

Digital literacy skills among African library and information science professionals – an exploratory study

Digital literacy skills

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Received 13 June 2022
Revised 30 July 2022
Accepted 22 August 2022

Abstract

Purpose – This study aims to assess the digital literacy of African library and information science (LIS) professionals. Digital literacy skills are required in the digital library environment.

Design/methodology/approach – Relevant literature was reviewed on this topic; previous study questionnaires, various university LIS curriculum, content analysis and job advertising were used for preparing the survey questionnaire. This study used an ex post facto research design. Purposive sampling was adopted in this study, and data were collected from Google form by sharing the research questionnaire by hyperlink which was undertaken from March 15, 2022 to May 24, 2022. The data were collected by a structured questionnaire. A four-point Likert scale was used to measure how library professionals acquired digital literacy skills. Content analysis of more than 500 job vacancies over the past three years (2018–2022) of library job advertisements was taken randomly.

Findings – This study's findings show that the majority of the good at basic level of digital literacy skills at the same time have less in advanced digital literacy skills. The finding of this study shows the majority of who have to upgrade and learn about advanced digital literacy skills.

Practical implications – This study recommends adopting a new syllabus and updating a LIS curriculum based on the library's technological development. Furthermore, this study's potential result suggests more practical classes instead of theoretical study and it is useful to the library schools, associations, MOOC providers and lifelong learners.

Originality/value – This study is conducted with 102 African library professionals from 13 countries. This study discusses futuristic digital literacy skills and basic literacy skills. This study is beneficial to those who are preparing a new curriculum in LIS fields.

Keywords Digital skills, Academic libraries, Information literacy, Digital literacy, ICT skills, Paper type research paper

Paper type Research paper



Introduction

Advancement in Information and Communication Technologies is increasing daily and this has affected the operations of services in every sector of the society. The library is not left

out with the introduction of various information technology-related services that have come to improve the overall operations and traditional services of the library. The functionality of librarians in the 21st century will be dependent on their possession of these skills which can be referred to as digital literacy skills. [Ugwulebo and Okuonghae \(2021\)](#) observed that this increase in the number of information resources has led to the problem of use of these information resources. To ensure full use of these resources, digital literacy skills must be acquired by the information managers who are also known as the library to be able to meet their user's needs. Libraries and librarians have now been challenged on the need to acquire these digital literacy skills so that they can effectively use these 21st-century resources and also meet their users' needs in good time and also remotely. Education of librarians on the need to possess these digital literacy skills is paramount to ensure improved service delivery and also increased participation in the information communication technology world. These digital literacy skills will make librarians digitally literate to effectively navigate the information world to ensure the effective creation of information resources and full use of these resources. In the words of Kirkland (2014) :

[...] this is the ideal time to leverage the collaborative learning model of the library as a learning commons and the professional leadership of teacher-librarians to address issues around digital literacy.

In their view, [Khan and Waheed \(2015\)](#) defined digital literacy as possessing the ability and technical know-how to perform and use information resources in a digital world. They further opine that a digitally literate person is someone that can be able to interpret and understand digital media like sound, images and text as well as generate new information from these resources. To further buttress the point, [Anyim \(2018\)](#) sees digital literacy as a group of life skills that are essential to possess for full inclusion and participation in our media-driven, information-rich society. These skills have to do with the ability to search, organise, understand, evaluate and use digital information and also the ability to assess the impact of these technologies and management of them.

Becoming digital literate is most needed at this time to provide the required digital information resources. The ability to use visual representations, integrate multiple digital texts, navigate non-linear digital texts and evaluate digital information are examples of digital literacy. Libraries have various types of resources such as print and electronic; two types of resources are primary (first-hand information) and secondary (second-hand information or synthesis of primary resources), multiple types of multimedia formats. Academic library professionals have to play a proactive role in ensuring the library services are provided effectively and have to know users are using the services efficiently.

Technology has developed and adopted most of the libraries and users also started to use and expect electronic-based services, because electronic services are time savers and easy to access. In any kind of electronic library, digital literacy skills are essential to work in a digital environment for providing e-resource services to the users in an effective way. Digital library literacy skills include fundamental knowledge of computers, social media, integrated library management systems, information retrieval, networking, programming, Web page design, database management system, metadata, editing the data to multimedia documents and strong technical skills that include communication and critical thinking skills. These skills are important to access and provide all the digital-based traditional services.

Digital literacy revolves around understanding information and performing tasks digitally in a digital environment. These have to do with all the skills and knowledge required to be able to perform in the digital world such as:

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- using a computer to find, manipulate and communicate information;
 - being able to identify information in different types of formats and media (such as films, databases, the internet and so on);
 - critically evaluating information and media sources for accuracy, reliability and credibility; and
 - using digital tools and information ethically and safely ([Ukachi, 2010](#)).

The importance of these skills to the librarians is enormous in terms of improving the overall performance of their job and also to be able to meet their client's needs. These skills also make librarians relevant. The relevance of the librarian will be determined by the ability of the librarian to solve their users' needs in this digital world. When the library does not possess the much-needed digital literacy skills, their relevance will not be seen, and also, this will lead to poor visibility for the profession. These skills also help to ensure time-saving during the use of information resources. Time is money and saving the time of the user always remains one of the key aspects of the profession. Without the acquisition of digital literacy skills, search and use of information will be cumbersome and discouraging to the user of the information. Digital literacy skills also lead to an increased usage of information resources. Once users are digitally literate, they will always want to access these digital resources, and this will lead to increased use of the resources to meet their information needs.

Technology has led to the proliferation of diverse information resources which can now be accessible to users. This accessibility is hampered by the presence of some challenges occasioned by a lack of digital literacy. The use of these technologies has been hampered as a result of a lack of in-depth skills, critical thinking and digital literacy and communication skills. Baring these issues, it is now important for librarians to not just acquire these skills but also be at the forefront of training their users to ensure full use of library resources. The libraries coordinate and direct users on the rudiments of digital literacy, thereby creating digital inclusion for the library user community. Thus, users will be digitally equipped and educated to ensure effective navigation of the information terrain to ensure that knowledge is created by the user and not just consumed. Thus, this literacy not only is about being knowledgeable in the use of computers and the internet but also includes other ethical issues ([Attahir, 2018](#)).

Traditional and technology-based library services are merged together to provide these improved library services. The use of library technology-based applications, such as the integrated library management system, and Web-based services, such as OPAC and remote access, has revolutionised the overall services of the library. This implies that every library professional is supposed to update and adapt as well as know about digital technology through the acquisition of digital literacy skills. Without these skills, effective e-services cannot be provided by library professionals. In India, special libraries/research institute libraries are providing numerous electronic-based services, so digital literacy skills study is necessary to conduct research with R&D libraries. Librarians and other information professionals in Africa are mostly faced with the challenge of upgrading their centres and activities in this era of digitisation. Library services are experiencing these changes in the digitisation era, and librarians and para-professionals have to upgrade their skills to flow with the digital era. Digitisation has impacted not only the information world but also the role, skills and method of delivery of service of the information professional ([Ezeami et al., 2015](#)).

The acquisition of digital literacy skills does not come without some challenges. In their view, [Emiri \(2017\)](#) and [Salaam and Adegbore \(2010\)](#) identified some factors that hinder

librarians from using digital literacy skills, and these include poor information and technology facilities, lack of in-depth skills on how to search information materials, low literacy levels of the population, internet prohibition issues, power shortage problem and low or weak internet network. It is on this backdrop that the research seeks to examine digital literacy skills among African library and information science (LIS) professionals in selected African countries.

Statement of the problem

The proliferation of information, the advent of digital technology and globalisation have led to the creation of a global village where access and use of information both electronically and traditionally are now paramount to every user. In this electronic dependent world, the promotion of digital library services and digital literacy skills are unavoidable for library professionals to acquire. Library services are now being upgraded from traditional to electronic-based services which makes it important for librarians to possess and apply updated digital literacy skills. Research has revealed that librarians in Africa are yet to fully grasp the importance of digital literacy skills to ensure the effective application of their services.

Librarians in Africa seemingly possess very little or nil computer skills. They can hardly operate the computer, cannot surf the internet or access the email. Most librarians also seem not to possess the skills to access information via the computer, and they also lack the skill with which to work in an automated library. The herculean task of information management in this 21st century makes it important that these skills are possessed by librarians so that they can meet their teaming users' needs. For satisfying library user needs, digital competencies and skills are vital. Therefore, in view of this scenario, the present study was necessitated. The findings of this study are useful to update the LIS curriculum and job requirements and also to inform the library professionals on the digital literacy skills required for upgrading themselves through conferences, seminars, webinars or workshops.

Objectives of the study

The main objective of the study is to explore the digital literacy skills among African LIS professionals. Specifically, the study seeks to:

- find out the level of digital literacy skills acquired by African LIS professionals; and
- find out the challenges encountered by the African LIS professionals while obtaining digital literacy skills.

Research questions

RQ1. What is the level of digital literacy skills acquired by African library and information science professionals?

RQ2. What are the challenges faced by the African library and information science professionals while obtaining digital literacy skills?

Research hypothesis

H1. The level of digital literacy skills acquired and accepted by African academic library professionals.

Literature review

Digital literacy concept

Paul Glisser coined the phrase “digital literacy” in 1997 to describe a person’s capacity to comprehend and use information delivered through computers in a variety of formats and from a variety of sources (Reddy *et al.*, 2020). Digital literacy is the ability to search, navigate, evaluate and process information using a wide range of information technology tools. Digital literacy requires an individual to be able to recognise, use, manipulate and transform digital information from digital resources for their varied information needs. Digital literacy is a combination of both digital and literacy; however, it is much more than this combination because it cuts across competencies, skills and technical know-how required to effectively use digital technologies. Ng (2012) proposed a framework for all aspects of digital literacy, focusing on three main intersecting dimensions: “technical”, “cognitive” and “social-emotional”.

- (1) The technical dimension is associated with technical and operational skills such as the use of peripheral devices, file protection, troubleshooting, application searching and installation and data transfer.
- (2) The cognitive dimension is concerned with the ability to think critically when searching for and evaluating digital information, choosing appropriate software for specific tasks and developing products that best demonstrate new understanding.
- (3) The social–emotional dimension is concerned with using the internet appropriately for the purposes of socialising, communicating and learning, as well as protecting the individual’s safety and privacy.

Digital information is a symbolic representation of data, and literacy refers to the ability to read for knowledge, write coherently and think critically about the written word (Warschauer and Matuchniak, 2010).

Digital literacy is a combination of basic digital skills and literacy skills which explains a set of digital practices, identities and behaviours. Digital literacy is evolving as information technologies evolve, and this implies that librarians have to be up to date on these literacy skills required to effectively use digital technologies. In another view, digital literacy is a set of professional and academic practices born out of changes in modern technologies (JISC, 2014). Digital literacy is a set of skills needed for effective participation in a knowledge-based society. These skills are important to ensure the proper use of digital technologies like tablets, smartphones, laptops and computers for information sharing, collaboration and use.

In his view, Offili (2017) opines that a digitally literate person should possess the knowledge to use computers, be able to analyse facts to ensure accurate judgement, possess the ability to be involved in online meetings and social networks while keeping to the protocols required for engagements and possess the ability to search and disseminate information. Digital literacy is as important for the general public as it is for those who work in or teach in our society (Reddy *et al.*, 2022).

Digital literacy skills and librarians

Academic libraries crush young potential in the sea of ideas to create better citizens through the teaching of digital literacy. Beyond the walls of libraries, it significantly hastens the education of digital literacy. A digitally embedded education system improved digital citizenship and broadened students’ cognitive abilities outside of the classroom (Rafi *et al.*, 2019).

Librarians need to be fully equipped with these skills to ensure improved services to their clients. Some of these skills include resource sharing, net surfing, social networking skills, instant messaging skills and a host of other digital-oriented activities (Emiri, 2017). In addition to the above, they need information, media, technology and innovation skills. These skills will be useful for their profession and also for lifelong learning. Some other skills necessary for librarians include the ability to navigate the website, how to search for a page, how to search for files, citation exportation, social media creation and information uploading on the internet. Being equipped with these will help to improve their knowledge and also assist their users with desired information at the right time (Abertawe, 2013).

Librarians and library users need to be aware of digital literacy in this current era of science and technology. Library users of this digital era are more interested in using digital tools during their quest for information (Khan and Waheed, 2015). As a result, it is essential for libraries to provide digital literacy training to their users and educate them on the effective use of digital information sources offered by libraries.

Information retrieval skills, evaluation skills and management of information resources are very important to ensure the effective use of digital resources. These skills help to give visibility to librarians who are into research aspects to reach a wider audience. The adoption of digital resources will not only improve the services of the library but also lead to the acquisition of new technologies that can be effectively deployed to improve user experiences.

Abertawe (2013) furthered that to develop key lifelong learning skills, a person with digital literacy skills will be confident in navigating an information-overloaded world. They will be able to use those skills to their advantage in any learning situation. Therefore, libraries need to keep the related technology of digital literacy to their users.

Digital literacy brings the empowerment of library professionals through the possession of these skills which will improve services and overall job performance of librarians. Librarians need to be tech-savvy with the recent technological explosion to ensure delivery of tech-related services to their teaming clients in line with the goals of the profession.

Challenges associated with the acquisition of digital literacy skills

The importance of digital literacy in librarians cannot be underestimated because of the recent development in technologies and digital transition that is gradually taking over the information space. To thrive in this digital library space without the right skills that will ensure proper accessibility, evaluation, storage and retrieval of information is as good as existing as a librarian without any value.

The challenges encountered by individuals during the acquisition of digital literacy skills have been grouped and traced to material and human factors according to Lwoga *et al.* (2005). Other factors include donor support, poor network power, inadequate digital facilities, low use of the available facilities, poor ICT training and lack of manpower are some challenges hindering digital literacy in Africa.

Chiwere (2007) adds that poor funding, unavailability of trained personnel, poor retention of skills, lack of internet connectivity, the absence of standard telecommunication infrastructure and copyright challenges. In his view, the administration of libraries has a role to play in terms of commitment to ensuring these digital literacy skills are taught to its staff, providing funds for the acquisition of these digital technologies, sponsoring courses for its staff to undergo in relation to digital literacy and also giving them the needed support.

Another challenge that has been identified by [Womboh and Abba \(2008\)](#) that is affecting the acquisition of digital literacy skills is the lack of interest among librarians. Some librarians do not consider self-development important; that is why they wait for their employers to train them instead of registering for courses and training that will boost their digital literacy skills. They also blamed the absence of good information technology policies guiding the implementation of digital projects in libraries as an issue handling the acquisition of digital literacy skills by librarians. The failed implementation of the national policy on information technology also hampered the establishment of these digital institutions, and without these digital institutions, the acquisition of the digital literacy skills may not be possible, and even if they are possible, there will not be the required facilities to practise these skills by the librarians.

[Nazim and Mukherjee \(2013\)](#) surveyed library science professionals' indispensable competencies. In their study result, they found that majority of them pointed out that IT skills are Web design and Web-based online activities, knowledge of digital library software and knowledge of repository software. Their study emphasises IT skills are most important and have to be developed. [Peyvand Robati and Singh \(2013\)](#) have highlighted 55 competencies required for librarians. This study reports most of their acquired skills are knowledge of computer technology, operating system, integrated library management system, basic computer operations and the use of Word, Excel and PowerPoint. Some advanced skills are lacking such as desktop publishing skills, library website creation and maintenance, recent modern library services and management and evaluation information services. Authors suggest that the LIS curriculum needs to be updated based on the new technology and services.

[Eze Asogwa \(2014\)](#) affirmed academic Nigerian university library professional ICT competencies. The study reported that Nigerian libraries have a lack of IT infrastructures, lack of internet connectivity, lack of ICT policies implementation, electricity power issues and library professionals have the least skills and competencies in ICT. [Cherinet \(2018\)](#) opined the top ten blended skills of librarians are hard skills, soft skills, leadership skills, 21st-century skills, civic skills, research skills, learning skills, survival skills, trans-literacy skills and cultural intelligence. In this study, he indicated the future role of librarians and skills in detail such as digital and data librarian, embedded librarians, educator of multi-literacy, licence negotiator, knowledge manager and many more.

[Ali and Richardson \(2018\)](#) reported that workplace information literacy skills of Pakistani library professionals. Their study reports show that library professionals are good at the basic operational level of library skills such as searching techniques, providing information to the users, marketing and administrative skills, and at the same time, they are bad at library module services, lack of knowledge of copyrights and less knowledge on research supporting software like plagiarism software, reference management software and many other too. [Ashiq et al. \(2018\)](#) interviewed 15 academic librarians in Pakistan. In their study, they discussed challenges in library leadership. The result of the study shows us major challenges that are faced by senior library professionals are lack of communication skills, inadequate budget allocation for subscribing to journals and magazines and lack of professional development skills, so they suggested to library schools that they need to adopt new syllabi and offer refreshers courses through various ways such as MOOC, library association workshops and library faculty development program. Technically also, they are lacking because most of them did not complete formal librarianship courses. Library professionals' self-learning is emphasised in their interviews.

[Okeji et al. \(2019\)](#) investigated digital literacy skills. In their study results, they presented that Nigerian librarians are not very knowledgeable on networking, software and system

security protection, digital content protection and the creation of different file formats. Challenges to acquiring digital literacy skills are the lack of funding for professional skill development, lack of ICT and physical facilities, lack of time and internet connectivity, inadequate ICT educators and the LIS course curriculum taught. Baro *et al.* (2019) have assessed African English speaking countries' university librarians' digital literacy skills. Their study report shows us most of them have moderate levels of digital literacy skills such as metadata development, digitisation, digital library development and library website development.

Hamad *et al.* (2021) investigated the research with Jordan academic library professionals regarding the effect of librarians' digital technology and skills. Their study respondents are 203. In their study, they found that the basic level of digital skills acquired more such as sending and receiving mail, downloading and uploading documents, searches in databases and information retrieval, but the advanced level of IT skills perceived a moderate level such as library website development, cloud computing, big data, copyright laws and designing databases. They faced many challenges to learn new digital skills, such as they did not get more funds for attending the workshop training and a lack of financial support and time.

Methodology

This study used an ex post facto research design. An ex post facto research design is a method in which groups with qualities that already exist are compared on some dependent variables. This research design is ideal because digital literacy skills are presumed to have been acquired by the African librarians. The population of the study comprised 102 African librarians randomly selected from LinkedIn and email message platforms. The entire population was used because it was small and manageable. The questionnaire was the research instrument used for data collection. Data were collected using the online questionnaires that were shared through email and LinkedIn to librarians across different countries in Africa. The questionnaire was divided into three parts. Part 1 was for the demographic details of the respondents, Part 2 was for the electronic resources and Part 3 was for the digital literacy skills; these skills were divided into three sections (basic-level skills, advanced-level skills and intermediate-level skills) which were measured by a four-point Likert scale of strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD), with a weighting of 4, 3, 2 and 1. The instrument was subjected to face and content validity by experts in the library. Cronbach's alpha test was conducted to ensure the reliability of the questionnaire. The data collected for the study were subjected to analysis using descriptive statistics of mean and standard deviation.

Discussion of findings

Part 1: background information (demographic data)

Table 1 shows that 56 (54.9%) of the respondents are females, while 46 (45.1%) are males. This showed that the female African librarians responded to the questionnaires more than their male counterparts.

Table 1.
Gender distribution

Gender	Respondents	(%)
Male	46	45.1
Female	56	54.9

Table 2 shows that 30–40 years was the highest age bracket of African librarians which represented 34 (33.3%) of the respondents, while less than 25 years was the last age bracket of African librarians and this represented 2 (2%) of the respondents. The implication of these is that the African librarians have people still in active and agile years of service.

Educational qualification of respondents

Table 3 shows that 44 (43.2%) of the respondents had their masters of LIS, 23 (22.5%) of the respondents are with a bachelor’s degree of LIS and 21 (20.6%) are with a doctoral degree in LIS. This shows that African librarians are professional librarians, and this will impact their digital literacy level.

Table 4 indicates that 37 (36.3%) of the African librarians have 10–20 years of experience in the profession, while 2 (2%) of the African librarians have less than a year of experience in the profession. This shows that the respondents were well experienced in the profession.

Table 5 indicates that 67 (65.7%) of the African librarians were in the cadre of librarian/ deputy librarian and library director levels, while 31 (30.4%) of the African librarians were in the cadre of assistant librarian and senior assistant librarian level. This shows that the

Age bracket	Respondents	(%)
Less than 25 years	2	2
25–30 years	10	9.8
30–40 years	34	33.3
40–50 years	33	32.4
Above 50 years	23	22.5

Table 2.
Age bracket of respondents

Educational qualification	Respondents	(%)
Diploma in Library Science	4	3.9
Postgraduate Diploma in LIS	5	4.9
Bachelor of LIS	23	22.5
Master of LIS	44	43.2
PhD in LIS	21	20.6
Did not complete LIS course	1	1
Others (BSc H Records and Archives Management 3, MTech Library and Information Technology 1)	4	3.9

Table 3.
Educational qualification of respondents

Years of experience	Respondents	(%)
Less than a year	2	2
1–3 years	11	10.8
4–10 years	28	27.4
10–20 years	37	36.3
More than 20 years	24	23.5

Table 4.
Years of experience of respondents

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respondents are well-positioned to give true responses to the state of digital literacy in their institutions.

Table 6 indicates that 36 (35.3%) of the respondents were African librarians in Nigeria, while 16 (15.7%) of the respondents were African librarians in South Africa. This implies that Nigeria and South Africa stand out as the highest number of respondents for the research.

Part 2: electronic resources

Table 7 shows that most of the respondents 85 (83.3%) indicated that their universities subscribed to e-databases, followed by 71 (69.6%) indicating e-journals subscription and 25 (24.5%) indicating e-magazines. The least subscribed e-resources are the e-case studies.

Table 5.
Designation of respondents

Designation	Respondents	(%)
Intern	1	1
Library assistant	3	2.9
Assistant Librarian/Senior Assistant Librarian	31	30.4
Librarian/Deputy Librarian/ Library Director	67	65.7

Table 6.
Name of the country

Countries	Respondents	(%)
Botswana	2	2
Cameroon	2	2
Ghana	5	4.9
Kenya	9	8.8
Lesotho	1	1
Namibia	6	5.9
Nigeria	36	35.3
South Africa	16	15.7
Sudan	1	1
Tanzania	6	5.8
Uganda	5	4.9
Zambia	6	5.8
Zimbabwe	7	6.9

Table 7.
Does your university subscribe to the following e-resources?

E-resources	Respondents	(%)
E-databases	85	83.3
E-journals	71	69.6
E-magazines	25	24.5
E-newspapers	4	3.9
E-books	3	2.9
Did not subscribe anything	8	7.8
Others (e-case studies 1)	1	1

Part 3: digital literacy skills

All the 20 items presented in the table were agreed by the respondents as basic digital literacy skills. Items 1 (basic computing, for example, Word processing, PowerPoint, Excel) and 2 (internet surfing/browsing) were the highest agreed items with a mean score of 3.86. Item 16 (vodcasting and podcasting) was the least agreed-upon item with a mean score of 2.68.

Of the 28 items presented in [Table 9](#), 19 items were highly agreed by the respondents, while 9 items were least agreed. Item 18 (institutional repository management software, for example, DSpace and e-prints) stands out as the highest agreed item with a mean score of 3.09. It was closely followed by Item 21 (remote access services and service providers) with a mean score of 3.05; Items 22 (building and developing digital library collections) and 23 (Digital content services) with a mean score of 3.00. Item 11 (handling big data) was among the lowest agreed items with a mean score of 2.47. Items 3 (Web languages, for example, JavaScript, Java, HTML and CSS) and 2 (Coding, for example, C, C++ and .NET) were also among the lowest agreed items with a mean score of 2.20 and 1.90, respectively.

[Table 10](#) indicates 84 (82.4%) of the respondents chose lack of budget and funds allocated to support library professionals training as the major challenges faced while acquiring literacy skills. This was closely followed by 66 (64.7) of the respondents who chose poor library ICT infrastructure as a challenge. The least challenge indicated by 27 (16.7%) of the respondents is a lack of article search skills because their library is not subscribed to electronic databases and e-journals.

Discussion of findings

Results in [Table 7](#) show that almost all the respondents agreed that e-databases were the most subscribed electronic resources subscribed by their library. This was closely followed by subscriptions to e-journals and e-magazines. This finding is in line with [Anyim \(2018\)](#), who revealed that digital resources and facilities are available in African university libraries. Also, [Harley \(2007\)](#) opined that these resources cut across both electronic information resources and electronic facilities which can be used to access them. This study is different from the above mentioned because it also revealed that some African libraries did not subscribe to any e-resources at all.

Results in [Table 8](#) revealed that respondents had basic digital literacy skills like Word processing, PowerPoint and Excel. Also, respondents agree that internet surfing skills and browsing were digital literacy skills needed to perform in their daily duty. The least agreed digital literacy skills needed for their daily activity were vodcasting and podcasting skills. These results show that basic digital literacy skills are paramount to the use of digital technologies. This result agrees with [Peyvand Robati and Singh \(2013\)](#), who revealed that librarians needed some basic digital competencies including basic computing operations and the use of Word, Excel and PowerPoint. These basic competencies ranging from turning on a computer to creating, accessing, storing and retrieving information are essential for effective service delivery. Findings are also connected with [Baro et al. \(2019\)](#) who assessed African English speaking countries' university librarians' digital literacy skills and reported that most of them have moderate levels of digital literacy skills such as metadata development, digitisation, digital library development and library website development. The study is different from the above mentioned because it also revealed that online communication skills like (e-mail, telephone, instant message and SMS) are also important for effective use of digital technologies. Without these basic skills, librarians may not be able to serve their teaming users. The recent trend in university libraries in Nigeria to request

	Basic digital literacy skills (I am familiar with)	Mean	SD
Table 8. Basic levels of library digital literacy competencies acquired by library professionals	Basic computing, for example, Word processing, PowerPoint and Excel	3.86	0.64
	Internet surfing/browsing	3.86	0.64
	E-reference and reader services	3.57	0.75
	Storing, copying and retrieving data into a primary and secondary storage device	3.68	0.74
	Retrieving documents from e-databases/e-journals and websites	3.69	0.75
	Digitisation, for example, scanning, editing and uploading	3.5	0.84
	Search engines and search strategies	3.65	0.76
	Cloud storage devices, for example, Dropbox	3.21	0.87
	Google products	3.38	0.83
	Online cataloguing and metadata	3.34	0.9
	Subject databases	3.33	0.87
	Electronic resources	3.67	0.78
	Online communication skills (e-mail, telephone, instant message and SMS)	3.84	0.67
	Online publishers and publishing agency	3.19	0.91
	Critical thinking skills	3.5	0.82
	Vodcasting and podcasting	2.68	0.91
	Subject gateways	2.86	0.9
	Metadata development skills	2.86	0.9
E-record management and archive	3.32	1	
E-information management	3.27	0.86	

electronic resources to develop their resources is another reason why librarians in Africa and especially Nigeria are now acquiring these basic digital literacy skills ([Anyaku et al., 2018](#)).

[Table 9](#) revealed that the knowledge of institutional repository management software like Dspace is vital to the performance of their duty. Also, digital literacy skills that have to do with remote access services and services providers, building and developing library collections and digital content services were essential for librarians' performance of their duty. The results are in line with [Okeji et al. \(2019\)](#), who investigated digital literacy skills and revealed that Nigerian librarians are not very knowledgeable on computer networking, software coding and system security protection and digital content protection and the creation of different file formats. Findings also support [Hamad et al. \(2021\)](#), who revealed that academic library professions were not very vast on advanced levels of digital literacy skills such as coding, library website development, cloud computing, big data and database designs. To ensure effective use and management of digital technologies, these advanced skills are to be acquired by the African librarians. In addition to knowledge of big data, Web languages like Javascript, Java, HTML and coding skills were seen as advanced skills and not too important by these African librarians in the performance of their duty. This agrees with the findings of [Ayoku and Okafor \(2015\)](#), who revealed that librarians had little or no knowledge of database management, coding and Web development applications. In addition, [Mansour \(2017\)](#) revealed that librarians were not certain about advanced digital literacy skills like software development skills and website design skills.

[Table 10](#) revealed that lack of budget and little funds allocated to support library professionals' training is the major challenge faced while acquiring digital literacy skills. This was closely followed by the issue of poor library ICT infrastructure which would have boosted the desire to acquire the needed digital literacy skills for daily activities. This result supports [Okeji et al. \(2019\)](#), who revealed that challenges encountered by

Advanced digital literacy skills (I am familiar with)	Mean	SD	Digital literacy skills
Software design and integration	2.24	0.91	Table 9. Advanced levels of library digital literacy competencies acquired by library professionals
Coding (e.g. C, C++ and .NET)	1.92	0.84	
Web languages, for example, JavaScript, Java, HTML, CSS, etc.	2.2	0.85	
Databases design, development and management	2.4	0.9	
Information systems development	2.5	0.93	
Installation Open-Source Library Software, for example, Koha	2.61	0.96	
Acquisition of sources through electronic ways, for example, used ILMs Koha or other	2.91	0.94	
Serial management process through Integrated Library Management System (e.g. online subscription, preservation, etc.)	2.86	0.95	
Desktop publishing (e.g. Photoshop, technical manuals and Adobe Creative Suite, etc.)	2.78	0.96	
Cloud computing	2.79	0.91	
Handling big data	2.47	0.97	
Network and system security	2.46	0.97	
Computer architecture technology, for example, hardware and software	2.43	0.95	
Computer operating systems, for example, Windows, Linux, etc.	2.88	0.95	
Plagiarism software, for example, Plagiarism checker X, ProWritingAid, etc.	3.13	0.94	
Bibliographic management tools, for example, Zotero, Mendeley, etc.	3.41	1.01	
Bibliometric tools and software	2.7	0.98	
Institutional repository management software, for example, DSpace, E-Prints, etc.	3.09	0.94	
Digital technological tools in libraries, for example, RFID, Library security System, CCTV, Big data, etc.	2.81	0.95	
Digital library development	2.97	0.94	
Remote access services and service providers	3.05	0.94	
Building and developing digital library collections	3.01	0.93	
Digital content services	3	0.9	
Webometric	2.5	0.93	
Web mining	2.29	0.9	
Online research methods, for example, online ethnography, netnography, etc.	2.67	0.98	
Ontology and taxonomies	2.36	0.9	
Statistical software, for example, SPSS	2.81	0.98	

Challenges faced while obtaining digital literacy skills	Respondents	(%) (n = 102)	Table 10. Challenges faced while acquiring digital literacy skills (multiple responses are allowed)
Lack of budget and funds allocated to support library professionals training	84	82.4	
Library workshops are costly so all are not affordable	57	55.9	
Management is not allowing to attend workshops or allowing to take a leave on working days	27	26.5	
Poor library ICT infrastructure	66	64.7	
Lack of support from library associations, they are not much involved in providing the free training programme to the members	53	52	
Lack of articles search skills because my library is not subscribed to electronic databases and e-journals	17	16.7	
LIS curriculum is not upgraded with digital literacy skills	56	54.9	

librarians while acquiring digital skills include poor funding, lack of ICT and physical facilities, lack of time and internet connectivity and also inadequate ICT educators and the problem of poor LIS curriculum. This finding is in line with the findings of Anyim (2018), who discovered that there are lots of hindrances to librarians' acquisition of digital literacy skills which include poor funding and lack of training sponsorship. The table

also revealed that the LIS curriculum is not upgraded with digital literacy skills, and this has hampered the acquisition of digital literacy skills to operate the digital technologies. This result is in line with [Batool and Ameen \(2010\)](#), who revealed that a poor LIS curriculum covering digital literacy skills, a lack of updated courses and an overall dearth of workshops and training for professionals are a major issue in the acquisition of digital literacy skills.

Conclusions and recommendations

Conclusion

Digital literacy skills are paramount to 21st-century librarians' career progression and efficient service delivery. Librarians are at the forefront of information management, and without these skills, these information managers will be lost out in the world of information explosion that is sweeping through all the sectors. The basic duty of librarians, which is solving the information needs of the users irrespective of their age, geography and literacy levels, should be a driving force towards the acquisition of these digital literacy skills to ensure effective service delivery.

Based on the analysis, the study found that African library professionals agreed that their institutions subscribed to electronic databases, which is a product of digital technologies. Also, basic computing skills like PowerPoint, Word processing and internet surfing skills were very high among the professionals, while advanced skills like metadata, software development and coding were moderate and low. This calls for more investment in the training of librarians in Africa by the library associations and international organisations like IFLA. Library heads should ensure that they equip their staff with digital literacy skills so that they can be able to meet their teaming users' needs in terms of research, teaching and learning.

Equipping them with these skills will not be enough without the investment into the acquisition of digital technologies and improving the LIS digital literacy curriculum. The study revealed that without investment in these areas, digital literacy will continue to be a challenge for African library professionals. Digital literacy skills are important for improving personnel collaboration, civic participation, information retrieval and social interaction. Library professionals who are digitally literate will be better prepared for instant messaging, blogging, social networking and other digital activities. These abilities also assist librarians in providing better library services to their users based on their information and educational needs.

Digital literacy competency level will go a long way to determining how librarians will perform their duties in the library. Automated and digital technologies not only help to ease the workload but also improve the service delivery, so this should be considered by libraries during the establishment of institutions to boost the teaching and learning of the parent institution.

Recommendations

Based on the research findings, this study made recommendations as follows:

- Academic librarians and other supporting library staff working in the libraries should make conscious efforts toward acquiring digital skills for effective service delivery.
- The library administrators should invest in the acquisition of digital technologies in libraries so that librarians can flow with the tide of information explosion. Without

the availability of these digital technologies, acquiring skills will be a waste of investment. Digital literacy skills

- Librarians should be encouraged to attend digital literacy training for their professional development.
- Incentives and other activities to motivate staff should be applied in the library to ensure effective service delivery because, without motivation, self-development may not be fully possible.
- There should be an investment in the internet facility in libraries. Without good internet digital technologies and strong bandwidth, these technologies will not be able to function properly and users will not be encouraged to come to the library.
- There should be regular updating of the LIS curriculum and syllabus to meet the current information and technology development in the library.

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