



COMPUTER SYSTEMS, DIGITAL NETWORKS AND INFORMATION DELIVERY IN FEDERAL UNIVERSITY E-LIBRARIES IN SOUTH-SOUTH, NIGERIA

By

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Journal of Applied Information Science and Technology 18 (2) 2025

<https://doi.org/10.70118/jaist.202501802.9>

Abstract

Purpose: *The study aimed to determine if the availability of computer systems and digital networks can influence information delivery in Nigerian university e-libraries.*

Design/methodology/approach: *The survey research design was adopted for the study. Two objectives and two hypotheses were used for the study. The purposive sampling technique was to select a sample of 214 e-library personnel from Federal Universities in South-South, Nigeria. Of the 214 structured questionnaires distributed, 208 were returned, representing 97 percent return rate and used for the study. The data was analysed using Simple Linear Regression analysis.*

Findings: *The results indicated that computer systems and digital networks are key predictors of information delivery in Nigerian university e-libraries. This implies that no e-library can function without contemporary computer systems and digital networks, including the internet and local area networks (LANs).*

Practical implication: *The federal and state governments should endeavor to equip Nigerian university e-libraries with modern computer systems and reliable internet access to ensure optimal performance and current information dissemination.*

Originality/value: *The literature study indicated that the majority of research on information distribution has been conducted globally, with less focus on Nigeria. Furthermore, most studies pertained to the health sector, with only a trace in the field of library and information science. This work aims to address this gap. This study is crucial for library managers in the planning and annual budgeting process, emphasising the necessity to equip University e-libraries with sufficient computers and digital networks to ensure optimal performance in meeting the information needs of patrons.*

Keywords: *Computer system, digital networks, information delivery, e-libraries, Nigeria*

Paper Type: *Empirical research*

Introduction

The library is the store house of knowledge. In tertiary institutions, libraries are established for use by students, academic and non-academic staff and anyone who may be interested in research. The introduction of Information and Communication Technologies (ICTs) in libraries has greatly and positively influenced the way information is acquired, stored and disseminated to patrons and this has immensely contributed to the growth of library functions, services and operations. ICT has resulted in quick access to information and this has led to a transformation of the functions of the librarian from that of direct provider of information resources to that of a facilitator of information access and someone who is actively involved in library use instruction to information users. Librarians as professionals identify, acquire, organise, stores and communicate or disseminates these information resources electronically or manually to satisfy the information needs of library patrons. Singh (2021), is of the view that publication in the internet provide libraries a platform for academics to communicate and share library activities and operations to diverse users across the globe, therefore, librarians are now challenged with new ways to successfully pass up-to-date information to its users. The library that was previously a storehouse of books and journals not actively used by students and researchers has now been transformed to an active place where information can be immediately accessed to cater for the information needs of library users.

The information resources available in the internet serve as a catalyst for improving research and interaction regardless of geographical limitation and space (Singh, 2020). While the internet in developed nations is regarded as a significant advancement in delivering efficient library services, African countries continue to encounter obstacles in information dissemination due to the inadequate knowledge and competencies of librarians in acquiring internet skills and expertise. Information constitutes power and pertains to processed data utilised in decision-making. Access to information is a fundamental right; thus, every individual is entitled to own or access information to address surrounding issues. This indicates that students require information for their schoolwork, projects, participation in political programs, educational pursuits, socio-economic activities, and community development.

The computer system is crucial in the information profession due to its rapid information processing capabilities. The computer system is highly reliable and devoid of faults, save for those caused by human factors. A significant characteristic of the computer system is its huge storage capacity. It can accommodate a substantial volume of data that can be effortlessly accessed when required. These attributes collectively provide a computer an essential instrument for enhanced productivity and efficient decision-making. The utilisation of e-libraries for information dissemination is crucial for economic sustainability. For the computer system to disseminate information to its users, a network connection is required. When computers are connected, data is

communicated from one terminal to the other. In many libraries and organisations, computers and printers are connected together for the purpose of sharing information. Without a digital network, access to information in e-libraries will be hindered. There is need for robust internet connectivity to aid in remote access to information. In addition, a local area network (LAN) for resource sharing is also needed in university e-libraries. Dhepe, and Gabhane (2024), emphasize that the cooperative efforts of libraries to share resources, information, and services are referred to as library networking. Libraries can pool their resources and expertise through a variety of collaboration models, such as consortia, shared catalogs, and interlibrary lending systems. Through networking, users can access materials more easily and a greater variety of resources than they could from a single library. Libraries can negotiate better prices for electronic resources and work together on cooperative projects that optimize their influence on the communities they serve by promoting collaboration.

The academic libraries of the 21st century rely on internet technology for the provision of information services. As internet services evolves fast and continuously, the users' information needs change and have more expectations from librarians (Coldwell-Neilson, 2017). Academic librarians must consistently enhance their technological competencies in conjunction with the everyday advancements in digital technology, particularly regarding breakthroughs in global internet services. The developments in digital technologies and specifically the paradigm shift in library

services with the advent of Information and Communication Technologies (ICTs), internet services, electronic resources, digital collections and other digital technology services have led to advancement in digital literacy in academic libraries and among librarians (Atram, 2017).

Liman, Yunusa, and Ahmed (2023), asserted that the internet has disseminated technological literacy and provided individuals globally with rapid access to extensive information. The internet connects educational, commercial, and non-profit organisations, the military, and individuals. Academic institutions are founded on the principles of pedagogy, scholarship, and inquiry, centred on the generation and dissemination of information, ideas, and knowledge. The internet has facilitated learning by enabling the acquisition, creation, and immediate access to digital content. The internet in academic libraries in Nigeria facilitates the provision of efficient and up-to-date information services for users.

The IFLA president (2020), accurately asserted that genuine sustainable development is unattainable without access to information, and that meaningful, inclusive access to information is impossible without libraries. In the absence of robust governmental funding for libraries, the digital divide may evolve into an information and knowledge disparity. Enhanced access to information and knowledge, supported by universal literacy, is a fundamental foundation for sustainable development. A fundamental principle of sustainable development is that technology may facilitate individuals in fulfilling their developmental requirements. Access to ICT skills facilitates

job applications, as the application process for all positions has transitioned online, promotes scientific research, upgrades the technological capacities of industrial sectors globally, particularly in emerging nations, and fosters creativity. All libraries are crucial in facilitating access to data, research, and knowledge that underpin informed inquiry and public information access.

Statement of the problem

E-libraries in Nigerian universities are created to enhance the traditional library's role in fulfilling the university's threefold mission of teaching, learning, and research. The purpose of every e-library is to provide information in electronic format to its users at all times. When e-libraries do not meet up with the above function, it consequently signifies that the purpose to which the e-library was developed has been defeated. The researchers observed numerous deficiencies in information dissemination in some e-libraries in the study area, including the unavailability of computers, software obsolescence, and a lack of pertinent digital networks, which resulted in unwarranted delays in information transmission. The question therefore arises: how can the availability of computer systems and digital networks influence information delivery in Nigerian University e-libraries?

Objectives of the study

The objectives that guided this study include the following.

1. To determine whether availability of the computer system can influence the delivery of information in Federal University e-libraries in South-South, Nigeria.

2. To ascertain if the availability of digital networks can influence the delivery of information in Federal University e-libraries in South-South, Nigeria.

Hypotheses of the study

The following hypotheses were derived from the objectives of the study.

3. Computer system availability does not significantly predict information delivery in Federal University e-libraries in South-South, Nigeria.
4. Availability of digital networks does not significantly predict the delivery of information in Federal University e-libraries in South-South, Nigeria.

Review of related literature

Onah, Onyebuchi, Eke, and Adayi, (2020), carried out a study titled "Empirical evidence of availability and utilization of information and communication technology (ICT) in teaching and learning cultural and creative arts in Nsukka local government". The study adopted a descriptive survey research design with a sample of 178 respondents selected through the stratified random sampling technique. Analysis was carried out using frequency distribution table, percentages and mean. The findings of the study revealed that major ICT facilities available in the secondary schools are: computers 94(55%), mobile phones 77(45.8%), photocopying machines 50(29.8%), Facebook 71(42.3%), and online information resources 50(29.8). on the other hand, ICT facilities such as Internet, e-mail, scanners, internet telephony, digital cameras, CD-ROMs, Local Area Network and Wide Area Network are least available in the

secondary schools. This means that the more available facilities can support information delivery, while the less available facilities needs to be improve upon for timely information delivery.

Omigie and Odion (2024), asserted that world-wide, information is ICT driven and the convenience and adoption of novel technologies for information resource delivery, will continue to keenly impact digital library users' information needs. Academic librarians in developing countries like Nigeria are hardworking but there is need to motivate them more alongside technology directions. This certainly would promote their desire to digitize their conventional library content into online by using the novel technologies for sustainable quality resources and access and efficient information delivery. Oladokun, Ajani, Oloniruha, Ilori, Nsirim, and Egbe (2025), posited that as metaverse libraries transform how users access and interact with information in immersive digital environments, they also face a unique set of cybersecurity challenges.

Onoriode, (2016), in a study on "Availability of Information and Communication Technologies (ICT) in Academic Libraries in Nigeria: A review", concluded that academic libraries in Nigeria are making serious efforts to meet user's information needs in this era by making ICTs e.g. computers, networks etc. available and applied to academic library services. Nonetheless, the study revealed that the availability of ICT in academic libraries in Nigeria remains inadequate. This necessitates action from governmental and non-governmental organisations to restore the reputation of libraries in Nigeria. Orim et al.

(2025), assert that the intuitive interface of ICT tools enables instructors to accelerate the scoring process, hence identifying areas requiring enhancement and facilitating prompt remediation. Academic personnel frequently appreciate the independence to assess and implement innovations according to their assessed significance and applicability.

In their study titled "Availability of Information and Communication Technology Resources for Enhancing Teachers' Instructional Delivery in Private Secondary Schools in Port-Harcourt Metropolis," Wordu, Jaja, and Gideon (2022), discovered that only laptop computers, printers, the Internet, PowerPoint projectors, radio and television sets, tablet computers, word processors, computer games, smartphones, multimedia, and digital cameras were sufficiently accessible for improving teachers' instructional delivery in Private Secondary Schools in Port Harcourt Metropolis, whereas all other ICT resources were unavailable. Research regarding the sufficiency of ICT resources for instruction in private secondary schools indicates that laptop computers, scanners, radio and television sets, smartphones, and digital cameras are deemed sufficiently accessible to improve teachers' instructional delivery in the Port Harcourt Metropolis. All remaining resources were assessed as severely insufficient. This findings implies that availability of ICT facilities like computer systems and other related digital facilities can go a long way in efficiently delivering information in all formats to its clients.

Dhepe, and Gabhane, (2024), concluded that networking technologies

allow libraries to form consortia, enabling them to share resources, including digital content and physical collections. Collaborative networks such as WorldCat, the largest global bibliographic database, allow libraries to provide users with access to materials beyond their own collections. Interlibrary loans (ILL) and digital resource sharing have become pivotal in enhancing the user experience. The integration of library networking and digitization is critical to the future of libraries, allowing them to adapt to the changing information landscape and satisfy the different demands of its users. Networking facilitates resource sharing and collaboration, whereas digitization is critical for preserving cultural heritage and increasing access to information.

According to Talikoti (2023), library networks have been instrumental in enhancing resource sharing and collaboration among libraries. By linking libraries, these networks provide enhanced access to a wider array of items than any individual library could provide, thereby increasing service delivery and optimising resource utilisation. The capacity to disseminate physical and digital materials, coupled with collaborative efforts, has reinforced the position of libraries as community hubs and information centres. The incorporation of technology into library networks has been a vital element in their development. The emergence of automated systems, digital resources, and cloud-based solutions has transformed the operational dynamics and networking interactions of libraries. These improvements have enhanced the effective management of library resources, improved user access to information, and allowed libraries to provide

a variety of digital services that were previously unfeasible.

Liman, Yunusa, and Ahmed (2023), asserted that online capabilities are needed for librarians to deliver efficient library services. The internet has emerged as a conventional instrument that industrialised nations have integrated into their libraries to access, connect, and deliver efficient information services to consumers. The internet has evolved into a platform that enables librarians to provide seamless access to information, surpassing conventional information service delivery in academic libraries. Twenty-first century librarians have revolutionised library services by transitioning to digital and virtual platforms, offering books and journals as e-books and e-journals. These advancements necessitate that librarians acquire online knowledge, skills, and competences to effectively provide information to clients as required.

ICT is seen as a contemporary reaction to the difficulties and complexities of library problems posed by the information age challenges. Mesagan, Anyim, Ubogu, and Echezona (2022), in their study "Availability and Utilisation of Information and Communication Technology Resources in Nigerian Academic Libraries," discovered that ICT serves as a conduit for library users to effectively and efficiently access and utilise online resources within any library. It is a retrieval system that offers many methods to retrieve library resources online. The study indicates that, owing to the ongoing problem of accessing information resources and recognising that accessibility is a prerequisite for information utilisation, ICT is essential in academic libraries for the timely delivery of

information. Edam-Agbor et al (2025), carried out a study titled “Librarians’ awareness, acceptability, and application of artificial intelligence in academic research libraries: Multigroup analysis via PLS–SEM”. The findings indicated that acceptance influences the utilisation of artificial intelligence (AI) in service delivery within academic research libraries underscoring a critical relationship between organisational attitudes and the adoption of innovative technologies like the computers and digital networks in information delivery.

Egbe, and Ogunjimi (2024), in their study on “Operating system software and CD-ROM databases as tools for information delivery in University e-libraries in South-South Zone, Nigeria” concluded that operating system software and CD-ROM databases have a significant influence on information delivery in University e-libraries in the study area. Computer systems without relevant operating system in e-libraries are just like toys used to decorate a child’s room. It is therefore expedient for university e-

libraries to equip their computer systems with adequate operating system software for timely information delivery. According to Ogunjimi, Egbe, and Enidiok, (2025), Information and Communication technology has enabled organisations and libraries to provide a wide range of services, and also transformed the way human beings interact, live, create, store and deliver information.

Methodology

The research design adopted for this study was the survey design. The tool employed for data collection was a structured questionnaire designed to obtain information from the respondents. The study utilised the complete population of 214 e-library staff, in Federal University e-libraries in South-South, Nigeria. categorising it as a census study. The purposive sampling method was employed to choose the study sample. Two hundred and fourteen (214) questionnaires were distributed, of which two hundred and eight (208) were retrieved and used for the study, giving a 97 percent return rate.

Results and Discussion

Table 1: Demographic variables of respondents

Demographic variables	No. of respondents	Percentage (%)
Gender		
Male	150	72.1
Female	58	27.9
Total	208	100
Age		
16-25	13	6.3
26-35	75	36.1
26 and above	120	57.6
Total	208	100
Marital status		

Single	80	38.5
Married	120	57.7
Separated/Divorced	8	3.8
Total	208	100
Educational Qualification		
OND/NCE	10	4.8
B.Sc./HND	160	76.9
M.Sc	25	12.0
P.hD	13	6.3
Total	208	100

Source: Field survey, 2025

The demographic variables of the respondents analyzed in the study include gender, age, marital status and educational qualification. The result in table 1 shows that most of the respondents were male (72.1%) while 27.9% were female. With regards to the age of the respondents, the results showed that majority of the respondents (57.6%) were 36 years and above, while 36.1% were between the age range of 26-35. Those in the age range of 16-25 received the lowest response (6.3%). The analysis of the results with respect to marital status indicated that most of the respondents were married (57.7%), while 38.5% were single and only 3.8% were divorced. Finally, in respect to the educational qualification of the respondents, majority of them were first degree holders

(76.9%) followed by M.Sc. holders (12.0%), Ph.D holders (6.3%) and OND/NCE was the least, which attracted (4.8%).

Hypothesis one

Availability of computer system does not significantly predict information delivery in Federal University e-libraries in South-South, Nigeria.

Simple regression analysis was employed to test this hypothesis. This is because regression analysis is commonly used for modelling the relationship between a single dependent variable and one or more predictors. Here simple linear regression is used because we have one predictor. The result of the analysis is presented in Table 2.

Table 2: Simple regression result of the prediction of availability of computer system and information delivery in university e-libraries (N=208)

R	R Square	Adjusted Square	R	Std. Error of the Estimate	
.483(a)	.234	.230		3.01982	
	Sum of Squares	Df	Mean Square	F	Sig.
Regression	573.120	1	573.120	62.847*	.000(a)

Residual	1878.573	206	9.119
Total	2451.692	207	

a. Dependent Variable: information delivery in e-libraries

b. Predictors: (Constant), availability of the computer system

The simple regression analysis of the prediction of availability of the computer system on information delivery in university e-libraries produced “an adjusted coefficient of determination (R^2) of .230. This indicates that availability of the computer system accounted for 23.0% of the variation in information delivery in e-libraries in the study area. The F-value obtained from the regression table was 62.847 and the sig. value of .000 at the degree of freedom (df) 1 and 206”. The implication of this result is that availability of the computer system is a significant

predictor of information delivery in Nigerian universities e-libraries.

Hypothesis two

Availability of digital networks does not significantly predict information delivery in Nigerian University e-libraries. Simple regression analysis was employed to test this hypothesis. This is because regression analysis is commonly used for modeling the relationship between a single dependent variable and one or more predictors. Here simple linear regression is used because we have one predictor. The result of the analysis is presented in Table 3.

Table 3: Simple regression result of the prediction of availability of digital networks on information delivery in university e-libraries

R	R Square	Adjusted R Square	Std. Error of the Estimate		
.556(a)	.309	.305	2.86818		
	Sum of Squares	Df	Mean Square	F	Sig.
Regression	757.042	1	757.042	92.025	.000(a)
Residual	1694.651	206	8.226		
Total	2451.692	207			

a. Dependent Variable: information delivery in e-libraries

b. Predictors: (Constant), availability of digital Networks

The simple regression analysis of the prediction of availability of digital networks on information delivery in university e-libraries produced “an adjusted coefficient of determination (R^2) of .305. This indicates that the availability of digital networks accounted for 30.5% of variation in

information delivery in e-libraries in the study area. The F-value obtained from the regression table was 92.025 and the sig. value of .000at the degree of freedom (df) 1 and 206”. The implication of this result is that availability of digital networks is a

significant predictor of information delivery in Nigerian University e-libraries.

Discussion of findings

Availability of the computer system and information delivery

The outcome of the initial hypothesis demonstrated that computer systems greatly forecast information dissemination in Nigerian university e-libraries. This indicates that when computers are provided in e-libraries, all library users will have access to these computers to obtain any information necessary to meet their informational requirements. The introduction of computers in libraries has facilitated the procurement of information more efficiently than in the conventional age. Computers facilitate access to diverse information resources, hence bridging the information gap between industrialised and developing or underdeveloped nations. This finding aligns with the research of Mesagan, Anyim, Ubogu, and Echezona (2022), which shown that ICT serves as a conduit for library users to access and utilise online resources effectively and efficiently. It is a retrieval system that offers many methods for accessing library materials online. The study indicates that, owing to the ongoing problem of accessing information resources and recognising that accessibility is a prerequisite for information utilisation, ICT is essential in academic libraries for the provision of current information.

Availability of digital networks and information delivery

The findings of the second hypothesis revealed that the availability of digital networks strongly predicts knowledge

dissemination in Nigerian university e-libraries. The veracity of this statement lies in the necessity of digital networks for the dissemination of knowledge in e-libraries to their clientele. In the absence of digital networks, information cannot be transmitted remotely from the internet. The internet and local area network (LAN) are essential in e-libraries for the effective delivery of information to seekers. The government, at both federal and state levels, is responsible for allocating funding necessary for the acquisition of digital networks to ensure the effective operation of e-libraries, thereby fulfilling their intended function. This finding agrees with Talikoti (2023), who believes that library networks have been instrumental in enhancing resource sharing and collaboration among libraries. By linking libraries, these networks provide enhanced access to a wider array of items than any individual library could provide, thereby increasing service delivery and optimising resource utilisation. The capacity to disseminate physical and digital materials, along with collaborative endeavours, has enhanced the function of libraries as community hubs and information centres. The incorporation of technology into library networks has been a vital element in their development. The emergence of automated systems, digital resources, and cloud-based solutions has transformed library operations and their interactions within networks. These improvements have enhanced the effective management of library resources, improved user access to information, and enabled libraries to provide a variety of previously unreachable digital services.

Conclusion and recommendations

Information systems are very important in University libraries especially with the advent of ICT and electronic information resources. Adequate infrastructure is needed in e-libraries for timely access to up-to-date information. As a result of the advent of information systems, the information gap between the developing and developed countries of the world is becoming very narrow. Meaningful, accessible and timely information is needed in University e-libraries for research, homework, decision making and teaching by students, faculty and researchers. The decision taken by the management of Universities towards provision of computers and digital networks in e-libraries is very important as this can affect the functionality of such e-libraries. An e-library rich in computers and digital networks can have a positive influence on users' attitude towards its use. E-libraries in Universities are established to complement the traditional library where it may be lacking in information provision and access. The emergence of technology has tremendously impacted on the way information is delivered in e-libraries. Unarguably, adequate computers and digital networks are indispensable in the provision of quality information in University e-libraries.

Based on the results of the study the following conclusion was reached; computer system and digital networks significantly predicts information delivery in university e-libraries. Most Nigerian universities do not maintain their e-libraries after they have been established, they do not even have what it takes to deliver information to its teeming

users. For an e-library to live up to its expectation, they must be up-to-date computers and these computers on their own cannot deliver information unless connected to a network. Therefore, this study concluded that adequate provision of computers and digital networks can cater for the information needs of its patrons and this in turn can lead to sustainable development.

Based on the findings of this study, it is recommended that both federal and state governments should endeavour to equip e-libraries in the study area with modern computer systems to enhance information delivery; additionally, digital networks such as the internet and LAN should be reliably provided for the effective dissemination of information in Nigerian university e-libraries.

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