



Information Communication Technology Utilisation for Serial and Bibliographic Routines in Federal University Libraries in North East, Nigeria.

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Abstract. The study examined Information Communication Technology Utilisation for Serial and Bibliographic Routines in Federal University Libraries in North- East, Nigeria. The study was guided by three objectives, three research questions and two null hypotheses. The study adopted descriptive survey research design. Three hundred and ninety-six (399) librarians and paraprofessional librarians from the six federal university libraries in northeastern Nigeria made up the study's population. Using the census sampling technique, the study's sample size is 399. A questionnaire was employed as the research instrument of this study. Tagged, "Information Communication Technology Utilisation for Serial and Bibliographic Routines Questionnaire" (ICTSBRQ). The questionnaire was based on a four-point rating scale. The instrument was face validated. Two research questions were answered using Pearson Product Moment Correlation Coefficient. The two null hypotheses were also tested using Pearson Product Moment Correlation Coefficient at .05 level of significance. Based on the findings, it was concluded that there is relationship between ICT utilisation for serial and bibliographic routines in federal university libraries in North East, Nigeria. It was recommended that appropriate ICT facilities should be provided by the management of the libraries under study for easier and successful serial and bibliographic routines. Librarians should also have positive attitude towards ICT utilisation for effective serial and bibliographic routines in federal university libraries in North East, Nigeria.

Keywords: Information Communication Technology, ICT utilization, effective serial and

bibliographic routines, federal university libraries, North East, Nigeria.

1. Introduction

ICT is now applicable in all aspects of university libraries especially in the serials and bibliographic routines. In libraries where computerization has fully taken place, these library routines could be effectively carried out using computer terminals. ICT utilisation is the employment of mechanized data processing machines (computer) to discharge regular library routines such as acquisition, organization and dissemination of serial information sources in the library. ICT can also be used for bibliographic routines, where cataloguing, indexing and abstracting processes can be effective for easy accessibility to information sources. The procedure of discharging all information activities like serial and bibliographic routines in library can be done with the help of data processor which is computer and related information technologies which can make the procedure to be easy and faster. That means serial routines can effectively carry out using ICT facilities in university libraries.

A complete serial routine covers everything that occurs to serials all over their life cycle. There are several perspectives on the concepts and components of serial routines. Serial routines deals with selection, acquisition, processing, organizing and user survey (Rowell and Money 2022). According to Enweani, (2023) serials routine also deals with fiscal management which deals with the checking of the price list, allocation of funds allocation, checking of invoice, payment of invoice

and checking of receipt. The techniques for subscription focus on ordering directly and subscription vendors while daily practices focus on stamping, taking record of statistics files, kardex cards and lists for serials. Organizing the serial materials deal with providing bibliographic information of all serial titles and appropriate class mark for easy accessibility by clientele of the library. Binding of serial documents help in preserving the information sources which will protect them from damage and lengthen their shelf life. These services are provided for the benefits of users: current awareness, circulation, abstracting, indexing, translation, interlibrary lending and photocopying services.

Serials routines have to do with communication with vendors, selection, acquisition, processing, preservation, daily statistics and creation of awareness about serial information sources in the information centre. Serials division is accountable for the management of serial information sources so that users can have access without difficulty. Serials unit have current and back sets of both local and foreign journals, newspapers and magazines. Unlike textbooks and monographs, serials are resources that are released either periodically or serially; anything that is part of a series is considered a serial. (Chukwueke, Okafor and Mayun 2021). All the above routines ICT facilities can handle them effectively more than the manual process. Utilisation of ICT in libraries has important precedencies than the manual information techniques, that is to say, it requires minimal manpower. Additionally, different software can be used to program the computer to perform different tasks (Olubiyo and Awoyemi, 2021). ICT utilisation for serials routines focus on the employment of emerging technology in order to discharge serials activities in the library. Thus the library as heart bit of higher learning institutions has extremely profited from the use of Information and Communication Technology. Serials division can use ICT gadgets to carry out the following routines: preparation of order, procurement process, subscription control, fund analysis and accounting. Additionally, they can be used to handle bibliographic files, catalog new serials, prepare serial record entries and transaction control, add, modify, and remove serials, and fulfill user requests. (Idhalama, and Obi 2019). According to Marke and Waziri (2023), serial units can also use ICT to provide these services, which include CD-ROM searching, online searching, network provision, photocopying, online information services, and database searching services. Checking in/receipt, claiming, binding, ordering and renewing subscriptions, financial control, management reports, union lists, online user access, and circulation are all considered serial tasks, according to Woodward (2019). These as stated by the author

are the routines in the serials unit which ICT gadgets can be used to deliver them easier and faster. Providing bibliographic information of serial materials make them to be easily accessible in order to provide the needed information by the clientele of the library. Bibliographic routines are performed by librarians to make sure sources of information are effectively utilised so as to provide answers to the needed information of the clientele in the library. The bibliographic routines perform by librarians are: abstracting of books, indexing of books, current awareness services of the newly acquired materials and charging and discharging of information sources in the library. The library materials that can be found in the bibliographic unit are government publications, autobiographies, publications of nongovernmental organizations, abstracts and indexes.

1.1 Problem Statement

Utilisation of ICT gadgets like computers, scanning machine, barcode readers, library software, Internet, library website and storage devices like hard drive, have the potentials of making information storage, processing, and delivery effective and efficient in the library. ICT utilisation enhances serial and bibliographic routines by making them faster and easy in the library. It takes away the manually run system in the library which is not efficient in processing and delivering the needed information sources to the appropriate user at the ideal time. To give a clear picture of what ICT utilisation can do in the library, the bibliographical information of library materials can be electronically performed, library users can access the catalogues in the library electronically, books and serials can also be acquired using ICT. Based on the advantages of ICT utilisation in the library, it is expected that librarians in this technology era would use ICT to perform serial and bibliographic routines in the library. According to the researchers' observations, federal university libraries in northeastern Nigeria have ICT resources. However, do librarians in North East Nigeria's federal university libraries make use of the ICT resources available for efficient serial and bibliographic routines? It is against this background the study determined ICT Utilisation for Serial and Bibliographic Routines in Federal University Libraries in North-East, Nigeria.

1.2 Objectives of the Study

The objectives of the study are:

- To assess the relationship between ICT Utilisation and serial routines in Federal University libraries in North East, Nigeria.
- To determine the relationship between ICT Utilisation and bibliographic routines in

Federal University libraries in North East, Nigeria.

- To examine the factors hindering ICT utilisation for effective library routines in Federal University Libraries in North East, Nigeria.

1.3 Research Questions

These research questions guided the study:

- What is the relationship between ICT Utilisation and serial routines in Federal University libraries in North East, Nigeria?
- What is the relationship between ICT Utilisation and bibliographic routines in the Federal University libraries in North East, Nigeria?
- What are the Factors hindering ICT utilisation for effective library routines in Federal University libraries in the North East, Nigeria?

1.4 Research Hypotheses

The following null hypotheses were formulated to guide the study:

Ho1. There is no significant relationship between ICT Utilisation and serial routines in federal university libraries in North East, Nigeria.

Ho2. There is no significant relationship between ICT Utilisation and bibliographic routines in federal university libraries in North East, Nigeria.

2. Literature Review

The study is anchored on three theories namely: Technology Acceptance theory postulated by Davis (1989) for independent variable, Lancaster Theory of Evaluation of Information System and Services (1978) for dependent variable.

2.1 Davis's Technology Acceptance Theory (1989) as Reported by Korpelaine (2011)

The Technology Acceptance Theory proposed by Davis (1989) as reported by Korpelainen (2011) serves as the foundation for this study. According to the theory, client approval of the system can be determined by measuring its perceived usefulness (PU), perceived ease of use (PEOU), and attitude towards utilization (ATU). According to technology acceptance theory, a user's behavioral intentions, attitude, perceived usefulness, and perceived ease of use all have an impact on how they actually utilize a technology system, either directly or indirectly. Furthermore, technology acceptance theory argues that external factors influence intention and actual use through mediated effects on perceived usefulness and perceived ease of use.

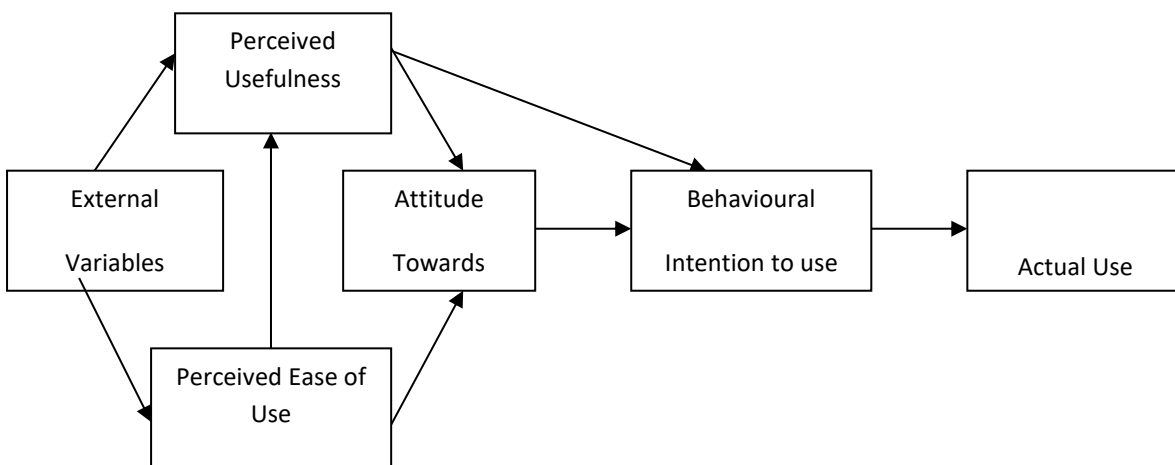


Figure 2.1 Technology Acceptance Theories (Davis, 1989)
Source: Korpelainen (2011)

Perceived ease of use and perceived usefulness of technology are factors of user attitude towards technology, subsequent behavioural intentions and actual usage. In fact, perceived ease of use too, is viewed to impact perceived usefulness of the technology. Both perceived usefulness and perceived ease of use impacts user’s attitude towards technology utilisation. Perceived usefulness (PU) is the extent to which an individual accepts that using technology can improve his or her efficiency on the job while Perceived Ease of use (PE) is the extent to which an individual accepts that using a specific method will be effortless. There are specific ecological factors that impact the choice of a client to embrace or applying technology. This requires the availability of facilities to aid the acceptance, reachability to the technology and perception about the functionality of the devices. In this theory, these among others are categorized as external variables. Perceived usefulness relates to the ICT

utilization, this is why the theory is relevant to the present study. The library personnel won't be able to effectively utilize ICT to improve their services until they acknowledge its value for day-to-day operations. Similarly, the perceived ease of use is dependent on the utilisation of ICT. That means until ICT is made available and staff of the library are trained, before awareness can be created about the technology that is available. Following the training, they will understand how simple the new system is to use, which will enable them to use it efficiently and improve library routines.

2.2 Lancaster Theory of Evaluation of Information System and Services

Theory of evaluation of information system and services was propounded by Lancaster (1978). Information system in this theory represents the library which responsibility is to provide services for effective utilisation of the information sources. Information systems provide the following services: acquisition and storage, organization and control of secondary distribution. The success of these services or routines is best understood when considered within the broader context of complete cycle by which services are transferred through channels in the information system. Diagrammatically, the elements of the cycle are as shown in this figure.

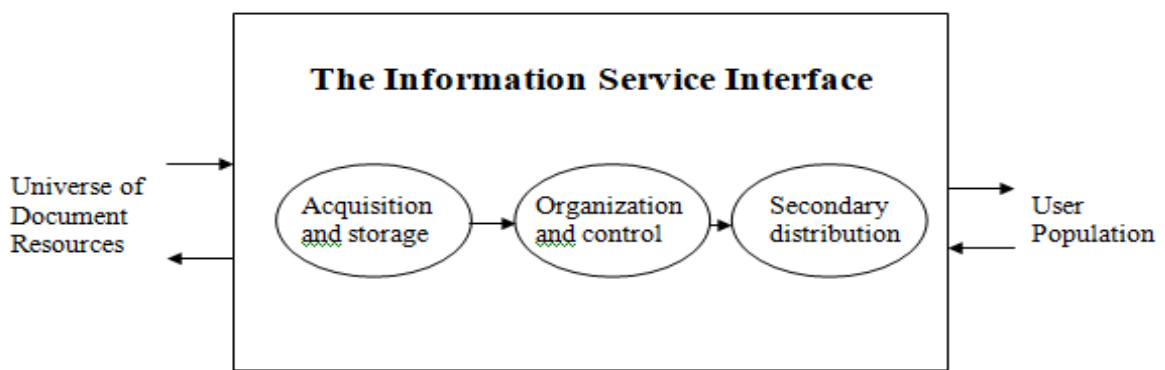


Figure 2: Lancaster Theory of Evaluation of Information Systems and Services (Lancaster, 1978).

In figure 2 universe of documents resources, implies the entire image of the library as a link between a particular population of users and the bibliographical resources or the universe of materials in either print or non-print materials. In this study, the user population represents the lecturers, postgraduate, undergraduate and remedial students. The librarians should ensure that, information resources are made available and accessible to clientele to provide the needed information. The next stage of information service interface or library routines is organization and control. This implies proper documentation, organization and presentation of the documents in order that they will be reachable for successful use. Librarians should not place more emphasis on preservation of library resources but concentrate on the organization and control for effective exploitation of the resources by users. This is by way of organizing by providing bibliographic information of documents which can be properly placed either as serials, reference materials or circulation materials and can be placed either on open shelves or controlled access area (reserve unit) for easy accessibility. The final stage in the diagram is, "secondary distribution" which represents assimilation. After an information centre acquires and organizes its resources, it is expected that through its various services, information sources are

disseminated to the users. A document of need is expected to be easily located, retrieved and analysed by a client and its subjects matter are completely absorbed at the end the reader is informed (that is, his awareness on the subject matter is changed). Reader services such as reference services, current awareness services (CAS), referral services, interlibrary lending, and selective dissemination of information (SDI) can facilitate the dissemination of information. These are what Lancaster referred to as public service routines.

This theory is appropriate for this work due to the fact that, it talks about the services or routines associated with the library. Lancaster looked at information services in the library as a circle and the services are in stages. Acquisition as a routine has to be properly done to make library materials available for use. Until the materials are available before organization can take place by providing cataloguing process for easy accessibility by users in the library. When the organization is properly done, the distribution or dissemination can effectively take place through inter-library loan, referral services, Selective Dissemination of Information (SDI), Current Awareness Services (CAS) and reference services. This theory has covered what library routines are all about and that makes it relevant to the present study.

ICT gadgets are applicable in the serial's unit for effective management. According to Eunice, A. O. and Rachael, A. T. (2023) the types of ICT facilities that can be used in serial management include: scanners, electronic pen, barcode sensors or readers, communication technologies such as fax machines, telephone, e-mail, teleconferencing, electronic bulletin boards, computers, and storage technologies such as, hard disks, flash drive and CD-ROM. ICT gadgets are used in serial unit, based on the activities of the unit. According to Enweani (2023) the activities of serial unit are as follows: preservation, public service, processing and acquisition. Activities of the serial unit is part of the activities normally carry out in the library thus; ICT gadgets can be used for efficiency and effectiveness of serial routines in the library. However, applying ICT should be based on the exceptional nature of serials. Oyewo, Akintonde, and Salau (2019) list the following as examples of ICT facilities: computers, bar-coding technology, database services, electronic books, electronic journals, networking technology, chat services, CD-ROM, indexing and abstracting services using computers, document scanning services, bulletin board services, Online Public Access Catalogue (OPAC), library management software package, printing technology, Internet facility, video conferencing, and electronic mail (e-mail).

Anunobi and Edoke (2015) conducted a study on the use of ICT facilities in Southern Nigeria Federal University libraries for serial functions. Four purposes and four research questions were used for the study. Southern Nigeria Federal Universities were covered by the study. Checklist and Questionnaire were used for the study. Out of 107 serials staff in the university libraries under study, 65 using Purposive sampling technique were selected. Questionnaire was instrument used for the study, it consists of 5 items which were distributed to the 65 respondents. Observation checklist was used to develop items 1-3 while four Point Likert scales was used to develop items 4-5. Based on the findings, most of the serial routines are still performed manually, ICT is being use more in the serials public services which are accessing and retrieving serials and title of articles. It is also being use for preservation functions. It was recommended that the managers of the libraries under study should take a verdict to provide ICT facilities for effective serial routines or create an ICT unit which will be responsible for providing ICT-related services which include serials routines. It was further recommended that University libraries should seek for support from donor agencies so that they can be provided with ICT hardware and software for effective serial routines. The present study is related

with the reviewed study since it concentrated on ICT utilisation for effective serial routines.

Olayemi et al. (2017) looked into how Bayero University Kano, Nigeria's serial unit used information and communication technology (ICT) to deliver services. The study employed qualitative research methodology. Eight (8) staff made up the population of the study which include the unit head and purposive sampling method was used to select four (4) using observation and interview. The study was analyse using thematic analysis based on the generated data. Based on the discovery of the study, there are different ICT gadgets available in the serial section. The utilisation of ICT for effective serial routines was low. Based on the finding, the challenges of the serial unit comprise of poor power supply, inadequate ICT facilities and lack of internet access. The study recommended that adequate funding, ICT infrastructure, proper ICT training for staff, sufficient power supply and good standby generator should be provided, e- journal subscription and proper Internet access should also be provided. The study therefore relates to the current work, the reason is; it focuses on ICT utilisation and library routines.

Bibliographic routine is one of the major activities in the university libraries. It prepares documents in form of indexes, catalogues and abstracts, in addition web pages that links users of the library to the documents of need are provided. Bibliographic routines deliver brief cataloguing, precise access point and processing of the information sources timely in order to give library users easy access to the collections. Abstracting and indexing of databases, institutional repositories and local digital library collections can be offered to researchers through bibliographic routines (Suleiman, 2024). It is part of the responsibility of the librarians in the division to do selective dissemination of information from books, journals government publications, pamphlets, theses and dissertation to the users. Charging and discharging of information sources also form the responsibility of the librarians working in the unit. Indexing, abstracting and bibliography form part of the bibliographic routines. Indexing is a higher technique than the cataloguing when it comes to having access to important information available in information sources stored in the library. While the subject headings for the cataloguing are limited, they normally tend to be greater in indexing as the information sources are examined in order to bring out the subject matters which have been adequately covered. Thus, the document will easily be retrieved in relation to more subject terms rather than cataloguing which looks only for the dominant theme (Aminu and Magaji, 2021).

Abstracting process gives an enhancement to the information source searched for. Aside from preparing comprehensive bibliographic information of the material, additional information is required. This will help the user to know if the material will be relevant when it is retrieved. Abstract is a complete citation, condensation and summary of essential facts of theories and opinions presented in an article or book (Owate and David-West, 2021). Abstract is relevant as it assists the users to choose whether to study the whole document or not. At this point, user will know if a document is interesting for him/her or related to the subject area he/she is studying rather than searching for numerous articles. Thus, readers depend on abstracts to choose fast if the document is important. Abstract assist readers and research workers recall major discoveries on the subject matter. Despite studying the document, readers frequently hold on to abstracts to recall the documents that support conclusions. According to Agrawal and Rasouli (2024) bibliography is a systematic or orderly list of books which incorporates the author, title, subject, publishers, dates, place of publication and places. The word systematic is used because an organized system is usually used in compiling bibliography. It could either be alphabetically, chronological or by subject. Bibliography originated from two Greek words 'biblio' which means books and 'graphien' which means writing of or to write. There is wide range of technologies available in the library that can be used for bibliographic routines; according to a study by Ikokoh, Madukoma, and Alegbeleye (2023), ICT resources available in academic libraries include personal computers, laptops, printers for printing documents in the library, the internet for uploading information, scanners for electronic document conversion, facsimiles for sending and receiving documents like book orders and quotations, telephones for reference and inquiry services, mobile phones, photocopiers for reprographic services, videoconferencing, and teleconference technologies for online chats and meetings. Libraries employ a range of ICT resources for research, according to Ahmad and Nishat (2019), who also noted that ICT products make it easier to find, access, manage, integrate, analyze, generate, and disseminate information. To promote the use of ICT-based products and services, it was suggested that librarians receive training.

Ivwhighweta (2013) conducted a study on the use of ICT for library services and operations in a few Nigerian university libraries. Five research questions served as the study's compass. The research design used in the study was a descriptive survey. Fifty (50) librarians from the Delta State University Library, Western Delta University Library, and John Harris Library comprised the study's population. The instrument used for the

study was questionnaire. Simple percentage and frequency count was used for the data analysis. Computers and internet were available based on the finding from the study selected libraries under study. The finding also revealed that students and researchers use Internet for browsing and preparing their lecture notes in the selected academic libraries under study. The study further revealed that ICT is mostly applied for acquisition of documents, bibliographic services and delivery of OPAC services. According to this study, one advantage of utilizing ICT in the libraries under investigation is that it increases the efficiency of the library's operations. The study's findings also showed that the majority of respondents cited insufficient funds and power supply as the main issues with ICT use in the academic libraries under investigation. In conclusion the study recommended that the government and the private sector should make the provision of ICTs facilities by funding the academic libraries under study for them to provide the needed information sources that is accessible using ICT facilities for the users of the 21st century. The study is related to the present study because it focused on the ICT utilisation and library operations/ routines which are the variables of the present study. However, the difference is seen in some of the objectives covered in the two studies. Where the former study covered the benefits derived from using ICT facilities and reasons for using ICT facilities in the selected libraries covered in the study which the present study did not cover.

2.3 Factors Hindering ICT Utilisation for Effective Library Routines

ICT utilization issues, according to Rawayau (2024), include inconsistent power supplies in the majority of Nigerian university libraries, a lack of standards for library software, and a lack of burglary proof for computers to prevent theft. Rawayau (2024) further identified a number of obstacles that hinder the use of ICT in libraries, including poor and inadequate telecommunication facilities, low computer literacy, a lack of functional ICT policy, resistance to change, low communication facility capacity, a lack of policy for manpower development, a low level of computer facilities, a low level of awareness of Internet facilities among policy makers, government officials, and the ruling class in general, and minimal involvement of academic institutions in network building in Africa. In a similar vein, Gardner (2019) listed limited human resources, poor maintenance, inadequate funding, and inadequate training as critical factors affecting the utilisation of ICT in developing nations. The author further included, expatriates are employed due to lack of skilled and trained personnel and Governments of African Countries cannot continue to pay expatriates. The main

concern of the Vendor is to make money without proper maintenance plan. Libraries cannot effectively use them if there is no good training. Culture is also one of the contributing factors to the effective use of ICT. The system that will be employed, there is need for the system designers to understand the library where the system will be used to improve the provision of services. If not, then there will be problem. Culture as a strong factor determines whether the technology will be accepted for use or not. This issue goes programme writers and system planners to regard the local way of reasoning, cultural milieu, awareness and educational level. Analysis of culture may have different stages. Culture can be analysed as functional, professional, organisational, industrial, regional and national; therefore, national and professional cultures are more relevant to this particular study. Professional cultures have cultural specifications, such as how librarians supervise, receive training, and interact with others; national cultures are related to one's birthplace and training, among other things; and a person's upbringing can have an impact on their capacity to fully utilize contemporary technologies.

The study of Okere (2022) determined Factors Affecting Librarians' Use of Information and Communication Technologies (ICTs) in Federal Colleges of Education, South Western Nigeria. The respondents include para professional librarians and professional librarians. Federal College of Education Osiele, Abeokuta, and Federal College of Education Special, Oyo, in southwest Nigeria, were included in the study. The study employed the descriptive survey research method. Forty-three (43) professional and paraprofessional librarians from the colleges under investigation comprised the study's population. The instrument used for the study was questionnaire. Descriptive statistics of frequency counts, percentages, mean and standard deviation were used for data analysis. Pearson Product Moment Correlation Coefficient was used to test the hypotheses of the study. The findings of the study showed that a variety of ICT tools, including computers, printers, CD-ROMs, projectors, the internet, and scanners, were often utilized for research. Low bandwidth, poor Internet connection, insufficient funding, and inadequate ICT equipment and facilities were identified as the primary obstacles to ICT utilization in the Colleges of Education under study. In two federal colleges of education in Southwestern Nigeria, there was a weak, positive, and significant relationship between the availability of ICTs and the efficient service provided by library staff. The two studies are related because, both covered ICT utilization for effective bibliographic routines. The reviewed study was carried out at Federal College of Education Special, Oyo, and Federal College of Education Osiele,

Abeokuta; in contrast, the current study was undertaken in federal university libraries in North East Nigeria.

3. Research Methodology

Descriptive survey research design was adopted for this study. This is because descriptive survey research design uses a sample and a questionnaire to collect data from respondents. This design is also appropriate because this study attempts to establish the relationship between two variables and data were collected, coded and analysed. ICT utilisation and serial routines in federal university libraries in northeastern Nigeria are the variable of interest. In essence the numerical value of the variables was collected, organized and calculated in an attempt to ascertain the relationship between the independent variable and the dependent variable. The study's population were 258 para-professional librarians and 141 librarians from the six federal university libraries in northeastern Nigeria. Librarians and para-professional librarians were used as respondents because they carry out the routines of the library. The census sampling technique was used to sample the complete population of 399. This included 258 paraprofessional librarians and 141 librarians working in federal university libraries in the North East Zone of Nigeria. Iliegbulen and Amini (2010) stressed that the entire population can be used when the size of the population is small. Therefore, since the population of the librarians and para-professional librarians is not large, census sampling method was considered suitable and therefore, the sample size is 399. Questionnaire was used as research instrument for this study, entitled "Information Communication Technology Utilisation and Serial Routines Questionnaire" (ICTUSRQ)". The respondents were required to indicate their level of agreement or disagreement using the four-point rating scale. The instrument was face validated. Twenty (20) librarians and paraprofessional librarians were given copies of the questionnaire once at Borno State University Library in order to determine the study's reliability. The choice of the library was that the respondents have the same characteristics and the same routines are also carried out. Cronbach's Alpha was used to analyze the respondents' scores in order to assess their reliability. The instrument's reliability coefficient was found to be 0.82. This demonstrates the instrument's reliability for data collection. Pearson Product Moment Correlation was used to answer the research question and testing the hypothesis.

4. Results and Discussion

This section presents data analysis based on the data collected for the study. The presentation was done

under the following subheadings: data analysis and result, finding of the study and discussion of findings.

4.1 Result

The study question was addressed using the Pearson Product Moment Correlation Coefficient.

Research Question 1: What is the relationship between ICT utilisation and serial routines in Federal University libraries in North East, Nigeria?

Table 1: An overview of analysis on the relationship between ICT utilisation and serial routines in federal university libraries in North East, Nigeria (n = 390)

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r-value
ICT utilisation	2621	17923	25004	0.16
Serial routines	3708	36112		

Table 1's result showed an r-value of 0.16, indicating a low relationship between ICT utilisation and serial routines in federal university libraries in North East, Nigeria. This finding suggests that in federal university libraries in northeastern Nigeria, there is low relationship between ICT and serial routines.

Research Question 2: What is the relationship between ICT utilisation and bibliographic routines in Federal University libraries in North East, Nigeria?

Table 2: Summary of analysis on the relationship between ICT utilization and bibliographic routines in federal university libraries in North East Nigeria (n = 390)

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r-value
ICT utilisation	2677	18919	18688	0.22
Bibliographic routines	2702	19494		

Table 2's result showed an r-value of 0.22, indicating a weak relationship between ICT utilisation and bibliographic routines in federal university libraries in North East, Nigeria. This finding suggests that there is low relationship between ICT use and bibliographic routines at Nigeria's federal university libraries in the northeast.

Research Question 3: What are the obstacles preventing Federal University libraries in North East Nigeria from using ICT for efficient library routines?

Table 3: Summary of mean and standard deviation scores of obstacles preventing ICT utilisation for efficient library routines in Federal University libraries in North East, Nigeria

S/N	Obstacles preventing ICT utilisation for effective library routines in Federal University libraries in North East, Nigeria	\bar{x}	SD	Remarks
1.	Insufficient funds	3.53	0.63	Strongly Agreed
2.	Inadequate ICT facilities	3.29	0.62	Agreed
3.	Inadequate power supply	2.30	0.61	Disagreed
4.	Inadequate library software package	3.04	0.54	Agreed
5.	Lack of encouragement from the management	3.11	0.57	Agreed
6	Poor maintenance culture	3.16	0.59	Agreed
7	Inadequate training of staff on ICT	3.09	0.60	Agreed
8	Staff apathy to ICT	2.97	0.59	Agreed
9	Insufficient technical assistance from vendors	3.04	0.56	Agreed
10	Poor Internet connectivity	2.78	0.69	Agreed
	Cluster Mean	3.03	0.60	Agreed

The results in Table 3 showed that the mean range of the respondents' responses for items 2, 4, 5, 6, 7, 8, 9, and 10 falls within 2.50-3.49. This indicates that the respondents agreed that inadequate ICT facilities, inadequate library software package, lack of management encouragement, poor maintenance culture, inadequate staff training on ICT, staff apathy to ICT, lack of vendor technical support, and poor Internet connectivity are obstacles

preventing ICT utilization for effective library routines in Federal University libraries in North East, Nigeria. The result in Table 3 also showed that the mean range of the respondents for items 3 falls within 1.00-1.49 which means that the respondents disagreed that inadequate power supply is a factor hindering ICT utilisation for effective library routines in Federal University libraries in North East, Nigeria. The results in Table 3 also show that the respondents' mean range for item 1 falls between 3.50 and 4.00. This indicates that the respondents strongly agreed that insufficient funding is a factor impeding the use of ICT for efficient library routines in Federal University libraries in North East Nigeria. However, the cluster mean of 3.03 for all the items suggests that factors impeding ICT utilization for efficient library routines in Federal University libraries in North East, Nigeria, include inadequate funding, inadequate ICT facilities, inadequate library software package, lack of management encouragement, poor maintenance culture, inadequate staff ICT training, staff apathy, lack of vendor technical support, and poor Internet connectivity.

Hypotheses

Hypothesis 1: There is no significant relationship between ICT utilisation and serial routines in Federal University libraries in North East, Nigeria.

Table 1: Summary of Pearson Product Moment Correlation analysis on the relationship between ICT utilisation and serial routines in federal university libraries in North East, Nigeria (n = 390).

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r-cal	r-cit	Decision
ICT utilisation	2621	17923	25004	0.16	.113	Significant
Serial routines	3708	36112				

*Significant at .05 level, df = 388 **Source:** Field work (2023)

The result in Table 1 reveals that the calculated r-value of 0.16 is greater than the critical r-value of .113 at .05 level of significance and at 388 degrees of freedom. With this result, the null hypothesis was rejected. This suggests that serial routines and ICT utilization have significant relationship in federal university libraries in northeastern Nigeria.

Hypothesis 2: There is no significant relationship between ICT utilisation and bibliographic routines in Federal University libraries in North East, Nigeria.

Table 2: Summary of Pearson Product Moment Correlation analysis on the relationship between ICT utilization and bibliographic routines in federal university libraries in North East, Nigeria (n = 390)

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r-cal	r-cit	Decision
ICT utilisation	2677	18919	18688	0.22	.113	Significant
Bibliographic routines	2702	19494				

*Significant at .05 level, df = 388

The result in Table 2 reveals that the calculated r-value of 0.22 is greater than the critical r-value of .113 at .05 level of significance and at 388 degrees of freedom. With this result, the null hypothesis was rejected. This implies there is significant relationship between ICT utilisation and bibliographic routines in Federal University libraries in North East, Nigeria.

4.2 Discussion of findings

The result of the research question regarding the relationship between ICT utilization and serial routines in federal university libraries in North East Nigeria revealed a low relationship, however, the

hypothesis showed that there is relationship between ICT utilisation and serial routines in federal university libraries in North East Nigeria. This is because of inadequate funding, inadequate ICT facilities and lack of encouragement from the management of libraries on ICT utilisation in federal university libraries in North East, Nigeria. With the effective utilisation of ICT, communication with vendors, acquisition and preservation of serials information resources can be more efficient than the manual process. The finding align with those of Anunobi and Edoka's (2015) study, "Use of ICT Facilities for Serials Functions in Southern Nigeria Federal University Libraries", which revealed that serials functions are still predominately manual. The

finding of the study of Eunice and Rachael (2023) on the ICT Application and Information Service Delivery in South-West Nigeria's Public Polytechnic Libraries, is also in line with the finding of this study, which revealed that application of ICT for the serial services is low. This is caused by the challenges ranging from inadequate ICT facilities, poor power supply, lack of internet access, etc. This implies that the low relationship between serial routines and ICT utilisation in federal university libraries in North East, Nigeria could be attributed to inadequate ICT facilities poor power supply and poor internet access.

The analysis of the research question on the relationship between ICT utilization and bibliographic routines in federal university libraries in North East, Nigeria revealed a low relationship, while the hypothesis indicated that there is a significant relationship between ICT utilization and bibliographic routines in federal university libraries in North East, Nigeria. This is because of inadequate power supply, staff apathy to ICT and poor Internet connectivity in Federal University Libraries in North East, Nigeria. Adequate ICT utilisation for bibliographic routines improves the efficiency of abstracting and indexing of information sources in the library. The finding corroborated those of Olushola et al.'s (2020) study, which discovered that ICT is utilized in a number of academic libraries in Kwara State for the following purposes: selecting library resources, ordering information resources, reviewing publisher's catalogue, purchasing information resources, cataloging and classifying information resources, library information resources statistics records, marketing of the library, bibliographic services, and user registration. The low relationship between bibliographic routines and ICT utilisation was as a result of poor funding. The finding also agreed with that of Ivwighreghweta (2013) whose finding indicated that the services and operations in library where ICT are mostly been applied to, are in the acquisition of materials, bibliographic services and provision of the OPAC services and that the low relationship between bibliographic routines and ICT utilisation was as a result of poor funding and power supply as the major problem militating against the use of the ICTs in the selected libraries. The finding contradict that of Godwin (2021), who found that the Plateau State University library used internet services extensively to provide collection development services, cataloguing/classification services, awareness services, reference services, selective dissemination of information services, interlibrary loan services, documentary services, circulation services, bibliographic services, and resource sharing.

Inadequate funding, inadequate ICT facilities, inadequate library software packages, lack of

management encouragement, poor maintenance culture, inadequate staff training on ICT, staff apathy toward ICT, lack of vendor technical support, and poor Internet connectivity are among the factors impeding ICT utilization for effective library routines in Federal University libraries in North East, Nigeria, according to the result of the analysis. This is due to the management's lack of interest in addressing the majority of the issues facing federal university libraries in North East Nigeria as well as insufficient funds. The results support Rawayau's (2024) assessment that the majority of Nigerian university libraries had inconsistent power supplies, a lack of standardized library software, and a lack of lack of burglaries to prevent computer theft. The results also support the findings of Rawayau (2024), who identified several obstacles to the use of ICT in libraries, including poor and inadequate telecommunication facilities, low computer literacy, a lack of functional ICT policy, resistance to change, low communication facility capacity, a lack of policy for manpower development, low computer facilities, low awareness of Internet facilities among policy makers, government officials, and the ruling class in general, and minimal involvement of academic institutions in network building in Africa. The results further support Gardner's (2019) assertion that the use of ICT in underdeveloped nations is significantly impacted by a lack of human resources, poor maintenance, inadequate finance, and inadequate training.

5. Conclusion

The study's findings led to the conclusion that, at Federal University Libraries in North-East Nigeria, there is low relationship between ICT utilisation for serial and bibliographic routines. This is because of Inadequate funding, inadequate ICT facilities, inadequate library software packages, lack of management encouragement, poor maintenance culture, inadequate staff training on ICT, staff apathy toward ICT, lack of vendor technical support, and poor Internet connectivity are among the factors impeding ICT utilization for effective library routines in Federal University libraries in North East, Nigeria,

6. Recommendations

Based on the conclusion of the study, this recommendation was made:

- Appropriate ICT facilities should be provided by the management of the libraries under study for easier and successful serial and bibliographic routines.
- In order to have efficient serial and bibliographic routines in federal university

libraries in North East Nigeria, librarians should have a positive attitude toward the use of ICT.

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