and management of databases, electronic mail services, publications, information storage, information analysis and design, information networking, selective dissemination of information, advisory services, bibliographic control services, lending and borrowing, website utility, research, online communication and information processing. ICT plays a significant roles in resource organization in libraries. This enable librarians to acquire, organize, and disseminate information resources more easily, and users too can accessed and utilized library resources easily and conveniently. One could believe that the application of ICT facilities in libraries has simplified the traditional library services of reference, indexing, cataloging and classification, acquisition, processing, circulation, and serials control and has made general administration of the library and its resources to be stress free. For instance, Internet has integrated nearly all aspects of the library activities. It plays an important role in service delivery in libraries. ICT is changing the way libraries organize, manage, and disseminate information. Different types of library services from membership registration, acquisition, cataloging, resource sharing, circulation, inter library loan, reference services, current awareness service, selective dissemination of information, and document delivery can be offered through the Internet. The advanced use of internet tools enable libraries to reach both local and distance users much more easily and effectively (Ikegwuro, 2017). Technologies such as email and Web provide tremendous opportunities for library and information scientists to deliver the information to the desktops of our users. Service delivery, denote a process between user providers, suppliers and partners of creating, designing and developing services and ensuring user needs are met. Service delivery should be enhanced to meet the needs and aspiration of citizens, decision makers and lifelong learners to achieve a long standing goal of the information profession. ICT has enabled users to avail many services without any human intervention, it has also made it possible to have scholarly materials, websites, multimedia presentation, quantitative data, working papers etc (Agbo, 2015). According to Chauhan (2004), the advent of computer, with their ability to process large amount of information and output in a variety of formats has finally brought the library to the customer, wherever he or she may be located. Effective service delivery in academic libraries should be provided to users so as to enable them access information need more effectively.

Statement of the Problem

There is no doubt that ICT has become a major channel or platform for resources organization and delivery of library resources and services in most academic libraries in tertiary institutions. ICT facilities enable users have easy access to information and speedy retrieval to information materials needed. It also enhances teaching, learning and research. Okorie (2005) asserted that ICTs changed scope, space, services, range as well as the procedure of information service delivery, storage and retrieval. It enables information to be stored, retrieved, communicated and broadcast electronically with speed and accuracy. It also allows information to be arranged, selected and transferred with ease. Many academic libraries in Nigeria apply ICTs in providing services to their users and organization of their resources. They have also computerized some of their services in the area of circulation such as registration of users, charging

and discharging, cataloguing and classification of materials are performed online using ICT facilities, acquisition of library materials and serials controlled are also conducted online with speed and accuracy realized.

However, the use of ICT in providing library services in the academic libraries seems to be declining in some libraries. It is evident that these facilities are underutilized which affects the organization of information materials and the services being provided in these libraries.

Ideally, provision of adequate ICT that would stand the test of time is made available in academic libraries in Bauchi state. There should be a good maintenance culture; training and retraining of personnel to enable them acquire technical know-how and expertise as well as supply of standby generator in the event of power outage. To this end, effective and efficient library services in academic libraries cannot be achieved without the provision and proper utilization of ICTs in academic libraries in Bauchi state.

There appears to be no specific empirical evidence on application of ICT for resources organization and service delivery in academic libraries in Bauchi State, Nigeria. It is against this backdrop that the researcher decided to investigate the application of ICT for resources organization and service delivery in academic libraries in Bauchi State.

Research Questions

The following research questions were formulated to guide the study

1. What are the ICT facilities available in academic libraries in Bauchi state?
2. What are the specific ICT resources applied in academic libraries in Bauchi state?
3. What is the extent of application of ICT in organization of library resources in academic libraries in Bauchi state?
4. To what extent is ICT applied in the delivery of library services in academic libraries in Bauchi state?
5. What are the challenges associated with the application of ICT in the organization of information resources and delivery of services in academic libraries in Bauchi state?
6. What are the strategies for enhancing the use of ICT in the organization of information resources and delivery of services in academic libraries in Bauchi state?

Hypothesis

1. H_{01} : There is no significance difference in the mean ratings of professional librarians and para-professional staff on the extent of use of ICT in organization of information resources among library personal in tertiary institutions in Bauchi State.
2. H_{01} : There is no significance difference in the mean ratings of professional librarians and para-professional staff on the extent of the use of ICT in the delivery of library services among library personal in Bauchi State, Nigeria.

Scope of the Study

Specifically, the study covers utilization of ICT for resources organization and services delivery in academic libraries in Bauchi state. The population of the study covers professional and para-professional librarians.

Review of Related Empirical Studies

Sani (2015) carried out a study on Technology in management of information resources and services in Kaduna state tertiary institutions' libraries Kaduna-Nigeria. The study was guided by five research questions and three null hypotheses. The study adopted descriptive research design. The population of the study was 1607 respondents with a sample of 250 respondents. The instrument used for data collection was a questionnaire developed by the research

with 30 items. The instrument was validated by experts and trial tested and the reliability index using Cronbach's Alpha was 0.87. Direct delivery and retrieval method was used by the researcher to collect data for the study. Mean and standard deviations were used to answer the research questions while t-test statistic was used to test the null hypotheses at 0.05 level of significance. The finding of the study among others showed that the application and diffusion of information and communication technology cannot be viewed in isolation from development in telecommunication technology. It was also found that innovation in computer and telecommunication technology have resulted in major changes in basic library operations as well as managing information in different offices and organization, such as circulatory reference services, cataloguing and classification, collection development (ordering and acquisition). However, the innovations have prompted many organizations to employ the use of ICT devices to further manage information and records of the organization. On this note, many organizations, now adopt the use of computer systems, database management systems, development of network systems to create, store, preserve, secure and use information for effective decision making in the organization. This paper highlighted the prospects and problems of ICT in Kaduna state tertiary institutions' libraries. Nwachukwu (2009) carried out a study on the utilization of ICT for effective library services delivery in Nigerian Army Training schools. The aim was to ascertain the types of ICT facilities available; services offered with the uses of the ICT; the extent of contributions to the ICT in the libraries. To identify that factors enhance the utilization of ICT, identify problems and proffer strategies for effective utilization of ICT. A descriptive survey research design was adopted using questionnaire and checklist for data collection. 50% of the population that is sample population of 653 was used comprising of all library staff and the students of three (3) military institutions. The questionnaires were divided into two (2) sets, one for the library staff, and the other for the students. Both questionnaires were further divided into six (6) sections. Face-to-face administration of the questionnaires and assistance of research 34 assistants were used. The data collected were analyzed using frequency counts, simple percentages and mean. The findings indicated that fifteen facilities were available while five facilities were not available. The findings show that the various services offered with the use of ICT have contributed to the qualitative services delivery in libraries. He concluded by recommending that all the available facilities should be accessible; implementation of ICT policies; all library staff should be trained in ICT proficiency; using of ranks should be stopped in the use of ICT facilities by the staff; more spaces and facilities should be installed and connected. Esther (2013) conducted the research on the topic: The Use of Information and Communication Technology (ICT) in Academic Libraries in Nigeria: A Case Study of Covenant University Library Ota, Nigeria. The study was guided by four purposes and four research questions. The study adopted a descriptive survey research design. The population of the study was 569 registered library users with a sample of 270 respondents. The instrument for data collection was a questionnaire developed by the researcher. The questionnaire was validated by experts and trial tested and the reliability coefficient using Cronbach's Alpha was 0.88. Direct administration and retrieval method was used by the researcher to collect data for the study. Frequency counts, mean and standard deviations were used to answer the research questions that guided the study. The finding of the study among others showed that; Information and Communication Technology (ICT) has added value to the services provided by Nigerian libraries. The findings also showed that Covenant University library has an abundance of computers connected to the internet with web based Millennium software. The students and faculty make use of online public access (OPAC) to

locate materials on the shelves. The study reveals several reasons for using the internet by both faculty and student respondents. But the lowest ICT usage was electronic databases. The faculty respondents with the highest frequency of 40 (80%) use the internet to up-date knowledge while the highest student respondents 177 (76.7%) use the internet to complete projects. However, adequate training of library staff would boost the use of electronic databases.

Ridwan (2015) conducted a study titled: Application of ICT in Management of Information Resources and Services in Kaduna state tertiary institutions' libraries. The researcher reviewed literature from various scholars and found out that the major problems among others encountered while using ICT for managing library information resources include problem of funding, lack of comprehensive ICT policy and poor ICT knowledge from the library staff. He concluded that information professionals must change the way of managing documents with latest tools and technologies. Professional organizations such as the Nigerian Library Association (NLA) and library administrators should organize short-term training programmes and workshop for library professionals in computer applications in library and information services, online information retrieval, data processing, electronic publishing, and also software such as Microsoft Office, CDS/ISIS, etc. Well-trained and skilled personnel are essential ingredients for implementing ICT in library. Steps should be taken to develop properly trained and competent people for this purpose.

Methodology

The research design of this study was descriptive survey. This design is most appropriate for the study, due to the fact that the study is based on opinion, conditions, practices that prevail, points of view, attitudes and effects that are being felt by the respondents on application of ICT for resource organization and service delivery in academic libraries in Bauchi State. The area of the study is Bauchi State, Nigeria. Bauchi State is one of the six states in the North East geopolitical region of Nigeria. Academic libraries in the area include: Abubakar Tafawa Balewa University, Bauchi; Bauchi State University, Gadau; Abubakar Tatari Ali Polytechnic, Bauchi; Federal Polytechnic Bauchi; Bauchi State College of Agriculture and A.D Rufa'i College of Legal and Islamic studies, Misau Bauchi state, College of education Kangere and Aminu Saleh College of education Azare, Bauchi state. The population consists of one hundred and fifteen (115) professional and Para-professional library staff in the academic libraries under study, as follows: Abubakar Tafawa Balewa University, 32; Bauchi; Bauchi State University, Gadau, 22; Abubakar Tatari Ali Polytechnic, Bauchi, 13; Federal Polytechnic Bauchi, 24; Bauchi State College of Agriculture, 5; A.D Rufa'i College of Legal and Islamic studies, Misau, Bauchi state 7; College of education Kangere, 5, and Aminu Saleh College of education, Azare, Bauchi state, 7. The researcher used all the population since it is manageable. As such, it does not require sample and sampling technique. The instruments for data collection for this research were Observation check list and a questionnaire. Two sets of questionnaire were used, one for professional staff and the other for Para-professional staff. Data collected for the study were analyzed using simple descriptive statistics of mean score, percentages and frequency table to answer the research questions. For clarity, each item was presented in a table and all findings were presented as the tables revealed. Data from research question one was analyzed using frequency and percentage. Data from the rest of the research questions were analyzed using the real limits of numbers as follows: any item with mean of 3.50 to 4.00 was considered as very high extent or strongly accepted or very appropriate; any item with mean of 2.50 to 3.49 was considered as high extent or accepted or appropriate; any item with mean of 1.50 to 2.29 was considered as little extent or rejected or fairly appropriate; any item with mean of 0.50 to 1.49 was

considered as not at all or strongly rejected or not appropriate. For research question one, any percentage that ranges from 50% and above was regarded as positive while 49% and below is negative and not useful in determining the findings of the study.

Results and Discussion

The descriptive data are presented in tabular form. The data analysis was presented using mean and standard deviation.

Research Question 1: What are the ICT facilities available for resource organization and service delivery in academic libraries in Bauchi State?

TABLE 1: Observation Checklist on availability of ICT Facilities in Academic Libraries in Bauchi State

S/ N	ICT ITEMS	ATBU		BSU		FPT B		ATA P		ACOE A		CILS		COE K		COA		OVERAL		D
		A V	N A	A V	N A	A V	N A	A V	N A	A V	N A	A V	N A	A V	N A	A V	N A	A V	N A	
1	Connected computers	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
2	Stand-alone computers	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
3	Telephones	√		√		√		√		√		√		√		√		3(37.5%)	5(62.5%)	N A
4	Tele-facsimile equipment		√		√		√		√		√		√		√		√	0(0%)	8(100%)	N A
5	Network facilities	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
6	Telephones	√		√		√		√		√		√		√		√		3(37.5%)	5(62.5%)	N A
7	Tele-facsimile equipment		√		√		√		√		√		√		√		√	0(0%)	8(100%)	N A
8	Photocopiers	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
9	Printers	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
10	Scanners	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
11	Internet facilities	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
12	E-mail	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
13	CD-ROM Technology	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
14	DVD ROM	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
15	Online public access catalogue (OPAC)	√		√		√		√		√		√		√		√		2(25%)	6(75%)	N A

16	Projectors	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
17	Library based software e.g. X-LIB	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
18	Flash drives	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
19	Local Area Network (LAN)	√		√		√		√		√		√		√		√		6(75%)	2(25%)	A V
20	Wide Area Network (WAN)	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
21	Wireless Internet access	√		√		√		√		√		√		√		√		8(100%)	0(0%)	A V
	TOTAL	19(90.5)	2(9.5)	1(4.8%)	4(19%)	1(5.7%)	6(28.6%)	1(4.8%)	3(14.3%)	1(4.8%)	5(23.8%)	17(81%)	4(19%)	1(4.8%)	5(23.8%)	1(4.8%)	5(23.8%)			

The result presented in table 1 showed that out of twenty-one (21) ICT resources for organization of library services listed in the table, an aggregate of sixteen (16) resources are available , while five (5) resources are not available in academic libraries in Bauchi state. Also, the researcher observed that in ATBU, 19(90.5%) were available , while 2(9.5%)were not available; in BSU, 17(81%) were available while 4(19%) were not available; in FPTB, 15(71.4%) were available while 6(28.6%) were not available; in ATAP 18(85.7%) were available while 3(14.3%)were not available; in ACOEA 16(76.2%)were available, while 5(23.8%) were not available; in CILS, 17(81%) were available while 4(19%) were not available; in COEK , 16(76.2%) were available while 5(23.8%) were not available and COA (76.2%)were available , while 5(23.8%) were not available. Some of the most available ones include: Online internet search services, E-mail services, Management of online databases, Management of online databases, Audio and Video Communication services.

Research Question 2: In What specific areas are ICT applied in academic libraries in Bauchi state?

Table 2: Mean ratings of respondents on the specific areas in which ICTs are applied in academic libraries in Bauchi state

		Status				Overall		R	D
		Professional		Professional		Mean	SD		
		Mean	SD	Mean	SD				
1	Online internet search services	3.22	.40	3.38	.91	3.30	.95	1st	A
2	E-mail services	3.56	.62	2.98	.72	3.28	.92	2nd	A
3	technical training in ICT for staff and users	3.20	.94	3.36	.85	3.28	.99	2nd	A
4	Management of online databases	3.09	.70	3.43	.72	3.25	.74	4th	A
5	Audio and Video Communication services	3.16	.52	3.14	.83	3.15	.80	5th	A
6	Subscription services	3.00	.21	3.14	.93	3.07	.89	6th	A
7	Digitized finding aids such as online bibliographies and indexes	3.13	.78	2.81	.83	2.47	.91	7th	D
8	Online cataloguing and classification services	2.48	.19	2.34	.66	2.46	.81	8th	D
9	Customer care services	2.51	.86	2.39	.50	2.44	.78	9th	D
10	Online reference services	2.66	.86	2.30	.95	2.43	.86	10th	D
11	Online inter-library services	1.80	.62	2.04	.60	1.90	.80	11th	D
12	Electronic Document Delivery Services	1.54	.50	1.60	.49	1.56	.54	12th	D
	Cluster Mean	2.78	.40	2.74	.55	2.72	.61		A

Table 2 shows the mean ratings of the respondents on extent ICT facilities are applied in libraries of tertiary institutions in Bauchi state Using criterion mean of 2.50, the results of the data analysis revealed that the respondents accepted that the purpose ICT are applied in libraries of tertiary institutions in Bauchi state include technical training in ICT for staff and users (mean= 3.30); Management of online databases (mean=3.25); Audio and Video Communication services (mean=3.15) Subscription services (mean =3.07), E-mail services (mean=2.28), and Online internet search services (mean=2.28).

Among the two status of respondents sampled in the study, the analysis showed that the professional staff identified E-mail services (mean 3.56), while the para professional recognized Management of online databases (mean= 3.43) as the specific areas ICT facilities are applied in the libraries. Furthermore, the table indication from the overall mean showed that Online internet search services (mean = 3.30) is ranked highest, while Electronic Document Delivery Services (Mean = 1.56) is ranked lowest.

Research Question 3: What is the extent of the use of ICT in organization of library resources in academic libraries in Bauchi state?

Table 3: Mean ratings of respondents on extent of use of ICT in organization of library resources in academic libraries in Bauchi state

		Status		Status		R			
		Professional		Professional		Mean	SD		
		Mean	SD	Mean	SD				
1	Computerization of all library operations	3.04	.65	3.40	.89	3.22	.64	1st	HE
2	Binding Services	3.24	.86	3.12	.94	3.18	.90	2nd	HE
3	Abstracting	3.27	.89	2.90	.77	3.09	.64	3rd	HE
4	Classification	3.00	.88	3.14	.98	3.07	.93	4th	HE
5	Indexing	3.24	.93	2.81	.65	3.03	.56	5th	HE
6	CD-ROM	2.93	.80	2.93	.77	2.93	.48	6th	HE
7	Video Conferencing	2.48	.65	2.50	.96	2.49	.86	7th	LE
8	Current Awareness Services	2.45	.75	2.39	.67	2.47	.56	8th	LE
9	Inter-Library Services	2.40	.61	2.36	.73	2.45	.82	9th	LE
10	Cataloguing of online resources	2.38	.79	2.50	.65	2.44	.62	10th	LE
	Cluster Mean	2.84	.82	2.81	.50	2.83	.75		

Table 3 above shows the mean ratings of the respondents on the extent of use of ICT in organization of library resources in academic libraries in Bauchi state. Using real limit of number principle, the results of the data analysis disclose that ICT is used to a high extent on Computerization of all library operations (mean=3.22) , Binding Services (mean= 3.18); Abstracting (mean= 3.09); Classification (mean= 3.09); Indexing (mean= 3.03) and CD ROM (mean= 2.93).It is used to a low extent, on Video Conferencing (mean= 2.49); Current Awareness Services (mean= 2.47); Inter-Library Services (mean= 2.45) and Cataloguing of online resources (mean= 2.44). Comparing the two status of respondents sampled in the study, the analysis showed that the professional rated Binding Services (mean 3.24) , while the para professional recognized Computerization of all library operations (mean= 3.40) as the major use of ICT in libraries of tertiary institutions in Bauchi state.

Research Question 4: To what extent are the available ICTs applied in the delivery of library services in academic libraries in Bauchi state?

Table 4: Mean ratings of respondents on the extent to which the available ICT resources are used in the delivery of library services in academic libraries in Bauchi state

		Status				Overall		R	D
		Professional		Para professional		Mean	SD		
		Mean	SD	Mean	SD				
1	Internet facilities	3.65	.78	3.73	.57	3.68	.70	1st	VHE
2	Wireless Internet access	3.32	.85	3.47	.74	3.39	.80	2nd	HE
3	Printers	3.32	.99	3.33	.99	3.32	.98	3rd	HE
4	Flash drives	3.09	.62	3.26	.75	3.17	.79	4th	HE
5	E-mail	3.05	.94	3.08	.91	3.06	.92	5th	HE
6	Telephones	2.94	.66	2.96	.56	2.95	.65	6th	HE
7	CD-ROM Technology	2.77	.58	3.00	.70	2.87	.81	7th	HE
8	Network facilities	2.88	.66	2.63	.69	2.78	.69	8th	HE
9	Connected computers	2.80	.66	2.73	.59	2.77	.77	9th	HE
10	Standalone computers	2.77	.61	2.76	.97	2.76	.99	10th	HE
11	Photocopiers	2.23	.72	2.67	.79	2.59	.60	11th	HE
12	Projectors	2.53	.64	2.60	.66	2.56	.76	12th	HE
13	Local Area Network (LAN)	2.53	.54	2.60	.56	2.56	.51	12th	HE
14	Wide Area Network (WAN)	2.53	.64	2.58	.59	2.55	.86	14th	HE
15	Scanners	2.66	.86	2.30	.95	2.54	.86	15th	HE
16	DVD ROM	2.46	.63	2.55	.64	2.50	.67	16th	HE
17	Online database	1.85	.70	2.04	.80	1.93	.75	17th	LE
18	Online public access catalogue (OPAC)	1.85	.94	1.98	.67	1.90	.50	18th	LE
19	Tele-facsimile equipment	1.82	.59	1.59	.98	1.72	.44	19th	LE
20	Machine readable catalogue (MARC)	1.60	.86	1.69	.82	1.64	.84	20th	LE
21	Library based software e.g. X-LIB	1.51	.50	1.41	.50	1.46	.50	21st	LE
Cluster Mean		2.58	.45	2.58	.32	2.58	.45		Mn

Table 4 above shows the mean ratings of the respondents on the extent of use of ICT in the delivery of library services in tertiary institutions in Bauchi state. Using real limit of number principle, the results of the data analysis shows that Internet facilities are applied in service delivery to a very high extent (mean = 3.68). Wireless Internet access are applied to a high extent (mean= 3.39). Other ICT resources employed to a high extent include: Printers (mean= 3.32); Flash drives (mean= 3.17); E-mail (mean= 3.06); Telephones (mean= 2.95); CD-ROM Technology (mean= 2.87). The less applied ones include; Projectors (mean= 2.56); Local Area Network (LAN) (mean= 2.56); Wide Area Network (WAN) (mean= 2.55), Scanners (mean=2.54) and DVD ROM (mean= 2.50).

Comparing the two statuses of respondents sampled in the study, the analysis showed that the professional and Para professional both rated Internet facilities (mean 3.65 and 3.73 respectively), as the mostly used ICT in service delivery in academic libraries of tertiary institutions in Bauchi state.

Research Question 5 What are the challenges associated with the use of ICT in the organization of information resources and delivery services in academic libraries in Bauchi state?

Table 5: Mean ratings of respondents on challenges of the use of ICT in the organization of information resources and delivery of library services in academic libraries in Bauchi state

		Status				Overall		R	D
		Professional		Para professional		Mean	SD		
		Mean	SD	Mean	SD				
1	Insufficient power supply	3.28	.96	3.24	.95	3.26	.35	1 ST	A
2	System breakdown	3.20	.79	3.20	.74	3.20	.75	2 ND	A
3	Poor infrastructural facilities such as toilet facilities, lighting, ventilation etc.	3.05	.42	3.31	.90	3.16	.77	3 RD	A
4	Inadequate technical support	3.02	.83	3.12	.81	3.06	.81	4 TH	A
5	Fees are charged before using the library	2.90	.91	3.20	.90	3.02	.89	5 TH	A
6	Lack of ICT training for users and staff	2.93	.99	2.96	.13	2.95	.85	6 th	A
7	Low internet connectivity	2.91	.89	2.99	.94	2.95	.99	7 th	A
8	Not enough computer systems	2.97	.63	2.82	.07	2.91	.94	8 th	A
9	Lack of awareness	2.74	.93	2.76	.97	2.75	.78	9 th	A
10	Restrictions in the use of certain facilities, resources and/or services	2.86	.54	2.53	.14	2.72	.33	10 th	A
11	Staff indifference towards users' challenges in using the library	2.79	.61	2.58	.14	2.70	.96	11 th	A
12	Time allowed for browsing is too short	2.67	.57	2.59	.14	2.64	.93	12 th	A
13	Inadequate man power	2.64	.52	2.46	.35	2.57	.86	13 th	A
14	Personal storage devices are not allowed	2.53	1.50	2.57	.10	2.55	.91	14 th	A
Cluster Mean		2.89	.61	2.88	.02	2.89	.89		A

Table 5 above shows the mean ratings of the respondents on the challenges they face in the use of ICT in the organization of information resources and delivery of library services in the tertiary institutions in Bauchi state. Using the real limits of numbers, the results of the data analysis disclose that the respondents accepted items 1-14 as challenges associated with the application of ICT in the organization of information resources and delivery of library services in academic libraries in Bauchi state. Also, the overall mean showed that insufficient power supply, (mean = 3.26) is ranked highest. Other challenges that ranked high include: Systems breakdown, Poor infrastructural facilities,

and inadequate technical support, Lack of ICT training for users and staff, and Low internet connectivity. Among the items ranked lowest as challenges associated with use of ICT in the organization of information resources and service delivery in academic libraries in Bauchi state include: personal storage devices are not allowed, inadequate man power, and time allowed for browsing is too short.

Research Question 6: What are the strategies for enhancing the use of ICT in the organization of information resources and delivery of services in academic libraries in Bauchi state?

Table 6: Mean ratings of respondents on strategies for improving the use of ICT in the organization of information resources and delivery of services in academic libraries in Bauchi state

SN	STATUS	Professional		Para professional		Overall		R	D
		Mean	SD	Mean	SD	Mean	SD		
1	Mandatory ICT literacy & training for students and staff	3.44	.76	3.36	.80	3.42	.76	1 st	A
2	Provision of adequate technical support	3.26	.82	3.31	.84	3.27	.83	2 nd	A
3	Provision of adequate man power	3.23	.86	3.32	.78	3.25	.84	3 rd	A
4	Provision of sufficient internet bandwidth	3.20	.84	3.19	.85	3.20	.84	4 th	A
5	Provision of sufficient power supply	3.20	.84	3.19	.85	3.20	.84	5 th	A
6	Quality infrastructural facilities such as toilet facilities, proper lighting and Ventilation	3.10	.92	3.29	.78	3.14	.89	6 th	A
7	Frequent maintenance of computer systems and other facilities	3.12	.94	3.17	.82	3.13	.92	7 th	A
8	Personal storage devices should be allowed	3.09	.95	3.04	.95	3.08	.95	8 th	A
9	Provision of a functional stand-by generator	3.03	.92	3.18	.76	3.06	.89	9 th	A
10	Creation of awareness of MTN digital library services	3.04	.93	3.10	.85	3.05	.91	10 th	A
11	Updating subscriptions	3.03	.98	3.11	.86	3.04	.95	11 th	A
12	Dedicated staff who are willingness to serve users	3.02	.92	3.05	.82	3.03	.90	12 th	A
13	Provision of adequate ICT facilities	3.02	.92	3.05	.82	3.03	.90	13 th	A
14	Provision of more work stations	2.95	.94	3.15	.80	2.99	.91	14 th	A
15	Provision of storage lockers for the storage of personal belongings whilst using the library	2.94	.95	3.16	.81	2.99	.93	15 th	A
16	Unrestricted access to all resources and services of the library	2.94	.91	3.07	.74	2.97	.87	16 th	A
Cluster Mean		3.10	.50	3.17	.52	3.12	.45		A

Table 6 above shows the mean ratings of the respondents on strategies for enhancing the use of ICT in the organization of information resources and delivery of library services in tertiary institutions in Bauchi state. Using real limit of number principle, the results of the data analysis shows that the respondents accepted that all the sixteen (16) items listed in the table were appropriate strategies for improving the use of ICT in the organization of information resources and delivery of library services in tertiary institutions in Bauchi state. The Major strategies includes Mandatory ICT literacy & training for students and staff, Provision of adequate technical support, provision of adequate man power and provision of sufficient internet bandwidth, Provision of sufficient power supply. Also, the overall mean showed that mandatory ICT literacy and training for students and staff (mean = 3.42) is ranked highest. Unrestricted access to all resources and services of the library (Mean = 2.97), Provision of storage lockers for the storage of personal belongings whilst using the library (Mean = 2.99), Provision of more work stations (Mean = 2.99) were ranked lowest as strategies for improving the uses of ICT in the organization of information resources and delivery of library services in tertiary institutions in Bauchi state.

Test of hypotheses

Hypothesis 1 There is no significance difference in the mean ratings of professional and para-professional staff on the extent of use of ICT in organization of information resources in academic libraries in Bauchi State.

Table 7: The t – test Analysis of extent of use of ICT in organization of information resources

SN	Gender	\bar{X}	SD	N	DF	Std. Error	t- test	Probability level	Level of Sig.	Rmk
1.	Professional	3.21	0.527	65		.047				
2.	Para-professional	3.32	0.474	49	112	.056	564	.643	0.05	NS

The above table is t-test analysis of hypothesis one which stated that there is no significance difference in the mean ratings of professional and para-professional staff on the extent of use of ICT in organization of information resources in academic libraries in Bauchi State.

The hypothesis was tested with t-test statistics. A calculated t-test value of .564 was obtained in the study at probability level of P>0.05 observed from the study, indicating that the result is not significant. This means that the null hypothesis which states there is no significance difference in the mean ratings of professional librarians and para-professional staff on the extent of use of ICT in organization of information resources n tertiary institutions in Bauchi State is accepted.

Hypothesis 2: There is no significance difference in the mean ratings of professional and para-professional staff on the extent of the use of ICT in the delivery of library services in academic libraries Bauchi State, Nigeria.

Table 8: The t – test Analysis of the extent of application of ICT in the delivery of services in academic libraries in Bauchi state

SN	Gender	\bar{X}	SD	N	DF	Std. Error	t- test	Probability level	Level of Sig.	Rmk
1.	Professional	3.32	0.627	65		.047				
2.	Para-professional	3.48	0.574	49	112	.046	.464	.643	0.05	NS

The above table is t-test analysis of testing the hypothesis which stated that there is no significance difference in the mean ratings of professional librarians and para-professional staff in the extent of the application of ICT in the delivery of library services in academic libraries in Bauchi State, Nigeria. The hypothesis was tested with t-test statistics. A calculated t-test value of -.464 was obtained in the study at probability level of $P > 0.05$ observed from the study, indicating that the result is not significant. The null hypothesis which states there is no significance difference in the mean ratings of professionals librarians and para-professional staff on the extent of application of ICT in the delivery of library services academic libraries in Bauchi State, Nigeria is accepted.

Summary of Findings

1. Out of twenty-one (21) ICT resources for organization of library services listed in the table, an aggregate of sixteen (16) resources are available, while five (5) resources are not available in academic libraries in Bauchi state. Some of the most available ones include: Online internet search services, E-mail services, Management of online databases, Management of online databases, Audio and Video Communication services.

1. ICT is mostly applied in internet related areas in academic libraries in Bauchi state.

2. ICT is used to a high extent on computerization of all library operations, binding, services, abstracting, classification, indexing and CD ROM.

3. ICT facilities used mostly in service delivery are internet facilities, wireless internet access; Printers; Flash drives; E-mail; Telephones; CD-ROM Technology; Photocopiers; Local Area Network (LAN); Wide Area Network (WAN); scanners and DVD ROM.

4. The purpose ICT are applied in libraries of tertiary institutions in Bauchi state include technical training in ICT for staff and users, management of online databases, Audio and Video Communication services, subscription services, E-mail services, and Online internet search services.

5. ICT is used to a high extent on Computerization of all library operations, Binding Services, Abstracting, Classification, and Indexing.

6. Challenges associated with application of ICT on resource organization and service delivery include insufficient power supply, systems breakdown, poor infrastructural facilities, inadequate technical support, lack of ICT training for users and staff, and Low internet connectivity.

7. The Major strategies for enhancement include mandatory ICT literacy & training for students and staff, provision of adequate technical support, provision of adequate man power and provision of sufficient internet bandwidth, Provision of sufficient power supply

8. There is no significant difference in the mean ratings of professional and para-professional staff on the extent of use of ICT in the delivery of library services among library personal in Bauchi state, Nigeria.

9. There is no significant difference in the mean ratings of professional and para-professional staff on the extent of use of ICT in organization of information resources among library personal in tertiary institutions in Bauchi state.

Conclusion

The study investigated utilization of ICT for resource organization and service delivery in academic libraries in Bauchi state, Nigeria. The purpose of the study was to identify the ICT facilities available in academic libraries, find out the special areas of ICT application in the academic libraries, investigate the extent of use of ICT in the organization of information resources, determine the extent to which ICTs are in the services delivery in academic libraries identify the challenges and proffer strategies for enhancing the ICT application for efficient resource organization and service delivery in academic libraries in Bauchi state.

The study therefore recommends that: government and other stakeholders in academic libraries in Bauchi state should pay their dues to ensure that effective service delivery is ensured in these institutions through proper dissemination of information with ICT tools.

Finally, information requirements of libraries demand that for effective service delivery, all libraries in Nigeria in general and the selected libraries in Bauchi state in particular should move with the growing trend by replacing the traditional system of library services with the one brought about by the advent of information and communication technologies. With this in place, the aims and objectives of libraries will not only be achieved but also the libraries will be able to compete favourably with their counterparts in the developed world.

Recommendations

This study makes the following recommendations according to the findings.

1. The Academic Libraries should increase the number of computers available to enable the users to maximize the usage of ICT-based resources and services. For this to happen however, it is recommended that efforts should be made by the government of Nigeria to have stable and uninterrupted power supply as this is panacea to any ICT development since ICT depends on electricity.

2. The issue of inadequate funding of government owned institutions should be considered by complying with the UNESCO's recommendation of 26% of the annual budget to education. With this in place all government -owned academic libraries will be able to improve their infrastructure facilities and by extension, libraries will also meet their developmental obligations regarding ICT.

3. Well-trained and skilled personnel are essential ingredients for implementing ICT in library. It was recommended that training be organized to increase the use of ICT-based products and services. Also Provision of hardware, standardized Library software, adequate financial resources, and proper training facilities for academic Librarians will help to strengthen ICT applications in academic libraries.
4. Networking should also be improved, since is one of the most effective ways of serving users' needs comprehensively. Networked access to databases would help get newly published information to library users.
5. Good maintenance culture should be developed in the academic libraries in Bauchi. There is no gain leaving any broken system to suffer because more harm could be done through such inaction.
6. More qualified technologists should be employed to ensure efficient maintenance culture for better results.
7. The Academic Libraries must increase the Video Conferencing facilities which enables the users to maximize the usage of ICT based activities and services.

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