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IVJLIS is being positioned as an internationally refereed journal published bi-annually in (May and November) by the Department of Library and Information Science in the Faculty of Communication and Information Sciences, University of Ilorin, Nigeria. Thus, issues will be identified as Volume 1, (Issue 1, May), 2018, Vol. 1, (Issue 2, Nov), 2018, etc. It is dedicated to the exchange of the latest research and practical information in the field of Library and Information Science. The journal publishes original research and case studies by Librarians, Library and Information Science academics, government, contributors, and other information professionals on the key areas of information science, library science, archives, and records management, including best practices, policies, and guidelines.

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EDITORIAL

This volume six edition combined two issues, issues 1 and 2. The edition featured fifteen different articles one of which is from foreign authors. The first article in the edition focused on Tanzania Higher Learning Institutional Repositories: Analysis of Research Collection on Industrial Development and was authored by Kardo Joseph Mwilongo & Beth Jacob Kachota. The article is followed by Massive Open Online Courses as a Pathway to Inclusive Education in Nigeria authored by Foluso Modupe Adeyinka. The article shed more light on Massive Open Online Courses/

The next article focused on Farm-technology Information Acceptance by Farmers for Sustainable Rice Production in Nigeria and was authored by Oluwakemi ADEBAYO & Anuoluwa F. AWODOYIN while Virtualization of References Services for Enhancing Users Experience in Nigeria Libraries: Strategies for Policymakers was authored by ILORI, Olufemi Olubunmi; ONANUGA, Ayotola Olubunmi; ADIGUNGaniyu Ojo & AJANI Yusuf Ayodeji.

Availability of Grey Literature for Library and Information Science Postgraduate Students in South-South, Nigeria written by Ifie Omonigho¹ Blessing Amina Akporhonor² Edwin Iroroeavwo Achugbue & Lawrence Arumuru. National Library Services as Panacea to Educational Rebirth in Selected Secondary Schools in Ilorin Metropolis is another article in this edition written by Muhammed, Jamiu Oladele; Akinosho, Gafar A. and Arilesere, Jemilat. Iyabo.

Librarians' Perception and Skills in the Use of Fourth Industrial Revolution Technologies for Service Delivery in University Libraries in Delta and Edo States, Nigeria was written by OGOCHUKWU T. EMIRI. Following it is the article that focused on a Survey of Disaster Management Practices in Selected Public University Libraries in Nigeria. It was written by Gboyega K. OYENIRAN; While Factors Influencing the Use of Open Access Resources by Library and Information Science Postgraduate Students, University of Ilorin was written by Abdullahi Mohammad Ibrahim; Ibrahim Olarewaju Yahaya; Abubakar Lawal & Najeebat Opeyemi Abdulraheem,

This interesting combined edition also focused on the relationship between Computer Self-efficacy and Electronic Library Use among LIS Undergraduates in Universities in Southern Nigeria by Lucky Oji Akpojotor and Librarians' Preparedness Towards Robots' Usage in Nigerian Academic Libraries was written by Humphrey Igwechi Wiche, Yemisi Susan Adeyeye, Bolaji David Oladokun, Nurudeen Adeniyi Aderibigbe, Nworu Carlo Nduka, and Emmanuel Adeniyi Oloniruha.

Other articles featured in this edition are as follows the order in which they appear in this edition; Influence of Management Styles and Information Anxiety on Job Performance of Library Personnel in Academic Libraries in Lagos State, Nigeria was written by Adegoroye, Adebola Oluwamayokun; Ojo, Joshua Onaade and Ashiru, Bolanle Badira; New Media Technologies in Library Services Delivery in University Libraries in Bayelsa State was written by Catherine I. Ogbara; Prospects of law information literacy in promoting career excellence among the undergraduate students of University of Abuja was written by Helen Emmanuel while the last article in this edition focuses on resistance to change in academic libraries: the university of Ilorin experience and was written by Jamiu Wankasi Abdulraheem, G.O. Eromosele and R. Olorunsola.

No doubt, this is a fantastic edition. I am convinced that readers will enjoy its reading and I do not doubt that their reading through will add value to their existing knowledge.

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Tanzania Higher Learning Institutional Repositories: Analysis of Research Collection on Industrial Development

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Abstract

This study aims to analyse the repositories of higher learning institutions in improving industrial development in Tanzania. The study was carried out to respond to three specific objectives which explain the importance, and contribution of repositories in industrial development, and examine the perception of library staff on the research policy and institutional factors toward influencing the sharing of research works for industrial development in Tanzania. An explanatory sequential mixed method design which involved a mixed research approach in data collection was used. The quantitative data from 153 library staff were analysed by the Statistical Product and Service Solution (SPSS) software version 26.0 while content analysis was used in qualitative data. The study findings indicate that the institutional repository is important and contributes to the proliferation of the industrial sector as well as universities. However, institutional and policy factors influence the sharing of research works. Recommendations for improvement, sustainability, and development goals achievement were provided.

Keywords: Institutional repository; higher learning institution; research outputs; industrial development; research and development; Tanzania

Introduction

The major and core function of higher learning institutions is to conduct training, consultancies, and research. Academic libraries of higher learning institutions preserve research outputs that are deemed important for development. Every state in the universe can achieve sustainable economic development through substantial investment in human capital through knowledge development and research outputs (Lemoine et al., 2017). Academic libraries' research output boosts citizens' economic activities and industrial development (Cobblah et al., 2022). It is through research outputs that compete in the world industrial markets characterised by rapidly changing technologies, production strategies, and business models, and thus advancement towards

industrial growth and sustainability (United Nations Educational, Scientific and Cultural Organization- (UNESCO), 2019). Higher learning institutions' research areas should be based on the industrial needs and efforts toward meeting the world market concerning its new products emanating from this combination. The sustainability to this endeavour depends on the ability to compete in the market economy and in globalized service markets coupled by excellence integration of technologies, Research and Development (R&D) (Penprase, 2018). The Tanzania Five Years' Development Plan 2021/22-2025/26 and the United Nations Sustainable Development Goal Nine (UN-SDG9) insist on the need for research institutions and government research agencies to be part of industrial development. In this light, Souleh (2020) defines industrial development as the advanced economic growth of a productive entity influenced by new technologies emanating from collaborative innovation initiatives between enterprises, research institutes, centres, agencies, and universities through cooperative research and development principles that lead to improved productivity, new products development and maximised profit.

University research outputs for industrial development overview

The university-industrial linkage is traced back to the 1970s when governments throughout the industrialised world focused on putting initiatives toward the university-industrial linkage for industrial and economic development (Souleh, 2020). In developed countries, this endeavour has had a crucial impact on industrial development, as it contributed to economic growth and the industrial revolution. Countries including the United Kingdom, United States of America, European Union, China, Japan, Korea, Taiwan, Indonesia, Mexico, and Brazil, among others, are benefiting from the university-industry linkage in sharing research works, experts and technology (Costantiello et al., 2022; Kniivilä, 2022). Universities in developed countries are increasing in providing original knowledge through research works which are commercially important in industrial development and have always been considered as the main stakeholders who are directly or indirectly involved in industrial development and ultimately the nations' prosperity at broad (Kniivilä, 2022; Teressa, 2022). The main emphasis of the developed countries in the establishment and maintenance of the sustainability of the linkage is through the industrial sector vision and the nations over the industrial development processes and strategies, sharing research agenda, provision of policies that foster the collaborative initiatives and contributes in the industrial development and performance. Universities of developed countries consider the linkage as a gateway for knowledge exchange and technology transfer for addressing technical issues, working on research and development, new industrial product development, and acquisition of scientific and technological knowledge for industrial proliferation (Singh & Kaundal, 2022). The university-industrial sector has for so long engaged in strengthening the region's research and development ecosystem while boosting economic, industrial, and regional progress.

The university-industry linkage in developing countries is increasingly becoming a priority in science and technology, engineering, processing, policy development, planning, and administration functions (UNESCO, 2020). A remarkable initiative has been realized in various regions of developing countries particularly East Asia while most of sub-Saharan Africa is far behind this endeavour (Tsfahunegn & Miruts, 2018; Singh & Kaundal, 2022). The ongoing

economic reforms and the United Nations Sustainable Development Goal Nine (UN-SDG9) on industrialisation have contributed to fostering most of the developing regions in visualizing the contribution of the universities in boosting industrial development (Okoronkwo, Agalaba, Onyekachi & Oladayo, 2022; Singh & Kaundal, 2022). Given the infrastructures and the developing countries' universities' working environments, the realisation towards collaboration with the industrial sector has gained momentum in recent years. For instance, African countries except South Africa, Benin, Nigeria, Ghana, Egypt, and Mauritius have been considered as the lagging nations in adopting the university-industry linkage for industrial development (Wangwe, 2018). Despite the research outputs being produced in these universities are mostly kept under custodians of the respective university libraries for the academic community access and less is being contributed to the industrial sector for development and networking. The institutional repositories of the respective academic libraries provide access to the research outputs to the academic community which more specifically the industrial sector is rarely addressed (Okoronkwo et al., 2022). In light of this, O'Dwyer et al. (2022) claim that the performance and development of the industry are subject to how the sector is well engaged with university networks and its management.

The university research collection is a critical and basic factor for industrial development (Lemoine et al., 2017). The United Nations Strategic Development Goal 9 for industry, innovation, and infrastructure considers research and development as the panacea for the industrial revolution. Research institutions and universities are the main sources of opportunities for improving innovation capacity in the industrial sector (UNESCO, 2020). Universities in developed countries are linked with the industrial sector for sharing research works, an endeavour which in developing countries, including Tanzania is rarely seized. Universities in Tanzania for so long have been used in developing human capital for service provision in various public and private sectors but have not noted the contribution of its research collections toward industrial development. The government of the United Republic of Tanzania has adopted the UN-SDG9 and on its capacity established a five-year development plan with a focus on seizing opportunities for improving the industrial sector and poverty reduction among the community. It has gone further and established a research data-sharing procedure in 2010 (Mushi et al., 2020). The initiatives on university-industry linkage in Tanzania have been earmarked and its prominence remained superficially researched. Teressa (2022) is of the view that the university-industry linkage has to be highlighted and its interactive performance measured through research and their findings documented for innovation, decision-making, and knowledge development.

The government of the United Republic of Tanzania has invested in research and development to achieve long-term economic development through industrialisation and realise its vision of being transformed into a middle-income and semi-industrialised nation by 2025 (COSTECH, 2016). In this, the government initiated the Third Five Year Development Plan (FYDP III) 2021/22 – 2025/26 integrated with the National Strategy for Growth and Reduction of Poverty (NSGRP). The latter was planned to nurture industrialisation for the transformation of the economy and human development through research and development, linkages, and poverty reduction (Wangwe, 2018). Universities and research institutions or agencies had to improve research data

transfer to foreign and other stakeholders through the established research data transfer procedures of 2010 (Mushi et al., 2020). However, the contribution and impact of the academic libraries' research collection for industrial development is rarely earmarked to date. It is similarly surprising to discover that there is very little in the way of rigorous research or even reliable basic information on the proposed study topic in Tanzania except for a study by Mushi et al. (2020) on identifying and implementing relevant research data management services for the library at the University of Dodoma. They insist and recommend researchers and university management to collaborate and make their data accessible to the community for improving industrialisation through research and development. In response to the above issues, the study takes up the challenge of studying academic libraries' research collection in improving industrial development in Tanzania.

Objectives

The main objective of this study is to analyse the academic libraries' research collections in fostering industrial development in Tanzania. Specifically, the study aims to:

- i. explain the importance of academic library research collection in the industrial development in Tanzania;
- ii. determine the levels of contribution of academic libraries' research collection in the industrial development in Tanzania; and
- iii. examine the perception of library staff on the research policy and institutional factors that influence the sharing of academic library research collection for industrial development in Tanzania.

Literature review

The United Nations Educational, Scientific and Cultural Organization (UNESCO) (2019) in the "*Global Investments in Research and Development Report*", acknowledges the fact that academic libraries' research collection boosts citizen's productivity, and innovation and promotes entrepreneurship and technological development. It is through research collection that brings competence in the world industrial markets and thus advanced committed regions to the Fourth Industrial Revolution (4IR). The academic library collection on research work forms a crucial component for industrial development. A close relationship between academic libraries and industries is significant to the aspect of research and development. In Ghana, Cobblah et al. (2022) in the study "*Connecting industries to research outputs and the role of academic libraries*" indicate that academic libraries could effectively contribute through the dissemination of research outputs with the industrial sector for development. In this, Cobblah et al. (2022) insist on stronger collaboration among researchers, academic libraries, and industries to foster innovation, high production, and thus national development and poverty reduction. It follows from this fact that in Tanzania academic libraries such collaboration is unevenly practised among the universities to the extent that if it evenly exists could have added value in the industrial development, economic development, achieving the national five-year development plan 2021/22-2025/26 and realisation of the United Nation Sustainable Development Goal Nine (UN-SDG9).

Polese et al. (2021) describe the co-creation value in university-industry collaboration. The authors put forward that sharing and dissemination of research works between academic libraries

and industries provide global competition, economic stability, and rapid technological proliferation. This is a joint effort based on socio-capital development which enhances a competitive advantage in innovation and socio-economic development of the national economy. The shared knowledge contributes to new and mutual value advantages between the academic libraries and the industrial sector. The industrialisation in the current market economy has become volatile and operational in a competitive global environment. This calls for a research and development collaborative approach to meet the demands of customers. Research organisations, government research agencies, and universities are inevitable in this endeavour. Through this lens, Awasthy et al. (2020) proposed “*A framework to improve university–industry collaboration*”. The framework for university-industry collaboration should consider; an effective collaboration platform, strengthening the research outputs sharing strategy, and focus on social capital resources (this includes trust, common obligation and understanding, access to information and opportunities). Moreover, a collaborative policy to support interventions and management of the collaboration is imperative for achieving the set goals. Regarding this endeavour, the academic libraries of higher learning institutions particularly in Tanzania can further establish and/or improve linkage with the industrial sector in supporting research and development. The ideology of understanding a complex set of interrelated factors comprising industrial development and the context of research outputs, industrial research agendas, professional trajectories as well as curriculum issues at higher learning institutions are considered imperative.

The linkage between academic libraries and the industrial sector mainly describes the collaboration and partnership between these two entities aiming at supporting research and development, innovation, and education (Polese, Ciasullo & Montera, 2021). In addition, such collaboration focuses on mobilising the resources, expertise, and knowledge of both entities to enhance the competitiveness of industries and provide better access to information for researchers, the public, the academic community, and other stakeholders (Kong, 2022). Among others, the main activities with the academic library-industry collaboration are not limited to joint research projects, internships and job opportunities for graduates, technology transfer, and the provision of access to industry-specific databases and resources (Cobblah et al., 2022; Kong, 2022). The goal is to develop a mutually beneficial association that fosters the advancement of knowledge and technology, as well as economic development, employment, and poverty reduction.

The university-industry linkage can be shaped in various forms of associations and commonly they can be; linkage for cooperative research, collaborative technology transfer, research support relationship, linkage for knowledge transfer, personal collaboration, linkage for the interest of institutional programs, industrial education programs and agreements between organisations relationship (Singh & Kaundal, 2022). Given the kind of collaboration, each requires the working tools that guide communication between the entities. In light of this view, a cooperative research linkage underpins the study, and thus issues related to research sharing policy, research action policy, collaborative research agenda, and intellectual property rights are essential for a smooth operation of the linkage (Mushi et al., 2020; Kong, 2022). Nevertheless, the universities

have to establish potential units and the mechanism for the industrial collaboration organisation, monitoring, and sharing of resources. The three selected universities for this study have these components for effective sharing of research work and communication.

Table 1: University-industry linkage units and mechanism

University	Linked university units	Linkage mechanism
University of Dar es Salaam	- Bureau for Industrial Cooperation (based in the College of Engineering and Technology) - Technology development and transfer centre	- Research work (Library) - Consultancy - Technology transfer - Professional services - Professional development courses for industries
Sokoine University of Agriculture	- Directorate of postgraduate studies and research - Technology transfer and consultancy - Departmental outreach committees - Local outreach stations - Bureau of agricultural consultancy and advisory services	- Research work (Library) - Consultancy - Patented innovations and technology transfer - ICT training and working laboratories - Exhibitions - Internship & exchange programme
Mbeya University of Science & Technology	- Directorate of postgraduate studies, research and publications - Directorate of public services and external links (department of industrial linkage and labour market) - Centre for innovation and technology transfer - Consultancy bureau	- Collaborative research (Library) - Consultancy - Internship - Technology transfer - Innovation & Incubation - Industrial Practical Training - Fieldwork and Student Research Programs - Industrial linkages for students

Source: Kong (2022)

The universities have a role to ensure that their units and the mechanism of sharing research work with the industrial sector are given attention for linkage sustainability (Kong, 2022). Researchers and the industrial sector have to appreciate the role of universities through their academic libraries as intermediaries that cannot be overlooked, hence the need for stronger relationships among researchers, academic libraries, and industries, which ultimately brings about high productivity leading to national development (Bang, 2020; Morisson & Pattinson, 2020). Furthermore, the linkage, on the other hand, can be a source of funds for the university as there are cases where researchers and students can be granted to conduct research in a specific industrial area of interest. However, to some extent, government funds are offered for research

work on a university-industry basis (Abebe, 2016; Priya et al., 2021). The mechanism and the overall process of selecting, organising, and preserving research work should be conducted by skilled information professionals or librarians who are well-trained in research data selection and sharing through a particular platform for the specific industrial need.

Research design and methods

The study was implemented in three universities that are conversant with engineering, processing, and technology programmes and thus have sufficient library research collection in the fields. These academic libraries are from the University of Dar es Salaam (UDSM), Sokoine University of Agriculture (SUA), and Mbeya University of Science and Technology (MUST). Choosing one of the most established public universities in Tanzania enhances the research data by reflecting the perspectives of the industrial sector development from the academic library research collection. At the same time, the suitable location and comfortable setting of the universities greatly allowed the research to progress smoothly as the study areas were easily reached.

The study adopted an explanatory sequential mixed research design. This design was selected for the study as it provided quantitative data collection from the respondents and later used qualitative data to explain the findings collected through the quantitative method. The unit of analysis of the study comprised 174 library staff and three library directors of the selected academic libraries. The total population of the library staff was 177 (UDSM Library 121, SUA 38, and MUST 18), and this was obtained from the respective library directors of the selected academic libraries. Table 2 presents the demographic information of the respondents. Given the population size, all the library staff were considered as potential respondents to this study. In light of this, a census method provided a quantitative and statistical inquiry in which data were collected from all the enumerated populations under the study. The method was deemed to be reliable and provided accurate information on the underpinning phenomenon of the study (Dubey & Kothari, 2022). Data was gathered through a structured questionnaire drawing from the literature that classified and evaluated the contribution of academic library research collection in fostering industrial development in Tanzania. Questionnaires were administered to 174 library staff who are involved in the management of the research collection. There was a face-to-face interview with three library directors who were purposely selected from the survey to capture administrative functions concerning knowledge or research collection-sharing with the industrial sector for its development. Interviews were conducted using pre-formulated guide questions. In this, the in-depth review of relevant documents including; policies, laws, reports, and literature that established prominence and assisted to achieve a better understanding of the issues underpinning the study were reviewed. In a nutshell, the study involved gathering both numeric information (for example, on instruments) and text information (for example, in an in-depth documentary review of relevant documents), so that the final database contains both quantitative and qualitative information.

Moreover, of the 174 self-administered copies of a questionnaire that were distributed to the library staff, only 153 filled questionnaires were returned, representing a response rate of 87.9% which was sufficient for further procedures. According to Livingston and Wislar (2012), a

response rate that is less than 60% is termed as poor and thus the higher the response rates the lower the potential chances of bias in research data. The collected data and the collection process had no potential effects on the respondents, particularly the most vulnerable group – the library staff. Additionally, library staff members participated in the study voluntarily, and indicated consent by signing a consent form. Participants were informed of their right to withdraw from the project at any time without any penalty or discrimination.

The collected data was finally analysed quantitatively by using the Statistical Product and Service Solutions (SPSS) software version 26.0 while the qualitative data was subjected to content analysis. The SPSS software was selected because of its high descriptive and multivariate statistical power for quantitative data analysis whereas the content analysis technique is a more systematic and objective one that organizes qualitative data based on phrases, occurrences, and concepts and ultimately derives inferences from the communication.

Table 2. Socio-demographic characteristics (n=153)

Variable	Category	Frequency	Percent
Institution	UDSM	107	69.9
	SUA	29	19.0
	MUST	17	11.1
Gender	Male	76	49.7
	Female	76	49.7
Age (years)	≤30	20.9	21.1
	30-35	28.8	28.9
	36-40	16.3	16.4
	41-45	13.1	13.2
	46-50	7.2	7.2
	51-55	9.2	9.2
	≥55	3.9	3.9
Highest Qualification	Lib certificate	9	5.9
	Dip certificate	35	23.0
	Bachelor degree	58	38.2
	Masters' degree	29	19.1
	PGDip	8	5.3
	PhD	12	7.9
	Post-Doctoral	1	.7
Work Experience (years)	≤2	9	5.9
	2-5	35	23.0
	6-10	58	38.2
	11-15	29	19.1
	≥15	8	5.3

Findings in Table 2 indicate that the surveyed libraries have sufficient and knowledgeable information professionals with enough working experience. These traits were crucial in providing detailed information on the importance, contributions, and factors influencing academic libraries in sharing research-based works with the industrial sector for economic growth, collaboration, research and development, and new product development.

Findings and discussion

Importance of university-industry linkage

The importance of most academic libraries is to support effective research works, teaching, and learning. Academic libraries collect both electronic and print-based research works and share the same with the academic community, public and potential stakeholders, including the industrial sector for references and decision-making. The industrial sector utilizes these resources for industrial and national economic development. Academic libraries use various methods in sharing research works with the industrial sector. The approaches include academic libraries social networking, academic library or institutional websites, researcher identifiers, and profile or institutional repository system to support in disseminating research works (Morisson & Pattinson, 2020; Olubiyo, 2022). The shared research work has varying importance to the industry, universities, and the nation. Findings on the importance of academic library research works are presented in Table 3.

Table 3:

Importance of sharing research collection	Library	Important		Not important		I do not know	
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Boosts industrial production	UDSM	87	81.3	7	6.5	13	12.1
	SUA	26	89.7	1	3.4	2	6.9
	MUST	17	100	0	0	0	0
	Total	130	85	8	5.2	15	9.8
New product development	UDSM	85	79.4	8	7.5	14	13.1
	SUA	28	96.5	1	3.4	0	0
	MUST	17	100	0	0	0	0

Importance of university-industry linkage (n=153)

	Total	130	85	9	5.9	14	9.2
Industrial innovation	UDSM	84	78.5	9	8.4	14	13.1
	SUA	27	93.1	2	6.9	0	0
	MUST	17	100	0	0	0	0
	Total	128	83.7	11	7.2	14	9.2
Promotes entrepreneurship	UDSM	85	79.4	7	6.5	15	14
	SUA	27	93.1	1	3.4	1	3.4
	MUST	12	70.6	5	29.4	0	0
	Total	124	81	13	8.5	16	10.5
Technological development	UDSM	82	76.6	11	10.3	14	13.1
	SUA	25	86.2	3	10.3	1	3.4
	MUST	14	82.4	0	0	3	17.6
	Total	121	79	14	9.2	18	11.8
Industrial revolution	UDSM	80	74.8	11	10	16	15
	SUA	23	79.3	4	13.8	2	6.9
	MUST	14	82.4	0	0	3	17.6
	Total	117	76.5	15	9.8	21	13.7

Source: Field Data (2022)

Table 3 shows that the linkage of academic libraries and the industrial sector has more benefits to the latter. Among the respondents, 130(85%) indicated that sharing research collections with the industrial sector boosts industrial production and new product development. Nevertheless, 128(83.7%) respondents showed that the academic library-industry linkage is important in promoting industrial innovation while 124(81%) respondents pointed out the importance of promoting entrepreneurship. Moreover, 121(79%) respondents indicated its importance in technological development, and the importance of it in the industrial revolution was mentioned by 117(76.5%) respondents. These findings imply that academic libraries play a key role in the effective sharing of research outputs to the industrial sector. On a different note, it was reported through interviews as follows:

The importance of the academic library in sharing research data has not been visualised as much of the information needed by the industrial sector is not related to the programs being offered in this university. If well organised, the information needs from various industries have to be centrally identified and the government through the Ministry of Education, science, and Technology in collaboration with the Ministry of Investment, Industry, and Trade links the information needs to particular higher learning institutions in respect to the programs offered or research agenda [Participant 2].

In this regard, the need for a stronger collaboration among researchers, academic libraries, and industries is imperative to ensure high productivity, leading to national and economic development through the Tanzania Five Years' Development Plan 2021/22-2025/26 which focuses on realizing that the industry sector is well established with increased efficiency and productivity in manufacturing (United Republic of Tanzania (URT), 2021) and realisation of the

United Nation Sustainable Development Goal Nine (UN-SDG9). The UN-SDG9 is hinged on building resilient infrastructures, promoting inclusive and sustainable industrialisation fostering innovation through enhancing scientific research, and upgrading the technological capabilities of industries in developing regions through collaboration with research institutions and centres (UNESCO, 2020). With this endeavour, academic libraries have to dynamically shift from their traditional roles and functions to modernized kinds of services where sharing of research works becomes more comprehensive and coupled with technology.

Contribution of university-industry linkage

The university-industry linkage has the potential for professionalism, industrial technology, and product capabilities. Industries depend on their internal R&D or outsource research works from various linkages which include inter-firm cooperation, research institution or centre-industry, and university-industry linkage. Different organisations and scholars (Lemoine, et al., 2017; Penprase, 2018; UNESCO, 2019; UNESCO, 2020) have considered the university-industry linkage as the crucial collaboration for industrial development, innovation, technology, new product development, and national economic development and in meeting the UN-SDG9. Developed countries have benefited from this endeavour and have dynamically transformed to the Fourth Industrial Revolution (4IR) and rarely this endeavour has been addressed in developing regions including the United Republic of Tanzania. This study has found that, in Tanzania, the university-industry linkage for sharing collected research works has contributed to the development of various industries. Figure 1 indicates the contribution of the university through the sharing of its academic library research collections with the industrial sector.

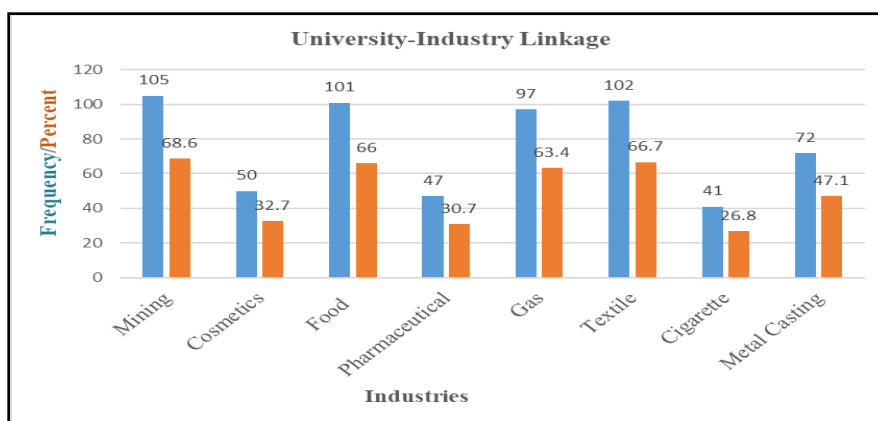


Figure 1: Contribution of university-industry linkage (Field Data, 2022)

Findings in Figure 1 indicate that universities contribute their research work collections with several fields at different levels. Among the respondents, 105(68.6%) showed that academic libraries contribute by sharing research collections with the mining industry while 102(66.7%) reported sharing with the textile industry. Moreover, 101(66%) respondents indicated that academic libraries contribute their research collections to the food and drinks industries. In addition, 97(63.4%) respondents indicated that academic libraries contribute to sharing research

collections with the natural gas industry. This trend of sharing research work collections with the industrial sector is contributed by the fact that programs related to these fields are provided by the selected universities. For instance, a geology program consists of natural gas and mining and it is particularly offered by the University of Dar es Salaam (UDSM). Similarly, processing technology forms part of the disciplines offered at the selected universities where the textile, food, and drinks industries benefit from these institutions in R&D. During the interview, the SUA Library Director said that;

Despite the library's contribution to the processing industries including the sugar and textile industries, researchers, and the academic community, its contribution is similarly marked by small-scale producers such as small farmers involved in food and drinks processing, livestock, and veterinary sciences. The institutional repository and the 'Mkulima' research library collection have been crucial to the small-scale producers [Participant 1].

Both UDSM and SUA have units for reserving research works (academic libraries), have a bureau for industrial linkage, technology transfer and consultancy, public services and external linkage, and teaching programs related to engineering and processing technology that have led to collaborative research projects. The academic libraries of the surveyed universities have enough research-based collections on mining, natural gas, textile, food, and drinks processing from which the linked industries benefit from this endeavour. In the study on leveraging university-industry collaboration, Kong (2022) opines that the most honoured universities in Tanzania that indicate significant linkage and dedicate their research works for industrial development are the University of Dar es Salaam, Sokoine University of Agriculture and Mbeya University of Science and Technology. On the other hand, the university-industry linkage with the cigarette, pharmaceutical, cosmetics, and metal casting industries was at a lower level (<50%) because of the reasons that the fields may not be streamlined with the selected universities' programmes and/or research and consultancy service collaborations are still very low.

Factors influencing university-industry linkage in Tanzania

In this study, factors related to institutional and policy issues influencing the sharing of research collection with the industrial sector were surveyed. Various factors were provided and the respondents were supposed to rate the extent of perception of the influence. The results are presented in Tables 4 and 5 respectively.

Institutional factors

The institution management's commitment, support, and accountability to research work sharing is imperative in maintaining relationships with various stakeholders for both professionalism and knowledge sharing. Other issues that influence the sharing of research work are not limited to decision-making on the relationship with stakeholders and the capability of extracting research work for sharing and dissemination. Table 4 presents findings on institutional factors.

Table 4: Institutional factors (n=153)

Institutional issues	Library	To a great extent		To some extent		To a small extent		Not at all	
		<i>F</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Quality of research collection	UDSM	64	59.8	24	22.4	11	10.3	8	7.5
	SUA	15	51.7	7	24.1	3	10.3	4	13.8
	MUST	11	64.7	6	35.3	-	-	-	-
	Total	90	58.8	37	24.2	14	9.2	12	7.8
Decision makers' commitment	UDSM	71	66.4	22	20.6	12	11.2	2	1.9
	SUA	17	58.6	10	34.5	2	6.9	-	-
	MUST	10	58.8	6	35.3	1	5.9	-	-
	Total	98	64	38	24.8	15	9.8	2	1.3
Linkage with industrial sector	UDSM	62	58	28	26.2	15	14	2	1.9
	SUA	18	62.1	9	31	2	6.9	-	-
	MUST	11	64.7	6	35.3	-	-	-	-
	Total	91	59.5	43	28.1	17	11.1	2	1.3
Industrial research agenda	UDSM	68	63.5	24	22.4	13	12.1	2	1.9
	SUA	15	51.7	10	34.5	4	13.8	-	-
	MUST	11	64.7	4	23.5	1	5.9	1	5.9
	Total	94	61.5	38	24.8	18	11.8	3	2
Reflective curriculum	UDSM	63	58.8	31	29	11	10.3	2	1.9
	SUA	11	37.9	12	41.4	3	10.3	3	10.3
	MUST	9	52.9	2	11.8	6	35.3	-	-
	Total	83	54.3	45	29.4	20	13.1	5	3.3
Accountability	UDSM	61	57	34	31.8	10	9.3	2	1.9
	SUA	15	51.7	9	31	5	17.2	-	-
	MUST	12	70.6	1	5.9	3	17.6	-	-
	Total	88	57.5	44	28.8	18	11.8	2	1.3
Institution - industry research agenda	UDSM	65	60.7	27	25.2	12	11.2	3	2.8
	SUA	17	58.6	7	24.1	4	13.8	1	3.4
	MUST	10	58.9	2	11.8	3	17.6	2	11.8
	Total	92	60.2	36	23.5	19	12.4	6	3.9
Institution/academic library vision on research sharing	UDSM	60	56.1	28	26.2	13	12.1	6	5.6
	SUA	14	48.3	8	27.6	7	24.1	-	-
	MUST	10	58.8	3	17.6	4	23.5	-	-
	Total	84	54.9	39	25.5	24	15.7	6	3.9
Model of research work sharing	UDSM	61	57	27	25.2	17	15.9	2	1.9
	SUA	22	75.9	3	10.3	4	13.8	-	-
	MUST	9	52.9	7	41.2	1	5.9	-	-
	Total	92	60.2	37	24.2	22	14.4	2	1.3
The capability of librarians in extracting data or	UDSM	59	55.2	27	25.2	13	12.1	8	7.5
	SUA	17	58.6	7	24.1	5	17.2	-	-
	MUST	9	52.9	4	23.5	4	23.5	-	-

research works for sharing	Total			38	24.8	22	14.4	8	5.2
		85	55.6						
Funds for establishing	UDSM	61	57	26	24.3	18	16.8	2	1.9
research data and management	SUA	20	68.9	3	10.3	5	17.2	1	3.4
	MUST	11	64.7	-	-	6	35.3	-	-
	Total	92	60.2	29	19	29	19	3	2

Source: Field Data (2022)

Findings in Table 4 show that institutional factors influence the sharing of research works with the industrial sector. The most factors reported to influence to a great extent are the commitment of decision-makers which was reported by 98(64%) respondents, industrial research agenda indicated by 94(61.5%) respondents whereas 92(60.2%) respondents pointed to institutional-industrial research agenda to influence the efforts in sharing research work. However, both the model for research work sharing and funds for establishing research data management for collaboration with the industrial sector were reported by 92(60.2%) respondents.

These factors are similarly varying between the institutions. For instance, 75.9% of the SUA respondents show that the model for research work sharing affected the dissemination of resources to a great extent while 70.6% of the respondents at MUST indicated that accountability of the institutional management affected research work sharing with the industrial sector. On the other hand, 55.6% of the respondents indicated that the librarian's ability to extract research works for sharing with the industrial sector to a great extent affected the collaborative efforts. Nevertheless, during an interview one of the participants narrated as follows:

It is important to make the institutional linkage strong with the industrial sector, training information professionals on research reports management is crucial as it provides the ability to handle issues related to selective dissemination of research data to a particular industry or any user interested in [Participant 3].

The aspect of librarians' capability was similarly observed by Ashiq et al. (2020) in the systematic literature review on research data management practices and services that academic librarians and researchers in developing countries lack the capacity and skills to identify the potential research works for collaboration. On the other hand, Cobblah et al. (2022) conducted a study on connecting industries to research outputs and the role of academic libraries in Ghana. This study by Cobblah et al. (2022) indicates that academic librarians in Ghana are not doing much in Selective Dissemination of Information (SDI) to identify potential research works that can be shared with a particular industry for sustainable collaboration and development. This phenomenon is contributed by the ability of librarians to extract data or research works for sharing. In addition, other institutional factors were not limited to; insufficient collaboration between academic libraries and industries, lack of funds for research work management and sharing but also lack of common research agenda between universities and the industrial sector and ultimately research works collected in the libraries never related to industrial needs and for so long remained in shelves for circulation.

The institutional factor of sufficient academic library-industry linkage is similarly supported by Kashyap and Agrawal (2019) on the study of academia as a new knowledge supplier to the industry, the uncovering barriers in the process in India. Again, the findings on academia-industry linkage, Singh and Kaundal (2022) supported poor academic library linkage and added other institutional-related factors of insufficient funds for linkage and resource identification and sharing, commitment, accountability, and support from the institutional management, librarians' skills and ability to select resources for sharing. Given the institutional factors that influence academia-industry linkage, the institutional top management of mostly developing countries must consider collaboration as a panacea for mutual relationship, economic development, sustainability, and professionalism.

Policy factors

The Universities, research centres, and institutions have a research-sharing policy that guides the procedures for sharing research works and data. The policy establishes the type of data for sharing and with whom, conditions for sharing, research data management, intellectual property rights, privacy rights, and licensing of shared data. In this study, policy factors that influence the sharing of research work with the industrial sector are presented in Table 5.

Table 5: Policy factors (n=153)

Policy issues	Library	To a great extent		To some extent		To a small extent		Not at all	
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Implementation of research sharing policy	UDSM	77	72	19	17.8	8	7.5	3	2.8
	SUA	17	58.6	7	24.1	3	10.3	2	6.9
	MUST	13	76.5	3	17.6	1	5.9	-	-
	Total	107	69.9	29	19	12	7.8	5	3.3
Oversight of policy makers	UDSM	69	64.5	29	27.1	5	4.7	4	3.7
	SUA	11	37.9	11	37.9	5	17.2	2	6.9
	MUST	12	70.5	5	29.4	-	-	-	-
	Total	92	60.1	45	29.4	10	6.5	6	3.9
Integrated HLIs-Industrial policy	UDSM	69	64.4	27	25.2	7	6.5	4	3.7
	SUA	11	37.9	11	37.9	5	17.2	2	6.9
	MUST	13	76.5	3	17.6	-	-	1	5.9
	Total	93	60.8	41	26.8	12	7.8	7	4.6
Updated research policy	UDSM	65	60.8	28	26.2	10	9.3	4	3.7
	SUA	12	41.4	9	31	5	17.2	3	10.3
	MUST	8	47.1	3	17.6	5	29.4	1	5.9
	Total	85	55.6	40	26.1	20	13.1	8	5.2
Government intervention	UDSM	65	60.7	30	28	9	8.4	3	2.8
	SUA	15	51.7	9	31	4	13.8	1	3.4
	MUST	7	41.2	2	11.8	5	29.4	3	17.6
	Total	87	56.9	41	26.8	18	11.8	7	4.6
Involvement of	UDSM	62	57.9	32	29.9	9	8.4	4	3.7

stakeholders in policy development.	SUA	18	62.1	8	27.6	3	10.3	-	-
	MUST	9	52.9	2	11.8	4	23.5	2	11.8
	Total	89	58.2	42	27.5	16	10.5	6	3.9
Policy implementation	UDSM	60	56.1	30	28	12	11.2	5	4.7
	SUA	17	58.6	9	31	3	10.3	-	-
	MUST	10	58.8	6	35.3	1	5.9	-	-
	Total	87	56.8	45	29.4	16	10.5	5	3.3

Source: Field Data (2022)

Findings in Table 5 on the factors influencing sharing of research works show that 107(69.9%) respondents reported on efficient implementation of research sharing policy while 93(60.8%) respondents pointed out the integrated university-industry policy and 92(60.1%) respondents opined on the policy makers' oversight. In addition, 89(58.2%) respondents affirmed the level of stakeholders' involvement in policy development as has to a large extent influenced the sharing of research works with the industrial sector. In this regard, and based on documentary review, the surveyed universities have research sharing policy but the policy action and the implementation of it in sharing research works has remained questionable. For instance, the University of Dar es Salaam has a 3rd ed. research policy and operational procedures of 2015 while the Sokoine University of Agriculture possess a research policy of 2018. However, Mbeya University of Science and Technology is missing a research policy for guiding research data management and sharing with the public and potential stakeholders (Kong, 2022).

Again, the issue of revising research research-sharing policy is crucial in adopting the technological changes in research and development. In this study, 85(55.6%) respondents indicated that the research-sharing policies are not frequently updated, which is the factor that influences greatly the sharing of research data and management. The evidence of this fact is observed in the two research-sharing policies from the University of Dar es Salaam and Sokoine University of Agriculture that have been in place for over 5-8 years without being reviewed.

Despite the availability of these policies, none is documented on action research policy for university-industry sharing of research data. On the same lens, Cobblah et al. (2022) identified that most of the university-industry collaborations in developing countries lack a research action policy which engages both the collaborating parts toward the implementation of the research data sharing. Unfortunately, in this study, 93(60.8%) respondents reported the fact that university-industry research sharing policies are crucial in the collaboration and mostly, and 89(58.2%) respondents reported on the levels of involvement of the collaborating part in designing the action research policy. The engaged action policy incorporates laws, regulations, incentives, guidelines, and funding programs for the well-being of university-industry research-based linkage. One of the participants reported as follows during the interview:

The collaborative initiatives have to be bound with a corporative policy which among others, has to be streamlined with the research action for implementation and sharing strategies. A collaborative research agenda has to be in place as other terms of reference regarding sharing of the resources

and the issue of intellectual property. However, most of the universities here in Tanzania do not have a corporative research sharing policy with industries, and thus inefficiency in sharing of the resources [Participant 2].

It is in the same vein that, Mushi et al. (2020) in the study to identify and implement relevant research data management services at the University of Dodoma library, observed that the implementation of the research data sharing policy and its management is not comprehensive to most of the African higher learning institutions including the University of Dodoma. In this regard, the European Union (EU) (2020) insists on the strength of the university-industrial collaboration which has to be determined by the university-industry knowledge transfer and inclusive action research policy. With the action research policy, the research agenda can be established for collaboration and implementation.

Conclusion

Generally, the empirical data supplemented by a survey of the selected universities indicate that the academic library research collections are important in boosting industrial production. These lead to new product development, industrial innovation, promotion of entrepreneurship, technological development, and industrial revolution. The academic libraries contribute their research collections to the natural gas industry, mining, textile, food, and drinks. For instance, the University of Dar es Salaam has set a research agenda to collaborate with the mining and natural gas industries and established an effective university-industry linkage. The study has established that institutional and policy issues have influenced the academic library research collections sharing with the industrial sector. The institutional factors include a commitment of decision makers, industrial research agenda, institutional-industrial research agenda, defined model of research work sharing, and funds for establishing research data management for collaboration with the industrial sector. Nevertheless, the policy factors are related to the implementation of research sharing policy, oversight of policymakers, integrated university-industry policy, stakeholders' involvement in policy development, updating research sharing policy, and involvement of the collaborating part in designing the action research policy for sharing research collection. Needless to say the crucial and comprehensive university-industry linkage in economic development and achievement of the UN-SDG9 of any developing country Tanzania inclusive, this study offers practical recommendations which would encourage strong engagement of the universities through their research collection for effective collaboration with the industrial sector.

Recommendations

The government of the United Republic of Tanzania through the Ministry of Education, Science and Technology should take advantage of the Universities and industrial strategies in formulating a collaborative research agenda for the proliferation of the linkage and achieving the United Nations Sustainable Development Goal Nine (UN-SDG9). The following recommendations are considered important for the government and universities in particular, towards enhancing the effective sharing of research collections with the industrial sector that may contribute to resolving economic problems, unemployment cases, and poverty reduction among the public:

- i. The University research approach has to be improved by integrating or performing more action research rather than continuing with experienced research gap coverage. The developed regions have been successful in collaborative research works where the action research approach has contributed to the proliferation of the university-industry linkage.
- ii. An effective university-industry policy is to be established for research works by involving all the stakeholders and the policy action for implementation should be centrally established with the modality of operation in line with the agreed university-industry research agenda. The policy has to be frequently reviewed to keep abreast with the fast development in technology and the industrial revolution.
- iii. Linkages and partnerships between universities, research, and development institutions/centres have to be promoted on the one hand and industries at local and international levels on the other hand. It is also important to invest in R&D to foster technological diffusion, decrease knowledge gaps, reduce poverty among the citizens, improve visibility, sustainable economic development, and realisation of the UN-SDG9.
- iv. Integration of various innovative policies for university-industrial linkage, including ICT policy, industrial policy, national broadband policy, higher learning education policy, and cyber-security policy. Additionally, an intellectual diaspora policy can be established to ensure that such a network connects the country to the global knowledge community and provides opportunities for partnership and development, particularly in innovation, technology, and research.
- v. Universities should revise their core functions and may establish industrial innovative research and development centre for industrial practitioners and investors' access. The centres should develop operational policies, procedures, and incentives for academics and researchers in various disciplines to address problems related to university-industrial research collaboration. The centres may however help to develop competencies in solving problems through technological action research.
- vi. The university libraries have to get more improve by integrating emerging technology trends and Web technologies for easy communication, sharing, and dissemination of the research collection to the public and other stakeholders, particularly the industrial sector.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Massive Open Online Courses as a Pathway to Inclusive Education in Nigeria

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Abstract

This review article brings to the fore insight into some of the issues that must be considered as Nigeria makes a cautionary move to the Massive Open Online Courses (MOOC) environment. The paper draws from existing literature to highlight the features; history and growth of MOOCs to show that it is one of the most recent OERs that have emerged to facilitate inclusive access to education at relatively low costs, particularly in developing countries, like Nigeria. The paper argues for the imperatives of MOOCs as a pathway for inclusive education in Nigeria, particularly with the growing demand for inclusiveness at Higher education institutions (HEI). The paper concludes that though MOOCs offer an opportunity to remove obstacles to participation and access, particularly for poor and marginalized groups, they present certain challenges in delivering inclusive education. These challenges include inadequate digital skills, competence as well and access to dependable internet and gadgets, Also, if MOOCs are not designed within the context of relevance they may fail to achieve their intended objectives. There is a call for urgent intervention by the government and relevant stakeholders in the higher education sector as the facilities and resources needed to successfully run MOOCs are enormous and require collaboration among various stakeholders. Furthermore, Nigeria needs to catch up with the global trend in making investments in education to effectively run MOOCs and make the digital space ties readily available to ensure that there is dependable Internet access to enable inclusive online education.

KEYWORDS: MOOCs, Inclusive education, Nigeria, OERs, Digital technologies

Introduction

Digital technologies have brought in and continue to bring in changes and innovative solutions to the delivery of inclusive education (Srivastava and Dey 2018; Sandanayake (2017). Open education resources (OER)-for teaching and learning in higher education institutions is one of these inclusive digital solutions. Massive open online courses (MOOCs) are the most recent OERs that have emerged to facilitate inclusive access to education at relatively low costs, particularly in developing countries where the education sector faces several issues, including deteriorating physical infrastructure, insufficient learning materials, low teacher quality, and high dropout rates, resulting in an ever-growing army of out-of-school children who fuel antisocial actions. MOOCs are educational platforms designed for mass reach and participation, with functional study materials (Hollands and Tirthali, 2014; Czerniewicz *et al*, 2015, (McAuley *et al*, 2010,). Zhao *et al* (2019) defined MOOCs as extensions of distance learning based on OERs, emphasizing the distinction in its characteristics which are “free of charge, open to a global

audience, and built for large numbers of participants. MOOCs are expected to expand educational opportunities and close learning gaps. One of the positive global learning outcomes from the effect of MOOCs would be its contribution to the achievement of Sustainable Development Goal (SDG) 4...to ensure *inclusive and equitable quality education and promote lifelong learning opportunities for all*. Conjecturally, within the context of the Economic Recovery Growth Plan (ERGP) and the current ten-year National Development Plan in Nigeria, it is expected that MOOCs would be a useful strategy to close the huge educational gap and the mismatch that presently exists in Nigeria between the needs of businesses and industry for skills and higher education.

UNICEF (2021) reported that Nigeria has one out of every five out-of-school children in the globe. Even though elementary education is nominally free and obligatory, over 10.5 million children aged 5 to 14 years are still not in school¹. This is attributed to the destitution of many families as a result of overall economic deterioration, and as such enrolment rates continue to fall, and drop-out rates also rising in recent years. Available statistics from the Federal Ministry of Education in Nigeria revealed that male and female gross enrolment rates in 2016 were 87.16% and 80.40%, respectively at the primary school level, indicating a gap in enrolment for primary education. Similarly, gross enrolment rates are much lower, at 44.94% for males and 41.19% for females in junior secondary education. Gross school enrolment ascended from 85.1% in 2010 to 92.1% in 2012, to 94.1% in 2013, but has declined since then, standing at 87.73% in 2016 (Federal Ministry of Education [FME, 2016]) and 87.5% in 2018 (WDI, 2021). As of 2011, the tertiary gross enrolment was about 10.2% according to information from the World Bank Indicators database. The adult literacy rate in 2018 was much higher for males (71%) than females (53%) with an overall of 62%². These trends also reveal the need to close gender gaps in education with MOOCs as a veritable option.

In the last year, almost all Nigeria Universities have recognized the need for putting together their respective Learning Management Systems (LMS), which can be described as a hybrid MOOC that puts together localized educational resources in response to the COVID-19 pandemic and the global economy lockdown, which disrupted the education system. Having an LMS is fast becoming an essential part of providing training/teaching facilities not only in universities but also in corporate organizations, government, and Nongovernmental organizations (NGOs). This made educational institutions in Nigeria begin to witness an era of increased open online learning activities and also brought the issue of MOOC as a front-burner research subject in Nigeria. According to UNESCO (2020), as of April 13th, 2020, an estimated 1.725 billion learners had been affected as a result of school closures, representing about 99.9% of the world's student population. In Nigeria, the closure of schools affected close to 46 million students at all levels of education. (EIEWG, 2020). However, MOOCs are presently being considered as a new normal in terms of a response strategy and pathway to inclusive education in the face of the COVID-19 pandemic. The fact however remains that the relevance of MOOCs should be seen beyond this period of present educational disruption.

¹UNICEF (2021) <https://www.unicef.org/nigeria/education>

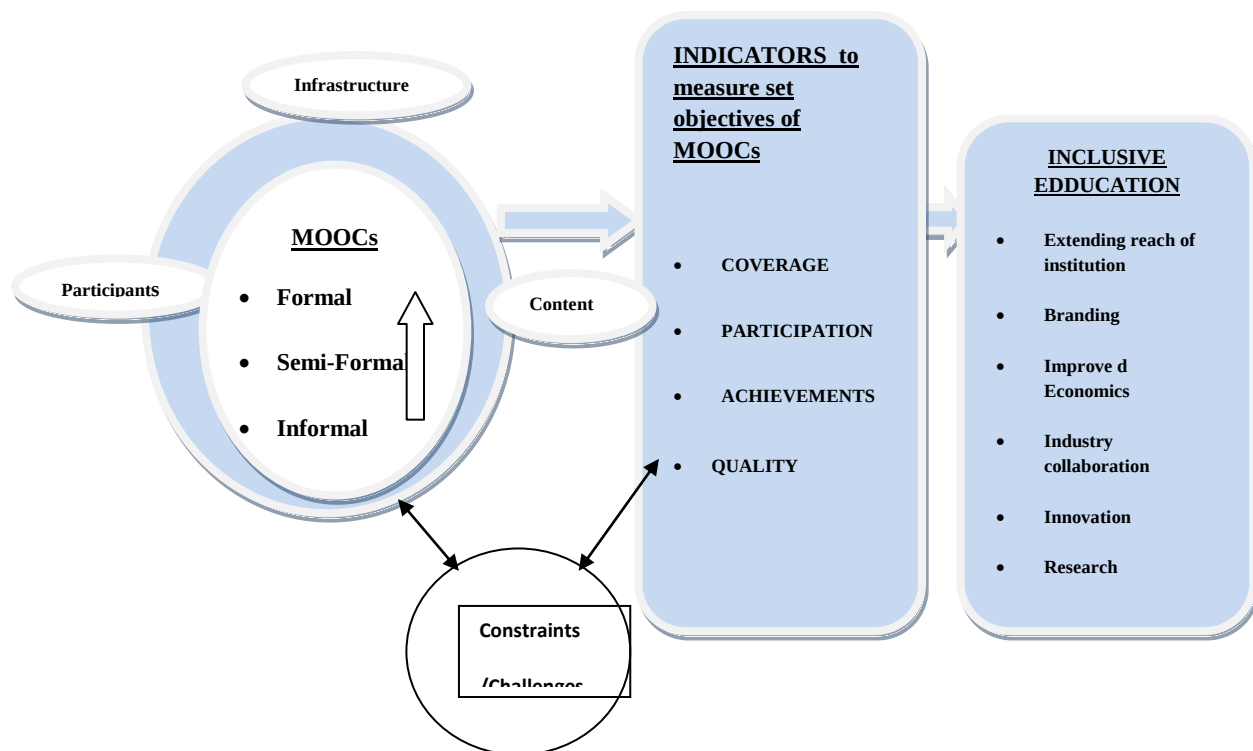
²<https://datatopics.worldbank.org/education/country/nigeria>

The objective of this paper is to bring to the fore deeper insight into some of the issues that must be considered as Nigeria makes a cautionary move to the MOOC environment. This paper, therefore, highlights the idiosyncrasies of this emergent pathway of inclusive education. This paper is organized into five sections including this introduction. Section two sheds light on the features of MOOCS, while section three discusses the history and growth of MOOCs. The challenges and prospects of MOOCS are discussed in section four and section five wraps up the paper by considering the imperatives of MOOCs as a pathway for inclusive education in Nigeria.

THE FEATURES OF MOOCS

As depicted in Figure 1, the features of any MOOC generally revolve around three sets of interactive elements, namely infrastructure, participants, and content respectively; with a central focus on achieving its objectives for inclusive education as a major outcome Conole (2014), identified benefits of inclusive learning to include creating a community of peers, enabling innovation and creativity; fostering collaboration; and achievement of quality education.

Figure 1: Understanding the features of MOOCs as a pathway to inclusive learning



Source: Author's conceptualization adapted from Davis (1989) and Console (2014)

- Participants in MOOCs include learners, tutors/instructors/teachers/lecturers, administrators, industry representatives, and policy makers (Conole, 2014). An assumption is that if participants find the MOOC environment user-friendly, useful, and easy to use, there is a likely possibility of high course enrolment and completion rates, and by extension low drop-out rates (Davis, 1989).
- Course content design, presentation as well and facilitation are also expected to play an important role in achieving the desired performance of the MOOC (Davis, 1989).
- Infrastructure to enhance communications and delivery of the MOOC has a major role to play if this pathway to inclusive education and learning is to be a reality.

MOOCs have been observed to be operationalized in three types of environments, namely non-formal, semi-formal, and formal (Czerniewicz et al (2015). The non-formal and semi-formal MOOC environments have tended to dominate, as content development is generally still domiciled in these environments, where they are offered as short vocational and/or technical courses, either with no credits or just certified with a diploma. Examples of such courses are

developmental courses, capacity building courses, preparatory or remedial modular courses, and optional enrichment courses that have varied course duration. It is however pertinent to mention that there are several emerging interesting experiments regarding hybrid MOOCs, which can be argued to be a move of MOOCs to the formal learning environment, where the characteristics of MOOCs need to be redefined to meet conventional learning outcomes. For example, there are existing efforts in support of distance learning and the use of OERs in Nigeria, as a gradual move to the formal environment of MOOCs. Some of these efforts include the successes recorded in the open access education through distance learning provided by the National Open University of Nigeria (NOUN) as well as in the distance learning programs offered at the University of Ibadan and the University of Lagos amongst others. The National Open University of Nigeria (NOUN), was established in July 1983, by an Act of the National Assembly as the first distance learning tertiary institution in Nigeria when it became crystal clear to the then Federal Government that the ever-growing demand for education by her people cannot be met by the traditional means of face-to-face classroom instructional delivery. A few private Universities in the country in the last few years developed their digital learning platforms to offer digital content and instruction to teachers and students. For example, Bowen University Iwo, Osun State concluded lectures online and conducted second-semester examinations online amidst the lockdown. Some international MOOC providers in the formal environment have emerged in Nigeria, and these include Azure Tutors and UTIVA. Authors including Czerniewicz et al. (2014) have posited that the course content of MOOCs in a formal domain will need to follow a curriculum with conventional procedures consistent with a normal, face-to-face university curriculum characterized by control to access, progression, and assessment in an online format and credit-bearing courses. It is in the foregoing regard that Conole (2014) argued that the MOOC environment will enable an inclusive education trajectory with a move along a spectrum from informal to formal; from loosely based resource-based learning to a structured, time-defined course, which is accredited.

HISTORY AND GROWTH OF MOOCs

The first generation of MOOC, coined as connectivist MOOC (cMOOC) emerged in 2008, while the second generation, labelled networked (xMOOC) came up in 2012. cMOOCs were based on a connectivist pedagogy, which aimed to foster the affordances of social and participatory media. It relied on significant interaction with a distributed network of peers. Participants used a variety of technologies to reflect on their learning and to interact with others. xMOOCs were primarily based on interactive media, such as lectures, videos, and text. xMOOCs adopted a more behaviourist pedagogical approach, with an emphasis on individual learning, rather than learning through peers. The success of the first and second-generation MOOCs raised a lot of interest in the public sphere, academia, and higher education institutions, and this led to the innovative experimental idea of hybrid MOOCs, as the third generation of MOOCs, delivered by a group of academics from the University of Edinburgh in 2013. The third generation of MOOCs has taken a more pragmatic approach by combining the two previous pedagogical approaches; to diversify learning opportunities and reach a broader audience. Yousef et al (2014) amongst other authors have reported on these hybrid MOOC models, which include small open online courses (MOOCs) and blended MOOCs with campus-based teaching (blended MOOCs).

To date, some of the biggest English-medium MOOC private providers include Coursera, edX and Udacity, FutureLearn, Open2learn, Udemy, NovoEd, and Iversity. These MOOCs are located in developed countries, but they provide worldwide services. They have incorporated partnerships with world-class universities including Stanford, Harvard and Yale. (Daniel, 2012). In the initial stages, the courses by these providers were organized on platforms like Zoom and Google Meet, but now most MOOC providers have their specialized platforms. Stanford University pioneered MOOCs in 2012 when three of its professors opened up courses, that were once limited to a specific number of students, accessible globally (Shah, 2020). Many other universities have since joined in making courses available online for both local and international students. Table 1 provides information on the global trend of MOOCs.

Table 1: Global Trend of MOOCs

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Students (Millions)	2	10	18	35	58	81	101	120	180
Universities	40	200	400+	500+	700+	800+	900+	900+	950
Courses	250	1200	2400	4200	6850	9400	11400	13500	16300
Micro-credentials			-	-	-	-	-	820	1180
MOOC-Based Degree			-	-	-	-	-	50	67

Source: Shah (2020)

The number of students on the various MOOC platforms has maintained an upward trend, rising rapidly by about 8900 percent from 2 million students in 2012 to 180 million students in 2020 with the highest and lowest growth rates totalling 400 percent and 18.8 percent in 2013 and 2019 respectively. In the same vein, the number of courses continues to rise over the years. However, even though there has been a marked increase in the number of courses offered on various MOOC platforms between 2012 and 2020, its growth rate declined consistently from 380 percent in 2013 to 18.4 percent in 2019 but it rose to 20.7 percent in 2020. Moreover, micro-credentials, certificates earned through short and transparently assessed courses, and MOOC-based degrees grew from 820 and 50 in 2019 to 1180 and 50 in 2020 respectively. It is important to note that the significant increase in the number of students, universities, courses, micro-credentials and MOOC-based degrees in 2020 is attributable to the disruption caused to physical learning by the COVID-19 pandemic, which compelled online learning. There are several subjects taught on MOOCs platforms including business, technology, humanities, science, and social sciences, among others. The number of universities involved in MOOCs has continued to grow since inception as it grew markedly by about 2275 percent from 40 universities in 2012 to 950 universities in 2020. According to the World University Ranking by MOOC Performance in 2020, universities from North America, Europe, and Asia dominate the top 200 universities offering MOOCs.³ This shows that universities in Africa including Nigeria are not globally competitive in terms of MOOCs. Table 2 gives information on the top four global MOOC

³ <https://www.mooclab.club/pages/wurmp-full-list/>

platforms in terms of the number of learners, courses, micro-credential and degrees offered by Coursera, edX, FutureLearn and Swayam respectively.

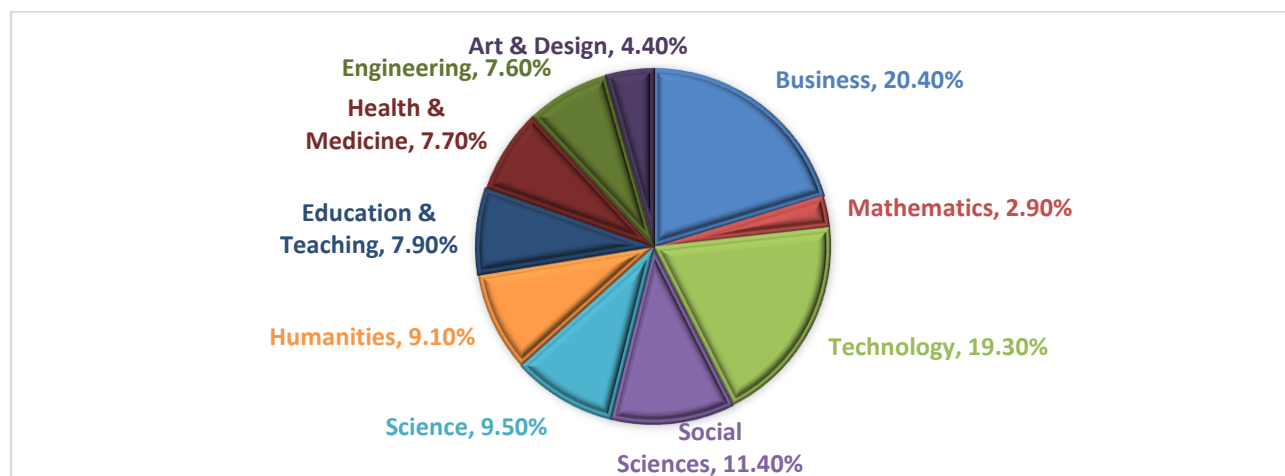
Table 2: Top MOOC Platforms in 2020

	Learners	Courses	Micro-credentials	Degrees
Coursera	76 million	4,600	610	25
edX	35 million	3,100	385	13
FutureLearn	14 million	1,160	86	28
Swayam	16 million	1,130	0	0

Source: Shah (2020)

Figure 1 shows that business-related courses are the most common courses on MOOC platforms and this accounts for 20.4%. Technology-related courses towed in second place with 19.3%. The dominance of business and technology-related courses signals the desire to develop technologies and commercialize them for work simplification and increased profitability. In addition, business and technology could be applied to various disciplines and spheres of life. Social science courses are taken by 11.4% of students while other courses have less than 10% of students enrolling for them, not because the courses are not important but as a result of personal preference.

Figure 1: Distribution of MOOCs across Subjects, 2020



Source: Shah (2020)

Prominent MOOCs are hosted and run largely by Ivy League institutions in developed countries particularly in Europe and North America (Trehan et al., 2017). Similarly, MOOC research is mostly conducted by authors from the global north (Liyanagunawardena et al, 2013). The early

research on MOOC-related issues had been mostly qualitative with narratives and case studies dominating the literature (Jacoby, 2014), but recent studies are coming up based on quantitative analysis. Zhu et al. (2018) reviewed 146 MOOC-related empirical papers published between October 2014 and November 2016 and found that most authors adopted quantitative research methods, the method of data collection was mostly through a survey with the prominent analytical technique being descriptive statistics. Similarly, Babori (2020) reviewed 100 MOOC-related studies drawn from 36 reputable peer-reviewed journals and found that most studies utilized questionnaires for their data collection, and analysis of the data is mostly done through descriptive statistics.

The review of 183 MOOC-related empirical paper publications from 2013 to 2015 by Veletsianos and Shepherdson (2016) showed the dominance of authors from Europe and North America. Similarly, Gasevic et al (2014) revealed the dominance of Western authors in the application for research grants at the MOOC Research Initiative. However, most of the empirical studies are so limited in scope that they fail to address MOOC-related issues in developing economies. The reason for this is not far-fetched as most of the top-notch MOOCs are domiciled in universities in Europe and North America. This obvious geographical skewness in MOOC research in favour of developed countries suggests that MOOC research is still nascent in developing countries thus, limiting the scope of understanding MOOC and depicting that MOOC research is still a regional phenomenon rather than a global phenomenon. This could be attributed to the limited capability (in terms of skilled manpower, financial resources, and infrastructural development) to fully and effectively operationalize MOOCs in developing economies (Olanrewaju and Afolabi, 2021).

Challenges and prospects of MOOCs

Empirical evidence from the works of Explorance, (2013) and Pickard (2018) has documented the challenges facing MOOCs to include: low completion rate, limited accountability, and accreditation, skewness in accessibility, high cost of creating online courses (financial sustainability) and unstandardized evaluation methods.

i. Completion Rate

Despite the growing number of student enrollment for MOOCs, the completion rate has been recorded to average less than 10 percent (Jordan, 2013). Pickard (2018) showed that only 7.5% of the approximately 200,000 enrollees for one of the courses on edX completed the course while only 34% of them accessed the course. This indicates that most enrollees only signed up for the courses without the motivation to complete them possibly due to the possibility of auditing courses without payments and the flexibility of the learning process. Explorance (2013) however cautioned that the course completion rate is not a good indicator for measuring the success of MOOCs as the rate does not account for the learning experiences of enrollees. While some enrollees garner requisite knowledge from specific contents of a course without completing the course, others participate in discussions or passively learn from the discussions without necessarily completing the course.

ii. *Accountability, accreditation, and transparency*

These are also key challenges facing MOOCs as it is arduous to prevent malpractices during online examinations or assessments. The possibility of malpractice increases when such courses culminate into a university degree or will be used for promotion or employment exercises. These weaknesses in MOOCs are the motivating factors for many students to enroll in MOOCs. This could lead to the preponderance of half-baked graduates and a high level of incompetence in the labour market. Mingming and Yanli, (2014) argued that ensuring credibility and preventing counterfeiting are daunting tasks that need to be addressed for MOOCs to be credible. Interestingly, this challenge can be addressed through the deployment of technological devices such as remote proctoring and the use of camera and computer audio devices during examinations.

iii. *Low awareness of the existence of MOOCs*

MOOCs have further widened the digital gap rather than bridged it as it is often accessed by graduates. For example, the majority (almost 75%) of enrollees in edX's MOOCs previously had a university education given the low awareness of the existence of free and low-cost courses among non-graduates as against technological access (Pickard, 2018). This makes collaboration with key stakeholders important to ensure a rise in the level of awareness of MOOCs.

iv. *Accessibility, Affordability, and Sustainability*

MOOC providers need to take cognizance of accessibility when designing their multimedia content to reduce the challenge of accessibility. The costs associated with creating courses together with the long wait before recovering the money is another major challenge facing MOOCs (Pickard, 2018). This serves as a great discouragement for creators of the courses as they could run at a loss if the enrollment rate falls.

v. *Non-Standardization in Evaluation*

The lack of uniformity in standards for evaluating MOOCs poses a great challenge to the credibility of the certificate earned from the courses. Mingming and Yanli (2014) alluded that the unstandardized evaluation method for MOOCs lowers the level of education from the platform and some courses cannot be effectively evaluated online but in a traditional school setting. Pickard (2018) reiterated the urgency with which these challenges should be addressed as they are capable of stifling MOOCs into extinction if left unattended.

Despite these challenges, MOOCs have great prospects as they continue to revolutionize the global educational sector. MOOCs are poised to make education inclusive across the world as it affords everyone the equal opportunity of getting educated inasmuch as the infrastructural facilities and devices to access the internet are readily available. MOOCs provide opportunities for people to garner modern knowledge and skillsets (Explorance, 2013). This will not only raise the standard of education globally but also ensure increased competitiveness of students from developing countries in the global market (Devgun, 2013). MOOCs also hold the key to unlocking the potential for increased employment generation across the world. This is because apart from the MOOCs creating job opportunities for the creators and designers of the courses, it also empower the students by building their human capital, which will ultimately help them

create employment opportunities and help them make significant contributions to their immediate societies. This will also ultimately improve the general welfare and nip poverty in the bud. Given their borderless and universal nature, MOOCs have the potential to ensure educational continuity with little or no disruption to academic calendars as was the case during the COVID-19 era. Many students were out of school during the pandemic as their institutions were not adequately prepared for the pandemic which not only caused restrictions in mobility but also discouraged physical gatherings and halted academic activities across the globe, especially in developing countries. MOOCs and digital learning played key roles in ensuring that learning continues despite the restrictions to physical learning as a result of the lockdown orders of the government geared towards flattening the COVID-19 curve (Olanrewaju & Afolabi, 2021).

MOOCs hold the keys to fast-tracking the adoption of digital technologies and the transfer of requisite digital skills required in the modern labour market. For example, computer literacy is a major prerequisite in the modern labour market and MOOCs are well-equipped to help students learn computer skills during their study as the courses are done using computers and other digital devices. In sum, myriads of challenges threaten the viability and credibility of MOOCs and MOOCs also present various opportunities for ameliorating the current performance of the global educational sector. This all-important technological innovation needs to be fully embraced to maximally tap into its potential for improved human capital development and productivity.

The imperatives of MOOCs for inclusive education in Nigeria

The growing demand for inclusiveness within the educational landscape, particularly at Higher education institutions (HEI). This group of institutions plays key roles in promoting talents and education, beyond the secondary school level; to the tertiary level by the university, polytechnic, or college of education (Adeyinka & Wahab, 2015). HEIs foster entrepreneurial mindsets and skill levels in Nigeria and boost the potential to leverage innovative ideas that will transform the system for increased access and opportunities for quality and affordable education. The hitherto brick-and-mortar educational system that has existed in the country will no doubt experience a boost under the injection of new solutions and technologies, such as OERs and in particular MOOCs to address critical human resource needs for millions of individuals who would not otherwise have had access to higher education in particular (De Waard et al, 2012; Wogu et al 2016). The high proliferation rate of MOOCs poses multifarious challenges to the global education sector and also presents several opportunities for revolutionizing the sector. MOOCs have been identified as a major driver of inclusive education given their universal accessibility and potential to bridge the education divide among countries. This makes the adoption of MOOCs imperative in Nigeria as the country is bedevilled with a high illiteracy rate and educational exclusion. It also calls for a more nuanced approach to institutional strategies towards promoting MOOCs in Nigeria. Empirical evidence as in Angya (2020) revealed that countries with impressive development strides prioritize not just quality education for their population but also the build-up and investment in infrastructure through which knowledge is communicated for effective delivery. Succinctly the goals of educating the population with state-of-the-art tools and promoting innovation in the educational sector are achieved. This no doubt has ripple effects on the labour market and the entire economy.

Given the quest for Nigeria to experience positive economic transformation and inclusive growth, the deployment of digital education through the promotion and adoption of MOOCs becomes imperative. Many graduates from Nigerian tertiary institutions lack digital skills which have become a key requirement in the global labour market, a situation which makes them unemployable. This has also increased the digital dependence of the country on other countries as Nigeria remains, at best, a consumer, rather than producer of technology. In addition, MOOCs have the potential to accommodate and drastically reduce the high number of students seeking admission into tertiary institutions in Nigeria. MOOCs have the capacity not only to fix these lacunas but also to position the Nigerian educational sector at the frontline of digital education across the world. This will help increase the number of international students the country attracts and put Nigeria in the league of countries with a high number of international students, a key criterion for ranking educational institutions. The development and preponderance of MOOCs in Nigeria will also create increasing employment opportunities for various classes of people particularly those in the services sector such as web developers, content creators, and lecturers as the number of part-time courses will surge as well as the enrolment rate. Given its unrestricted coverage, MOOCs will tremendously reduce the level of illiteracy in the country as well as achieve the Sustainable Development Goal (SDG) target of “leaving no one behind.”

Conclusion

No doubt, MOOCs may be a pathway to inclusive education in Nigeria by providing the opportunity to remove obstacles to participation and access, particularly for poor and marginalized groups. MOOCs can also offer customizable and tailored learning paths that suit the interests and objectives of learners with a variety of backgrounds, skills, and requirements. However, MOOCs present certain challenges in delivering inclusive education. MOOCs require some amount of digital competence as well as access to dependable internet and gadgets, which many students may not have or cannot afford. Furthermore, MOOCs may fail to fully address the social and emotional aspects of learning, such as contact, feedback, and motivation, all of which are necessary for cultivating a sense of belonging and engagement. Therefore, for MOOCs to be useful as a pathway to inclusive education, they need to be designed and delivered with attention to the diverse needs and contexts of learners, and complemented by other forms of support and guidance. Only then can MOOCs truly contribute to creating inclusive and equitable quality education for all.

Recommendations

This paper makes the following recommendations for adoption of MOOCs as a pathway for inclusive education in Nigeria

1. There is a call for urgent intervention by the government and other stakeholders in the higher education sector as the facilities and resources needed to successfully host and run MOOCs are enormous and require collaboration among various stakeholders

2. Inadequate funding of the education sector in Nigeria remains a major clog in the wheel of progress of the sector. To this extent, Nigeria needs to catch up with the global trend in making investments in education to effectively run MOOCs and make the necessary digital devices and infrastructural facilities readily available to ensure learners and facilitators have dependable Internet access to enable online learning.
3. There is a need for early digital literacy training opportunities to support and develop needed skills and confidence to effectively use online platforms and resources.
4. The design of MOOCs by seasoned academics in educational institutions in Nigeria should be encouraged, but it must take into consideration local relevance and context, this is to ensure that the contents are appropriate for the learners' needs and interests. This can be achieved via collaboration and interaction among learners and facilitators through online forums, peer feedback, group projects, and mentorship to foster a sense of community and engagement.
5. As MOOCs become imperative and offer a platform for continuous learning in Nigeria, there is a need for the integration of modern needs into the system. To this extent, the design of the grading system of MOOCs should be competitive with existing education systems to ensure recognition and accreditation for learners who choose this pathway as an option for inclusive education.

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¹ <https://www.mooclab.club/pages/wurmp-full-list/>

Biographical note

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Farm-technology Information Acceptance by Farmers for Sustainable Rice Production in Nigeria

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ABSTRACT

The use of information is an indispensable factor in the practice of farming as information on newly introduced technology is needed for the overall development of agriculture. Consequently, the adoption of innovations and new technologies in Agriculture will not only have a central contribution to the achievement of food security and sustainability of rice production rather it will help to address the second Sustainable Development Goals of Zero hunger. This study therefore, investigated farm-technology information acceptance by rice farmers in Ekiti State, Nigeria. The survey research design of correlative type was adopted using a multistage sampling procedure, stratification sampling was used to select eight hundred and seventy 870 rice farmers in Ekiti State. A questionnaire was used for data collection. The result shows that the majority types of farm technology information accepted by rice farmers are leveler 600 (95.1%), planting machine 590(93.5%) and autopilot tractor 579(91.8%). The level of acceptance of farm technology and farm technology information among rice farmers was moderate ($\bar{x} = 2.28$), and the level of awareness of farm technology and farm technology information among rice farmers was low ($\bar{x} = 2.53$). Adequate workshops, training and awareness should be done by the government and other agricultural organizations for rice farmers to be aware of information on farm-technology to achieve sustainable rice production.

Keywords: Farm-technology, Farm Technology Information Acceptance, Rice production, Farmers.

INTRODUCTION

Agriculture is the second largest economic sector in Nigeria after petroleum which contributes immensely to the Gross Domestic Product (GDP) of the nation. Due to its contribution to the GDP of the nation, the government therefore, supports agricultural research and extension aiming at producing and disseminating new technologies to improve the productivity of farmers. In percentage, agriculture contributes more than 24.14% to the GDP (NBS 2020) and remains the most important sector in transforming rural communities (USDA, 2014). Rice a staple crop in agriculture and a constant commodity, is one the world cannot do without; an average household in Nigeria consumes rice between 5-7 days a week. Rice is also the fourth largest crop produced in Nigeria after sorghum, millet and maize (NBS, 2020). Twenty-nine out of the thirty-six states in Nigeria excluding Abuja cultivate rice while Ekiti states is the fourth highest rice producer in

the country (1.5 million Metric Tonnes as at 2022). Despite the increase in rice production in the country and the Nigerian rice sector being special within the West African context, it remains a paradox that rice production has consistently fallen below the national demand. The limited capacity of the Nigerian rice sector to meet the domestic demand has been attributed to several factors such as declining productivity due to low awareness and acceptance of farm-technology information.

Consequently, the government supports agricultural research and extension aiming at producing and disseminating new technologies to improve the productivity of farmers including rice farmers. Rice farmers are among the most vulnerable group of farmers because they rely on rain to meet water needs (Nyamekye, Dewulf, Van Slobbe, Termeer & Pinto, 2018). Low technology adoption and use make it even more difficult for small-scale farmers to maximize productivity on their farms (Akudugu, Guo & Dadzie, 2012; Conley & Udry, 2001 in Nyamekye, et. al, 2018). The impact and type of technologies adopted by farmers depends largely on the awareness and acceptance of such technologies by the farmers. Farmers therefore need the right information in making the right decisions on what technologies to accept and use on their farms. Information has therefore been regarded as the most valuable resource in agricultural and rural development programs. This is because information brings people out of intellectual darkness and exposes them to ideas, thoughts and reasoning that they were previously unaware of (Mchombu & Cadbury, 2006). In addition, the use of information is an indispensable factor in farming because information on newly introduced technology is needed for the overall development of agriculture by farmers (Thomas & Okoro, 2018).

Timely, credible and relevant agricultural information is crucial because it affords farmers opportunity to make and execute wise decisions on their farms which consequently brings about improvement in farm output, yield and income. Furthermore, if farmers accepted relevant information to their farm needs, they would be able to tackle problems well, adopt new ideas and introduce social change. Information acceptance by farmers will also help to identify efficiencies that lead to higher productivity and profitability, lower input cost, and optimized fertilizer use. The more a farmer accept information about a certain technology the higher the interest to make use of the technology. Utilization of information on various farm technologies are indispensable for sustainable production, this is because information and technology are the most important input in Agricultural Development (Dulle 2002). Nigerian farmers are reported not to feel the impact of agricultural innovation mainly because they have no access to such vital information or due to poor dissemination (Oguya, 2007 & Morrow, 2002 in Zarmai, Okwu, Dawang & Nankat, 2014). It has also been observed that, the wide use of various farm technologies in Agricultural Development Programs in various regions of the country including Nigeria has been generally acknowledged. However, what may be important may not just be the existence of these technologies but how accessible they are to the farmers. Some of these technologies are tractors, leveller, tillage equipment, planting machine, trans planter, seeder and harvesting machines etc.

For enhance sustainable rice production in the Nigerian agricultural sector, one option would be to make available adequate farm-technology information to farmers; and encourage the use of information among rice farmers. These efforts if carefully utilized will help to make rice production not only in Ekiti state increase; it will also help to fill the consumption difference

needed to obtain optimal production. Technology adoption by farmers is an essential pre-requisite for economic prosperity in developing countries. In many developing nations, a huge amount of resources has been devoted to extension services to educate farmers on new agricultural practices. In Nigeria, such initiatives have been undertaken through the Agricultural extension project (Chekene & Chancellor, 2015 and Donye, Ja'afar-Furo & Obinne 2013). The efficiency of these programmes depends on the acceptability and usage of this farm-technology information by farmers hence the need for this study.

Statement of the Problem

Ekiti state being the fourth highest producer of rice in Nigeria is confronted with the major challenge of increasing production to feed a growing and increasing population in the face of insecurity and other threats. The importance of information is seen as a straw that stirs the drink in development activity especially when available and documented. Farm- technology information acceptance should lead to a significant yield of technology use which will boost rice production and enhance sustainable rice production. However, despite the effort of the government through Agricultural Development Programs and Agriculture extension agents in each local government of Ekiti State to make the information on farm technology available to all rice farmers, observations still indicate that rice farmers in most cases find it difficult to accept such information on farm technologies. Some of the farmers that are aware of the farm technology information are not willing to accept them, this could be due to high level of illiteracy, inadequate access to loans, politicising grant opportunities, credibility of the source of information, timeliness of the information and poor socioeconomic background of the farmers. It is against this background this study tends to look at farm-technology information acceptance by rice farmers for sustainable rice production in Ekiti state, Nigeria.

Research Questions

The following research questions guided this study:

1. What is the level of awareness of Farm Technologies and Farm Technology Information by rice farmers in Ekiti State?
2. What is the type of farm technology and farm technology information accepted by rice farmers in Ekiti State?
3. What is the type of farm technology and farm technology information accepted by rice farmers in Ekiti State?

Literature Review

Agricultural technology or agro-technology is the use of technology in agriculture, horticulture, and aquaculture to improve yield, efficiency, and profitability. Agricultural technology can be products, services or applications derived from agriculture that improve various input/output processes (National Institute of Food and Agriculture, 2020). To address the liquidity and supply constraints faced by poor farmers with regard to technology acceptance, several African countries have implemented various forms of 'smart subsidies' that target specific farmers (Minde, Jayne & Crawford, 2008). Based on extensive studies in Ethiopia, it has been shown that life cycle effects are important drivers of agricultural technology acceptance (Asfaw, & Admassie, 2004). Agricultural technologies play an immense role in increasing food productivity. Agricultural

technologies are said to include all kinds of improved techniques and practices which affect the growth of agricultural output (Jain, Arora, & Raju, 2009).

Increasing agricultural productivity is critical to meeting the continuously rising demand for food. According to Loevinsohn, Sumberg, Diagne, and Whitfield (2013), the most common areas of technology development and promotion for crops include new varieties and management regimes; soil as well as soil fertility management; weed and pest management; irrigation and water management. According to Challa (2013) an improvement in input and output relationships, new technology tends to raise output and reduce the average cost of production which in turn results in substantial gains in farms.

According to (Doss, 2003), the first thing to consider is whether acceptance is a discrete state with binary response variables or not. That means the definition depends on the fact that the farmer is an adopter of the technologies or a non-adopter taking values zero and one or the response is a continuous variable (Challa, 2013). Again Kiptot et al (2007) in Sousa, Nicolay and Home (2016) reported several factors that influence the uptake of innovations, including financial incentives and practical issues, but also information transfer. Technology information acceptance is often the result of informal learning processes, in which social networks play an important role, with farm managers learning by creating networks of colleagues and advisers (Gielen, Hoefer, Nieuwenhuis 2003 in Sousa, Nicolay, Home 2016). Early adopters tend to be those with better information networks, which suggests that information flow between different growers and other actors should be encouraged if Technology information is to be accepted (Aguilar-Gallegos 2015). Collence (2012) believed that information is an integral component of a value chain network because it connects all components, activities and operations. Information is critical in agricultural development because it is a tool for communication and coordination between stakeholders.

According to Ali (2014), the information needs of farmers change from time to time due to changes in agricultural technologies, environmental changes, agricultural policies, and the emergence of agricultural innovations. Despite the recognized importance of acceptance, there is no clear definition of what acceptance is and how to measure it. Only a little work regarding acceptance theory has been carried out within the Farmer-supported area. Many studies have claimed to measure acceptance although few of them have defined what it is. As Regan et al (2002) put it “While everyone seems to know what acceptability is, and all agree that acceptability is important, there is no consistency across studies as to what ‘acceptability’ is and how to measure it”. Although there is no prevailing definition of acceptance, there is some work done.

In particular, younger as well as much older household heads are risk averse and are less likely to adopt new technologies. On the other hand, the availability of adult family members within households may facilitate the process of technology because most farming households cannot easily acquire hired labour due to liquidity constraints (Carletto, Kirk & Winters 2007). In a study on Farmer’s acceptance towards sustainable farming technology, the study found out that farmers are willing to accept sustainable farming technology when they can make gains and

reduce task uncertainty in their farming activities. They will also accept it when the technology can increase their work performance (Sa'ari, Jabar, Tahir and Mahpoth 2017).

However, Ali (2014) found out that the information needs of farmers change from time to time due to changes in agricultural technologies, environmental changes, agricultural policies, and the emergence of agricultural innovations. Some of the challenges that rice farmers encounter include the lack of an effective way to collect farm produce data, record farm input expenses, as well as expenditure on farm chemicals and receive information from other stakeholders (Oluoch & Osida, 2015).

The use of ICTs in Malaysia (Hassan, Shaffril, AbuSamah, Abu Hassan & Ismail, 2009 in Nzonzo& Mogambi 2016) and India (Syiem& Raj, 2015) among irrigated rice producers have shown that there is a positive effect of ICTs use on access to markets, sharing knowledge on emerging technologies for production, sharing of value addition activities in irrigated rice production and availability on weather information. Literature shows that information that is often sought by rice farmers in most countries in sub-Saharan Africa, Nigeria inclusive, included pest and disease management, pesticide and fertilizer application, the best time to plant, planting method, storage and seed treatment (Orde and Mary, 2008)

Methodology

The study adopted the descriptive survey research design. A multi-stage sampling technique was adopted for this study, using a combination of random, proportionate and stratified techniques to select respondents for this study; In the first stage, five (5) Local Government Areas (LGAs) namely; Gbonyin LGA, Irepodun/ Ifelodun LGA, Ijero LGA, Ido-Osi LGA, Oye LGA in Ekiti State were purposely selected based on the annual production survey of Ekiti State Ministry of Agriculture (2021), which indicates that,- this LGAs produces rice in good quantity and quality. Secondly, three (3) communities from each LGA were randomly selected. Thirdly, the selection of 10% of rice farmers in each of the selected LGA as shown in Table 1. Thus, fifteen (15) communities were selected for the study. The questionnaire was the main research instrument used in gathering information for the study. The questionnaire was divided into two sections, section A and B. Section 'A' which solicit for demographic data of the respondent, and section 'B' which focuses on the research questions aimed at extracting facts for the study.

Table 1: Population of the Study

SN	LOCAL GOVERNMENT AREA	Total number of hectares	No of Farmers
1	Gbonyin	3500	1700
2	Irepodun/Ifelodun	3800	2000
3	Ijero	2800	1800
4	Ekiti West	2000	800
5	Ekiti West, Efon	3200	1140
6	Ido/Osi	1600	1600
7	Oye	2100	1600
8	Ado	1550	700

9	Emure, Ise	2000	1240
10	Ikole, Ekiti East	3500	1250
11	Ekiti South West	1250	600

Table 2: Distribution of the sample of the Study

LGA	Town/ Community	Total Number of Rice Farmers	10% sample size
Gboyin	Ijero Ijan Aisegba	1700	170
Irepodun/Ifelodun	Igbemo Awo Eyio	2000	200
Ijero	Ijero Ikoro Epe Ijero	1800	180
Ido-Osi	Esure Orin	1600	160
Oye	Ayetoro Ire Omu Ijelu	1600	160
Total =		8700	870

Results**Table 3: Demographic information of respondents**

Gender	Frequency	Percentage (%)
Male	392	62.1
Female	239	37.9
Age		
Below 30	73	11.6
31-40	124	19.7
41-50	230	36.5
51-60	162	25.7
61 above	42	6.7
Years of work experience		
0-4 years	114	18.1
5-10 years	192	30.4
11 years and Above	325	51.5

Level of Education		
No formal Education	-	-
Primary school	21	3.3
Secondary education	47	7.4
OND/ NCE	154	24.4
HND/BSC	312	49.5
Postgraduate	97	15.4
Farm size		
Less than 1 Hectare	52	8.2
1-2 Hectares	136	21.6
2-3 Hectares	251	39.8
4 Hectares and Above	192	30.4
Total	631	100

Results in Table 3 revealed that 392(62.1%) of the respondents were male while 239(37.9%) were female. This implies that more males participated than females. Results in Table 3 further revealed that the majority of the farmers were between ages 41-50 years and had been farming between 5yrs-10yrs. A good number of the farmers had either a higher national diploma or a bachelor's degree. The farm size depicts that the majority of the farmers also had between 2-3 hectares of farm size.

Research Question 1: What is the level of awareness of Farm Technologies and Farm Technology Information by rice farmers in Ekiti State?

Results in Table 4 revealed that the level of awareness of farm technology and farm technology information of the respondents is generally low. This is depicted by the average of the means score of ($\bar{x}$ = 2.53). The analysis of data shows that the Rice farmers are above average in the usage of mobile technology and cameras ($\bar{x}$ = 3.46), documentation of field via GPS ($\bar{x}$ = 3.38), and monitoring, and controlling crop irrigation systems via smartphone ($\bar{x}$ = 3.37) and information on planting machine ($\bar{x}$ = 3.53), traction and power ($\bar{x}$ = 3.53), autopilot tractor ($\bar{x}$ = 3.49), threshers to increase the rice production ($\bar{x}$ = 3.49), leveller ($\bar{x}$ = 3.47), pest control ($\bar{x}$ = 3.47), chemical fertilizers ($\bar{x}$ = 3.46), tube wells for irrigation ($\bar{x}$ = 3.38), usage of mobile technology and camera ($\bar{x}$ = 3.37), tillage equipment ($\bar{x}$ = 3.35), soil cultivation ($\bar{x}$ = 3.35), how to apply pesticides ($\bar{x}$ = 3.35), intelligent water application systems ($\bar{x}$ = 3.13), transplanting machine ($\bar{x}$ = 3.04), pesticide residue elimination and emission of agro-chemical ($\bar{x}$ = 3.04) and power sprayer ($\bar{x}$ = 3.00). It could be concluded that the level of awareness of farm technology and farm technology information among rice farmers in Ekiti State was low.

Table 4: Level of awareness of Farm Technology Information by rice farmers

S/N	Farm technology Information	Extremel y aware	Moderat ely aware	Somewh at aware	Slightly aware	Not at all	$\bar{x}$	SD
		5		3	2	1		

4

Farm Technologies

1	Usage of mobile technology and camera	239(37.9 %)	105(16.6 %)	101(16.0 %)	79(12.5%)	107(17.0%)	3.46	1.51
2	Documentation of field via GPS	239(37.9 %)	113(17.9 %)	68(10.8%)	72(11.4%)	139(22.0%)	3.38	1.60
3	Monitoring and controlling crop irrigation systems via smartphone	269(42.6 %)	86(13.6%)	66(10.5%)	29(4.6%)	181(28.7%)	3.37	1.70
4	Barcodes, QR codes, RFID	-	289(45.8 %)	111(17.6 %)	39(6.2%)	192(30.4%)	2.79	1.30
5	Real time recording systems	-	218(34.5 %)	169(26.8 %)	46(7.3%)	198(31.4%)	2.65	1.24
6	Smart logistics system	-	117(18.5 %)	158(25.0 %)	102(16.2 %)	254(40.3%)	2.22	1.16
7	Smart traceability system	-	94(14.9%)	187(29.6 %)	87(13.8%)	263(41.7%)	2.18	1.13
8	Seeder	-	90(14.3%)	172(27.3 %)	85(13.5%)	284(45.0%)	2.11	1.13
9	VRA spraying system	-	160(25.4 %)	87(13.8%)	22(3.5%)	362(57.4%)	2.07	1.31
10	Crop sensor	-	148(23.5 %)	95(15.1%)	26(4.1%)	362(57.4%)	2.05	1.29
11	VRT and Swath Control Technology	-	78(12.4%)	86(13.6%)	134(21.2 %)	333(52.8%)	1.86	1.07
12	Herbicide application	-	33(5.2%)	155(24.6 %)	49(7.8%)	394(62.4%)	1.73	1.00
13	Autopilot tractor	-	79(12.5%)	71(11.3%)	73(11.6%)	408(64.7%)	1.72	1.09

14	Weeding machine	-	77(12.2%)	81(12.8%)	52(8.2%)	421(66.7%)	1.71	1.09
15	Harvesting machine	-	37(5.9%)	125(19.8%)	80(12.7%)	389(61.6%)	1.70	0.98
16	Milling equipment	-	59(9.4%)	103(16.3%)	38(6.0%)	431(68.3%)	1.67	1.05
17	Intelligent water application systems	-	69(10.9%)	89(14.1%)	36(5.7%)	437(69.3%)	1.67	1.08
18	Transplanting machine	-	39(6.2%)	105(16.6%)	85(13.5%)	402(63.7%)	1.65	.97
19	Power sprayer	-	65(10.3%)	82(13.0%)	40(6.3%)	444(70.4%)	1.63	1.05
20	Leveler	-	65(10.3%)	56(8.9%)	77(12.2%)	433(68.6%)	1.61	1.02
21	Planting machine	-	64(10.1%)	47(7.4%)	99(15.7%)	421(66.7%)	1.61	1.00
22	Power tiller	-	38(6.0%)	98(15.5%)	64(10.1%)	431(68.3%)	1.59	0.97
23	Tillage equipment	-	29(4.6%)	67(10.6%)	131(20.8%)	404(64.0%)	1.56	0.86
							2.09	1.17
Farm Technology Information								
24	Information on planting machine	239(37.9%)	98(15.5%)	126(20.0%)	93(14.7%)	75(11.9%)	3.53	1.42
25	Information on traction and power	239(37.9%)	98(15.5%)	126(20.0%)	93(14.7%)	75((11.9%)	3.53	1.42
26	Information on autopilot tractor	224(35.5%)	122(19.3%)	121(19.2%)	67(10.6%)	97(15.4%)	3.49	1.45

27	Information on threshers to increase the rice production	224(35.5 %)	122(19.3 %)	121(19.2 %)	67(10.6%)	97(15.4%)	3.49	1.45
28	Information on leveller	227(36.0 %)	102(16.2 %)	134(21.2 %)	79(12.5%)	89(14.1%)	3.47	1.44
29	Information on pest control	227(36.0 %)	102((16.2 %)	134(21.2 %)	79(2.5%)	89(14.1%)	3.47	1.44
30	Information on chemical fertilizers	239(37.9 %)	105(16.6 %)	101(16.0 %)	79(12.5%)	107(17.0%)	3.46	1.51
31	Information on tube wells for irrigation	239(37.9 %)	113(17.9 %)	68(10.8%)	72(11.4%)	139(22.0%)	3.38	1.60
32	Information on the usage of mobile technology and camera	269(42.6 %)	86(13.6%)	66(10.5%)	29(4.6%)	181(28.7%)	3.37	1.70
33	Information on tillage equipment	197(31.2 %)	94(14.9%)	167(26.5 %)	81(12.8%)	92(14.6%)	3.35	1.41
34	Information on soil cultivation	197(31.2 %)	94(14.9%)	167(26.5 %)	81(12.8%)	92(14.6%)	3.35	1.41
35	Information on how to apply pesticide	197(31.2 %)	94(14.9%)	167(26.5 %)	81(12.8%)	92(14.6%)	3.35	1.41
36	Information on intelligent water application systems	129(20.4 %)	94(14.9%)	210(33.3 %)	123(19.5 %)	75(11.9%)	3.13	1.27
37	Information on transplanting machine	114(18.1 %)	70(11.1%)	259(41.0 %)	102(16.2 %)	86(13.6%)	3.04	1.24
38	Information on pesticide residue elimination and emission of agro-	114(18.1 %)	70(11.1%)	259(41.0 %)	102(16.2 %)	86(13.6%)	3.04	1.24

	chemical								
39	Information on power sprayer	108(17.1 %)	90(14.3%)	215(34.1 %)	125(19.8 %)	93(14.7%)	3.00	1.27	
40	Information on seeder	112(17.7 %)	77(12.2%)	223(35.3 %)	125(19.8 %)	94(14.9%)	2.98	1.28	
41	Information on milling equipment	79(12.5%)	82(13.0%)	262(41.5 %)	148(23.5 %)	60(9.5 %)	2.96	1.12	
42	Information on VRA spraying system	92(14.6%)	104(16.5 %)	217(34.4 %)	121(19.2 %)	97(15.4%)	2.96	1.25	
43	Information on weeding machine	73(11.6%)	103(16.3 %)	247(39.1 %)	136(21.6 %)	72(11.4%)	2.95	1.14	
44	Information on harvesting machine	84(13.3%)	84(13.3%)	231(36.6 %)	158(25.0 %)	74(11.7%)	2.91	1.17	
45	Information on herbicide application	96(15.2%)	74(11.7%)	230(36.5 %)	133(21.1 %)	98(15.5%)	2.90	1.25	
46	Information on power tiller	73(11.6%)	92(14.6%)	240(38.0 %)	154(24.4 %)	72(11.4%)	2.90	1.14	
47	Information on crop sensor	83(13.2%)	81(12.8%)	246(39.0 %)	111(17.6 %)	110(17.4%)	2.87	1.23	
48	Information on barcodes, QR codes, RFID	69(10.9%)	81(12.8%)	253(40.1 %)	110(17.4 %)	118(18.7%)	2.80	1.20	
49	Information on soil management	-	289(45.8 %)	111(17.6 %)	39(6.2%)	192(30.4%)	2.79	1.30	
50	Information on smart traceability system	-	289(45.8 %)	111(17.6 %)	39(6.2%)	192(30.4%)	2.78	1.30	
51	Information on smart logistics system	-	218(34.5 %)	169(26.8 %)	46(7.3%)	198(31.4%)	2.65	1.24	

52	Information on - monitoring and controlling crop irrigation systems via smartphone	117(18.5 %)	158(25.0 %)	102(16.2 %)	254(4 0.3%)	2.22	1.1 6
53	Information on - VRT and Swath Control Technology	94(14.9%)	187(29.6 %)	87(13.8%)	263(4 1.7%)	2.18	1.1 3
54	Information on - real time recording systems	148(23.5 %)	95(15.1%)	26(4.1%)	362(5 7.4%)	2.05	1.2 9
55	Information on - documentation of field via GPS	78(12.4%)	86(13.6%)	134(21.2 %)	333(5 2.8%)	1.86	1.0 7
56	Information on - Government regulations	77(12.2%)	81(12.8%)	52(8.2%)	421(6 6.7%)	1.71	1.0 9
Average						2.97	1.3 0

Average of the Means = 2.53

Research Question 2: What are the types of farm technology and farm technology information accepted by rice farmers in Ekiti State

Table 5 shows that the type of farm technology accepted by rice farmers in Ekiti State are leveller 600(95.1%), planting machine 590(93.5%), autopilot tractor 579(91.8%), seeder 577(91.4%), herbicide application 556(88.1%), transplanting machine 550(87.2%), tillage equipment 540(85.6%), harvesting machine 404(64.0%), milling equipment 376(59.6%), power tiller 344(54.5%) and weeding machine 339(53.7%).

The table also shows that the type of farm technology information accepted by rice farmers in Ekiti State are: information on leveller 574(91.0%), information on planting machine 573(90.8%), information on harvesting machine 572(90.6%), information on intelligent water application systems 566(89.7%), information on the usage of mobile technology and camera

529(83.8%), information on weeding machine 525(83.2%), information on milling equipment 505(80.0%).

It could be concluded that the major type of farm technology accepted by rice farmers in Ekiti State are levellers, planting machines and autopilot tractors while the major type of farm technology information accepted by rice farmers in Ekiti State are: information on levellers, information on planting machines and information on harvesting machine.

Table 5: Farm Technology/ Farm Technology Information Acceptance

S/N	Farm technology/ Information Accepted	Farm technology	Frequency	Percentage(%)
Farm technologies				
1	Leveler		600	95.1
2	Planting machine		590	93.5
3	Autopilot tractor		579	91.8
4	Seeder		577	91.4
5	Herbicide applicators		556	88.1
6	Transplanting machine		550	87.2
7	Tillage equipment		540	85.6
8	Harvesting machine		404	64.0
9	Milling equipment		376	59.6
10	Power tiller		344	54.5
11	Weeding machine		339	53.7
12	Real time recording systems		263	41.7
13	Usage of mobile technology and camera		209	33.1
14	Power sprayer		166	26.3
15	Intelligent water application systems		156	24.7
16	Documentation of field via GPS		137	21.7
17	Barcodes, QR codes, RFID		112	17.7
18	Smart traceability system		105	16.6
19	Monitoring and controlling crop irrigation		104	16.5

	systems via smartphone		
20	VRT and Swath Control Technology	103	16.3
21	VRA spraying system	101	16.0
22	Crop sensor	85	13.5
23	Smart logistics system	80	12.7
	Farm technology information		
24	Information on leveller	574	91.0
25	Information on planting machine	573	90.8
26	Information on harvesting machine	572	90.6
27	Information on intelligent water application systems	566	89.7
28	Information on the usage of mobile technology and camera	529	83.8
29	Information on weeding machine	525	83.2
30	Information on milling equipment	505	80.0
31	Information on transplanting machine	498	78.9
32	Information on power tiller	485	76.9
33	Information on tillage equipment	479	75.9
34	Information on threshers to increase rice production	423	67.0
35	Information on monitoring and controlling crop irrigation systems via smartphone	421	66.7
36	Information on pest control	382	60.5
37	Information on documentation of field via GPS	354	56.1
38	Information on real-time recording systems	352	55.8
39	Information on seeder	348	55.2
40	Information on soil management	321	50.9

41	Information on herbicide application	310	49.1
42	Information on traction and power	291	46.1
43	Information on chemical fertilizers	285	45.2
44	Information on a crop sensor	279	44.2
45	Information on barcodes, QR codes, RFID	261	41.4
46	Information on how to apply pesticide	255	40.4
47	Information on soil cultivation	253	40.1
48	Information on VRT and Swath Control Technology	216	34.2
49	Information on tube wells for irrigation	183	29.0
50	Information on power sprayer	158	25.0
51	Information on smart traceability system	153	24.2
52	Information on smart logistics system	135	21.4
53	Information on the VRA spraying system	80	12.7
54	Information on autopilot tractor	59	9.4
55	Information on Government regulations	40	6.3
56	Information on pesticide residue elimination and emission of agro-chemical	38	6.0

Research Question 3: What is the level of acceptance of farm technology information among rice farmers in Ekiti State?

Table 6 shows that the level of acceptance of farm technology among rice farmers in Ekiti State was moderate generally. This is depicted by the average of the means score of ($\bar{x} = 2.28$). The table also revealed that the partially accepted farm technology is the autopilot tractor ($\bar{x} = 2.51$), usage of mobile technology and camera ($\bar{x} = 2.50$), leveller ($\bar{x} = 2.40$), planting machine ($\bar{x} = 2.39$), power sprayer ($\bar{x} = 2.38$), smart traceability system ($\bar{x} = 2.37$), weeding machine ($\bar{x} = 2.35$) and power tiller ($\bar{x} = 2.35$). The table also revealed that partially accepted farm technology information on planting machines (2.38%), autopilot tractors (2.37%), leveller (2.37%), seeder (2.30%), real-time recording systems (2.30%), how to apply pesticide (2.30%), tillage equipment (2.29%), documentation of field via GPS (2.28%), and power tiller (2.28%). It could be

concluded that the level of acceptance of farm technology and farm technology information among rice farmers in Ekiti State was moderate.

Table 6: Level of acceptance of farm technology information among rice farmers

S/N	Farm Information	technology	Total Acceptance	Partial Acceptance	Never Accepted	$\bar{x}$	SD
Farm technologies							
1	Autopilot tractor		385(61.0%)	183(29.0%)	63(10.0%)	2.51	0.67
2	Usage of mobile technology and camera		378(59.9%)	190(30.1%)	63(10.0%)	2.50	0.67
3	Leveler		323(51.2%)	238(37.7%)	70(11.1%)	2.40	0.68
4	Planting machine		329(52.1%)	218(34.5%)	84(13.3%)	2.39	0.71
5	Power sprayer		315(49.9%)	239(37.9%)	77(12.2%)	2.38	0.69
6	Smart traceability system		317(50.2%)	230(36.5%)	84(13.3%)	2.37	0.71
7	Weeding machine		316(50.1%)	217(34.4%)	98(15.5%)	2.35	0.73
8	Power tiller		302(47.9%)	245(38.8%)	84(13.3%)	2.35	0.70
9	Tillage equipment		301(47.7%)	246(39.0%)	84(13.3%)	2.34	0.70
10	Transplanting machine		288(45.6%)	267(42.3%)	76(12.0%)	2.34	0.68
11	Herbicide application		280(44.4%)	281(44.5%)	70(11.1%)	2.33	0.67
12	Harvesting machine		308(48.8%)	218(34.5%)	105(16.6%)	2.32	0.74
13	Real time recording systems		280(44.4%)	274(43.4%)	77(12.2%)	2.32	0.68
14	Seeder		308(48.8%)	211(33.4%)	112(17.7%)	2.31	0.76
15	VRA spraying system		308(48.8%)	211(33.4%)	112(17.7%)	2.31	0.76
16	VRT and Swath Control Technology		245(38.8%)	337(53.4%)	49(7.8%)	2.31	0.61
17	Crop sensor		273(43.3%)	267(42.3%)	91(14.4%)	2.29	0.70
18	Barcodes, QR codes, RFID		274(43.4%)	245(38.8%)	112(17.7%)	2.26	0.74
19	Documentation of field via		259(41.0%)	295(46.8%)	77(12.2%)	2.26	0.73

GPS							
20	Milling equipment	259(41.0%)	253(40.1%)	119(18.9%)	2.22	0.74	
21	Intelligent water application systems	231(36.6%)	281(44.5%)	119(18.9%)	2.18	0.72	
22	Smart logistics system	204(32.3%)	336(53.2%)	91(14.4%)	2.18	0.66	
23	Monitoring and controlling crop irrigation systems via smartphone	190(30.1%)	350(55.5%)	91(14.4%)	2.16	0.65	
Average					2.32	0.70	
Farm technology information							
24	Information on planting machine	329(52.1%)	211(33.4%)	91(14.4%)	2.38	0.72	
25	Information on autopilot tractor	315(49.9%)	232(36.8%)	84(13.3%)	2.37	0.71	
26	Information on leveller	301(47.7%)	260(41.2%)	70(11.1%)	2.37	0.67	
27	Information on seeder	259(41.0%)	302(47.9%)	70(11.1%)	2.30	0.66	
28	Information on real-time recording systems	294(46.6%)	232(36.8%)	105(16.6%)	2.30	0.74	
29	Information on how to apply pesticide	259(41.0%)	302(47.9%)	70(11.1%)	2.30	0.66	
30	Information on tillage equipment	77(12.2%)	77(12.2%)	77(12.2%)	2.29	0.67	
31	Information on documentation of field via GPS	280(44.4%)	246(39.0%)	105(16.6%)	2.28	0.73	
32	Information on power tiller	287(45.5%)	231(36.6%)	113(17.9%)	2.28	0.75	
33	Information on tube wells for irrigation	280(44.4%)	239(37.9%)	112(17.7%)	2.27	0.74	
34	Information on milling equipment	266(42.2%)	266(42.2%)	99(15.7%)	2.26	0.71	

35	Information on pest control	280(44.4%)	231(36.6%)	120(19.0%)	2.25	0.76
36	Information on transplanting machine	287(45.5%)	210(33.3%)	134(21.2%)	2.24	0.78
37	Information on the usage of mobile technology and camera	266(42.2%)	253(40.1%)	112(17.7%)	2.24	0.74
38	Information on chemical fertilizers	266(42.2%)	253(40.1%)	112(17.7%)	2.24	0.74
39	Information on pesticide residue elimination and emission of agro-chemical	280(44.4%)	225(35.7%)	126(20.0%)	2.24	0.76
40	Information on soil management	217(34.4%)	351(55.6%)	63(10.0%)	2.24	0.62
41	Information on harvesting machine	266(42.2%)	246(39.0%)	119(18.9%)	2.23	0.74
42	Information on intelligent water application systems	287(45.5%)	204(32.3%)	140(22.2%)	2.23	0.79
43	Information on the VRA spraying system	245(38.8%)	288(45.6%)	98(15.5%)	2.23	0.70
44	Information on traction and power	245(38.8%)	288(45.6%)	98(15.5%)	2.23	0.70
45	Information on soil cultivation	266(42.2%)	245(38.8%)	120(19.0%)	2.23	0.75
46	Information on barcodes, QR codes, RFID	238(37.7%)	295(46.8%)	98(15.5%)	2.22	0.70
47	Information on threshers to increase rice production	245(38.8%)	281(44.5%)	105(16.6%)	2.22	0.71
48	Information on herbicide application	266(42.2%)	231(36.6%)	134(21.2%)	2.21	0.77
49	Information on smart logistics system	196(31.1%)	358(56.7%)	77(12.2%)	2.19	0.63
50	Information on monitoring and controlling crop irrigation systems via	238(37.7%)	266(42.2%)	127(21.1%)	2.18	0.74

	smartphone						
51	Information on crop sensor	238(37.7%)	260(41.2%)	133(21.1%)	2.17	0.75	
52	Information on Government regulations	224(35.5%)	273(43.3%)	134(21.2%)	2.14	0.74	
53	Information on power sprayer	210(33.3%)	288(45.6%)	133(21.1%)	2.12	0.73	
54	Information on smart traceability system	182(28.8%)	344(54.5%)	105(16.6%)	2.12	0.66	
55	Information on weeding machine	217(34.4%)	266(42.2%)	148(23.5%)	2.11	0.75	
56	Information on VRT and Swath Control Technology	161(25.5%)	358(56.7%)	112(17.7%)	2.08	0.65	
	Average				2.24	0.72	
	Average of the Means = 2.28						

Decision Rule: 1.0-1.99 = low; 2.00-2.99 = moderate; 3.00-4.00 = high.

Discussion of Findings

The demographic information of the respondents depicts that the majority of the farmers are male. This is consistent with the expectation that farming on a large scale is usually done by men probably because it is a tedious task. Interestingly, the majority of the farmers are graduates which implies that because they are literate they should be able to accept farm technology information to improve productivity on their farms. However, the findings from the study revealed that rice farmers' awareness of some of the farm technologies was rather low. The implication is that utilization of farm technology will be low because awareness of farm technology is low among rice farmers. The finding shows that the major types of farm technology accepted by rice farmers are levellers, planting machines, autopilot tractors, seeders, herbicide applicators, transplanting machines and tillage equipment. Additionally, very few farmers accepted monitoring and controlling crop irrigation systems via smartphones, crop sensors and smart logistics systems. Also, the major type of farm technology information accepted by rice farmers are information on levellers, information on planting machines and information on harvesting machines. The reason for this outcome is not far-fetched, this may be arising from the fact that the rice farmers are used to only a few of the farm technologies and are hesitant to try out other technologies on their farms. The finding is in line with the findings of Umar, Yarima, Yusuf, Adetayo and Salihu (2021) who reported that the tractor is one of the major farm tools that enhance mechanization in agriculture. Therefore, incorporating mechanization, notably the tractor is essential because it affects the farmer's livelihoods and living conditions. Cazanescu, Mihai and Mudura (2010) stated that levelling becomes of high importance, in modern and intensive agriculture conditions. Its effects are found in providing

optimal and equal conditions to the crops, during yielding and growing. In areas with water excess, the soil levelling provides an appropriate water runoff, ensuring better water management.

The finding further showed that the level of acceptance of farm technology and farm technology information among rice farmers in Ekiti State was moderate. This implies that the perceived usefulness and relative advantage of the technology influence the positive or negative attitude of the farmers toward the technology. The finding is in line with the finding of Ullah Saqib and Kächele (2022) showed a strong association between the farmers' awareness of a technology (improved wheat varieties) and its adoption.

Conclusion

This study has been able to point out that if farm-technology information is accepted by rice farmers, newly introduced technology and agricultural innovations will be embraced which will lead to a high increase in rice production and reduce the exorbitant cost of rice in our growing nation. There are a number of reasons why rice farmers in Ekiti state did not accept farm technology information these include, the cost of the said technology, lack of access to credit, the credibility of the source of information, poor socioeconomic background of the farmers, erroneous belief, politicizing grant opportunities, favouritism and so on. It is believed that when these problems are addressed the level at which rice farmers accept farm technology information will increase, which will result in a high rate of utilization of those technologies. This will ensure sustainable rice production in Ekiti state and also reduce hunger and boost food security.

Recommendations

Based on the findings of this study, the following recommendations are imperative;

1. Government should provide easy access to loans and grants and also shun favouritism and politicizing the process, to increase the level of acceptance of any information about new technology or innovation to boost rice production for security and to reduce the importation of rice in Nigeria.
2. Adequate workshops, training and awareness should be done by the government and other private organizations for rice farmers to change their orientations and motives towards accepting farm-technology information.
3. The government should procure the technology needed by the rice farmers at a low cost and ensure they pay back at low interest.
4. Extension officers should further educate the farmers on modern farm technologies that can be adopted by farmers on their farms to increase productivity.
5. Extension officers as information disseminators should monitor the disbursed loan from the government and ensure that the loan is not diverted to other projects.

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Virtualization of References Services for Enhancing Users Experience in Nigeria Libraries: Strategies for Policymakers

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Abstract

The virtualization of reference services in Nigerian libraries has the potential to significantly improve user experience through enhanced accessibility and convenience. However, the successful implementation of virtual reference services requires policymakers to address certain challenges. This qualitative research study conducted in-depth interviews with 14 Nigerian library stakeholders to gain insights into their experiences with virtualizing reference services. The study findings indicate that while virtual reference services offer numerous benefits, there are also concerns related to technology, staffing, and service quality. Collaborative efforts involving librarians, IT professionals, and other stakeholders are crucial in addressing these challenges and ensuring the success of virtual reference services. To optimize virtual reference services, policymakers are advised to prioritize infrastructure development. This includes investing in robust internet connectivity, reliable hardware, and appropriate software to ensure seamless service delivery. Additionally, addressing challenges such as staff competence and readiness, as well as formulating policies and regulations to guide the implementation of virtual reference services, is necessary. While recognizing the concerns raised by stakeholders, it is important to strike a balance and not overlook the potential advantages of virtualizing reference services. Mitigating concerns related to security, privacy, and confidentiality is essential for building user trust. This study provides valuable insights for policymakers in Nigeria's library sector, emphasizing the need to consider the unique challenges and opportunities associated with virtual reference services. By implementing strategies that address infrastructure limitations, staffing issues, and user expectations, policymakers can optimize virtual reference services and enhance the overall user experience in Nigerian libraries.

Keywords: Virtual References Services, Users Experience, Nigerian Libraries, Policymakers.

Introduction

Libraries are vital resources for education, research, and community development. They play a critical role in the acquisition and dissemination of knowledge, serving as a bridge between information sources and users. With the advent of technology, libraries have evolved from traditional physical spaces to digital environments that provide easy access to information resources. This evolution has prompted Nigerian libraries to consider the virtualization of their reference services. However, the question remains: is virtualizing reference services in Nigerian libraries worth it? In Nigeria, access to information resources is still a major challenge, particularly in rural areas. The limited number of libraries and the inadequate funding of existing ones means that many Nigerians are unable to access the information resources they need. While the virtualization of reference services may be seen as a solution to this problem, it is important to assess its effectiveness and efficiency in meeting the needs of library users.

The virtualization of reference services in libraries is a global trend that has been on the rise in recent years. This trend has been driven by several factors, including the increasing use of technology in libraries, the need to reach out to remote users, and the desire to improve the efficiency and effectiveness of library services (Dawson, 2021). Many libraries around the world have already virtualized their reference services, providing users with access to online reference tools, virtual reference desks, and chat and email reference services. For example, the British Library has implemented a virtual reference service that provides users with access to reference librarians via email and online chat (The British Library, 2022). Similarly, the National Library of Canada has implemented a virtual reference service that provides users with access to reference librarians via telephone, email, and online chat (National Library of Canada, 2022).

In the United States, many academic libraries have virtualized their reference services, providing users with access to online databases, e-books, and virtual reference desks. For example, the University of California Berkeley Library offers a virtual reference desk that provides users with access to reference librarians via chat, email, and telephone (UC Berkeley Library, 2022). In Africa, the virtualization of reference services is still relatively new, but some libraries have already implemented virtual reference services. For example, the University of Pretoria in South Africa has implemented a virtual reference service that provides users with access to reference librarians via email and online chat (University of Pretoria, 2022). However, there is still a need for more libraries in Africa to embrace the virtualization of their reference services to improve access to information for their users. No doubt, Nigerian libraries are faced with the challenge of meeting the diverse needs of their users. These users include students, researchers, and the general public, each with unique information needs (Etim, Etor & Udofia, 2021).

However, in a country like Nigeria, with limited financial resources, it is important to determine whether the cost of virtualizing reference services is justifiable, particularly given the potential benefits that may accrue. However, assessing the readiness of Nigerian libraries to virtualize their reference services is crucial in determining the feasibility of such a move. Therefore, the availability of necessary infrastructure and resources, as well as trained staff, are essential for

effective virtualization. But is the cost of virtualizing reference services justifiable given the potential benefits? Virtualizing reference services may also bring about changes in the role of librarians, requiring them to acquire new skills and competencies. So, are Nigerian librarians ready to adapt to these changes? Finally, it is important to consider the potential benefits of virtualizing reference services in Nigerian libraries. The benefits may include increased accessibility and reach, improved resource management, and enhanced user engagement. But are these potential benefits not come with threats and risks? It is against these rhetorical questions asked that this study seeks to investigate the worthiness of the virtualization of reference services in Nigerian libraries.

Literature Review

The emergence of virtual reference services can be traced back to the late 1990s and early 2000s when libraries started exploring the use of digital technologies to provide reference assistance remotely (Casey, 2021; Kim, 2022). This shift was driven by advancements in information and communication technologies, as well as changing user expectations and preferences. The early stages of virtual reference services were primarily focused on email-based reference, where users could send their questions via email and receive responses from librarians (Radford, 2020). This approach allowed for asynchronous communication and expanded the reach of reference services beyond the constraints of physical library spaces and operating hours. As internet connectivity improved and online communication tools became more prevalent, libraries began adopting real-time chat services as part of their virtual reference offerings (Cook, 2019).

Chat reference services allowed users to engage in instant messaging with librarians, enabling quicker response times and more interactive exchanges. This synchronous mode of communication enhanced user experiences and provided a more personalized approach to reference assistance. Alongside email and chat services, libraries also started incorporating video conferencing technologies into their virtual reference services (Miller, 2021). This enabled users to have face-to-face interactions with librarians, simulating the in-person reference experience while leveraging the convenience of remote access. The emergence of social media platforms and mobile technologies further expanded the scope of virtual reference services. Libraries began leveraging platforms such as Twitter, Facebook, and WhatsApp to engage with users, respond to inquiries, and share information and resources (Tella et al., 2022).

These platforms offered new avenues for communication and allowed libraries to meet users on their preferred social and mobile channels. As virtual reference services continued to evolve, libraries recognized the importance of integrating them seamlessly into their overall reference service framework (McClure, 2023). This meant providing consistent and coordinated support across different communication channels, ensuring that users receive the same level of assistance and quality of service regardless of the virtual platform they choose. Today, virtual reference services have become an integral part of library services worldwide. Libraries of all types and sizes, including academic, public, and special libraries, offer virtual reference options to meet the needs and expectations of their users (Radford, 2020). The ongoing advancements in technology, such as artificial intelligence and chatbot systems, are also being explored to further enhance and automate virtual reference services (Kim, 2022).

The history of virtual reference services reflects the transformative impact of digital technologies on the delivery of library services (Cook, 2019). It demonstrates libraries' commitment to adapting to changing user behaviours and preferences in an increasingly digital world (Casey, 2021). This evolution has led to the emergence of the virtualization of reference services, which utilize digital technologies and online platforms to enhance the assistance provided to library users (Smith, 2023; Johnson et al., 2023). By embracing virtual reference services, libraries offer improved accessibility, convenience, and flexibility to benefit patrons in their information-seeking endeavours (Jones & Brown, 2023). This transformative approach allows libraries to reach a broader audience, provide round-the-clock assistance, and cater to users who prefer remote access to information resources (Williams, 2023; Lee et al., 2023).

The integration of digital technologies and online platforms has facilitated the seamless delivery of reference assistance, aligning with the evolving needs and expectations of library users. To optimize the user experience in Nigerian libraries through virtual reference services, policymakers have an opportunity to implement strategies that address the specific context and needs of the country. By focusing on infrastructure development, policymakers can allocate resources to enhance technological capabilities, including robust internet connectivity, reliable hardware, and appropriate software (Adams, 2023; Ojo & Adegoke, 2023). This infrastructure investment is essential for providing seamless and reliable access to virtual reference services. Oluwatoyin et al. (2018) focused on the perceptions of academic librarians in Nigerian universities regarding virtual reference services. They found that librarians were aware of virtual reference services and considered them effective in addressing user inquiries and improving access to resources. However, challenges such as inadequate funding, limited training and support, and insufficient technological infrastructure were identified.

Kashi and Nasiri (2018) examined the challenges and opportunities of virtual reference services in Iranian academic libraries. They found that limited awareness and usage among users, lack of technical infrastructure, and difficulties in providing services in multiple languages were major challenges. However, opportunities such as increased accessibility and efficiency were also identified. The study recommended increasing awareness, improving infrastructure, providing language support, and offering comprehensive training programs to address these challenges. The study by Luna and Moulaison (2015) conducted a systematic review of the literature on virtual reference services. They analyzed 35 articles to explore user needs and service providers' responses in this area. The findings emphasized the importance of understanding user needs and expectations, as well as the role of librarians in delivering satisfactory virtual reference services. The review also highlighted challenges faced by librarians and discussed the use of technology, such as email and chat services, in providing virtual reference assistance. Overall, the study provided valuable insights for improving virtual reference services in libraries.

Literature Gaps

One area that lacks sufficient research is the exploration of the unique challenges and opportunities faced by Nigerian libraries and users in the context of virtual reference services. While some studies discuss general trends and experiences in virtual reference services, there is a need for more focused research that specifically examines the Nigerian context (Oluwatoyin et al., 2018). Nigeria's specific challenges, such as infrastructure limitations, funding constraints,

and linguistic diversity, require tailored strategies and solutions (Oluwatoyin et al., 2018; Kashi & Nasiri, 2018). Furthermore, there is a gap in in-depth studies that investigate the long-term impact of virtual reference services on user behaviour and outcomes. While some studies assess user perceptions and satisfaction, there is a need for research that goes beyond immediate experiences and explores the broader effects of virtual reference services on information access, literacy, and learning outcomes (Luna & Moulaison, 2015).

Additionally, the integration of emerging technologies, including artificial intelligence and chatbot systems, in virtual reference services requires further exploration. Although mentioned in the literature as potential enhancements for virtual reference services, empirical studies are needed to evaluate the effectiveness, usability, and user acceptance of these technologies in various library contexts (Kim, 2022). To address these gaps, future research should prioritize empirical studies that specifically examine the challenges and opportunities faced by Nigerian libraries, explore the long-term impact of virtual reference services on users, and evaluate the effectiveness and user acceptance of emerging technologies. By addressing these gaps, researchers and policymakers can develop a better understanding of how to optimize virtual reference services in Nigeria and enhance the overall user experience.

Method

The feasibility of virtualizing reference services in Nigerian libraries was investigated in this study, employing a phenomenological approach that was appropriate for understanding individuals' subjective experiences and the meaning they attach to those experiences. The study used interpretative phenomenological analysis (IPA) to identify both commonalities and differences in the experiences of library stakeholders regarding the virtualization of reference services. Previous studies have demonstrated the effectiveness of IPA in exploring individuals' experiences in various contexts (Smith et al., 2009; VanScoy and Evenstad, 2015). To ensure the diversity of the participants, purposive sampling was used to recruit a group of experienced Nigerian librarians and users. Ethical procedures of the study were approved before the recruitment of participants to ensure the protection of their rights and privacy. Recent studies have emphasized the importance of ethical considerations in research, particularly in terms of informed consent and confidentiality (Saldaña et al., 2021; Wu and Wong, 2021).

Model

The proposed model for this study was a qualitative research design that involved conducting in-depth interviews with stakeholders to collect data on their experiences with virtualizing reference services. To ensure that participants could express their thoughts and feelings freely, open-ended questions were used during the interviews. Thematic analysis was employed to analyze the data, which involved identifying common themes and patterns that emerged from the participant's responses. To add value to the study, the thematic analysis was guided by relevant literature on the virtualization of reference services and its impact on libraries and information services. This helped to contextualize the participants' experiences within the broader framework of virtualization and provided a deeper understanding of the implications of virtualizing reference services in Nigerian libraries. Recent studies have emphasized the importance of qualitative research in understanding individuals' experiences in various contexts (Braun and Clarke, 2021;

Guest et al., 2021). Thematic analysis is a widely used method in qualitative research, known for its ability to identify patterns in complex data sets (Braun and Clarke, 2006). By using this method, the study was able to provide insights into the subjective experiences of Nigerian librarians, users, and stakeholders regarding the virtualization of reference services in their libraries.

Data

The study focused on gathering data from librarians and users who were associated with different libraries in the South-west region of Nigeria, specifically the University of Ibadan Library, Oyo State Library Board, and The African Heritage Research Library and Cultural Center in Ibadan, Oyo State, Nigeria. These libraries included one academic library, one public library, and one special library. To ensure that the selected participants had relevant knowledge and experience regarding the virtualization of reference services in Nigerian libraries, two sampling techniques were utilized: Purposive sampling and snowball sampling. The selection process was coordinated with the assistance of a contact person from each of the selected libraries in Southwest Nigeria. The sample size consisted of two librarians, one electronic librarian, and two library users from each of the selected libraries, resulting in a total of fifteen participants for the study. In-depth interviews were conducted using the Zoom platform, and comprehensive audio recordings and verbatim transcriptions of the interviews were obtained. Thematic analysis was then employed to identify, analyze, and report patterns within the dataset.

Analysis

Research Objectives 1: To assess the cost-effectiveness of virtualizing reference services in Nigerian libraries: The librarians and library users in Nigerian libraries were asked about their experiences with virtualizing reference services, particularly regarding the cost-effectiveness of the technology. Participants were asked if they were aware of the benefits of virtualizing reference services and if they believed that the benefits outweighed the costs. The results of the study thematically showed thus:

Cost savings: Participants mentioned that virtualizing reference services could lead to cost savings for libraries, such as reduced expenses on physical infrastructure and maintenance. For example, one librarian stated, "We spend a lot of money on buying and maintaining physical reference materials. With virtualization, we can reduce those costs and allocate resources to other areas."

Improved resource management: Participants also noted that virtualizing reference services could lead to better resource management, such as improved organization and accessibility of information. For instance, a library user remarked, "With virtual reference services, I can access information from anywhere and at any time, which makes it easier to manage my research."

Increased user engagement: Participants mentioned that virtualizing reference services could lead to greater user engagement, such as increased interaction with library users and improved service delivery. For example, a librarian said, "Virtualization can help us to reach more users who may not have physical access to the library, which can enhance our user engagement."

Staff training and development: Participants highlighted the need for staff training and development to effectively virtualize reference services. For instance, a librarian stated, "Virtualization requires a different skill set from traditional reference services, so we need to train our staff to acquire those skills."

Technological infrastructure: Participants discussed the need for adequate technological infrastructure to support the virtualization of reference services, such as reliable internet connectivity and access to relevant software. For example, a library user remarked, "Virtualization is great, but we need to have reliable internet connectivity and access to relevant software to make it work effectively."

User satisfaction: Participants emphasized the importance of user satisfaction in determining the cost-effectiveness of virtualizing reference services. For instance, a library user said, "If virtualization improves my satisfaction with the library's reference services, then it's worth the investment."

Cost-benefit analysis: Participants suggested conducting a cost-benefit analysis to determine the cost-effectiveness of virtualizing reference services in Nigerian libraries. For example, an e-librarian stated, "We need to conduct a cost-benefit analysis to determine if the benefits of virtualization outweigh the costs."

Collaboration and partnerships: Participants highlighted the need for collaboration and partnerships to effectively virtualize reference services. For instance, a library user remarked, "Libraries can collaborate with technology companies and other stakeholders to develop virtual reference services that are cost-effective and user-friendly."

Accessibility and inclusivity: Participants discussed the potential for virtualizing reference services to improve accessibility and inclusivity in Nigerian libraries. For example, a librarian said, "Virtualization can help us to reach users with disabilities who may not be able to physically access the library."

Sustainability: Participants emphasized the need for sustainability in virtualizing reference services, such as ensuring that the technology used is sustainable and can be maintained over time. For instance, a library user remarked, "We need to ensure that virtualization is sustainable and that we can continue to provide quality reference services in the long run."

The findings of the study indicate that virtualizing reference services in Nigerian libraries can lead to various benefits, including cost savings, improved resource management, increased user engagement, and better user satisfaction. However, participants noted that several factors need to be considered to ensure the cost-effectiveness of virtualization. These include staff training and development, adequate technological infrastructure, collaboration and partnerships, accessibility and inclusivity, and sustainability. Many participants mentioned that virtualizing reference services could result in cost savings by reducing expenses on physical infrastructure and maintenance. Additionally, virtualization could lead to better resource management by improving organization and accessibility of information. Participants also noted that virtualization could improve user engagement and satisfaction by reaching more users and providing better service delivery. However, to effectively virtualize reference services,

participants emphasized the need for staff training and development, adequate technological infrastructure, collaboration and partnerships, accessibility and inclusivity, and sustainability. Participants suggested conducting a cost-benefit analysis to determine the cost-effectiveness of virtualization, as well as collaborating with technology companies and other stakeholders to develop user-friendly and cost-effective virtual reference services.

Research Objectives 2: To determine the readiness of Nigerian librarians to adapt to changes that may come with virtualizing reference services. To achieve the second research objective, the study focused on exploring the willingness of Nigerian librarians to adapt to the changes that may come with virtualizing reference services. Participants were asked about their level of readiness to learn new skills and competencies that may be required to effectively virtualize reference services. The results of the study thematically showed thus:

Technological Competence: Several participants stated that Nigerian librarians need to improve their technical competence to effectively adapt to virtualizing reference services. For instance, a librarian expressed, "Not all librarians have the technical skills required to handle virtual reference services. Some may require training to develop these skills."

Attitude towards Change: The attitude of Nigerian librarians towards change may impact their readiness to adapt to virtualizing reference services, as noted by some participants. For example, a library user commented, "Some librarians may be resistant to change, which may affect their readiness to adapt to virtual reference services."

Communication and Collaboration: Effective communication and collaboration among Nigerian librarians are essential to adapt to virtualizing reference services, as highlighted by several participants. A librarian said, "We need to work together and share knowledge to effectively adapt to virtual reference services."

Resource Allocation: Adequate resource allocation is necessary to support the adaptation to virtualizing reference services, as discussed by some participants. For example, a library user remarked, "Nigerian libraries need to allocate sufficient resources, including funding and time, to support the adaptation to virtual reference services."

User Needs: Considering the needs of library users is crucial in the adaptation to virtualizing reference services, as emphasized by many participants. A librarian stated, "We need to listen to our users and understand their needs to effectively adapt to virtual reference services."

Training and Development: Training and development are essential to support the adaptation to virtualizing reference services, as noted by participants. For example, a library user stated, "Nigerian librarians need to receive training on how to effectively coordinate virtual reference services."

Infrastructure: Adequate technological infrastructure is necessary to support the adaptation to virtualizing reference services, such as reliable internet connectivity and access to relevant software, as discussed by participants. For instance, an e-librarian commented, "We need to ensure that we have the necessary technological infrastructure to support virtual reference services."

Policy and Regulation: Having policies and regulations to guide the adaptation to virtualizing reference services is crucial, as noted by some participants. A library user remarked, "Nigerian libraries need to have clear policies and regulations to guide the use of virtual reference services. If not, the initiation of the services will just be a waste."

Benefits and Challenges: It is important to consider the benefits and challenges associated with virtualizing reference services to effectively adapt to the technology, as noted by participants. For instance, a librarian said, "We need to weigh the benefits and challenges of virtual reference services to determine if it is a feasible option for Nigerian libraries."

User Acceptance: User acceptance is crucial for the successful adaptation of virtual reference services in Nigerian libraries, as emphasized by participants. A library user remarked, "The acceptance of virtual reference services by library users is crucial for its successful adaptation in Nigerian libraries."

Based on the findings, The results of the study thematically showed that Nigerian library stakeholders have varying levels of readiness to adapt to changes that may come with virtualizing reference services, with some expressing enthusiasm and others expressing concerns about the changes. various factors should be considered to determine the readiness of Nigerian librarians to adapt to the changes that come with virtualizing reference services. These factors include technological competence, attitude towards change, communication and collaboration, resource allocation, user needs, training and development, infrastructure, policy and regulation, benefits and challenges, and user acceptance. The study participants emphasized the importance of enhancing technological competence, having a positive attitude towards change, ensuring effective communication and collaboration among librarians, allocating sufficient resources, considering the needs of library users, providing training and development opportunities, having adequate infrastructure, having clear policies and regulations, and understanding the benefits and challenges of virtual reference services.

Research Objective 3: To explore the potential threats and risks of virtualizing reference services in Nigerian libraries. For this research objective, the study aimed to explore the potential threats and risks associated with virtualizing reference services in Nigerian libraries. Participants, including librarians and library users, were asked about their concerns regarding the technology and any potential risks they may perceive. The results of the study thematically showed thus:

The findings thematically showed that participants expressed concerns about several potential threats and risks associated with virtualizing reference services. These concerns included security risks, technological issues, lack of personal interaction, inadequate training, misuse of technology, resistance to change, accessibility issues, legal and ethical issues, and dependence on technology.

Security Risks: Participants expressed concern about security risks associated with virtualizing reference services. For example, a librarian stated, "There is a high risk of hackers and data breaches when we move our services online." A library user also added, "Virtualizing reference services may put our confidential information at risk."

Technological Issues: Some participants highlighted potential technical issues that may arise with virtualizing reference services. A librarian remarked, "Connectivity issues or system crashes could disrupt the services." A library user also noted, "Not everyone may have access to the required technology, which could limit access to the services."

Lack of Personal Interaction: Some participants highlighted the potential loss of personal interaction that comes with virtualizing reference services. For instance, a librarian said, "Virtualizing reference services may lead to a loss of the personal touch that comes with face-to-face interactions." A library user added, "It may also be difficult to establish a rapport with a librarian over a virtual platform."

Inadequate Training: Participants noted that inadequate training could pose a threat to the successful virtualization of reference services. A librarian said, "Not all librarians may be adequately trained to handle virtual reference services, which could lead to inefficiencies in the system." A library user added, "Inadequate training could also result in errors or misinformation being provided to users."

Misuse of Technology: Participants noted the potential for the misuse of technology in virtualizing reference services. A librarian stated, "There is a risk that technology may be misused for unethical purposes, such as the sale of personal information." A library user added, "Misuse of technology could also lead to the spread of misinformation or fake news."

Resistance to Change: Some participants highlighted the potential resistance to change that may occur with virtualizing reference services. A librarian remarked, "Some librarians may be resistant to change and may not be willing to adopt virtual reference services." A library user added, "Resistance to change could lead to the delay or failure of the virtualization process."

Cost: Participants noted the potential cost associated with virtualizing reference services. A librarian stated, "The cost of acquiring the necessary technology and infrastructure could be prohibitive." A library user added, "There may also be ongoing costs associated with maintaining and updating the technology."

Accessibility Issues: Participants noted the potential accessibility issues that may arise with virtualizing reference services. A librarian said, "Not everyone may have access to the internet or may have limited access to virtual platforms." A library user added, "Accessibility issues could lead to inequities in access to reference services."

Legal and Ethical Issues: Some participants noted the potential legal and ethical issues associated with virtualizing reference services. A librarian stated, "There may be legal and ethical implications of storing and sharing personal information online." A library user added, "There may also be issues related to intellectual property rights and copyright infringement."

Dependence on Technology: Some participants noted the potential dependence on technology that may occur with virtualizing reference services. A librarian said, "We may become too dependent on technology, which could lead to a loss of skills and abilities that come with traditional reference services." A library user added, "Dependence on technology could also lead to a loss of human touch and empathy in reference services."

The study revealed that participants in Nigerian libraries had several concerns regarding the virtualization of reference services. These concerns were grouped into categories including security risks, technological issues, lack of personal interaction, inadequate training, misuse of technology, resistance to change, cost, accessibility issues, legal and ethical issues, and dependence on technology. Participants expressed apprehension about security risks and potential data breaches, as well as technical issues such as connectivity problems and system crashes that could disrupt services. Furthermore, they were worried that virtualizing reference services could lead to a lack of rapport and connection with librarians due to the loss of personal interaction. Inadequate training was identified as a potential risk, and participants were concerned about the potential for errors or misinformation being provided to users. The misuse of technology for unethical purposes, such as the sale of personal information or the spread of misinformation, was also a source of concern. Participants noted that resistance to change and the cost associated with virtualizing reference services could be a threat. Additionally, limited access to the internet or virtual platforms could create accessibility issues leading to inequities in access to reference services. Legal and ethical issues related to storing and sharing personal information online, as well as issues related to intellectual property rights and copyright infringement, were also noted. Lastly, participants expressed concern about the potential dependence on technology that may occur with virtualizing reference services. They feared this could lead to a loss of traditional reference services' skills and abilities, as well as a loss of human touch and empathy in reference services.

Discussion of Findings

The findings of the study mentioned seem to suggest that virtualizing reference services in Nigerian libraries can have significant benefits, it's important to note that there may also be some drawbacks and challenges associated with this process. For instance, Kashi and Nasiri (2018) examined the challenges and opportunities of virtual reference services in Iranian academic libraries. The study found that while virtual reference services can improve accessibility and convenience for users, there are also several challenges related to technology, staffing, and service quality. The study suggests that a collaborative approach involving librarians, IT professionals, and other stakeholders is needed to address these challenges and ensure the success of virtual reference services. The findings of this study highlight the importance of considering various factors when assessing the readiness of Nigerian librarians to adapt to changes that come with virtualizing reference services. However, it is important to note that these findings do not necessarily mean that virtualizing reference services should not be pursued. Rather, they underscore the need to carefully consider the challenges and concerns that may arise and to address them through appropriate measures. Oluwatoyin et al. (2018) study provides a counterpoint to these findings. The study found that academic librarians in Nigeria were generally positive towards the adoption of virtual reference services, with most expressing a willingness to adopt the technology. However, they also identified several challenges that need to be addressed, including inadequate technological infrastructure, limited staff competence and readiness, and lack of policies and regulations to guide the implementation of virtual reference services. The concerns raised by the participants in the study regarding the virtualization of reference services are valid and need to be addressed. However, these concerns should not overshadow the potential benefits of virtualizing reference services. It is important to find ways

to mitigate these concerns while reaping the benefits of virtualization. A study by Luna and Moulaison (2015) found that while virtual reference services have several benefits, there are also potential risks and challenges associated with the technology. The authors note that concerns related to security, privacy, and confidentiality are among the most significant barriers to the adoption of virtual reference services.

Conclusion

In conclusion, the study highlights both the benefits and challenges associated with virtualizing reference services in Nigerian libraries. While there are concerns related to technology, staffing, and service quality, the potential benefits of virtualization cannot be ignored. The findings suggest that a collaborative approach involving librarians, IT professionals, and other stakeholders is needed to address these challenges and ensure the success of virtual reference services. It is important to carefully consider the challenges and concerns that may arise and to address them through appropriate measures. The study provides valuable insights that can guide the development of policies and regulations to guide the implementation of virtual reference services in Nigerian libraries. By addressing the concerns raised by stakeholders, virtual reference services can improve accessibility and convenience for users and ultimately enhance the quality of library services in Nigeria.

Strategies for Policymakers

Based on the findings discussed, there are several implications for policymakers in Nigeria regarding the virtualization of reference services in libraries:

1. Policymakers should assess the cost-effectiveness of virtualizing reference services in Nigerian libraries. While the benefits of virtual reference services are evident, it is essential to determine whether the investment required for this technology will provide significant returns.
2. Policymakers should also evaluate the readiness of Nigerian librarians to adapt to changes that come with virtualizing reference services. This assessment should include an evaluation of the current technological infrastructure, staff competence, and readiness, as well as the availability of policies and regulations to guide the implementation of virtual reference services.
3. Policymakers should explore the potential threats and risks of virtualizing reference services in Nigerian libraries. Issues related to security, privacy, and confidentiality are among the most significant barriers to the adoption of virtual reference services. Therefore, policymakers should consider measures to mitigate these risks.

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Availability of Grey Literature for Library and Information Science Postgraduate Students in South-South, Nigeria

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Abstract

The study investigated *the* availability of grey literature for library and information science postgraduate students in South-south, Nigeria. The study was led by two research questions and one hypothesis. The availability of grey literature for postgraduates in library and information science was discussed after a study of pertinent and recent literature. The research design used in the study was a descriptive survey. 121 respondents, all postgraduates in library and information science, made up the study's population. Using the census sampling method to choose the respondents, the complete population served as the sample size. The respondents' replies were elicited using a self-structured, open-ended 27-item questionnaire. Examples of descriptive and inferential statistics that were utilized to analyze the data gathered from the administered instrument include simple percentages, frequency counts, and correlation. The study's findings included, among other things, the verity that government publications, dissertations, handbooks, bulletins, thesis, newsletters, and conference proceedings are among the grey literature options available to postgraduate students. The availability of grey literature in the library does not statistically significantly influence the research outputs of postgraduate students in library and information science in South-South, Nigeria, it was also shown. The study *concluded* that grey literature is a beneficial source of knowledge that enhances postgraduate students' research writing in higher education institutions. Therefore, it was advised that library management form an ad hoc committee to determine the grey literature that is relevant to postgraduate students in comparison to the grey literature that is already available in the library and to make appropriate recommendations that will direct management on the need to make provisions for the grey literature that is not in the library.

Keywords: Availability, Grey literature, Postgraduate students, South-south, Nigeria.

Introduction

The information needed by citizens to make decisions about their lives and the society in which they live is provided through grey literature. Grey literature will continue to be the most frequently used source of information, whether people are travelling, conducting research, purchasing an appliance, treating an illness, maintaining machinery, participating in an archaeological dig, or engaging in a variety of other activities as part of their daily lives (Mukhtar, 2009). As long as there is a demand, print versions of grey literature, such as handbooks, service manuals, consumer product ratings, travel guides, and other materials we frequently carry about us and study, will likely continue to be published. According to Weintraub (2011), In a world where instantaneous connectivity and free commerce have removed many of the barriers to information flow, grey literature is becoming more significant as a knowledge source for a considerable section of the worldwide population. It already serves as an important resource for an informed audience and will undoubtedly do so for a very long time as an important contribution to journal literature. It appears that knowledgeable and effective management of these resources is now required.

Libraries should place a high priority on making grey publications accessible in the environment of circulating information in universities. Four views on availability might be deployed: physical, bibliographic, intellectual, and internet (Tofi & Fanafa, 2019). The focus of this poll, physical availability, refers to the grey literature document's presence in a library. This indicates that consumers have the option to conduct in-depth content consultation. Bibliographic availability denotes the existence of citations to a document's title or content without the document itself necessarily being available in the library's collection. Some nations have made an effort to restrict the bibliography of grey literature (Muswazi, 2001).

The European Society for Grey Literary Exploitation, for instance, was founded in Europe because of a grey literature strategy (EAGLE). Since 1993, there have also been international conferences on grey literature, which have sparked a national interest in the subject in nations including Sierra Leone, Sudan, Benin, Lesotho, Senegal, Botswana, Zimbabwe, and Tanzania. Intellectual accessibility refers to the presence of analytical or evaluative works on the source documents of the grey literature. Most of the time, intellectual access can satiate users' informational needs without necessitating a further visit to the document. Conversely, the term "online availability" describes the existence of the "grey literature" in computer systems that are reachable through computer-to-computer communications. In this instance, even though the documents containing them are not physically present in the library, the material can still be made physically available (by downloading).

The biggest issue preventing libraries from appreciating the worth of grey literature and using it consequently is still availability. Items may be available in libraries but not always accessible (perhaps owing to the poor organisation), but they may not always be accessible even if they are available. This implies that the usage of grey literature is reliant on libraries having it on hand. Use studies become powerful indications of the value assigned to such works by users when they are made available in libraries (Tofi & Fanafa, 2019).

This may not always be the case, though, since people occasionally use what they see not because it is what they want but rather because it is what is available right now. The main conclusion of a report detailing the outcomes of a brief survey on academic grey literature accessibility to Small and Medium Sized Enterprises in the UK (SMEs) was that SMEs require grey literature for practical benefits like using resources and university facilities as well as training opportunities and scouting for potential recruits. the JISC Scholarly Communications Report from 2008. The best source for contemporary research on particular topics, such as rural poverty or the plight of Sydney's homeless, is typically grey literature. 2012 (The UNE Home Library) (The UNE Home Library). Grey literature is "a broad and amorphous array of resources that is likewise 'grey' for being 'uncertain, unclear, and imprecise[e]," according to Rucinski (2015, p. 544). "Grey literature" is described by Weintraub (2011) as works created in print and electronic media by the government, academia, business, and industry but not under the purview of capitalist publishing concerns or when publishing is not the organization's core business activity. Publications that are neither published commercially nor indexed by significant database suppliers are referred to as "grey literature. Those with expertise in education, research, development, and information have been observed to pay increased attention to the potential of grey literature. Unpublished conference materials, standards, patents, basic specifications and recommendations, statistical resources, discussion/working papers, factsheets, promotion/advertising/commercial documentation, preprints, preliminary progress and advanced reports, research memoranda, posters, unpublished translations, and unpublished bibliographies are all examples of grey literature.

Statement of the Problem

There has been an explosion of informational assets in multiple formats as a result of the accessibility of ICTs and their associated use in controlling all parts of data processing. However, one important source of information that contains undiluted information is grey literature, such as scientific, technical, economic, social, and other reports developed in national and private institutions, unpublished conference materials, standards/patents/technical specifications and recommendations, statistical resources, and so on. Particularly, the overabundance of information sources has made it difficult for information seekers to decide which sources to use. According to the researcher's initial study, students in South-South, Nigeria, do not have easy access to grey literature for research purposes, which is why this study was done to determine whether such literature is available to postgraduate library and information science students.

Research Questions

The study was centred on the following research questions:

- i. What grey literature is obtainable in South-South, Nigeria, for postgraduates studying library and information science?
- ii. What difficulties do postgraduate students encounter when conducting research?

Hypothesis

The hypothesis below guided the study

- i. The research output of LIS postgraduates and the amount of available grey literature do not significantly correlate.

Literature Review

It is widely known that the library is a repository of knowledge that has been recorded and is available to users in a variety of formats to aid in their instruction, training, and research endeavours. The library is frequently the first stop for postgraduates engaged in advanced research studies because it is recognized to contain literature or recorded human knowledge. Consequently, they examine various information resources to expand the frontier of knowledge. All writing can be considered literature in the broad sense, or it can be defined more specifically as work that conveys ideas, emotions, and outlooks on life. So, the term "literature" is best described as "chronic phrase(s) in lexis" (said or penned), especially when those words are arranged in a pleasing and conventional pattern or form, such as grey type. According to Osayand and Ukpebor (2012), grey literature is one genre that librarians purchase to suit the information needs of their patrons. Annual reports, fact sheets, patents, blogs, government publications, personal communications, interviews, bulletins, policy statements, conference proceedings, legislation, newsletters, dissertations/theses, press releases, newspaper clippings, speeches, data and statistics, and more are among the publications that are categorized as grey literature, according to a report from the University of Canberra Library (2020).

Annual Reports: they contain details about the operations of the controlling organization and any other subordinate organizations during the reporting year. It is a key document used by enterprises to inform their shareholders and other stakeholders about their activities, spending, strategies, and other information (CPA Australia, 2019).

Fact Sheets: a fact sheet, also known as a fact file or one sheet, is a source of information that highlights key points about a specific event or the operations of an organization using tables, headings, bullets, and other formatting devices. Fact sheets typically include summaries of research findings, production statistics, technical data, lists, statistical reports, responses to frequently asked questions, educational resources, do-it-yourself instructions, etc. Examples of fact sheets include the planetary fact sheets of the U.S. National Aeronautics and Space Administration, the abridged U.S. International Revenue Service report, study guides on various subjects, and fact sheets from the World Health Organization on a variety of health-related topics (NASA).

Dissertations/Theses: a paper that contains a thorough explanation of the research that a postgraduate student undertook to obtain a degree or other type of professional certification is referred to by this phrase. Several details in a dissertation or thesis typically benefit postgraduate students' ongoing academic endeavours. A dissertation/thesis is a protracted academic writing assignment that often employs predetermined procedures and is based on primary research completed by a postgraduate student as a fraction of the requirements for the award of a master's or doctorate, as the case may be. Even researchers typically dismiss dissertations/theses as sources of information, yet when properly combined, they offer the following advantages:

- i. Similar like journal articles, conference papers, and other sorts of literature, current dissertations/theses offer sneak peeks into concepts and conclusions that have not yet been made public.

- ii. These might be the sole works by authors that are made available to the general public but don't typically publish through commercial publishers or write for a popular readership.
- iii. Dissertations/theses frequently include extensive bibliographical and PubMed to assist readers in locating pertinent literature for their research. They could also serve as models for structuring and presenting concepts, diagrams, charts, and other elements of a document.
- iv. In addition, the dissertation and thesis serve as references and shed light on a particular person's early work.
- v. They both serve as a jumping-off point for the majority of scholars.

Conference Proceedings: a conference proceedings is an anthology of academic papers published as a fraction of an academic conference or workshop in academia or librarianship. These papers reflect the contributions of the researchers who attended the conference or workshop and are published in many academic fields in addition to academic journals. According to a report from Penn State University Libraries, a conference proceeding is the published account of the events of a conference, congress, symposium, or other meeting organized by a professional body, society, or association. Typically but not always, it includes abstracts or reports of papers presented by the participants or researchers (2020).

Personal Communication: Personal communications include personal memos, letters, emails, face-to-face encounters, and phone calls with a specific person over a time frame specified. Intimate interactions are only cited in the text and not in the reference list because they cannot be retrieved by other people.

Bulletins: A bulletin is a condensed report, often a government announcement on a topic of public interest, that is released for quick publishing, broadcast, or information to the target audience. It may equally be observed as a succinct update or summary of recent news information distributed by an established communication source in an organization, whether it be print, non-print, or both. A bulletin is a brief notice made by a reputable source regarding significant information. It can also be thought of as a brief article that a company publishes to share news about itself.

Policy Statements: This piece offers a summary of the appropriate practices for staff members and clients inside an organization. Often, it outlines how things should be conceded within the organization. A policy statement should cover the organization's human resources, financial resources, legal or regulatory concerns, safety concerns, and operational concerns. Policy statements are documents that outline an organization's goals, explain how those goals might be attained, and specify the steps necessary to get there (Duff, 2019).

Omeje (2010) pinpointed certain traits of in grey literature, which are summarized below:

- i. They are hard to find and obtain due to their unconventional publication style, and non-availability through typical channels of book supply.
- ii. They are unconventionally published, that is, they are not published by traditional publishers

- iii. They are typically not available through the traditional sources of book supply, such as publishers, vendors, and bookshops
- iv. They are not covered by secondary bibliographic services like indexes, abstracts, and bibliographies.
- v. They are significant informational sources since they include unaltered reports or the authors' original opinions.

Research is carried out precisely and methodically to look for new knowledge, skills, attitudes, and values or for the reinterpretation of existing knowledge, skills, attitudes, and values to address a specific issue. Bocar (2013) noted that when conducting research, researchers must be cautious, allow a bounty of occasions to complete each stage of the activity, be conscientious, and work in the library for a specific number of hours each week. Additionally, researchers must add additional hours or weeks before the deadline because some tasks take longer than anticipated and some research work stages are more challenging than what the researchers anticipate. According to Trimmer(Bocar, 2013), there are unforeseen challenges that researchers face that may result in academic failures, but the first step is to think optimistically about reaching set goals. Collins (2012) noted that because conducting research is a technological process requiring a great deal of technical knowledge and critical thought, researchers often face a variety of difficulties. Olaitan (2009) lists a few of the difficulties faced by researchers as the alternative researchable topic, a deficiency of knowledge about where to find materials, supervisors who are unfriendly and occasionally aggressive, a deficiency of motivation on the researcher's part, a deficiency of funding, poor health during the research-writing process, etc.

Taylor and Beasley (as cited in Bocar, 2013) claim that because researchers face numerous difficulties, they require additional guidance from their supervisors to improve research writing abilities such as problem-solving, original thought, validation, summary, documentation, and reproduction. Due to their inability to locate pertinent literature, including books, articles, papers, abstracts, theses, and dissertations, researchers also, have difficulties while using search engines and databases. Williams et al. (as cited in Bocar, 2013) also noted that some postgraduate students delay writing their theses not because of any academic challenges but rather because of their supervisors' lack of acceptance and respect. According to Wisker, Robinson, and Shacham (as cited in Bocar, 2013), who conducted the study that yielded this conclusion, issues might occasionally arise when a student's prospects for the supervisory relationship and the research experience do not line up. According to Career Research and Advisory Centre (2022), obstacles faced by researchers include a deficiency of motivation on their part, a lack of self-confidence, poor time management, a deficiency of focus or direct support, researchers who are stuck in their comfort zones, a fear of failure or fear of taking risks, a lack of relevant experience, an inability to choose a researchable topic, a deficiency of sufficient resource materials on the topic chosen, hostile attitude.

Methodology

This study looked into the availability of grey literature for postgraduate students studying library and information science in South-South, Nigeria. Postgraduate LIS students at Delta State University, Abraka, Ambrose Alli University, Ekpoma, and Ignatius Ajuru University of Education, Portharcourt were asked for their opinions. For this study, a descriptive research

design was used. Using the census sampling technique, 121 respondents from the postgraduate student population (Ph.D. and M.Sc.) were selected as the sample. The limited population is to blame for this. According to Baxter and Babbie (2004), the complete population can be used for this investigation if the population is small and manageable. The study's instrument, a questionnaire, has 24 open-ended questions about the accessibility of grey literature and the difficulties faced by postgraduate researchers while they carry out their research projects. The availability of grey literature for library and information science postgraduate questionnaire (AGLLISPQ) was the name of the study tool. To ensure a high response rate, the questionnaire was personally distributed to respondents in each lecture hall. Descriptive statistics including mean, frequency counts, and straightforward percentages were used to analyze the data collected from the disseminated questionnaire. Using SPSS version 22, the analysis was completed.

Results

The data and interpretation of the research findings are presented in this portion of the study following the research questions and hypotheses that served as its guiding principles.

Table 1: Questionnaire Response Rate

Copies of the Questionnaire Administered	Copies of Questionnaire Retrieved	Percentage of Retrieved Copies of Questionnaire
121	119	98

In total, 121 copies of the questionnaire were distributed to the respondents, and 119 (98%) of those copies were completed, retrieved, and otherwise useful for carrying out the study, as shown in Table 1. The study concluded that a 98% response rate to the questionnaire was sufficient for conducting the poll and allowing for population-wide generalization. This finding was reached in agreement with Fincham's (2008) claim that researchers should aim for a response rate of roughly 60% for the preponderance of their studies.

Table 2: Institution of the Respondents

Institution	Freq.	Percentage
Delta State University, Abraka	43	36
Ambrose Alli University, Ekpoma	24	20
Ignatius Ajuru University of Education, Portharcourt	52	44
Total	119	100

According to data in Table 2, 52 (44%) of the responders hold postgraduate degrees from Ignatius Ajuru University of Education in Portharcourt, 43 (36%) hold postgraduate degrees from Delta State University in Abraka, and 20 (24) have postgraduate degrees from Ambrose Alli University in Ekpoma. The preponderance of the responders who participated in the survey are postgraduates from Ignatius Ajuru University of Education, Portharcourt, it was concluded.

Research Question 1: What grey literature is obtainable in South-South, Nigeria, for postgraduates studying library and information science?

Table 3: Obtainable Grey Literature for Postgraduates

Grey Literature	Available		Not Available	
	Freq.	%	Freq.	%
Conference Proceedings	99	83	20	17
Technical reports	15	13	104	87
Theses	99	83	20	17
Dissertations	112	94	7	6
Newsletters	99	83	20	17
Patents	39	33	80	67
Factsheets	24	20	95	80
Government publications	114	96	5	4
Bulletin	108	91	11	9
Extract from minutes of meetings	19	16	100	84
Research reports	17	14	102	86
Handbooks	111	93	8	7
Blogs	24	20	95	80

The mainstream of responders, as shown by the data in Table 3, agreed that the obtainable grey literature in the university libraries under this study is composed of government publications (114, 96%), dissertations (112, 94%), handbooks (111, 93%), bulletins (108, 91%), newsletters (99, 83%), and theses.

Research Question 2: What difficulties do postgraduate students run into when conducting research?

Table 4: Challenges Encountered by Postgraduates when Carrying Out Research

Challenges	Agree		Disagree	
	Freq.	%	Freq.	%
Difficulty in the selection of researchable topic	96	80	23	20
Inadequate knowledge of the source of materials	98	82	21	18
Unfriendly/sometimes aggressive behaviour of supervisors	101	85	18	15
Less motivation from the side of the researcher	105	88	14	12
Inadequate financial resources	112	94	7	6
Bad health during the period of writing the research	29	24	90	76
Low self-esteem	17	14	102	86
Poor time management	117	98	2	2
Lack of focus/direction on the part of the researcher	107	90	12	10
Inability to carry out independent research	111	93	8	7
Fear of failure	103	87	16	13
Inadequate research experience	97	81	22	17
Inadequate or difficulty in getting literature	102	86	17	14
Inadequate research skills	97	82	22	18

Data in Table 4 revealed that the bulk of the responders agreed that poor time management (117, 98%), a deficit in financial resources (112, 94%), an inability to conduct independent research (111, 93%), a deficiency in focus/direction on the part of the researcher (107, 90%), a deficit in motivation on the part of the researcher (105, 88%), and fear of failure (103, 87%) are among the challenges faced by postgraduate students while conducting research. Inadequate or challenging literature acquisition (102, 86%), unwelcoming or occasionally aggressive supervisor behaviour (101, 85%), a deficit in familiarity with the sources of the materials (98, 82%), a deficiency in research experience and expertise (97, 81%), and difficulty selecting a research topic are additional confrontations that students must overcome.

Hypothesis 1: The research output of LIS postgraduates and the amount of obtainable grey literature do not significantly correlate.

Table 5: Correlation between Obtainable Grey Literature and Research Output

		Availability Grey Literature	Research Output
Availability Grey Literature	Pearson Correlation	1	.032
	Sig. (2-tailed)		.740
	N	119	112
Research Output	Pearson Correlation	.032**	1
	Sig. (2-tailed)	.740	
	N	112	112

$\alpha = 0.05$

The association connecting the obtainable grey literature and the research outputs of postgraduate Library and Information Science students in South-South, Nigeria is shown by the data in Table 5. The outcome indicates that the correlation coefficient, or r , is .032, or 3.2%. This demonstrates that there is only a shaky relationship between the research outputs of postgraduate scholars and the available grey literature. However the significant level of .740 is higher than the alpha threshold of 0.05. Therefore, it is recognised that there is no significant relationship between the research outputs of postgraduate students and the available grey literature. The conclusion reached was that the currently available grey literature has no statistically significant impact on the research outputs of postgraduate library and information science students in South-South, Nigeria.

Discussion of the Findings

The explanation of the research findings is provided in this portion of the study and is supplied as follows following the research questions and hypotheses that acted as the study's guiding principles:

Obtainable Grey Literature for Postgraduates

Government publications, dissertations, handbooks, bulletins, theses, newsletters, and conference proceedings are among the sorts of grey literature that are obtainable in the university libraries under this study, according to the analysis of the data for research question 1. The results show

that libraries are a repository of preserved human knowledge in a variety of setups that are made accessible to library users to support their teaching, learning, and research activities. The results are consistent with Osayand and Upebor's (2012) claim that librarians often purchase grey literature to gratify the information needs of their patrons. The results concur with the University of Canberra Library's report from 2020, which identified a variety of publications as grey literature, including annual reports, fact sheets, patents, blogs, government publications, personal communications, interviews, bulletins, policy proclamations, conference proceedings, legislation, newsletters, dissertations/theses, press releases, newspaper clippings, speeches, and data.

Confrontations Encountered by Postgraduates when Carrying Out Research

Data analysis for research question two uncovers that poor time management, a deficit in financial resources, an inability to conduct independent research, a deficit in direction and focus on the researcher's part, insufficient motivation on the researcher's part, and fear of failure, insufficient or difficulty obtaining literature, unfriendly/occasionally aggressive behaviour on the part of supervisors, and a deficit of knowledge of the source of obtaining material are among the factors that contributed to the failure of the researcher. The results support Trimmer's assertion (as cited in Bocar, 2013) that researchers occasionally face unforeseen challenges that can result in academic failures, but that the first step is to maintain a positive outlook on achieving objectives. The results supported those of Olaitan (2009) who found that postgraduate students face several difficulties when conducting research studies, including choosing a researchable topic, not knowing where to find materials, dealing with unfriendly and occasionally aggressive supervisors, lacking motivation on the researcher's part, having insufficient financial resources, and being ill while writing the research.

Correlation between Available Grey Literature and Research Harvest

In line with the first hypothesis's conclusion, the presence of grey literature in the library has no statistically significant impact on the research outcomes of postgraduates studying library and information science in South-South, Nigeria. The study's findings contradict Okiki's (2013) assertion that the access to and utilization of information assets determines the quality of the research output produced by researchers. He added support for the idea that libraries at higher education institutions were created to help the teaching, learning, and research efforts of faculty, students, and other outside users of the library by offering information resources.

Conclusion

Considering the study's findings, the researcher concluded that grey literature, which includes government publications, dissertations, handbooks, bulletins, , newsletters, and conference proceedings, is a useful source of information that contains crucial information that improves postgraduate students' research writing in higher educational institutions. Postgraduate students still face several difficulties when writing their thesis or dissertation, including poor time management, a deficit in funding, the inability to conduct independent research, a deficit in focus or direction on the part of the researcher, and a deficit in desire.

Recommendations

Considering the study's findings, the following were recommended:

1. . To prevent unethical behaviours, university administration should devise a system for monitoring the interaction between supervisors and supervisees. They should also set up a program on research writing where seasoned professionals will be asked to instruct postgraduate students.
2. Library bureaucrats should shape an ad hoc committee to assess the importance of the grey literature to postgraduate students in comparison to the grey literature already available in the library and to provide management with appropriate recommendations regarding the need to make provisions for the non-library grey literature.
3. Library management should inform university administrators about the necessity of educating postgraduate students about the worth of grey literature to their academic achievement and exposing them to the grey literature that is available in the library to ensure corresponding utilisation.

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National Library Services as Panacea to Educational Rebirth in Selected Secondary Schools in Ilorin Metropolis

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Abstract

This study investigated the role of the National Library on the educational rebirth of students in selected secondary schools in Kwara State. The study adopted a descriptive survey design and the data were collected using a structured questionnaire. Multi-stage sampling technique was used to select 335 respondents for the study and a questionnaire was administered to all respondents from which 323 were returned and valid for data analysis. Data collected were analyzed using frequency tables and simple percentages. The study revealed that secondary school students are aware of the existence of the National Library and they are registered users of the National Library, though they visit the library weekly. The findings indicated that the major role of the National Library is to promote students reading culture, meet the information needs of students, and encourage students to seek access to and use information material independently. The national library organized programmes such as debate and quiz competitions, preschool and summer reading programmes, and career counselling among others towards achieving educational rebirth. Challenges faced by the National Library in discharging its role in educational rebirth include socio-cultural barriers, historical barriers, political barriers, language barriers, technological barriers, and religious barriers among others. The study recommended National Library should improve on its reading advocacy to enhance reading culture among secondary school students.

Keywords: National Library, Educational Rebirth, Students, Secondary Schools

Introduction

It is impossible to overstate the value of education to humanity as a whole. The right to an education is a fundamental one. Education is now widely recognised as a crucial development indicator since the link between education and development has been demonstrated. The

international community and governments from all around the world have pledged to ensure that their populations have access to education in acknowledgement of its value. More importantly, it is a tool for knowledge transfer, a process through which a person develops the moral, intellectual, social, and physical skills necessary to operate well and contribute to their society. It is the ideal tool for promoting national development as well as lowering poverty and promoting socioeconomic empowerment for individuals, (Ike, 2017),

Additionally, education is a universal phenomenon that enables all human cultures to acquire the prerequisite knowledge, expertise, and abilities necessary for their survival and expansion. According to Leicht, Heiss and Byun (2018), education is a potent, dynamic, and real tool for effecting social, cultural, and economic transformation in any community. Every well-intentioned society prioritises it, and according to Barrett, Treves, Shmis, Ambasz, and Ustinova (2019), it is just as valuable in reshaping character and attitudinal transformation as it is in reshaping human potential for desired development. The fact that it serves as an essential tool for the development of human resources for social development is another reason for its recognition. Akusoba (2012) describes education as "the most reliable instrument of social mobility and cohesion, one of the essential determinants of the destiny of a nation in terms of social, political, and economic development" for this reason.

To crown it all, Sanubi and Akpotu's (2015) National Empowerment Development Strategy aptly summarises Nigeria's dire educational situation as follows: "...the delivery of education in Nigeria has suffered from years of neglect, compounded by inadequate attention to policy frameworks within the sector." The results of an ongoing analysis of the education sector in Nigeria support this. The current national literacy rate is 57 percent. The number of unqualified teachers in the workforce is about 49%. At all levels, there are severe infrastructure and facility deficits. Gender concerns, sociocultural attitudes, and practices, among other things, obstruct access to basic education. There are still significant differences in learning outcomes and educational standards. To the detriment of technical, vocational, and entrepreneurial education, the system places a strong emphasis on theoretical knowledge. To make school curricula more current and practical, urgent revisions are required.

Babalola (2016) agreed, claiming that a variety of causes contributed to the decline in the Nigerian educational system. These include the loss of highly skilled and qualified professionals, labour unrest, decaying structures brought on by decreased funding for education, negligence and lack of attention on the part of the government, and student disturbances. These forces over time have pushed Nigeria's educational system to the point where its graduates are so poorly educated that they have little to no ability to contribute to the progress of the country. When they stated that "when the issues of Nigeria's education system today are raised, the first set of thoughts that come to mind are: decline in standard, deterioration of facilities, examination malpractices,"

Oyewole and Osalusi (2016) further emphasised the poor state of the Nigerian educational system. The emphasis on material prosperity, the get-rich-quick mindset, and a general lack of value for education are some of the additional factors that have led to the terrible position in which the Nigerian educational system currently finds itself. However, the current status of education in Nigeria is causing more concern than satisfaction, which has prompted the field's

stakeholders to pose more concerns than they have answers about the functions of national libraries in ensuring that their citizens receive a solid education. According to the consensus of academics like Aiyebilehin and Iboi (2020); is that Nigeria's educational system needs a rebirth and a total overhaul through which national library roles cannot be left out through its services to ensure effective and efficient educational rebirth. Librarians as custodians of knowledge must be at the forefront of any effort aimed at revamping the educational system. Libraries and librarians have become long-standing development partners that provide cost-effective alternatives. In many countries, libraries are given special recognition because of the vital role they play in guiding societies to development.

Libraries receive special distinction in many nations due to the crucial role they play in fostering social development. In fact, according to IFLA (2015), libraries are "key public institutions that have a vital role to play in development at every level of society." As a result, the national library is essential to the revival of Nigeria's educational system. Some of these responsibilities entail initiating in secondary schools through well-planned programmes a process of social reengineering and mental reorientation of the students. It is impossible to overstate the importance of the National Library's contributions to the educational rebirth, particularly in terms of providing students with tools for lifelong learning. To fulfil its function in education, this library's services must be thoroughly researched and should actively include the educational community (IFLA, 2015). These services which vary from school library to school library if properly stocked and placed, school libraries have the potential to create literate communities and direct society towards growth and advancement. Particularly in a nation like Nigeria where education and economic sector are becoming neglected due to issues like inadequate funding, a lack of opportunities (such as grants), and societal disorientation, school libraries might act as a catalyst for educational and economic rebirth. The national library should, as part of its duties, put methods in place to counter the growing instances of youth indifference towards education, a lack of reading culture, and a general lack of interest in schooling in Nigeria, with a particular focus on Kwara state. The following initiatives and programmes should be implemented in addition to circulation, reference, serials, and ICT services to improve student's learning processes for educational rebirth: a book club, extending hours of operation, observing World Book Day, Book game, and information literacy lessons

Therefore, the government, parents, students, and other stakeholders need to understand and play their roles for Nigeria, and specifically Kwara state, to develop and come out with thought-out tactics in rebirthing a new educational system. The Kwara State government in particular should clearly define the roles of all stakeholders and make sure that everyone contributes to the effort to restructure the educational system in Kwara State (Kwara Digest, 2019).

Research Questions

This study was guided by the following research questions:

1. What is the level of patronage of the national library by students of the selected secondary schools in the Ilorin metropolis?
2. What are the roles of the national library in educational rebirth among the students of the selected secondary schools in the Ilorin metropolis?

3. What are the types of programmes organized by the national library that are influential to the educational rebirth of students of the selected secondary schools in the Ilorin metropolis?
4. What are the constraints faced by the national library programmes on educational rebirth among the students in the selected secondary schools in the Ilorin metropolis?

Literature Review

The Conceptual Definition of the National Library

The National Library stands out among all other sorts of libraries, and scholars consider its collections to have the broadest scope, richest material, and most comprehensive coverage. The simple truth is that it comprises knowledge of all facets of life, including political, social, cultural, educational, agricultural, economic, and spiritual. Ayanda, Olu Timothy, and Ayangbeku (2017) described National Libraries as those established and maintained by the national government of a country. National Library operates library services nationwide. The author further stated that national libraries are regarded and treated as part of the national government; this is because of policy controls and officially constituted boards.

According to Verma and Brahma (2017), a national library is a library that was especially founded by the government of a nation to act as the foremost information repository for that nation. These, in contrast to public libraries, hardly ever let anyone check out books. They frequently contain a large number of uncommon, priceless, or important works. National libraries can be defined more broadly, with less focus on their role as repositories. Compared to other libraries in the same nation, national libraries are typically renowned for their size. Some non-independent states that want to preserve their unique culture have set up national libraries with all the features of these institutions, including legal deposit (Akidi & Charles 2019). According to Aliyu and Akewukereke (2013), national libraries are government-maintained libraries that cater for the interests of both governmental entities and the general public. The majority of national libraries are legal depository institutions, meaning that every publisher is obligated by law to deposit one or more copies of every book they publish with the national library. National libraries typically stand out from other libraries in the same nation due to their size, (Fabiya, Ahmed, Kayode, and Moral 2014). Some non-independent states that want to preserve their unique culture have set up national libraries with all the features of such institutions, including legal deposits.

Monumental Development of the National Library of Nigeria

From 1953 to June 1970, the University of Ibadan library served as the country's main library. Even though from 1950 to 1970, the library at the University of Ibadan published both the Nigerian publication and the present national bibliography. The chief secretary to the government received a letter from the head of a Standing Committee on the supply of libraries on July 3, 1948, in which he made the first reference to a national library in Nigeria (Okafor, 2020). The committee recommended that the government establish a national central library, which would be a copyright library and house "all books and papers published in Nigeria, and works of reference which are required by serious students but not in sufficient demand to warrant their placement in regional or local libraries." Additionally, according to Ojo and Shabi (2011), it would serve as a repository and distribution hub for microfilms and out-of-print books.

The Nigerian Division of the West African Library Association (WALA), whose efforts and activities were more directly connected with the realisation of the dream for a National Library of Nigeria, a dream that dates back to the 1930s, played a key role in the conception of the National Library of Nigeria (Gbaje, 2013). The Nigerian Library Association was founded in 1962 as a result of the Nigerian Division of (WALA)'s recommendation, which was further traced by Gbaje (2013). A library advisory committee had already been set up in the late 1950s. It was the responsibility of this committee to develop plans for the nation's library services and convince the government to establish a National Library. Following independence, the Nigerian government accepted the association's suggestion for a national library. Along with funding, the Ford Foundation of America agreed to offer the required knowledge for a feasibility study. The study supported the suggestion of the Library Advisory Committee for the establishment of a National Library of Nigeria.

The National Library Act passed in September 1964, established the Nigerian National Library. The National Library Decree No. 29 of 1970 later replaced and substituted for this Act. It is the premier library in the nation and a grade "A" parastatal. It serves as the country's vast intellectual repository and data bank for the learning and memory-building process. It is at the forefront of information services delivery and library development, offering advice on library development to institutions, groups, and MDAs at all governmental levels.

Goals and Objectives of the Nigerian National Library

The National Library of Nigeria is the information institution for the federal government of Nigeria, according to Iroka and Ndulaka (2018). The library has a foundation upon which to operate and direct its services to the nation. The National Library of Nigeria adheres to the following principles to serve as an intellectual announcement to its citizens: Offering assistance that is required for academic endeavours directed towards Nigeria's development and progress. Ensuring the availability of comprehensive and a nearly complete collection of resources as possible, materials or knowledge in existence in the world and ensuring fuel access to such resources both within and outside the nation's boundaries. Ensuring the free exchange of knowledge between the country and others. It also secures the country's role in the international community of countries that rely on recorded knowledge and information for survival in a world of quick technological development and intellectual exploitation.

Furthermore, the National Library acts as a catalyst, and reliable resource for education, illumination, and preservation of cultural heritage and values. It also acts as the last-order library, directing, organising, and maintaining library activities within the country's libraries or representing their interests abroad.

General Services Offered by the Nigerian National Library

According to Abba and Song (2013), the National Library of Nigeria serves as an important national repository for information about international organisations like the United Nations and its departments. Additionally, every author and publisher operating in the nation is required by Decree 29 of 1970 section 4 (1) 4 (3 a b) to deposit with the National Library a predetermined

number of copies of each book published. The law further specifies that three (3) copies are to be deposited by private publishers, ten (10) copies by state and local governments, and twenty-five (25) copies by the Federal government. This position implies that the National Library is the sole location where a citizen can find publications from all levels of government—federal, state, local, and individual—in one location. This facilitates research and accessibility while also conserving the user's important time. By establishing state branches of the National Library throughout the nation, the National Library is playing yet another important role in Nigerian society by ensuring that all Nigerians have equal access to its resources and services.

Currently, the National Library has branches in twenty-five (25) of the federation's states. The National Library serves as the library of libraries, completing other libraries' offerings and filling the gaps. This would encourage and support Nigerians across the nation's need for information, social interaction, and education. The researcher also believes that by assuring the gathering, preservation, and transfer of the country's cultural heritage for future generations, the National Library contributes significantly to Nigerian society. This implies that subsequent generations assure the continuity of the nation's cultural identity in all of its manifestations. Indeed, without the presence of people who will ensure the achievement of their intended goals, institutions and organisations are nothing more than inanimate objects. Employees in various organisations make up the people, and the National Library is no exception. The components that interact to produce the system in the library are the staff, information resources, patrons, and building/environment. A new component, information technology, has just been added, revolutionising and altering the pattern of information dissemination. Of all these components, personnel are the primary and most significant resources in view to accomplish organisational goals and coordinate the entire system (Ajala, 2003).

Given this growth brought about by the Information Age, the National Library is expected to play a leadership role as the top library in the nation. This leadership position can only be achieved by having a suitable number of workers and strong training programmes to ensure well-trained individuals. Shorunke and Makinde (2016) outlined the services of the National Library as follows: Legal Deposits, Bibliographic Control Services, Court Subpoena and Summons, Issuance of ISBN, ISSN, ISMN/, Production of National Bibliography of Nigeria (NBN), Establishment and maintaining branches of the National Library of Nigeria in each state, Readership Promotion Campaign (RPC), Book gifts and exchanges, virtual library services – ICT, services, content development, internet services, developing, maintaining and sustaining online National Union Catalogue (ONUC) and Online Public Access Catalogue (OPAC) (National Library, 2019).

Funding of the National Library of Nigeria

Ejechi (2019) defined funding as the act of finding, acquiring, and managing finance to accomplish desired goals. The author also noted the funding sources for the National Library, an organisation that oversees library operations and services in Nigeria: direct funding, government subvention, grants, donations, commissions, and fees for services.

Library Staff on the Rebirth of Education

According to Abumandour (2020), the following outlined roles are played by library staff in educational rebirth: They collaborate to educate people, create curricula, and incorporate resources into teaching and learning. They equally impart the knowledge and abilities necessary for people to use ideas and information effectively. They look for, pick, assess, and use technological tools and resources, as well as teach people and teachers how to use them.

Library staff offer cooperative reading education programmes, choose resources to satisfy everyone's demands in terms of learning, provide smooth integration of technology into education, and choose materials that adhere to academic requirements. select resources that improve collections at different levels, They offer creative resources that encourage learning motivation and promote autonomous information seeking, access, and usage. In addition, they offer reading assistance, a personalised reading selection, and free voluntary reading.

They offer ways to fulfil the mission of education and achieve predetermined goals, manage information by enabling both physical and intellectual access to printed, broadcast, and online sources using local or global resources, address each person's intellectual demands, work together with educators, they regularly work with lecturers, teachers, and educators to provide resources and activities for integrating courses, units, and lessons. Library staff helps educators and individuals find the information they need, analyse the sources they find critically, and use technology to combine their results to create new knowledge, connecting students with books in all media, such as print, audio, and e-books, that could encourage reading advocacy, educate students in information literacy, managing, maintaining, and organise a collection of priceless materials.

They give people access to resources and endeavours that will benefit them both now and in the future, inform educators about the results of reading research, encourage individuals to engage in reading, learning, and academic success throughout their school years and promote individual fulfilment and success, keep the library and networking environment caring and helpful.

Conceptual Explanation of Educational Rebirth

More children are attending school than ever, according to Lant Pritchett (2013). Targets like the second Sustainable Development Goal and increased international focus on increasing enrollment have contributed significantly to this improvement. However, even though, there are numerous educational objectives, there is no international education aim, and it should be made clear that education is not the same as schooling. The purpose of basic education is to give children the fundamental knowledge, skills, and values that will enable them to contribute positively to their family, community, government, and economy. Although measuring education may be more difficult than tracking the number of students enrolled, it is nevertheless achievable by breaking down broad objectives into a series of precise, time-bound learning targets, such as proficient reading by the age of ten. A learning profile with the two elements of grade achievement (how long you remain) and grade learning (how much you study every year) can be used to represent how schooling contributes to education.

Almost all developing nations intend to increase their expenditures on education, yet decades' worth of data demonstrate that doing more of the same will typically result in more of the same. Countries require evidence-based plans to make meaningful educational development. Simply said, doing more of the same will not result in the significant gains required to reduce the learning gap between rich and poor countries (Iroka & Ndulaka, 2018).

Factors to be considered in Education Rebirth

After several years of actively participating in initiatives to reform education, Mitra (2013) claimed that it was still not clear that the success of these efforts depended on the active inclusion and consideration of at least four elements. Matri (2013) listed the four elements as follows: assessment, curriculum, teacher Training and community involvement

Programs Associated with Education Rebirth to Secondary School Students

Kirp (2015). exemplified a few of the initiatives aimed at giving secondary school pupils an educational makeover, namely:

Organising a debate and a quiz contest, summer reading and Pre-school education, campaign for reading promotion, learning opportunity for kids, reference for universities and colleges, advice on significant issues and civic participation.

Methodology

This study adopts the descriptive research design of survey type to obtain relevant and needed data on the research topic. This research design was employed because it gives room for careful recording of observation. The population of this study include all 168,174 senior secondary school students in public secondary schools in the entire Local Government areas in Kwara state.

Population of the Study

The total population of the study in the selected Secondary School in Ilorin Metropolis is 2,056.

Table1: Distribution of populations

S/N	Schools	Population
1	St. Anthony Senior Secondary School	1,245
2	Government Day Senior Secondary School, Tanke	385
3	Government Day Senior Secondary School, Agbabiaka.	426
	Total	2,056

Source: Research Survey

3.3 Sample and Sampling Technique

Sample in research refers to a group of theselected population from which necessary data for its conduct would obtain. The sample for this study is

$$N = 2056 / 1 + 2056(0.0025)$$

$N = 2056/1 + 5.14$

$N = 2056/6.14$

$N = 334.85 \sim 335$ (sample size)

The sample for the study was 335 respondents

Table2: Distribution of the Respondents Table

S/N	Schools	Population
1	St. Anthony Senior Secondary School	135
2	Government Day Senior Secondary School, Tanke	100
3	Government Day Senior Secondary School, Agbabiaka.	100
	Total	335

Sample and Sampling Techniques

The multi-stage sampling procedure was used to select respondents for the study. In the first stage, the entire Local Government Areas were stratified into three Senatorial Zones. In the second stage, a simple random sampling technique was used to select three (3) Local Government Areas; thereby, one Local Government Area was selected from each of the senatorial zones. However, at the third stage, from each of the Local Government Areas selected, a purposive sampling technique was used to select 3 schools due to their closeness to the national library which are; St. Anthony Secondary School, Government Day Secondary School, Tanke, Ilorin and Government day secondary school, Agbabiaka, Ilorin. In all, 335 respondents were sampled among SSS 1-3 students from the three selected schools. These techniques were considered appropriate because they gave no room for bias and gave equal chances (to all respondents) to participate in the study.

Results and Discussion of Results

Response Rate

A total of 335 copies of questionnaires were administered to all the respondents sampled for this study of which 323 copies were completed and returned, which represents a 96.4% return rate.

Table3: Demographic Information of Respondents Table

		Frequency	Percentage %
Name of schools	St. Anthony secondary school	121	37.5%
	Government day secondary school, Tanke	101	31.3%
	Government day secondary school, agbabiaka	101	31.3%
Discipline	Art	122	37.8%
	Commercial	85	26.3%
	Science	116	35.9%
Class	S.S.S 1	83	25.7%
	S.S.S 2	146	45.2%
	S.S.S 3	94	29.1%
Gender	Male	146	45.2%
	Female	177	54.8%

Age range	9-11yrs	0	0.0%
	12-14yrs	178	55.1%
	15-17yrs	145	44.9%
	18-20yrs	0	0.0%
	21yrs-above	0	0.0%

Table 3 revealed that respondents of the study were from 3 secondary schools, 121 (37.5%) were from St. Anthony secondary school, 101(31.3%) were from Government Day secondary school, Tanke, and 101(31.3%) were from Government Day secondary school, Agbabiaka. Also, 122(37.8%) disciplines were Art, 85(26.3%) were Commercial and 116 (35.9%) were Science. The table further shows the Classes of the respondents 83(25.7%) are in S.S.S1, 146(45.2%) are in S.S.S2 and 94(29.1%) are in S.S.S 3. It was also revealed that 146 (45.2%) were male and 177(54.8%) were female. Of the age range of the respondents, 178 (55.1%) were in the range of 12-14 years, while 145 (44.9%) were in the age range of 15-17 years.

Table 4: Level of National Library Patronage Among Students in the Selected Secondary

Statement		Yes	No
Are you aware of the existence of a national library?		323 (100%)	0 (0.0%)
Have you been to the National Library before?		250 (77.4%)	73 (22.6%)
Are you a registered library user in the national library?		199 (61.6%)	124 (38.4%)
Have you used any library materials from the national library before?		199 (61.6%)	124 (38.4%)

		Frequency	Percentage
How frequently do you visit the national library?	Daily	0	0.0%
	Twice a week	22	6.8%
	Weekly	106	32.8%
	Monthly	71	22.0%
	Occasionally	51	15.8%
	Never	73	22.6%

Table 4 revealed that 323 (100%) of the respondents are aware of the existence of a national library. 250 (77.4%) of the respondents have been to the national library before, while 73 (22.6%) indicate “no” that they have not been to the national library before. 199 (61.6%) of the respondents indicate “yes” that they are registered users of an national library, while 124 (38.4%) indicate “no”. 199 (61.6%), of the respondent, indicated “yes” that they have used national library materials before, while 124 (38.4%), indicate “no”. 22 (6.8%) of the respondents indicated that they visited the national library twice in a week, 106 (32.8%) indicate “weekly”, 71 (22.0%) indicate “monthly”, while 51 (15.8%) indicate “occasionally” and 73 (22.6%) indicate “never”.

Table 5: Roles of National Library on Educational Rebirth among the Students of Selected Secondary School

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
The National Library promotes individual reading culture	0 (0.0%)	323 (100%)	0 (0.0%)	0 (0.0%)
They provide collaboration for the reading institution	50 (15.5%)	273 (84.5%)	0 (0.0%)	0 (0.0%)
They select resources to meet the information needs of individual	0 (0.0%)	272 (84.2%)	51 (15.8%)	0 (0.0%)
They acquire resources that support individual learning standards.	0 (0.0%)	323 (100%)	0 (0.0%)	0 (0.0%)
The National Library provides imaginative materials that promote individual learning motivation.	0 (0.0%)	301 (93.2%)	22 (6.8%)	0 (0.0%)
The national library encourages the individual to seek, access and use information independently.	0 (0.0%)	250 (77.4%)	73 (22.6%)	0 (0.0%)
The national library provides new technologies that enhance the information needs of the individual.	0 (0.0%)	272 (84.2%)	51 (15.8%)	0 (0.0%)
National library provide resources and activities that are meaningful for individuals now and in the future.	0 (0.0%)	272 (84.2%)	51 (15.8%)	0 (0.0%)

Table 5 revealed that 323 (100%) of the respondents used for the study agreed national library promotes individual reading culture. Also, 323 (100%) of the respondents agreed that national libraries provide collaborative reading institutions. 272 (84.2%) of the respondents agreed while 51 (15.8%) disagreed that national libraries select resources to meet the information needs of individuals. 323 (100.0%) of the respondents agreed that national libraries acquire resources that support individual learning standards, while none of the respondents disagree. Also, 301 (93.2%) of the respondents agreed while 22 (6.8%) disagreed that the National Library provides imagination materials that promote individual learning motivation. 250 (77.4%) agreed that the National Library encourages the individual to seek, access and use information independently, while 73 (22.6%) of the respondents disagreed. The national library provides new technologies that enhance the information needs of individuals 272 (84.2%) agreed with this statement, while 51 (15.8%) of the respondents disagreed with this statement. 272 (84.2%) agreed and 51 (15.8%) disagreed that national libraries provide resources and activities that are meaningful for individuals now and in the future.

Table 6: Types of National Library Programs and Educational Rebirth of Students of the Selected Secondary School

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
The national library organized debate and quiz competitions.	0 (0.0%)	323 (100.0%)	0 (0.0%)	0 (0.0%)
National Library organized preschool and summer reading program	0 (0.0%)	323 (100.0%)	0 (0.0%)	0 (0.0%)
Reading promotion campaign	50 (15.5%)	208 (64.4%)	65 (20.1%)	0 (0.0%)
A learning experience for students	0 (0.0%)	272 (84.2%)	51 (15.8%)	0 (0.0%)
Reference for schools and colleges	50 (15.5%)	251 (77.7%)	22 (6.8%)	0 (0.0%)
Advise on an important subject for students	0 (0.0%)	272 (84.2%)	51 (15.8%)	0 (0.0%)
Civil engagement	50 (15.5%)	200 (61.9%)	73 (22.6%)	0 (0.0%)
Counselling Education	50 (15.5%)	201 (62.2%)	72 (22.3%)	0 (0.0%)
Career Education	50 (15.5%)	273 (84.5%)	0 (0.0%)	0 (0.0%)

The results in Table 6 show that the types of national library programs for the educational rebirth of students in secondary is 323 (100.0%) who agreed that the National Library organized debate and quiz competitions, while none of the respondents disagreed. 323 (100.0%) agreed that the National Library organized preschool and summer reading programs. Also, 258 (79.9%) of the respondents agreed that the Reading promotion campaign is one of the programs the national library organized to influence educational rebirth, while 65 (20.1%) of the respondents disagreed. A learning experience for students as one of the programs organized by the national library to influence educational rebirth, 272 (84.2%) of the respondents agreed, while 51 (15.8%) disagreed. 301 (93.2%) of the respondents agreed that Reference for Schools and Colleges is part of the program organized by the national library to influence the educational rebirth of students in secondary. While 22 (6.8%) of the respondents disagreed. Also, 272 (84.2%) agreed to Advise on an important subject for students as part of the programs, while 51 (15.8%) of the respondents disagreed. 250 (77.1%) of the respondents agreed that Civil engagement is part of the programs organized by the national library for the educational rebirth of students in secondary. While 73 (22.6%) of the respondents disagreed. Counselling education as part of the programs organized by the national library for the educational rebirth of students in secondary school 251 (77.7%) of the respondents agreed. While 72 (22.3%) of the respondents disagreed with this. 323 (100%) of the respondents agreed that career education is part of the programs organized by the national library to influence the educational rebirth of students in secondary school, while none of the respondents disagreed.

Table 7: Constraint Faced by National Library on Educational Rebirth of Students in the Selected Secondary School

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
Geographical barrier	0 (0.0%)	246 (76.2%)	77 (23.8%)	0 (0.0%)
Economic barrier	0 (0.0 %)	323 (100.0%)	0 (0.0%)	0 (0.0%)
Social and cultural barriers	50 (15.5%)	251 (77.7%)	22 (6.8%)	0 (0.0%)
Historical barrier	0 (0.0%)	185 (57.3%)	138 (42.7%)	0 (0.0%)
Political barrier	50 (15.5%)	222 (68.7%)	51 (15.8)	0 (0.0%)
Language barrier	0 (0.0%)	229 (70.9%)	94 (29.1%)	0 (0.0%)
Technological barrier	0 (0.0%)	280 (86.7%)	43 (13.3%)	0 (0.0%)
Religion problem	0 (0.0%)	217 (67.2%)	106 (32.8%)	0 (0.0%)
Technical problem	0 (0.0%)	323 (100.0%)	0 (0.0%)	0 (0.0%)
Government problem	0 (0.0%)	323 (100.0%)	0 (0.0%)	0 (0.0%)
Fund allocations	0 (0.0%)	323 (100.0%)	0 (0.0%)	0 (0.0%)

Table 7, revealed that 246 (76.2%) of the respondents used in this study agreed that geographical barrier is one of the constraints facing the national library on educational rebirth. While 77 (23.8%) of the respondents disagreed. 251 (77.7%) of the respondent agreed and 22 (6.8%) disagreed that social and cultural barrier is one of the constraints faced by the national library on the educational rebirth of students in secondary school. Also, 185 (57.3%) of the respondents agreed that the Historical barrier is one of the constraints. While 138 (42.7%) of the respondents disagreed. 272 (84.2%) of the respondents agreed that the political barrier is one of the constraints faced by the national library on educational rebirth. While 51 (15.8%) disagreed with this. 229 (70.9%) of the respondents agreed that the language barrier is one of the factors faced by the national library on educational rebirth. While 94 (29.1%) of the respondents disagreed. Technological as one of the factors faced by the national library on educational rebirth 280 (86.7%) of the respondents agreed to this, while 43 (13.3%) of the respondents disagreed. 323 (100%) of the respondents used for this study agreed to the following terms as part of the constraints faced by the national library on the educational rebirth of students in secondary school these are; Economic, Technical, Government problems and Fund allocations.

Discussion of Findings

Research Objective 1: Level of national library patronage among students

To a considerable extent, the students are aware of the existence of the national library and they have been to the national library before, more so, they are registered users of a national library, and they have used national library materials before, but they visit the national library weekly. These findings contradict the study by Sulyman, Taiwo, Rasaq and Fajenyo (2015) on the availability, accessibility and utilisations of indigenous publications in the National Library of Nigeria, Kwara State branch. In the survey, it was reported that only a few portion of secondary school students are using the national library.

Research Objective 2: Roles of the National Library on educational rebirth among the students

From the findings, it was revealed that the role of the national library in educational rebirth is to promote individual reading culture, to provide collaboration for reading institutions, to meet the information needs of the individual, to support individual learning standards, to promote individual learning motivation, encourages individual to seek, access and use information independently, to provides new technologies that enhance information needs of the individual and to provide resources and activities that are meaningful for an individual now and in the future. The findings corroborate the earlier findings by Ogbebor (2011) on the basic and extensive discussion of libraries, their roles and their resources in education.

Research Objective 3: Types of national library programs and educational rebirth of Students

Concerning the types of national library programs and educational rebirth majority of the respondents agreed that national libraries organized debate and quiz competitions, pre-school and summer reading programs, reading promotion campaigns, learning experiences for students, references for schools and colleges, advice on important subject for students, Civil engagement, Counselling Education and Career education, to influence educational rebirth of students in secondary. This finding is supported by Arnn (2013), who highlighted the programs associated with the educational rebirth of students in secondary schools as it was implemented by the national library.

Research Objective 4: Constraints faced by the national library on the educational rebirth of students.

The result obtained has shown that geographical barriers, economic barriers, social and cultural barriers, historical barriers, political barriers, language barriers, technological barriers, religious problems and technical problems are the constraints faced by the national library in educational rebirth of students. This is supported by the findings of Niwezeshe (2016) who outlined factors influencing the educational rebirth of students in secondary school.

Conclusions

The study has examined the effect of the national library on education rebirth. So far, the result has indicated that students are aware of the existence of the national library and they have been to the national library before, more so, they are registered users of a national library, and they have used national library materials before, but they visit the national library weekly. Also, the role of the national library in educational rebirth is to promote individual reading culture, to provide collaboration for reading institution, meet the information needs of the individual, support individual learning standard, promote individual learning motivation, encourages individual to seek, access and use information independently among others. the types of national library programs and educational rebirth range from debate and quiz competition, pre-school and summer reading program, reading promotion campaign, Learning experience for students, Reference for schools and colleges, Advise on important subject for students, Civil engagement, Counselling Education and Career education. The result also shows that encounter Geographical

barriers, Economic barriers, Social and cultural barriers, Historical barriers, Political barriers, Language barriers and others.

Recommendations

Based on the findings of this study, it is recommended that:

1. The national library should promote reading advocacy by matching students to books in all formats, including print, audio, and e-books. This will enhance the reading culture of every individual in the community.
2. There should be a supportive and nurturing environment for students in the library and network environment to increase individual satisfaction and achievement in their education careers.
3. Efforts should be made to educate students by national library staff on the use of library materials and teach the skills individuals need to become effective users of information materials.
4. More funds should also be disbursed for the development of the national library in terms of resource growth, infrastructure, and other areas that will enrich the performance of the national libraries on the role they perform in supporting the educational rebirth of students in secondary.
5. The national library should be located where it will be easily accessible by students and there should be proper awareness of national library services on the educational rebirth of students in secondary.

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Librarians' Perception and Skills in the Use of Fourth Industrial Revolution Technologies for Service Delivery in University Libraries in Delta and Edo States, Nigeria

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ABSTRACT

This research explored librarians' attitudes and abilities in utilizing Fourth Industrial Revolution Technologies to provide university library services in Delta and Edo States, Nigeria. The study employed a descriptive survey design with a population of 127 librarians in university libraries in Delta and Edo States. A total enumeration sampling technique was used for the research. Data collection was conducted using a structured questionnaire. Of the 127 questionnaires given out, 96% (122) were returned and assessed using descriptive statistics. The study found that library professionals in Delta and Edo States, Nigeria, generally have a positive attitude towards the use of 4IR technologies like Artificial Intelligence, Virtual and Augmented Reality, and QR Codes for service delivery in university libraries. However, they are not sufficiently skilled to use these technologies. Additionally, there are several impediments to the adoption of 4IR technologies, including inadequate relevant ICT infrastructure, technical difficulties, unreliable electricity, inadequate internet access/low bandwidth, insufficient support from university management, standards and legal issues, inadequate training, and intellectual property concerns. The study recommended that librarians should be adequately trained in the use of 4IR technologies like Artificial Intelligence, Virtual and Augmented Reality, and QR Codes, as this would improve their skills in the use of these technologies, thereby enhancing their service delivery. University management should provide adequate financial and infrastructural support to the libraries for the adoption of 4IR technologies.

Keywords: Librarians'; Perception, Skills, Use; Fourth Industrial Revolution Technologies; Service Delivery; University Libraries

Introduction

University libraries are essential to universities in that they provide materials and services that help students, faculty, and staff with their educational, research, and recreational needs. They strive to furnish those inside and outside the academic realm with access to relevant information and resources that they can use with a valid form of identification. The emergence of information communication technologies has impacted virtually all fields of life and the library and information profession is not exempt (Younes & Al-Zoubi, 2015; Kyle, 2020). Eje and Dushu (2018) argued that libraries in Nigeria and across the globe are now incorporating technologies

for meeting their various service needs to ensure users access information on a round-the-clock basis and this is very prominent in this Fourth Industrial Revolution Era.

The fourth industrial revolution (4IR) has brought about a shift towards automated and data-driven industrial processes. Advanced technologies such as AI, robotics, the Internet of Things, 3D printing, and autonomous vehicles are being utilized to enhance these processes. In tandem, libraries are becoming increasingly important in 4IR, as they are providing students, academics, and researchers with access to the newest technologies and resources necessary for their research and studies. The 4IR is known for its focus on the integration of people and machines, with three main communicative pathways: human-to-machine (H2M), machine-to-machine (M2M), and machine-to-human (M2H) (Ahmat and Hanipah, 2018; Bartodziej, 2017; Schneider et al., 2020). Perception is an essential factor in the acceptance of technology in the library and information science field. Research conducted has indicated that one's perception towards technology is a major determinant in their inclination to utilize it (Kumar, Rose, & D'Silva, 2008).

Aiyebilehin and Omekwu (2019) emphasize that how individuals or groups interpret and assess a situation or object is known as perception. This can be guided by their values, opinions, and backgrounds, and is used to decide how they will react to and engage with a phenomenon. It is therefore essential to understand library staff's attitude towards the integration of 4IR technologies, as it will determine whether they will make use of them to augment their services. Davis (1993) posited that one's perception towards technology stems from how simple one finds it to operate. For librarians to effectively embrace these new advances, they must be proficient in the utilization of them. Thus, the ability to use technology can be seen as a factor in its successful adoption.

The capacity to effectively use and comprehend different types of technology, including hardware, software, the internet, and other digital media, is known as tech skills (Indeed Editorial Team, 2023). The 4IR has unveiled a new wave of tech tools that requires a unique set of skills to implement and use effectively. Although there is a lack of research on librarians' perceptions and skills in this area, this work seeks to fill the gap and provide a basis for future studies. It is essential to know how to operate computers, networks, and software, as well as other digital systems, to achieve goals. Solving problems and critical reasoning abilities are also essential for the successful utilization of 4IR technologies.

Objectives of the Study

Please, state the broad objective first, then you can say: The specific objectives of the study were to:

1. Determine library professionals' perception of the application of 4IR technologies to provide services in universities in Delta and Edo States, Nigeria.
2. Identify the skills of library professionals in utilizing 4IR technologies for service delivery in universities in Delta and Edo States, Nigeria.
3. Determine the availability of 4IR technologies in universities in Delta and Edo States, Nigeria.

4.—

4. Identify the drawbacks in embracing 4IR technologies for service delivery in the university libraries in Delta and Edo States, Nigeria.

Research Questions

The study provided answers to the following research questions:

1. How do library professionals in universities in Delta and Edo States, Nigeria, view the utilization of Fourth Industrial Revolution (4IR) technologies for service delivery?
2. What are the skills of library professionals in the use of 4IR technologies for service delivery in the university libraries in Delta and Edo States, Nigeria?
3. How available are 4IR technologies in university libraries in Delta and Edo States, Nigeria?
4. What are the drawbacks in the adoption of 4IR technologies for service delivery in the university libraries in Delta and Edo States, Nigeria?

Literature Review

The literature review was carried out in alignment with the aims of the study:

Library Professionals' Perception of Using 4IR Technologies for Delivering Services

Under this section, studies will be reviewed on library professional perception of 4IR technologies for delivering services in universities. Mohideen, Sheikh, Kaur and Sukmawatid (2022) examined librarian views on the Fourth Industrial Revolution (4IR) and its likely impact on their roles in Malaysian academic libraries. The librarians were found to have a positive outlook on how 4IR could alter their duties, implying that the technology could close the gap between the typical library function and the current technological environment. Tella, Amuda, and Ajani (2022) conducted an exploration into the feasibility of deploying blockchain technology for archives and libraries during the 4th Industrial Revolution. Data was collected from the southwest section of Nigeria, with the results indicating a positive outlook for this technology. It was found that blockchain technology is seen as being able to help archives by allowing for the storage of data in a distributed manner, aiding in the collection, maintenance, and sharing of reliable data, and creating a unique and verifiable record that is accessible to anyone. Researchers, Idhalama and Fidelis (2020) assessed information professional views and beliefs related to cloud computing in the Dar es Salaam University Library. Their results showed that the participants had a favourable outlook toward the utilization of cloud computing to enhance their services. Hussain (2019) noted that librarians feel concerned that automated technology brought on by the 4IR may lead to disengagement and an increase in unemployment, as their duties could be taken over by machines. Hervieux and Wheatley (2020) researched librarians in the United States and Canada assessing their perceptions of artificial intelligence. Their findings indicated that academic librarians had varied understandings of artificial intelligence and that additional training for librarians about the concept and its use in libraries is necessary.

Library Professionals' Skills in the Deployment of 4IR Technologies for Service Delivery

Ayinde and Kirkwood (2020) argued that though in the 4IR era, machines would be replacing humans in most jobs humans and machines would reconfigure some job routines, hence workers in this era are required to possess the right competencies to be relevant and effective. Cox and

Mazumdar (2022) explored the concept of artificial intelligence (AI) as it relates to librarianship. Their literature review revealed that librarians have limited skills in AI, hindering its implementation. The paper was intended to provide librarians with a strategic, rather than technical, perspective on AI. Tajudeen et al (2021) looked into cloud-based information resources and services utilized by librarians at selected Southwest universities and uncovered that a deficiency of skills and trained personnel are the main factors impeding the deployment of cloud-based services and resources by librarians in university libraries. Ali, Naeem, and Bhatti (2020) surveyed university librarians to evaluate their views on artificial intelligence tools and discovered that a lack of technical skills is the key obstacle to adopting AI. Bajpai and Margam (2019) examined the ICT capabilities of LIS experts in college libraries of the University of Delhi, determining that most participants had the fundamental ICT knowledge needed for service delivery, apart from certain areas such as software and operating systems. A survey conducted by Hamad, Al-Fadel, and Shehata (2023) investigated the degree of digital proficiency in Jordan academic libraries concerning 'smart' information services. Of the 340 participants who were asked to complete the survey, 72.4% responded, indicating that there is a moderate level of digital competency in the provision of these services and the requisite skill set to promote them.

The Availability of 4IR Technologies in the University Libraries

Omosekejimi, Ijiekhuamhen, and Nweke (2022) conducted a study to evaluate the ability of librarians to offer services in the 4IR. They identified printing using 3D, sorting via robots, shelf reading, shelving, cloud computing, and storage, Books-to-Desk (B2D), and mobile worklist alerts as the relevant 4IR technologies available to university libraries. Asim, Arif, and Rafiq (2022) conducted a study to explore the incorporation of Internet of Things (IoT) technology in Pakistani university libraries. They discovered that a variety of IoT-enabled devices, such as smart air conditioners, automated fire alarms, smart hand sanitiser machines, and secure automated doors, were being utilized. Ghuloum and Al-lamki (2020) researched to examine the benefits and drawbacks of interactive applications (IAs) in academic libraries. They found that features of 4IR technologies, such as Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR), are being embraced by many university libraries, which has enabled them to enhance their services. According to research by Opleidingen School for Information (2022), Augmented Reality (AR), Virtual Reality (VR), Drones, Artificial Intelligence (AI), Robotics, Internet of Things (IoT), Blockchain, and are all examples of 4IR technologies that can be used in libraries to improve services for users. Nkiko and Okuonghae (2021) sought to explore the ability of the Fourth Industrial Revolution (4IR) to change university libraries in Sub-Saharan Africa. Their research discovered that 4IR is branded by automation, utilization of new technologies and AI, Internet accessibility, access to global information networks, subscriptions to reliable online databases, a wide range of materials in different formats, an increase in the number of digital natives among patrons, the requirement for effortless access to digital resources, new library spaces (Learning Commons, Research Commons, and Makerspace), open scholarly communication, research data management, social media applications, digital curation, and preservation.

The Drawbacks in The Adoption of 4IR Technologies for Service Delivery in the University Libraries

In a study, Farag, Mahfouz, and Alhajri (2021) investigated the utilization of Artificial Intelligence (AI) within academic libraries, and the difficulties they face. Their research revealed a notable absence of sufficient technological facilities within university libraries, likely influencing the low comprehension of AI amongst library professionals, at 69%. Serholt et al. (2018) found that the unique and ever-changing nature of libraries poses numerous difficulties for the development and implementation of new technologies. Despite this, they highlighted the potential for digital services to enhance libraries' contemporary roles. Jalamneh and Khder (2021) claimed that some of the challenges to implementing cloud computing in Arab library settings are a lack of technical competence and training, and other technical issues including the absence of applications and programmes, storage space, large data amounts, privacy, and information security problems. Walsh (2009) pinpointed the challenges of using QR codes in libraries as being a deficit of understanding, inadequate hardware for encoding and decoding messages, and librarians' minor familiarity with QR codes. Hussain (2019) argued that a major hindrance to librarians and libraries taking advantage of 4IR technology is the absence of the skills to utilize these tools adequately. Nkiko and Okuonghae (2021) determined that the challenges that impede full 4IR implementation in university libraries comprise financial limitations, inadequate infrastructure, scarcity of competency/skills, security and intrusion problems, and a lack of global standard exposure.

Methodology

The study is quantitative research since it involves the collection and analysis of numerical data. This study explored librarians in Delta and Edo States universities using a descriptive survey research design. The population of the research was the 127 librarians in the university libraries in Delta and Edo States, Nigeria. The researcher used a census sampling technique due to the manageable size of the respondents. The instrument used for data collection was a questionnaire. The validity of the instrument was done by two lecturers in the mathematics and statistics department of the Federal University of Petroleum Resources, Effurun, Delta State. Their comments help in re-structuring the questionnaire items to ensure it capture the right content and measures what is appropriate for the research. A self-constructed, structured questionnaire was distributed to 127 librarians and supervised by three trained research assistants. The data elicited via the questionnaire were analysed using the descriptive statistics method. Of the questionnaires distributed, 122 were returned and analyzed, giving a response rate of 96%.

Findings

Section A: The Participant's Demographic Breakdown

The Participant Demographic Breakdown by Gender

Table 1: Participants Breakdown by Gender

Sex	Frequency	Percentage %
Male	68	56%
Female	54	44%
Total	122	100%

From the findings, the majority of the respondents (68, or 56%) are male, while the other 54 (44%) are of the female gender.

The Demographic Breakdown of the Respondents by Age

Table 2: Age Distribution of the Respondents

Age Range	Frequency	Percentage
Young (Below 30 Years)	18	15%
Middle (31-50 Years)	72	59%
Older (Above 51 Years)	32	26%
Total	122	100%

The data in Table 2 showed that most of the librarians who took part in the study were middle-aged, falling within the range of 31-50 years old (72/59%). This was followed by librarians over the age of 51 (32/26%) and those younger than 30 (18/15%).

The Participant Demographic Breakdown by Gender

Table 3: Participants Breakdown by Gender

Cadre of Librarians	Frequency	Percentage
Graduate Assistant	22	18%
Assistant Librarian	44	36%
Librarian II	32	26%
Librarian I	12	10%
Senior Librarian	8	7%
Deputy University Librarian	4	3%
University Librarian	---	---
Total	122	100%

It was found that most of the librarians who participated in the survey were in the assistant librarian cadre, accounting for 36% of the total. Following this, Librarian II represented 26%, graduate assistants 18%, Librarian I 10%, senior librarian 7%, and deputy university librarian 3%. There were no university librarians in the sample.

Section B: Main Findings of the Research

Research Question 1: How do library professionals in universities in Delta and Edo States, Nigeria, view the utilization of Fourth Industrial Revolution (4IR) technologies for service delivery?

Table 4: The perception of library professionals in deploying 4IR technologies for delivering services in university libraries

S/N	Perception of Library Professionals of 4IR Technologies	SA	A	D	SD
1.	I believe that by utilizing AI, services can be provided more efficiently.	72(59%)	12(10%)	22(18%)	16(13%)
2.	I think that Integrated Systems technologies can be incorporated into different facets of library services.	70(57%)	18(15%)	22(18%)	12(10%)
3.	It is unlikely that robots would take over the roles of librarians in university libraries.	66(54%)	18(15%)	12(10%)	26(21%)
4.	I believe that the majority of Fourth Industrial Revolution technologies are user-friendly.	18(15%)	28(23%)	48(39%)	28(23%)
5.	I believe that implementing Automated Systems would allow users to have 24/7 access to services.	84(68.8%)	22(18%)	8(6.6%)	8(6.6%)
6.	4IR technologies could increase the library's presence and access to users.	62(50%)	36(29%)	14(11%)	10(8%)
7.	It feels easy to embrace and utilize QR Codes, Augmented Reality, Mixed Reality, Virtual Reality, and in university libraries.	60(49%)	28(23%)	18(15%)	16(13%)
8.	I feel incorporating 3D printing into university libraries could have a positive impact on user experience.	68(56%)	30(24%)	12(10%)	12(10%)
9.	I feel it is feasible for university libraries to obtain 4IR technologies at a reasonable cost.	74(61%)	18(15%)	8(6%)	22(18%)

Table 4 revealed glaringly that there is a generally positive perception of library professionals towards the use of 4IR technologies for delivering services in the university libraries in Delta and Edo States, Nigeria. The respondents strongly agree/ agree that implementing automated systems would allow users to have 24/7 access to services, they feel it is feasible for university libraries to obtain 4IR technologies at a reasonable cost. The respondents believe that by utilizing AI,

services can be provided more efficiently, and integrated Systems technologies can be incorporated into different facets of library services, they feel incorporating 3D printing into university libraries could have a positive impact on user experience, and the respondents feel it is unlikely that robots would take over the roles of librarians in university libraries, they feel 4IR technologies could increase the library's presence and access to users, they feel it is easy to embrace and utilize Virtual Reality, Augmented Reality, Mixed Reality, and QR Codes in university libraries. The respondents however disagreed that the majority of Fourth Industrial Revolution technologies are user-friendly.

Research Question 2: What are the skills of library professionals in the use of 4IR technologies for service delivery in the university libraries in Delta and Edo States, Nigeria?

Table 5: The Skills of Library Professionals in the Deployment of 4IR Technologies for Delivering Services

S/N	Skills of Library Professionals	VHE	HE	LE	VLE
1.	I am proficient in using computer applications.	70 (57%)	25 (21%)	12 (10%)	15 (12%)
2.	I can generate QR codes and read them.	20 (16%)	27 (22%)	30 (25%)	45 (37%)
3.	I can use 3D scanning technology to improve the user experience.	14 (12%)	32 (26%)	20 (16%)	56 (46%)
4.	I am capable of utilizing integrated library systems to provide services.	30(24%)	30(24%)	11(10%)	51(42%)
5.	I can use AI for rendering library services to users	20(16%)	40(33%)	20(16%)	42(34%)
6.	I have fundamental robotics skills	10(8%)	10(8%)	41(34%)	61(50%)
7.	I possess the capabilities to utilize Virtual Reality, Augmented Reality, and Mixed Reality to increase user satisfaction	20(16%)	30(24%)	25(21%)	47(39%)
8.	I can access and view digital content using the web.	20 (16%)	10 (8%)	32 (26%)	60 (49%)
9.	I can use the internet to navigate and render services.	70 (57%)	30 (24%)	10 (8%)	12 (10%)
10.	I possess the ability to manage and search databases.	50 (41%)	35 (29%)	10 (8%)	27 (22%)

Note: VHE: Very High Extent; HE: High Extent; LE: Low Extent; VLE: Very Low Extent

From Table 5, the library professionals in Delta and Edo States, Nigeria are only proficient in using computer applications and navigating the internet for service delivery. However, they had a very low extent of abilities in generating/ reading QR codes, using 3D scanning technology, using AI for rendering library services, poor robotics, virtual reality, augmented reality, and mixed reality skills, and low skills in accessing and viewing digital content using the web, as

well as poorly skilled in managing and searching databases. Conclusively, it is glaring that library professionals are poorly skilled in the deployment of 4IR tools for delivering services in the universities in Delta and Edo States, Nigeria.

Research Question 3: What is the availability of 4IR technologies in the university libraries in Delta and Edo States, Nigeria?

Table 6: The availability of 4IR technologies in the university libraries

Availability of 4IR Technologies	Frequency	Percentage
Computer Facilities is available in my university library	122	100%
Artificial Intelligence is available in my university library	46	38%
3D Printers are available in my university library	32	26%
Integrated Library System is available in my university library	78	64%
Institutional Repository is available in my university library	28	23%
Virtual Reality, Mixed and Augmented Reality are available in my university library	22	18%
Robot Assistant is available in my library	-	-
There is Internet available in my library	98	80%
QR Code Technology is available in my university library	12	10%
Cloud Computing Technologies is available in my university library	28	23%
Smart Devices are available in my university library	102	84%

From Table 6, it is glaring that the highest available 4IR technology in the universities in Delta and Edo States, Nigeria is computer facilities (100%). The second highest is smart devices (84%), followed by the internet (80%), integrated library systems (64%), artificial intelligence (38%), 3D printers (26%), cloud computing technologies (23%), virtual reality, augmented reality, mixed reality (18%), and QR code technology (10%). There is no availability of robot assistants in the universities. From this finding, it is clear that there is poor availability of 4IR technologies in the universities in Delta and Edo States, Nigeria.

Research Question 4: What are the drawbacks in the adoption of 4IR technologies for service delivery in the university libraries in Delta and Edo States, Nigeria?

Table 7: The drawbacks in the adoption of 4IR technologies for service delivery in university libraries

Drawbacks in the Adoption of 4IR Technologies	Frequency	Percentage
Poor ability to employ 4IR technologies	116	95%
Intellectual Property Challenges	24	20
The cost of acquiring certain 4IR technologies can be quite high.	74	61%
Standard and Legal Challenges	42	34%
Inadequate Training	36	30%
The lack of adequate ICT infrastructure to facilitate the adoption of 4IR technologies	108	89%

Technical challenges	102	84%
Epileptic power supply	96	79%
Poor internet access/ Low Bandwidth	92	75%
Poor support from University Management	72	59%
Absence of Policy Framework	12	10%

From Table 7, the drawbacks in the implementation of 4IR tools for service delivery in the university libraries include poor ability to employ 4IR technologies, the lack of adequate ICT infrastructure to facilitate the adoption of 4IR technologies, technical challenges, epileptic power supply, poor internet access/ low bandwidth, poor support from university management, standard and legal challenges, inadequate training, intellectual property challenges, the cost for acquiring certain 4IR technologies can be quite high, and the absence of a policy framework.

Discussion of Findings

The survey results demonstrated that the majority of information professionals working in universities in Delta and Edo States, Nigeria, were male and predominantly in the middle age bracket. Furthermore, the majority of those surveyed were assistant librarians. The findings were discussed in line with the research objectives of the study.

Library professionals' perception of the utilisation of 4IR technologies for service delivery in the universities

The findings revealed that there is a generally positive perception of library professionals towards the deployment of 4IR technologies for delivering services in the universities in Delta and Edo States, Nigeria. This agreed with the study of Mohideen, et al (2022) which showed that the information professionals in Malaysian academic libraries had a positive view of the effects 4IR would have on their work, suggesting that the technology would bridge the divide between the traditional library role and the changing technological landscape. The study also agreed with the findings of Tella, Amuda, and Ajani (2022) which showed glaringly that the librarians from the Southwest Geopolitical area had a positive perspective of blockchain technologies. It was found that blockchain technology is seen as being able to help archives by allowing for the storage of data in a distributed manner. However, the findings of Hussain (2019) disagreed with the study outcome, stating that librarians around the world are apprehensive that the 4IR could have a detrimental impact on their job responsibilities, as automated tools could substitute their roles and lead to a heightened rate of unemployment.

Library professionals' skills in the use of 4IR technologies for service delivery in the universities

The findings show that the library professionals are poorly skilled in the deployment of 4IR technologies for delivering services in the universities in Delta and Edo States, Nigeria. The study outcome agrees with the research of Cox and Mazumdar (2022) their findings show that librarians have limited skills in AI, hindering its implementation. The findings disagreed with the study of Hamad, Al-Fadel, and Shehata (2023) which showed that most librarians in Jordan academic libraries had a moderate level of digital skills necessary to utilize 4IR technologies.

The Availability of 4IR technologies in the University Libraries

From this finding, it is glaring that there is poor availability of 4IR technologies in the universities in Delta and Edo States, Nigeria. This finding disagreed with the study of Omosekejimi, Ijiekhuamhen, and Nweke (2022); Asim, Arif, and Rafiq (2022); Nkiko and Okuonghae (2021) which revealed that there is the availability of 4IR technologies in university libraries.

The Drawbacks in the Adoption of 4IR Technologies for Service Delivery in the University Libraries

The findings indicate that the drawbacks in the adoption of 4IR tools for delivering in universities include poor ability to utilize 4IR technologies, the lack of adequate ICT infrastructure to facilitate the adoption of 4IR technologies, technical challenges, epileptic power supply, poor internet access/ low bandwidth, poor support from university management, standard and legal challenges, inadequate training, intellectual property challenges, among others. This finding agreed with the findings of Jalamneh and Khder (2021) which showed poor technological competence and training is considered the major factor negatively affecting the implementation and usage of cloud computing in universities. This finding disagrees with the study of Serholt et al. (2018) which revealed unique and ever-changing nature of libraries is the major factor affecting the use and adoption of new technologies. Similarly, the findings also disagreed with the study of Nkiko and Okuonghae (2021) showed that monetary limitations and inadequate facilities are the cause of the drawback and use of 4IR tools by librarians in universities.

Conclusion

The study concluded that there is a generally positive perception of library professionals towards the deployment of 4IR tools for delivering services in the universities in Delta and Edo States, Nigeria; however, the library professionals are poorly skilled in the deployment of 4IR tools for delivering services in the universities in Delta and Edo States, Nigeria. The availability of 4IR technologies in the university libraries in Delta and Edo States, Nigeria is poor while the drawbacks in the adoption of 4IR technologies for service delivery include poor ability to utilize 4IR technologies, the lack of adequate ICT infrastructure, technical challenges, epileptic power supply, poor internet access/ low bandwidth, poor support from university management, standard and legal challenges, inadequate training, and intellectual property challenges. All stakeholders should ensure efforts are put in place to improve the deployment of 4IR technologies in the university libraries.

Recommendations

Based on the findings, the following recommendations were made;

1. There is a need for adequate training in the use of 4IR tools by librarians, as this would improve their skills in the use of these technologies, thereby enhancing their service delivery.

2. University management should provide adequate financial and infrastructural support to the libraries for the adoption of 4IR technologies.
3. The government should provide a more reliable power supply and improved internet access to the university libraries to facilitate the implementation and use of 4IR tools.
4. There should be a comprehensive policy framework in place to guide the adoption and use of 4IR technologies in university libraries.
5. Library professionals should be made aware of the potential benefits of 4IR technologies to service delivery and should be motivated to embrace the technology.

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A Survey of Disaster Management Practices in Selected Public University Libraries in Nigeria

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Abstract

The paper investigated disaster management practices in selected University libraries in Nigeria. The descriptive design survey was adopted for the study. The study covered federal and state university libraries in South-West, Nigeria. The population of the study consists of all librarians from the federal and state university libraries of the studied area. The exact population of the study was two hundred and thirty-seven librarians. The researcher employed the total enumeration sampling technique, which involves studying the entire population. Five research questions were used to guide the study. Questionnaires were raised to elicit data from the respondents, which were validated through expert's opinion. Data generated for the study were analyzed using some descriptive statistics of percentages, mean and frequency counts. It was discovered that the perceptions of librarians vary in disaster management practices. Some of the problems encountered in disaster management include a lack of disaster preparedness plans, inadequate fund allocation to libraries and inadequate disaster facilities and modern Technological equipment. The paper identified strategies for effective disaster management in university libraries in Nigeria. These strategies include the development of a disaster preparedness plan, regular surveillance to prevent theft and mutilation of library books, vulnerability analysis and risk assessment to evaluate the types of emergencies that might affect library collection, staff training and raising awareness of the need to protect documents from disaster. Based on the findings above, the study recommends that there should be adequate disaster preparedness plans to guide librarians and users on the management of disaster in our libraries. Training of librarians and other staff on disaster control and prevention should be carried out as well as adequate funding of the libraries by the government.

Keywords: Disaster, disaster management, libraries, public universities

Introduction

From the time immeorial, library have been indispensable agents of information gathering, organizing, storing, retrieval and dissemination. According to Aina, (2004) university library is the most important retrieval institution. The academic health, intellectual vitality and effectiveness of any university depend largely upon the state of the health and excellence of its library, thus making it the heart of an academic institution. A well-equipped library is therefore very vital to the education and general information of the masses. With the colossal amount of money spent on the development of a library, one expects that adequate arrangements be made to protect the materials against disaster. While the economic situation in the country bites harder, librarians should make changes in the various aspects of their professional practice to guard

against disaster in any form. Libraries, right from earliest times to the present have been suffering a lot of threats from disasters such as flood, fire, harmattan, leaking roofs, mutilation, insects, fungi and theft. All these have caused great ravages to the library resources as a result of poor disaster management practices.

Therein, the unprecedented increase in damages caused by disasters in the recent past has become a cause for national and international concern. Over the past decade, the number of natural and human-induced disasters has relentlessly risen and has considerably inflicted unquantifiable strife and injury on their impeccable victims. The unpredictability of their occurrences, how they occur and which one occurs, first has been a great concern to individuals and organizations worldwide. For instance, the Center for Research on the Epidemiology of Disasters (CRED, 1984) described the disaster as the tragedy of a natural or human-made hazard that negatively affects society or the environment. In a similar vein, the World Health Organization (WHO) defines disaster as “a sudden ecological phenomenon of sufficient magnitude to require external assistance”. It is also defined as any event, typically occurring suddenly, that causes damage, ecological disruption, loss of human life, deterioration of health and health services, and which exceeds the capacity of the affected community on a scale sufficient to require outside assistance (Landsman, 2001). Similarly, in a world of copious digital technologies, university libraries have enough shares of disasters. Unfortunately, a library disaster has to do with any event that directly or indirectly affects the smooth administration of a university library by disrupting its normal services to its users. It is an unexpected event, which puts library resources or collections at risk. According to Alegbeleye (1993), disaster occurs in a library when any event causes a sudden removal of records and documents from accessibility and use. He further argues that libraries are very prone to disasters. The endemic damages by disasters in libraries, whenever any of them strikes, leave the affected library in a deplorable condition. No matter how the threats appear, or how they influence university libraries, the ability to safeguard and preserve their collections should be uppermost in their policies.

Consequently, with the colossal amount of money spent on the development of a library, one expects that adequate arrangements be made to protect the materials against disaster as the economic situation in the country bites harder, librarians should make changes in the various aspects of their professional practice to guard against disaster in any form. The preoccupation of the librarians at this period should be how to ensure the survival of the existing collection. However, it seems unfortunate that library materials, library buildings and other facilities are not properly planned and managed against disaster occurrence by the parent institution, the librarians themselves or the government. It is therefore viewed, that this inadequate protection against disaster is jeopardizing the culture of the society and the future generation. Given the foregoing, the researcher intends to investigate disaster management practices (preparedness and mitigation) in selected university libraries in Nigeria.

Objectives of the study

The main objective of the study is to investigate the disaster management practices in selected public university libraries in Nigeria. The specific objectives are to:

- i. Identify the types of disasters that are ravaging library resources in public university libraries in Nigeria;

- ii. Identify the disaster preparedness facilities and equipment available for the mitigation of disaster in the university libraries;
- iii. Ascertain the level of awareness of librarians to the disaster preparedness plans in the university libraries;
- iv. Identify the strategic plans put in place to curb the likelihood of disaster in the university libraries;
- v. Identify the challenges associated with disaster management practice in the university libraries;

Research Questions

- i. What are the kinds of disasters ravaging library resources in public university libraries in Nigeria?
- ii. What are the types of disaster facilities and equipment available for the mitigation of disaster in the university libraries?
- iii. What is the level of awareness of disaster preparedness plans that mitigate disaster in the university libraries?
- iv. What are the strategic plans put in place to safely guide the library resources against the likelihood of disaster?
- v. What are the challenges associated with disaster management practices in university libraries?

Related Literature

Disasters in libraries are as old as the word library. The Great Alexandria Library of Ancient Egypt was believed to be the largest library in the ancient world. Estimated to hold a collection strength of more than 500 volumes of Egypt, Assyria, Persia, Greece, India and other nations of the world (Chesser, n.d). It was home to the legendary scrolls of the works of great thinkers like Socrates, Plato, Homer etc. The way ‘what’, ‘how’ and ‘by whom’ this gargantuan collection of human knowledge went into extinction has remained a subject of debate. However, the focus is not to do a root-cause analysis of the events that triggered the demise of the great library, but to gain insight into the disappearance of one of the Seven Wonders of the World in the ancient world called Books (Rollin, 1851). The dramatic increase and the unprecedented damages caused by disasters in the recent past have become a cause for national and international concern. Over the past decade, the number of natural and human-induced disasters has relentlessly risen and has considerably inflicted unquantifiable strife and injury on their impeccable victims. The unpredictability of their occurrences, how they occur and which one occurs, first has been a great concern to individuals and organizations worldwide. In a study carried out by Teferra (1996) on Ethiopian libraries, mutilation constitute a serious threat in the libraries studied as indicated by 93% of the respondents and the materials frequently mutilated were mainly books and periodicals. IFLA (2006) International Federation of Library Association defines a disaster, whether natural or man-made as “an event whose timing is unexpected and whose consequences are seriously destructive.

Types of Disaster in University Libraries

The most common examples of disasters in the library and information services context are floods and fires, but the term covers a range of natural and human-made phenomena, including storms, earthquakes, pests, explosions, asbestos, bombs, thefts, and civil disorder (Corrall & Brewerton, 1999). There are various types of disasters affecting university libraries across the globe.

Specifically, Charlotte and Clay (2001) classified disasters into four broad categories namely;

- i. Accidental Disasters: This type of disaster is caused by loss of power, fire outbreak due to electrical issues, exposed wire and voltage overload etc.
- ii. Natural Disasters: This type of disaster is mainly composed of earthquakes, flooding, thunderstorms lighting etc.
- iii. Internal Disasters: Some examples of internal disasters include sabotage by library and university management, theft, mutilation and violence.
- iv. Technological Disasters: This type of disaster is prominent due to advances in information communication technologies. Some examples are computer vandalism, hacking and computer viruses

Alegbeleye (1993) in his study listed several disasters that have struck information centers in Africa. According to him, in 1988, records were destroyed when a record centre was burnt down by students in Sierra Leone. In another incident, the Nigerian Institute of Policy and Strategic Studies Library in Jos experienced an electrical failure resulting in a fire that destroyed many books, artefacts, and other monuments in 1987. In Kenya, the then Colonial Secretary's office containing early colonial records was gutted by fire in 1939, resulting in considerable loss of valuable records. In Botswana, the old Immigration Department building near the railway line in Gaborone was gutted by fire in the 1990s, resulting in many records being burnt (Hlabaangani & Mnjama, 2008). Jimoh (2004) reported a fire incident that consumed the library of Federal Polytechnic, Idah, North Central Nigeria which burnt down the institution's library perpetrated by protesting students. Unfortunately, the very recent earthquake and the tsunami tragic disaster in Japan will further extend the long list of library disasters.

Disaster facilities and equipment

Various factors trigger the occurrence of a disaster on the surface of the earth. Some of these include sudden earth movement, climate change, volcanic eruption, human and animal activities which include inadequate facilities and equipment and many more. Disasters in libraries usually occur suddenly without any warning signs. Therefore, there is a need to prepare ahead of time. Disaster preparedness entails careful planning; it involves getting ready by putting the necessary measures in place so that in the event of a sudden occurrence of disaster the library would know what to do. Part of the measures that need to be put in place in preparing for disaster are facilities and equipment. In the finding of research conducted by Sawant (2014) on preservation and conservation practices in academic libraries in the Mumbai district of India using 41 respondents, most of the Libraries indicated that they have fire extinguishers 30 (85.7%). Commenting more on the availability of facilities and equipment to mitigate disasters in university libraries, Promise, Mole, Izuagbe and Ekwueme (2018) in their study of disaster preparedness and

response in university libraries in Nigeria found that there is an adequate availability rate of fire extinguishers, sand buckets, emergency exit doors, anti-virus software and thunder arrestors. Other core disaster equipment like dehumidifiers, dryers, dust extractors, plastic sheet covers, warning alarms etc. are lacking in the libraries. Echezona, Ugwu and Ozioko (2010) studied disaster management in university libraries: perception, problems and strategies. The study revealed that the lack of adequate facilities to fight disasters was identified as the major challenge in disaster management.

Disaster Preparedness plans and level of awareness in university libraries

Disaster preparedness is a dynamic process that requires good cooperation and coordination among different types of professionals. Disasters are usually unforeseen events with unpredictable catastrophic effects, most often, resulting in irredeemable loss. Disasters are occurrences that disrupt the normal environmental conditions of the community, imposing a significant level of hardship that exceeds the capacity of the affected community to recover completely [WHO/ Emergency Humanitarian Action EHA, 2002). Libraries and other relevant institutions need to take proactive steps towards preparing for disasters through the analysis of the peculiarity of their environment and resources to formulate a disaster preparedness plan (McIlwaine, 2006).

Promise, Mole, Izuagbe and Ekwueme (2018) measured disaster preparedness and response in university libraries in Nigeria, evaluating the role of disaster equipment. The study revealed that the disaster preparedness and response practices primarily carried out in the studied libraries include regular inspection and maintenance of electrical equipment, ensuring disaster equipment is in its rightful positions and timely replacement of fire extinguishers on expiration. In the same vein, Marfor and Borteye (2016) also did a study on disaster preparedness at Kwame Nkrumah University of Technology Ghana and the majority of the staff indicated that they are aware of the location of emergency exits and the location of fire extinguishers. As Finley (2001) claims “Every library needs a disaster preparedness plan and that planner needs to plan for the worst. It’s right to hope for the best, but you should plan for the worst”. In the same vein, Nwokedi, Panle and Samuel (2017) investigated the extent of staff disaster preparedness to ascertain readiness/competence to prevent, mitigate, respond or recover adequately in the event of future occurrence. The study revealed that staff are aware of the fire safety instructions and safety measures in the library. But sadly, the study found that staff are unaware of what to do to salvage partly damaged resources in the case of a fire disaster, and such, they were not prepared. If after two fire disasters, the library and its staff are still not prepared for the same catastrophe, the outcome will be better imagined than experienced in the case of other disasters never experienced or prepared for.

Strategic plans put in place to safely guide disaster in university libraries

Disaster prevention is a key area in disaster management practices and the ultimate goal is to slow down the wear and tear of library information stock thereby prolonging the lifespan and ensuring long-term access to the resources. Whereas achieving this goal dependent on factors such as adequate funding, the availability of relevant technology infrastructure and technical

expertise are also essential to the success of the entire process. A revelation from the study of World Health Organization/Emergency Humanitarian Action (1998) noted that the basic objective of mitigation is to reduce the intensity of risks and hazards from becoming a disaster. The researchers observed further that even if it is impossible to eliminate hazards, vulnerability can be minimized, laying a stronger foundation for the response and recovery process. In other words, when disaster prevention fails, control measures should be adopted. Disasters cannot be adequately and efficiently prevented or mitigated without training and re-training of personnel who could respond to recover using available facilities and know-how. The role of training towards disaster preparedness has been acknowledged in literature (Issa, Aliyu, & Abareh, 2014) to impact mitigation, response and recovery. Thus, how well the mitigation process is harnessed and coordinated, is a measure of disaster preparedness. The studies of Echezona, Ugwu and Ozioko (2010) for instance affirmed the development of a disaster preparedness plan, vulnerability analysis and risk assessment, backing up library websites regularly, staff training and raising awareness of the need to protect documents from disaster are the disaster prevention strategies employed in the university libraries in Southern Nigeria. Abareh (2014) examined this phenomenon in North-Eastern Nigeria focusing on academic library Heads in the twenty-one academic institutions located in the region. Sadly, the study showed that none of the libraries had insurance policies. This implies that a vital part of the recovery procedure was left out in the disaster recovery plans of the studied libraries if at all a plan exists. Adequate disaster preparation and control of hazards are relatively cheaper than the recovery process. Thus, it is a justifiable supposition that disaster prevention and control is preferable in many instances compared to the costly and endless process of post-disaster recovery.

Challenges faced by Librarians in mitigating Disaster in University Libraries

Disasters have happened throughout the history of libraries and information services and some of them have even eliminated entire organizations; in other words, most concerned librarians and archivists in the world look more closely at the collection. This is because the magnitude of the disaster management problem becomes increasingly threatening and the situation has been partly caused by many years of neglect and partly by the environmental conditions most often beyond the control of the librarians and other information managers. Eden and Mathews (1997) identified some of the following as problems of disaster management: insufficient exit in the library, firefighting equipment not in working order and order of advice to users and defective lifts. Research has shown that many institutions with disaster plans rarely review, update or test them. More importantly, staff are not adequately trained in emergency procedures. In the same vein, Ilo, Ngwuchukwu, Michael-Onuoha and Segun-Adeniran (2019) found that inadequate disaster facilities and equipment as well as poor funding were the greatest challenges confronting disaster mitigation in federal and state universities in Nigeria. Echezona and Ugwu (2010) stated that inadequate facilities and fund allocation to libraries are some of the major problems that militate against disaster management. The government pays little or no attention to disaster management finance to the public libraries as a whole. Similarly, Echezona, Ugwu and Ozioko (2015) in their study of disaster management in university libraries: perception, problems and strategies. The researchers found that some of the problems encountered in disaster management include lack of adequate facilities, inadequate fund allocation to libraries and lack of interest on the part of some librarians on disaster management issues. The results were alarming. Again, out

of 177 libraries, only 39 (22%) had a disaster plan (IFLA-PAC, 2006). These findings probably may be a general reflection of what is obtainable in most academic libraries in Nigeria today.

Methodology

The study investigated the disaster management practice in selected public university libraries in Nigeria. The study covered all the federal and state university libraries in Southwest, Nigeria. The descriptive survey research design was adopted for the study. Thereafter total enumeration sampling technique was used for the study. The total enumeration has to be used when the population is not large enough to achieve a desirable level of precision. five research questions were answered in the study and a questionnaire titled Disaster Management Practice Questionnaire (DMPQ) containing 50 items was designed and administered to all professional librarians of selected university libraries across the Southwest geopolitical zone of Nigeria. Before the instrument was used, it was submitted to experts in the Department of Library and Information Science of Delta State University, Abraka for scrutiny and content and face validity. The simple percentage and frequency counts were used to analyze the data. In all a total of 332 copies of the questionnaire were distributed and 237 copies were returned and found usable which made up of (71.4%) response rate and is considered adequate for the study.

Table 1: Questionnaire Response Rate

No of Questionnaire distributed	No of Questionnaire retrieved	Percentage
332	237	71.4

Table I shows the questionnaire response rate, out of the 332 copies of the questionnaires distributed to the respondents, the researchers were able to retrieve 237 copies. Hence, there was a 71.4 % response rate.

Table II: Gender

Gender	Frequency	Percentage
Male	135	56.9%
Female	102	43.1%
Total	237	100

Table: II above shows that 135(56.9%) of the respondents were male, while 102(43.1%) of the respondents were female. This implies that there were more male librarians than females in Southwest, Nigeria at the time of this study.

Findings

Does your university library have disaster preparedness plans?

Table: III.Availability of Disaster Preparedness Plans

Availability of Disaster Preparedness Plans	Frequency	Percentage
There is a disaster preparedness plan in my university library	45	18.9 %
There is no disaster preparedness plans in my university library	192	81.1%
Total	237	100

Table iii

The table shows the availability of disaster preparedness plans in university libraries, 45(18.9%) indicated there is a disaster preparedness plan available in their libraries, while 192(81.1%) of the respondents indicated that there was no disaster preparedness plan available in their libraries.

Table: iv. Types of disaster ravaging university libraries in Nigeria

S/N	Kinds of Disaster	Frequency	Percentage
1	Leaking roof & substandard library materials	210	88.6%
2	Earthquake	---	---
3	Hacking	30	12.6%
4	Flood	24	10.1%
5	Mutilation of Library materials	235	99.2%
6	Theft of Library materials	230	97.0%
7	Thunderstorm/ Lightening	200	84.4%
9	Computer vandalism	101	42.6%
11	Fire outbreak	207	87.3%
12	Biological agents (rodents, insects, termites)	220	92.8%
13	Environmental pollution	87	36.7%
14	Landslide erosion	----	-----
15	Computer virus	130	54.9%
16	Typhoon	----	-----

The results in the table revealed the types of disasters that occur in university libraries in Nigeria. It is showed that the majority 235 (99.2%) indicated mutilation of library materials and closely followed by theft of library materials with 230 (97.0%), 220(92.8%) indicated biological agents such as rodents and other insects while 210 (88.6%) indicated leaking roof and substandard library materials, 207 (87.3%) indicated fire outbreak, 200 (84.4) indicated Thunderstorm/ lightening and other inadequate building protection, 130 (54.9%) indicated

computer virus 101(42.6%) indicated computer vandalism, 87 (36.7%) indicated environmental pollution, 30 (12.6%) indicated hacking of system and 24 (10.1%) indicated flooding.

Table: v. Disaster Management Practices Facilities and Equipment

S/N	Facility	Readily Available (RA)	Available (A)	Rarely Available (RA)	Not Available (NA)
1	Warning Alarm	37 (15.6%)	53 (22.3%)	67 (28.2%)	80 (33.7%)
2	Insecticides	86 (36.2%)	61 (25.7%)	47 (19.8%)	43 (18.1%)
3	Anti-virus software	90 (37.9%)	70 (29.5%)	46 (19.4%)	31 (13.0%)
4	Fire extinguishers	97 (40.9%)	78 (32.9%)	32 (13.5%)	30 (12.6%)
5	Sound bucket	89 (37.5%)	67 (28.2%)	47 (19.8%)	34 (14.3%)
6	Fumigation chemical and equipment	88 (37.1%)	69 (29.1%)	37 (15.6%)	43 (18.1%)
7	Security camera (CCTV)	42 (17.7%)	35 (14.7%)	67 (28.2%)	93 (39.2%)
8	Air purifier	48 (20.2%)	42 (17.7%)	70 (29.5%)	77 (32.4%)
9	Anti –Hacking/spyware software	43 (18.1%)	37 (13.6%)	70 (29.5%)	87 (36.7%)
10	Dust extractors	78 (32.9%)	76 (32.0%)	46 (19.4%)	37 (15.6%)
11	Air fresheners	80 (33.7%)	73 (30.8%)	47 (19.8%)	37 (15.6%)
12	Thunder arrestors	85 (35.8%)	70 (29.5%)	45 (18.9%)	37 (15.6%)

The respondents were asked to indicate the extent of the availability of facilities and equipment for mitigating disaster in their university libraries. These results show that the majority of the respondents 175 (73.8%) indicated fire extinguishers were readily available in their libraries, closely followed were about 160 (67.4%) respondents indicated anti-virus readily available in their libraries, 157(66.2%) indicated fumigation was chemical and equipment availability, 156(65.8%) indicated sand bucket, closely followed is thunder arrestors with 155 (65.4%), 154(64.9%) indicated dust extractors, 80(33.7%) indicated anti-hacking/spyware software, 90(37.9%) indicated warning alarm, 77(32.4%) indicated security camera presence.

Table: vi. Disaster Preparedness Plans and level of Awareness

S/N	Disaster Preparedness Plans Awareness	Very Highly Aware	Highly Aware	Less Aware	Not Aware
1	Are you aware of the availability of fire extinguisher locations and how to use them	92 (38.8%)	90 (37.9%)	35 (14.7%)	20 (8.4%)
2	Are you aware of what to do to salvage slightly damage resources e.g books	30 (12.6%)	34 (14.3%)	83 (35.0%)	90 (37.9%)
3	Are you aware of the emergency exit doors and phone No of the person in charge	92 (38.8%)	88 (37.1%)	37 (15.6%)	20 (8.4%)
4	Do you know multiple well-stocked emergency kits location in the building	85 (35.85%)	80 (33.8%)	40 (16.9%)	32 (13.5%)
5	Do you know of library building floor plans and key areas of the building	52 (21.9%)	20 (8.4%)	77 (32.55%)	88 (37.1%)
6	Are you aware of the most precious collections to be evacuated in case of a fire outbreak	40 (16.6%)	22 (9.2%)	81 (34.1%)	94 (39.6%)
7	Are you aware of any staff training in disaster emergency recovery planning & risk assessment	30 (12.6%)	40 (16.8%)	84 (35.8%)	90 (37.9%)
8	Are you aware of the list of staff to be called and their phone number in case of an emergency	87 (36.7%)	86 (36.2%)	40 (16.6%)	24 (10.1%)
9	Are you aware of the available list of services needed in an emergency exit unit	80 (33.7%)	72 (30.3%)	55 (23.2%)	30 (12.6%)
10	Are you aware of the functionality of the fire extinguisher, fire alarm and water system	78 (32.9%)	89 (37.5%)	39 (16.5%)	31 (13.1%)
11	Are you aware if the call-out list and the entire preparedness plans are regularly updated	30 (12.6%)	30 (12.6%)	79 (33.3%)	98 (41.3%)
13	Are you aware of the location of the electrical control switch?	45 (18.9%)	20 (8.4%)	81 (34.1%)	91 (38.3%)

Disaster Preparedness Plans and level of Awareness

The results revealed that the majority of the respondents 182 (76.7%) indicated they were highly aware of the availability of fire extinguishers locations and how to use them closely followed by 180 (75.9%) respondents indicated they were highly aware of emergency exit doors and phone numbers of the person in charge, 173(72.9%) aware of the list of staff to be called and their number in case of emergency. However, very few librarians 60 (25.2%) indicated they are aware

if the call-out list and the entire preparedness plans are regularly updated while a large percentage of about 173 (72.9%) indicated they are not aware, 175 (73.8%) indicated that they do not aware of most precious collection to be evacuated in case of fire outbreak and very handful percentage of just 62 (25.8%) indicated they are aware, 174 (73.4%) indicated that they are not aware of any staff training in disaster emergency recovery planning & risk assessment while only a very few respondents with 70 (29.4%) indicated they are aware, 172 (72.5%) indicated that they are not aware of the location of the electrical control switch and few respondents of just 65 (27.4%) indicated they are aware 165 (69.6%) indicated that they are not aware library building floor plans and keys areas of the building while also very few respondents with just 72 (30.3%) indicated they are aware.

Table: vi. Disaster strategic plans towards safe guiding the library resources in the university libraries

S/N	Disaster strategic plans to safely guide Library resources	SA	A	D	SD
1	Regular check of the library building regarding roof leakages	84 (35.4%)	78 (32.9%)	39 (16.4%)	36 (15.1%)
2	Staff training on disaster and mitigation plans	89 (37.5%)	75 (31.6%)	34 (14.3%)	39 (16.4%)
3	Development of disaster preparedness plans	90 (37.9%)	80 (33.7%)	47 (19.8%)	20 (8.4%)
4	Backing up library electronic resources in the cloud	90 (37.9%)	77 (32.4%)	30 (12.6%)	40 (16.8%)
5	Installation of CCTV, and other electronic gadgets to monitor library resources in the library	81 (34.1%)	90 (37.9%)	36 (15.1%)	30 (12.6%)
6	Regular fumigation of the library and its environment against insects and other biological agents	90 (37.9%)	79 (33.3%)	30 (12.6%)	38 (16.0%)
7	Installation of anti-virus, anti-hacking /spyware software on all university library system	85 (35.8%)	73 (30.8%)	43 (18.1%)	36 (15.1%)
8	General vulnerability analysis and risk assessment of the library	52 (21.9%)	40 (18.8%)	70 (29.5%)	75 (31.6%)
10	Regular inspection of the library building regarding electrical installation & wiring	78 (32.9%)	73 (30.8%)	46 (19.4%)	40 (16.8%)
11	Regular surveillance to prevent theft and mutilation of library books	89 (37.5%)	87 (36.7%)	31 (13.0%)	30 (12.6%)

Note: A- Agree; SA – strongly Agree; D- Disagree, SD- strongly Disagree

The respondents were asked to state the strategic plans towards safely guiding library resources in their libraries. The results in the table show that the majority of the respondents 176 (74.2%) agreed and strongly indicated regular surveillance to prevent theft and mutilation of library books, closely followed by 171 (72.1%) respondents agreed and strongly indicated that the Installation of CCTV, and other electronic gadgets to monitor library resources in the library, 170 (71.7%) strongly agreed or indicated the development and availability of disaster preparedness plans, 169 (71.3%) agreed and strongly indicated regular fumigation of library and its environment against insects and other biological agents, 167 (70.4%) agreed and strongly indicated backing up library electronic resources in the cloud, 164 (69.1%) indicated Staff training on disaster and mitigation plans, 162 (68.3%) indicated regular check of library building regarding roof leakages, 158 (66.6%) indicated Installation of anti-virus, anti-hacking /spyware software on all university libraries system. However very low number of respondents about 92 (38.8%) agreed and strongly indicated general vulnerability analysis and risk assessment of the library.

Table: vii. Challenges associated with disaster management practices

S/N	Challenges	SA	A	D	SD
1	Insufficient funding for disaster management plans	95 (40.0%)	82 (34.5%)	30 (12.6%)	30 (12.6%)
2	Lack of awareness campaign on disaster mitigation	89 (37.5%)	78 (32.9%)	40 (21.5%)	30 (16.4%)
3	Lack of disaster preparedness plans	98 (41.3%)	94 (39.6%)	30 (12.6%)	15 (6.3%)
4	Lack of skilled personnel in disaster mitigation and response	79 (33.3%)	76 (32.1%)	42 (17.7%)	40 (16.8%)
5	Absence of insurance policy	82 (34.5%)	79 (33.3%)	36 (19.4%)	30 (12.6%)
6	Irregular assessment of Hazard and vulnerability	30 (12.6%)	50 (21.0%)	70 (29.5%)	87 (36.7%)
7	Poor citing and planning of the library building	75 (31.9%)	80 (33.7%)	32 (13.5%)	50 (21.1%)
8	Inadequate disaster facilities and modern Technological equipment	80 (33.7%)	77 (32.4%)	40 (16.8%)	40 (16.8%)
9	Unreliable power supplies for operating sophisticated disaster equipment	88 (37.1%)	81 (33.3%)	41 (18.1%)	27 (11.3%)
10	Inadequate training of librarians and users on disaster management practices	42 (17.7%)	40 (16.8%)	75 (31.6%)	80 (33.7%)
11	Most libraries operate without adequate security and non-involvement of library staff	94 (39.6%)	82 (34.5%)	39 (16.4%)	22 (9.2%)
12	Inadequate implementation and enforcement of preparedness plans	86 (36.2%)	70 (29.5%)	33 (13.9%)	33 (13.9%)

Note: A- Agree; SA – strongly Agree; D- Disagree, SD- strongly Disagree

In Table vii, the respondents were asked to state the challenges associated with disaster management practices in their libraries. The majority of the respondents 192 (81.0%) agreed and strongly agreed that lack of disaster preparedness plans, closely followed were 177 (74.6%) of the respondents who agreed and strongly indicated insufficient funding for disaster management plans, 176 (74.2%) agreed and strongly agreed or indicated that most of the libraries operate without adequate securities and non-involvement of library staff in the security arrangement while 167 (70.4%) of the respondents agreed and strongly indicated that lack of awareness campaign on disaster mitigation, 169 (71.3%) agreed and strongly indicated unreliable power supplies for operating sophisticated disaster equipment, 157 (66.2%) agree and strongly indicated inadequate disaster facilities and modern Technological equipment, 156 (65.8%) agreed and strongly indicated inadequate implementation and enforcement of preparedness plans. However, while just a few respondents 82 (34.5%) agreed and strongly indicated inadequate training of librarians and users on disaster management practices and closely followed are just 80 (33.7% respondents agreed and indicated irregular assessment of Hazard and vulnerability.

Discussion of findings

Availability of Disaster Preparedness plans

The analysis shows that the majority of the respondents indicated that disaster preparedness plans were not available in their libraries while a handful number of respondents showed that they had preparedness plans. These findings are in line with McIlwaine's (2006) study that affirmed that libraries and other relevant institutions need to take proactive steps towards preparing for disasters through the analysis of the peculiarity of their environment and resources to formulate disaster preparedness plans. Also IFLA –PAC (2006) surveyed in 2003 among National libraries to find out which of them had disaster plans, it was established that out of 177 libraries studied, only 39 (22%) had disaster plans.

Types of disaster ravaging university libraries in Nigeria

The analysis showed that the majority of the respondents agreed and strongly agreed that mutilation of library materials and theft of library materials are the major causes of disaster in their libraries. Closely followed are the biological agents, leaking roof, and fire outbreak respectively. The study equally showed that none of the respondents indicated that typhoons, landslide erosion and Earthquakes had caused disaster in their libraries. The findings align with the study carried out by Teferra (1996) on Ethiopian libraries, where he affirmed that mutilation constitutes a serious threat in the libraries studied as indicated by 93% of the respondents and the materials frequently mutilated were mainly books and periodicals. Also, this finding is consistence with Alegbeleye's 1993 study where he affirmed that biological agents such as rodents, fungi and insects destroy books and library materials and the most hit areas are tropical countries.

Disaster facilities and equipment

The respondents were asked to indicate the extent of the availability of facilities and equipment for mitigating disaster in their university libraries. The analysis showed that the majority of the respondents indicated fire extinguishers were readily available in their libraries. Closely followed were the anti-virus availability, fumigation, chemical, equipment, and availability of sand buckets respectively. The study also revealed that anti-hacking/spyware software, warning alarms and security cameras otherwise called CCTV were not readily available in most of the university libraries studied. The finding is in line with Promise, Mole, Izuagbe and Ekwueme (2018) who all established in their studies that there was adequate availability of fire extinguishers, sand buckets, emergency exit doors, anti-virus software and thunder arrestors. Other core disaster equipment like dehumidifiers, CCTV Anti-hacking/spyware software, dryers, dust extractors, plastic sheet covers, and warning alarms were lacking in the libraries.

Disaster Preparedness plans and awareness in university libraries

The respondents were asked to state the disaster preparedness plans and the level of awareness in the university libraries. The analysis of the study revealed that the majority of the respondents indicated that they are aware of the location of fire extinguishers/ how to use them and familiar with the emergency exit doors and the rest. However, a large number of the respondents indicated that they did not know what to do to evacuate the precious collection in case of emergency. The findings collaborated with Marfor and Borteye's (2012) study on disaster preparedness at Kwame Nkrumah University of Technology Ghana where the majority of the staff indicated that they are aware of the location of emergency exits and the location of fire extinguishers. The finding is also aligning with Nwokedi, Panle and Samuel's (2017) study where they investigated the extent of staff disaster preparedness to ascertain readiness/competence to prevent, mitigate, respond or recover adequately in the event of future occurrence. The study found that staff was aware of the fire-safety instructions and safety measures in the library. However, sadly, the same study found out that staff were unaware of what to do to salvage partly damaged resources in the case of a fire disaster, and as such, they were not prepared.

Strategic plan to safeguard disaster in university libraries

The respondents were asked to state the Strategic plans put in place to safely guide disaster in university libraries. The majority of the respondents agreed and strongly agreed that theft and mutilation of books is a major disaster in most libraries and that, there is a need for regular surveillance to prevent or possibly reduce this ugly incident also very high number equally supported the installation of CCTV and other electronic gadgets to monitor library resources. This might be possible because of the funds required to train skilled personnel and other financial involvement, especially in the procurement of the tools needed for the exercise. The findings collaborated with the studies of Echezona, Ugwu and Ozioko (2010) where they all affirmed that the development of a disaster preparedness plan, vulnerability analysis and risk assessment backing up library websites regularly, staff training and raising awareness of the need

to protect document from disaster are the disaster prevention strategies employed in the university libraries in Southern Nigeria. Also survey carried out in 2003 among National libraries to find out which of them had disaster plans, it found that out of 177 libraries studied, only 39 (22%) had disaster plans (IFLA-PAC, 2006).

Challenges associated with the management of disaster practices

The respondents were asked to state the challenges associated with disaster management practices. The finding of the study revealed that the majority of library managers operate without disaster preparedness plans. The finding also shows insufficient funds for managing disasters and the non-involvement of library staff in the security arrangement. The finding is in line with Echezona, Ugwu and Ozioko (2015) study of disaster management in university libraries: perception, problems and strategies. The researchers established that some of the problems encountered in disaster management include lack of adequate facilities, inadequate fund allocation to libraries and lack of interest on the part of some librarians in disaster management issues. The finding also collaborated with the study conducted by Ilo, Ngwuchukwu, Michael-Onuoha and Segun-Adeniran (2019) found that inadequate disaster facilities and equipment as well as poor funding were the greatest challenges confronting disaster mitigation in federal and state universities in Nigeria.

Conclusion

The university libraries are the nerve centres of academic programmes in university education. The resources in their custody are quite valuable for the achievement of the tripartite function of teaching, learning and research. Therefore, the urge to invest would not be allowed to be wasted through disaster. This places a responsibility upon stakeholders especially librarians for a concerted effort and commitment towards the preservation of library resources against disaster. The findings of the study therefore showed that a large percentage of the libraries studied did not have disaster preparedness plans. However, the study revealed the availability of basic facilities and equipment like fire extinguishers, bucket sand and so on but sadly, equipment like anti-hacker spyware software, security cameras otherwise called CCTV and others for proper surveillance work was not readily available.

Recommendations

Based on the foregoing, the researchers recommend as follows:

- i. University libraries should have proper surveillance in place through the installation of CCTV and other electronic gadgets to reduce the mutilation of library print resources currently in the increase in Nigerian university libraries
- ii. University library management as a matter of urgency should draft and approve disaster preparedness plans for their libraries to be able to efficiently tackle disasters that might occur at any time.
- iii. Modern fire-fighting equipment such as smoke detectors, fire alarms fire suppression systems and even effective anti-virus to mitigate the effects of viruses should be

acquired and installed in the library and staff should be trained on how to use them to ensure quicker emergency response

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Factors Influencing the Use of Open Access Resources by Library and Information Science Postgraduate Students, University of Ilorin

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Abstract

The study investigated factors influencing the use of open access resources by library and information science postgraduate students at the university of Ilorin. The study adopted a total enumeration method to involve all 94 LIS postgraduate students at the University of Ilorin. A web-based questionnaire was designed using Google form and the generated link was shared among postgraduate students of Library and Information Science, University of Ilorin. The link was shared with various groups of postgraduate students of Library and Information Science via WhatsApp and Telegram. The responses were collected for two weeks. The study reported that awareness, attitude, performance expectancy and internet self-efficacy are factors influencing the use of open access resources. The study also revealed a shortage of power supply, a bad network, poor awareness and poor searching skills as the challenges influencing the use of open access resources. The study recommends that awareness of the use of open access should be increased to the postgraduate students.

key words: Open access, Library, Information science, Postgraduate students and University.

Introduction

Open access (OA) is an effort to make information resources available to users without charge. With open access, information is perceived to be available to researchers, postgraduates and others. However, open access resources are electronic resources which are freely available to the end user free of cost. No need to pay either the institution or the individual for accessing, and downloading articles. The User can read, download, copy, distribute, print, search, or link to the full texts of these articles. Open access resources are not limited only to open access journals but they may vary in forms such as an open e-books, open databases, open access repositories, and institutional repositories that may influence library and information science postgraduates. Moreover, Open Access (OA)" means that it can be freely accessed by anyone from any location in the world using an internet connection (Adeyokun, Adebowale & Yaya, 2015). Academic

publication in open access repositories makes it available on the internet and permits anyone to browse, download, read, share, print, copy, index or link to other articles; use them as the law permits, and does not require any technical, financial or legal barriers except the ones associated with logging into the internet itself (Orsu, 2020).

Okoye and Ejikeme (2011) opined that open access is free availability on the Internet, permitting users to read, download, copy, distribute, print, search or link to the full text of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal or technical barriers other than those inseparable from gaining access to the Internet itself. Suber (2013) described open access as online research outputs that are free of all restrictions on access (for instance, access tolls) and free of many restrictions on use (for instance, certain copyrights and licence restrictions). According to Kenneway (2011), the burden of who is responsible for the expenses incurred right from submission of articles through publishing to distribution stages has been shifted to authors rather than the readers. In other words, users can freely access, download, use and distribute research content without any hindrance from the authors or publishers in as much as necessary citations are done. They allow the cost of publishing to be borne by the author(s), sponsors or institutions and allow the use and reuse of publications without restrictions. To corroborate this, Kundart (2013) described open access as immediate, online, no-cost availability of scholarly articles unlocked for everybody to see and use.

Dulle, Minish-Majanja and Cloete (2010) identified attitude, self-efficacy, facilitating conditions and social influence as factors that influence the use of open access among LIS. In essence, open access content comprises creative works and research undertaken following systematic procedure(s) to increase the stock of knowledge, either of human beings, nature, culture and or society and the use of the knowledge obtained thereof, to devise new applications and or further knowledge. Applebee and Clayton (1996) opined that ease, convenience, and accessibility are major factors influencing academic use of open access among library and information science postgraduates. Dulle (2010) opined that researcher self-efficacy and lack of Internet skills were part of the factors that hindered the acceptance and use of open access publishing. Obuh and Bozimo (2012) and Gbaje (2010) posited that a lack of awareness of open access journals was responsible for the low adoption and use of open access publishing, while Emojorho et al. (2012) emphasized inadequate facilitating conditions as an obstacle to the adoption and use of open access publishing. Open access publishing is still in its infancy in most developing countries like Nigeria, where poor infrastructural facilities have been established as the bane to its development and adoption among postgraduates (Okoye & Ejikeme, 2011). Postgraduate education, in the submission of Asogwa, Wombo and Ugwuoke (2014) involves learning and studying for degrees, professional or academic certificates or other qualifications for which a first or Bachelor's Degree generally is required and it is normally considered to be part of higher education. Pertinently, those involved in postgraduate education, as the name implies, should also be postgraduate students. Against this background, this study examines factors influencing the use of open access resources by library and information science postgraduate students at the University of Ilorin.

Statement of the Problem

Over time Nigerian universities, and postgraduate in library and information science schools confront research activities that require extensive information materials from different sources. However, it is perceived that many of them find it difficult to get the required information. However, with open access, postgraduates can have access to information materials needed for their research work and other assignments that require literature. However, many studies have been carried out on the use of open access publications but not much has been done on factors that influence the use of open access. It has been observed that most postgraduates and researchers are still reluctant to use open access publications; one of the major reasons for this is that they are not aware of what is available to them and what the services are capable of doing.

Some studies like that of Ivwighrehweta and Onoriode (2012) have even pointed out that postgraduate students in tertiary institutions are less likely to use open access journals unless they are encouraged to do so by their lecturers. Nowadays, the survival of libraries depends on students' use of the various information resources (print, electronic including open access resources) but it is still not clear whether these students are fully aware of the rich information contents available in these open access resources (OARS) to improve their education. Against this background, the study examines factors influencing the use of open access resources by library and information science postgraduate students at the University of Ilorin.

Objectives of the Study

The main objective of this study is to examine factors influencing the use of open access resources by library and information science postgraduate students at the University of Ilorin. However, the specific objectives of the study were to:

1. identify factors that influence the use of open access resources by library and information science postgraduate students, University of Ilorin,
2. find out the benefits derived from the use of open access resources by postgraduate students of the University of Ilorin Library and information science,
3. examine the challenges affecting the use open access resources by postgraduate students of the University of Ilorin library and information,

Research Questions

The following research questions were provided to guide the study in the following order.

1. What are the factors that influence the use of open access resources by library and information science postgraduate students, at the University of Ilorin?
2. What are the benefits derived from the use of open access resources by postgraduate students of the University of Ilorin Library and information science?
3. What are the challenges affecting the use open access resources by postgraduate students of the University of Ilorin library and information?

Review of Related Literature

Okoye and Ejikeme (2011) defined open access as free availability on the Internet, permitting users to read, download, copy, distribute, print, search or link to the full text of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal or technical barriers other than those inseparable from gaining access to

the Internet itself. Suber (2013) described open access as online research outputs that are free of all restrictions on access (for instance, access tolls) and free of many restrictions on use (for instance, certain copyrights and license restrictions). According to Kenneway (2011), the burden of who is responsible for the expenses incurred right from submission of articles through publishing to distribution stages has been shifted to authors rather than the readers.

In other words, users can freely access, download, use and distribute research content without any hindrance from the authors or publishers in as much as necessary citations are done. They allow the cost of publishing to be borne by the author(s), sponsors or institutions and allow the use and reuse of publications without restrictions. To corroborate this, Kundart (2013) described open access as immediate, online, no cost availability of scholarly articles unlocked for everybody to see and use. Okoye and Ejikeme (2011) nevertheless stressed the need for users to acknowledge authors through proper citations of consulted/referenced work. Open access applies to all forms of published research output, such as peer-reviewed and non-peer-reviewed journal articles, conference papers, and theses (Schopfel & Prost, 2013).

In essence, open access content comprises creative works and research undertaken following systematic procedure(s) to increase the stock of knowledge, either of human beings, nature, culture and or society and the use of the knowledge obtained thereof, to devise new applications and or further knowledge. They are used in most cases to establish and confirm facts, reaffirm the results of previous work, solve new or existing problems support theorems or develop new theories. They might be used as an expansion on past work in the field, to test the validity of instruments, procedures or experiments and may be used to replicate elements of prior projects or the project as a whole (OECD, 2002). Suber (2008) distinguished two degrees of open access as gratis open access which is online access free of charge and library open access which is online access free of charge plus additional usage rights.

Dulle (2010) studied the factors affecting the adoption of Open Access research activities in Tanzanian public universities. The study found the majority of research scholars are aware of Open Access. Poor research conditions, low internet search skills and publishing skills found as the main hurdles before Open Access communication. Bashorun, Sebina, Jain and Kalusopa (2016) examine factors influencing the adoption and use of OA publishing by academic staff in universities in Nigeria using an adapted Unified Theory of Acceptance and Use Technology (UTAUT). The study applies methodological triangulation by combining quantitative and qualitative approaches. The empirical data were collected from 317 academic staff in universities in southwest Nigeria. The questionnaire forms were analyzed using the Statistical Package for Social Sciences (IBM-SPSS) 19.0 version to generate descriptive statistics, Analysis of Variance, and Hierarchical Multiple Regression. Thematically, the analysis also applies to the interviews. The results show that awareness, attitude, performance expectancy, Internet self-efficacy, and facilitating conditions significantly influenced the adoption and use of OA publishing.

Utulu and Bolarinwa (2009) investigated the adoption of OA initiatives by academics from the Universities of Ibadan and Lagos. It was reported that a lack of understanding of the OA concept and the inability to identify appropriate OA journals were observed as part of contributory factors for its low adoption and use. Okplogidi and Tyungu (2015) examined the kinds of open

access scholarly publications or information resources accepted and adopted by federal university libraries in South East Nigeria. The study found that the university library accepts and adopts open access such as institutional repositories, open journals, subject repositories, e-books, and personal websites among others with the use of computers, internet facilities and services. Inadequate internet facilities and services were identified as a major factor that affects open access acceptance and adoption in university libraries.

The main benefit of Open Access products is that the entire content is made readily available and accessible to users regardless of affiliation with subscribing libraries (Ivwhighreghweta and Onoriode, 2012) or wherever users are located. Authors' citations of articles in hybrid open access journals proved much greater or higher than non open access articles (Antelman, 2004). With Open Access, articles can be accessed online free of charge (Suber, 2012; 2013). Open access publications usually appear more regularly thus, allowing scientists to disseminate research findings more quickly, timely, and widely and establishing the priority of researchers investigating the same problems (Albert, 2006). These benefits of open access have encouraged increased accessibility to resources and better serve users' needs (Mammo & Ngulube, 2015). This view was supported by Kenneway (2011) and Gross and Ryan (2015) when they expressed that open access journal contents have been made accessible to a global audience.

Similarly, Qayyum, Riaz, Rehman, Ahmed, Tahir and Kazi (2013) stressed that the widespread dissemination of scientific knowledge was a major benefit derived from Open Access publishing medium. Open Access initiatives have helped solve the challenges of inaccessibility to information bedevilling developing countries (Mammo & Ngulube, 2015). The initiative has ensured that publications and research contents are available, searchable and retrievable thus allowing, data or statistics, information and knowledge within an article to be recycled and reused. It incorporates local research into all interoperable networks of global knowledge; increases the impact of local research by providing new contacts and research partnerships for authors; removes professional isolation and strengthens economies through the development of a strong and independent national science base (Mammo & Ngulube, 2015).

Kenneway (2011) admitted that Open Access increased the readership of published materials thereby increasing citations. Increased citation is evidence of good visibility for publications because such works would be available to users worldwide and at no cost. Ivwhighreghweta and Onoriode (2012) regarded restricted access as a great barrier to the growth of science and the wellbeing of publishing which Open Access has solved. This was buttressed by Suber (2012; 2013) who considered restrictions as limiting the research audience and harmful to research development. Utulu and Bolarinwa (2009) also considered Open Access as being more economical than print publications. According to Georgia State University (2015), Open Access has increased opportunities for collaboration and innovation, brought about better returns on investment for research sponsors, is faster than the traditional publishing model and has contributed immensely to education's mission of advancing knowledge.

Orsu's (2019) study investigates the utilization of open access repositories for the visibility of academic publications by lecturers in South-East, Nigeria. The specific objectives were to investigate the types of academic publications available, platforms used in self-archiving, the

level of satisfaction derived by lecturers with the contribution of open access repositories, challenges and strategies. It adopted a descriptive survey design. A Proportionate stratified sampling technique was used to draw a sample size of 418 from the total population of 4,187 lecturers. A questionnaire and observation checklist were used for data collection. Frequency count, percentage, and mean score were used to analyze the data. The study revealed that there are enough academic publications available such as books, journals, projects, and theses except for handouts.

Okoye and Ejikeme (2010) in their investigation indicated that with open access, articles can be accessed online free of charge. They identified inadequate skills to navigate the internet, unstable power supply, unavailability of internet facilities, the permanence of open access movement due to unstable financial support, and lack of knowledge of the existence of open access resources on the internet as constraints to the use of open access publications by students and researchers in general. Similarly, Ivrihrehweta and Onoriode (2012) in their study on the awareness and use of open access journals by Library and Information Science students at the University of Ibadan, Nigeria reported a lack of knowledge of the existence of open access journals on the Internet, lack of internet search skills, retrieval of too much irrelevant information, download delay amongst others as the major problems militating against the use of open access publications by the students.

Agber and Agwu (2013) opined that the factors which hinder students' effective use of online resources may be technical and non-technical. The technical constraints include inadequate and poor telecommunication infrastructure, absence of national information communication infrastructure, problems of connectivity, lack of or limited bandwidth for ICT for learning and research and non-reliability of public electricity; while the non-technical constraints include, among other constraints: online usage skills necessary for general surfing of the net, lack of time to use ICTs as a result of school work amongst others (Association of African University, AAU, 2000). However, Ukwoma and Onyebinama (2020) surveyed the challenges and opportunities of access and use of open access resources by undergraduate students in selected federal universities in the south-east, of Nigeria. The study employed a descriptive survey method and quantitative research technique, using a questionnaire as an instrument for data collection. A total of 369 students selected from four federal universities in South East, Nigeria was used as the population of the study. The study found that inadequate training, and unsuitable infrastructure, are the challenges of using open access

Orsu (2020) examines the utilization of open access repositories for the visibility of academic publications by lecturers in South-East, Nigeria. The specific objectives were to investigate the types of academic publications available, platforms used in self-archiving, the level of satisfaction derived by lecturers with the contribution of open access repositories, challenges and strategies. It adopted a descriptive survey design. A Proportionate stratified sampling technique was used to draw a sample size of 418 from the total population of 4,187 lecturers. A questionnaire and observation checklist were used for data collection. Frequency count, percentage, and mean score were used to analyze the data. The study revealed that inadequate power supply, poor network, lack of awareness and inadequate research grants are all challenges that influence the use of open access among academics. Iqbal and Ali (2017) assessed the

awareness and use of Open Access resources among the library users of Cochin University of Science and Technology (CUSAT) and Pondicherry University (PU), Puducherry. The study found that the majority of the respondent is aware of the existence of Open Access repositories in their institution and use the repository for their research. The study found that screen reading, lack of guidance and training and lack of search skills are the main obstacles faced by library users in the use open access.

Method

The study used a research design. The population includes postgraduate students of Library and Information Science, at the University of Ilorin. However, there are 94 postgraduate students in Library and information science at the University of Ilorin, Ilorin Nigeria. Therefore, this study adopted the total enumeration method otherwise known as the census. The research resorted to using this method because the population of the study was extremely small. The instruments which were used for the collection of data in this study were interviews and questionnaires. A web-based questionnaire was designed using Google form and the generated link was shared among postgraduate students of Library and Information Science, university of Ilorin. The link was shared with various groups of postgraduate students of Library and Information Science via WhatsApp and Telegram groups. The questionnaire link was shared and responses were collected for two weeks. The total response from the survey is 94 and that was the unit of analysis for the study. The responses collected were automatically analysed by Google Forms. However, From the 94 sample size of respondents, only 90 responded. Therefore, only 90 were filled and returned, hence validated for the study.

Data Presentation and Analysis

Table 1: Demographic Information of the Respondents (N=90)

Gender	Frequency	Percentage
Male	65	72.2%
Female	25	27.8%
Total	90	100
Age	Frequency	Percentage
21-30	22	24.4%
31-40	47	52.2%
41-50	19	21.1%
50 years and above	02	2.2%
Total	90	100

Source: Authors' Field Survey (2021)

Table 1 shows responses on the distribution of respondents on gender with 65(72.2%) of respondents being male while 25(27.8%) respondents were female. This shows that the majority of respondents were male. Table 1 also shows responses on age with 22(24.4%) of respondents being between 21-30 years, 47(52.2%) of respondents between 31-40 years age 19(21.1%) of respondents between 41-50 years of age and 02(2.2%) of respondents were between 50 years and above. The implication of this table to the study is that the majority of respondents were between 31 years and above.

Analysis of Research Questions

RQ 1: What are the factors that influence the use of open access resources by library and information science postgraduate students at the University of Ilorin?

Table 2: Factors that influence the use of open access resources (N= 90)

S/N	Factors that influence the use of open access resources	SA	A	D	SD
1	Awareness	62(68.9%)	21(22.2%)	1(1.1%)	7(7.8%)
2	Attitude	50(55.6%)	34(37.3%)	5(5.6%)	1(1.1%)
3	Performance expectancy	18(20.0%)	43(47.8%)	15(16.7%)	14(15.6%)
4	Internet self-efficacy.	21(23.3%)	43(47.3%)	15(16.7%)	11(12.2%)

Source: Authors Field Work, 2021

Table 2 shows that 83(92.2%) of the respondents agreed with awareness as a factor influencing the use open access resources while 8(8.9%) of respondents disagreed. Also, 89(98.9%) of the respondents agreed with attitude as a factor influencing the use of open access resources while 1(1.1%) disagreed. In addition, 61(67.8%) of the respondents agreed with performance expectancy while 29(32.2%) disagreed. Moreover, Table 2 also shows that 61(67.8%) of the respondents agreed that internet self-efficacy is a factor influencing the use of open access resources. The implication of this table to the study is that awareness, attitude, performance expectancy and internet self-efficacy are perceived to be factors influencing the use of open access resources among postgraduates of library and information science at the University of Ilorin.

RQ 2. What are the benefits derived from the use of open access resources by postgraduate students of the university of Ilorin Library and information science?

Table 3: Benefits derived from the use of open access resources (N=90)

S/N	Benefits derived from the use of open access resources	SA	A	D	SD
1	Articles can be accessed online free of charge	62(68.9%)	21(22.2%)	1(1.1%)	7(7.8%)
2	Open Access will help in solving the challenges of inaccessibility to information	50(55.6%)	34(37.3%)	5(5.6%)	1(1.1%)
3	Open Access has increased opportunities for collaboration and innovation	18(20.0%)	43(47.8%)	15(16.7%)	14(15.6%)
4	Brought about better returns on investment for research sponsors.	21(23.3%)	43(47.3%)	15(16.7%)	11(12.2%)

Source: Authors Field Work, 2021

Table 3 shows that 83(92.2%) of the respondents agreed that articles can be accessed online free of charge as a benefit derived from using open access resources while 8(8.8%) disagreed. Also,

the majority of the respondents 84(93.3%) agreed that Open Access will help in solving the challenges of inaccessibility to information as the benefit derived from using open access resources while 6(6.7%) of the respondents disagreed. Moreover, Table 3 also shows that 61(67.8%) of the respondents agreed that Open Access can increase opportunities for collaboration and innovation as the benefit derived from the use of open access resources while 29(32.2%) disagreed. In addition, 64(71.1%) of the respondents agreed that open access brought about better returns on investment for research sponsors while 26(28.9%) disagreed. However, the implication of this table to the study is that the majority of postgraduates of library and information science at the University of Ilorin believe that with open access, articles can be accessed free of charge online, challenges of inaccessibility to information can be solved, opportunities for collaboration and innovation can be increased and better returns on investment for research sponsors is provided as benefits of open access resources use.

RQ 3: What are the challenges affecting the use open access resources by postgraduate students of the university of Ilorin Library and information science?

Table 4: Challenges affecting the use open access resources (N= 90)

S/N	Challenges affecting the use open access resources	SA	A	D	SD
1	Shortage of power supply	40(44.4%)	43(47.3%)	1(1.1%)	6(6.7%)
2	Bad network	34(37.8%)	53(58.9%)	3(3.3%)	-
3	Poor awareness	34(37.8%)	46(51.1%)	4(4.4%)	6(6.7%)
4	Poor searching skills	38(42.2%)	42(46.7%)	4(4.4%)	6(6.7%)

Source: Authors Field Work, (2021)

It can be observed in the 4 that respondents 83(92.2%) agreed that the shortage of power supply is a challenge influencing the use of open access resources among postgraduates of library and information science at the University of Ilorin while 7(7.8%) disagreed. Moreover, the table also shows that 87(96.7%) of the respondents agreed that a bad network is a challenge influencing the use open access resources while 3(3.3%) disagreed. In addition, Table 4 also showed that 80(88.9%) of the respondents agreed with poor awareness of a challenge influencing the use of open access resources while 10(11.1%) of the respondents disagreed. Furthermore, it is also seen in the table that 80(88.9%) of the respondents agreed that poor searching skills were a challenge influencing the use of open access while 10(11.1%) disagreed. This implies that a shortage of power supply, bad networks, poor awareness and poor searching skills are challenges influencing the use of open access resources among postgraduates in library and information science at the University of Ilorin.

Discussion of Findings

The factors influencing the use of open access resources postgraduate library and information science, university of Ilorin, it found that awareness, attitude, performance expectancy and internet self-efficacy are perceived to be factors influencing the use of open access resources

among postgraduate library and information science at the University of Ilorin. The finding of this study is in line with Bashorun, Sebina, Jain and Kalusopa (2016) that awareness, attitude, performance expectancy, Internet self-efficacy and facilitating conditions significantly influenced the adoption and use of open access publishing. On the benefits derived from the use of open resources, the study found that with open access, articles can be accessed free of charge online, challenges of inaccessibility to information can be solved, opportunities for collaboration and innovation can be increased and better returns on investment for research sponsors is provided. The finding of this study is consistent with Suber, (2012, 2013) and Mammo and Ngulube, (2015) that with Open Access, articles can be accessed online free of charge and Open Access initiatives have helped solve the challenges of inaccessibility to information bedevilling the developing countries

The study also revealed that a shortage of power supply, bad networks, poor awareness and poor searching skills are challenges influencing the use of open access resources among postgraduates in LIS, University of Ilorin. The finding is supported by Orsu (2020) and Iqbal and Ali (2017) that inadequate power supply, poor network, lack of awareness, lack of search skills and inadequate research grants are all challenges that influence the use of open access among academics

Conclusion

It is established that postgraduate students in library and information science schools have identified awareness; attitude, performance expectancy and internet self-efficacy are perceived as factors that influence open access usage. This is because open access provides an avenue for potential researchers to have information that would be useful to them. The study concludes that open access usage benefits postgraduates to have access to information that is free, inaccessible information and opportunities for collaboration.

Recommendations

The following recommendations were made based on the findings of the study: Awareness of the use of open access should be provided to the postgraduate students in the library and information science students at the University of Ilorin. University authorities should provide needed orientation to the postgraduate students in library and information science at the University of Ilorin. The alternative power supply should be provided to postgraduate students in library and information science to have access to open access information for their research work.

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Relationship between Computer Self-efficacy and Electronic Library Use among LIS Undergraduates in Universities in Southern Nigeria

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Abstract

The study examined the relationship between computer self-efficacy and electronic library use among library and information science undergraduates in universities in Southern Nigeria. One research question guided the study while one research hypothesis was tested at a 0.05 level of significance. The correlational research design was adopted for the study. The population of the study was 10,345 Library and Information Science (LIS) undergraduates from ten federal, seventeen state and eight private universities in Southern Nigeria. The study adopts purposive and quota sampling techniques to determine the sample size of 1,017 used for the study. Two instruments: the Undergraduates' Computer Self-Efficacy Questionnaire (UCSQ) and Undergraduates' Electronic Library Use Questionnaire (UELQU) were used for data collection. The overall reliability indexes for the two instruments were .88 and .89 respectively using Cronbach alpha. Pearson's Product Moment Correlation Coefficient (PPMC) and simple linear regression were used to analyse the data. The findings revealed that there was a very low positive relationship between LIS undergraduates' computer self-efficacy and their use of electronic libraries. It further showed that there was a significant positive relationship ($df; 1,981$) = 36.37 $p < 0.05$ between computer self-efficacy and electronic library use among LIS undergraduates. It was recommended that the teaching of computer skills to LIS undergraduates in universities be promoted. This is to ensure that the low level of electronic library resource usage among LIS undergraduates changed to a high one and is sustained for their adequate academic prowess.

Keywords: Computer Self-Efficacy, Electronic Library Use, Library and Information Science, Undergraduates, Universities and Southern Nigeria

Introduction

An electronic library is a multi-disciplinary concept that shares various branches of computer science and other subjects such as data management, information retrieval, library science, document management, information systems, the web, image processing, and artificial intelligence. The multi-disciplinary nature of the electronic library engenders flexibility in the concept which makes it difficult to have a singular definition of an electronic library. However, the format, form and nature of the library give a clearer picture of what an electronic library means. An electronic library is a library in which collections are stored in electronic or digital formats (as opposed to print, microform, or other media) and accessible by computers and telecommunication gadgets. The content may be stored locally, or accessed remotely via electronic systems and computer networks (IFLA, 2012). The electronic library possesses the same functions and goals as the traditional print-based library and the difference lies in the

electronic part of the term which indicates merely that the material is stored and accessed electronically.

Comprehensively, the electronic library can be defined as an organization which provides the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret distribute, preserve the integrity of, and ensure the persistence over time of collections of electronic works so that they are readily and economically available for use by a defined community or set of communities. The rationale for the adoption of electronic libraries in universities is solely to provide electronic and online information resources for staff, researchers and students. This provision is to enhance educational development and provide educational information resources for effective teaching, learning and research activities because users may not visit the library directly or physically for reference. Electronic library achieves their objectives by creating opportunities for users to access and retrieve appropriate information that caters for their information needs (Anyim, 2018).

The electronic library enables library users to directly access electronic data via telecommunications networks since the resources are available in digital format; where there is no paper and the information resources (indexes, journals, and reference materials including online reference services) are accessed through computer networks or the internet. Electronic library resource consists of materials that are computer – controlled, including materials that require the use of a peripheral (e.g., a CD-ROM player or drive) directly connected to a computerized device. However, adequate knowledge in the use of computers is paramount if undergraduates are to use electronic libraries effectively and efficiently because the cognition, proficiency and capacity to use the computer without computer phobia are of great importance to harness electronic library resources in this 21st century (Bringula, Sarmiento & Basa, 2017). Today, the electronic library is regarded as a powerhouse where information is stored, generated and transferred electronically to fulfil users' needs. For optimum and satisfactory use of electronic libraries undergraduates should have adequate knowledge of computers to access its electronic resources to fully achieve their information needs. To this end, undergraduates' knowledge ability in the use of computer devices is a vital key to the effective use of electronic library resources. An impediment to the use of the electronic library, particularly its electronic resources is the lack of computer competency which affects most undergraduates' self-efficacy in searching the relevant resources to satisfy their information needs. The proficiency of undergraduates in the use of computers in accessing electronic library resources to a larger extent depends on the undergraduate level of computer self-efficacy which is the competency they need to effectively utilization of library electronic collections.

Computer self-efficacy is concerned with self-capability and self-worth toward the use of a computer (Bandura, 2012). Computer self-efficacy as an individual's self-confidence and ability to perform a behaviour or task. Anyim(2018) asserted that computer self-efficiency is the knowledge and ability a person has to use computers and technology According to Fabunmi and Awoyemi (2017), computer self-efficacy has to do with judgments about one's capability to successfully perform a specific task using the computer. Individuals who do not see themselves as having the capability to accomplish a task will likely not engage in such tasks. Thus, the frequency of computer use is a key factor which has a direct bearing on self-efficacy. Undergraduates using computers must possess the ability to apply their computer skills and

knowledge to a wider range of computer-related activities or operations when faced with a particular task. This is because self-efficacy beliefs are task-specific, subjective, and situation-dependent including the extent and perceived ability of an individual to use the computer (Adeniran, 2017).

In the same vein, an undergraduate self-efficacy toward an application can decline during periods of inactivity with that particular application. No wonder, heightened self-efficacy may cause students to spend little effort toward learning new computer concepts because of their vast knowledge of using the computer (Odede & Zawedde, 2018). Students with high computer self-efficacy are more likely to explore new technologies, software or databases than others (Bello&Ajoyiyon, 2021). Thus, such students with high computer self-efficacy would be more likely to take advantage of electronic library information resources when compared to students with low computer self-efficacy, as the latter may lack confidence or shy away from using computer-based information resources. Computer self-efficacy has an important influence on an individual's possibility of the outcomes of using computers, their passionate reactions to computers as well as their certain computer use.

More so, adequate user computer self-efficacy may bring about user satisfaction in using the electronic library which jointly predicts and contributes significantly to the academic performance of undergraduates. Thus, students will utilize the electronic library information resources if they have the necessary computer self-efficacy. Wierzbicki (2018) affirmed that self-efficacy is divided into two types, general self-efficacy (GSE) and specific self-efficacy (SSE) determine the undergraduate level of academic productivity. He added that both GSE and SSE denote beliefs about one's ability to achieve the desired outcome, but the constructs differ in scope. However, this study is interested in general self-efficacy that deals with varieties of situations or tasks. Additionally, generalized self-efficacy pertains to an individual's coping ability (Lemelle & Scielzo, 2012), which has been predicted that those who are better and able to cope with stressful situations are likely to experience satisfaction in their academic productivity.

It is worth noting, that despite the significance of electronic libraries as providers of authoritative scholarly resources in a convenient and unrestricted manner, studies have shown that usage of electronic libraries is not up to the level expected or is simply underutilized (Kwadzo, 2015; Akussah, Asante & Adu-Sarkodee, 2015; Yamson, Appiah & Tsegah, 2018; Ebijuwa&Mabawonku, 2019). Also, some undergraduates believe that their search skills are inadequate for the computerized electronic library information resources due to their low level of computer proficiency, and even though more undergraduates use electronic libraries there is still the majority of them who lag in their confidence and/or desire to use computers and telecommunication gadget (Omosekejimi, Eghworo&Ogo, 2015; Oladokun & Adeoye, 2022). In addition, findings have also revealed that students with a high level of computer self-efficacy use the electronic library more because computer self-efficacy is associated with attitudes toward computer technologies. (Daramola, 2016; Umar, Azeez&Haruna, 2020; Ebijuwa&Mabawonku, 2019). The extent to which undergraduate demonstrates confidence in the use of a computer can also determine the extent to which they will use electronic library resources since the resources are accessed via computers.

However, undergraduates' must also strive to arm themselves with the computer skills necessary for the exploration of electronic library resources. This became imperative because the skills that have become increasingly important in the pursuit of higher education will affect how undergraduates handle the increasing electronic library resources including the way the resources are been used for learning. Thus, the level of ICT skills possessed by undergraduates will determine their level of usage of electronic library resources in the information age. To this end, with the availability of ICT facilities in university libraries, it is expected that undergraduates who possess the skills to operate computers would find it easy to use electronic library information resources to meet their required information needs in the libraries. This study, therefore, examined the relationship between computer self-efficacy and electronic library use among library and information science undergraduates in universities in Southern, Nigeria.

Research Objectives

Specifically, the objective of the study was to determine the relationship between Computer self-efficacy and electronic library use among LIS undergraduates in universities in Southern Nigeria.

Research question

The following research question was formulated to guide the study:

What is the relationship between computer self-efficacy and electronic library use among LIS undergraduates in universities in Southern Nigeria?

Research Hypotheses

The following null hypotheses were formulated to guide the study

H_0 1 There is no significant relationship between LIS undergraduate computer self-efficacy and electronic library use in universities in Southern Nigeria

Literature Review

Use of Electronic Library

The electronic library has significantly transformed information handling and management in academic environments and university libraries in particular. Kude (2013) opined that an electronic library also known as a web-based library is a library consisting of electronic materials and services with walls as well as without walls depending on the way the users access it. The foregoing means that an electronic library eliminates physical boundaries of data storage, access, retrieval and dissemination of information to users within and across the globe with the use of an internet network. Owolabi, Idowu, Okocha and Ogunbare (2016) mentioned that an electronic library is a set of documents available through electronic means by the use of digital or telecommunication technologies that allow for the retrieval, archiving, preservation, and dissemination of electronic documents. Electronic library refers to the process of translating a piece of information such as a book, sound recording, picture or video into bits (Umaru, Aghadiuno & Mamo, 2018).

According to Fabunmi, Paris and Fabunmi (2016), electronic library use can be seen as the process of using electronic resources in the library via electronic medium. They further established that electronic library use gives users reliable and accurate information for the right user. In addition, the use of electronic library information resources helps students to be well-informed and up-to-date in their respective thematic areas, unlike print information resources that are not updated regularly. Yudina (2018) defines electronic libraries as information systems that allow reliable storage and effective use of various collections of electronic documents (text, image, sound, video, etc.), localized in the system itself, as well as accessible to it through telecommunications networks. Borisova, Mikidenko and Storozheva (2020) define electronic library use as the process of staying off-library to access electronic resources from diverse ends via the use of fingertips, computers and telecommunication gadgets. Thus, students can access information around the globe, particularly through the Internet for their scholarly work. Information can be accessed from different parts of the globe without any geographical and time limitations. The electronic library information resources can be subscribed through consortia/publisher updates, modifications and alterations could easily be effected, and made available in various files and formats for use.

Tofi (2019) asserted that electronic library use has created opportunities for global access to information, enhanced the speed of service, increased the number of users served, increased the quality of the information provided, and offered new opportunities for undergraduate students to find relevant information. The use of an electronic library enables undergraduates to access current international literature as soon as it is published on the Internet from a different location. Electronic library information resources consist of information provided in electronic formats such as CDROM, databases, flash drives, e-books e-journals, online databases, Online Public Access Catalogues, institutional repositories, e-prints, World Wide Web; WIFI; search engines; online indexes; video CDs VSAT based Internet connectivity; portals and another computer based electronic networks (Ekhanuere, Olayinka, Taiwo, Alonge&Obono, 2015; Ekere, Omekwu, Obiora, &Chidinma, 2016). Electronic library information resources can be searched, browsed, accessed, copied, downloaded quickly and customized, linking feature facilitates links within the documents as well as outside of the documents (Owolabi, Idowu, Okocha & Ogundare, 2016). Students can use electronic library resources simultaneously, and it is possible to monitor the usage of electronic information resources to some extent (Tlakula & Fombad, 2017).

In the context of this study, electronic library use can be seen as the use of information resources in the library electronic section via an electronic medium, computer and Internet connectivity. These information resources that are used electronically in the library include; e-books, e-journals, e-print, e-conference proceedings, e-thesis and dissertations, CD-ROMs, offline databases, online databases, Internet access, institutional repositories, Online Public Access Catalogues, email reference services, ask-a-librarian, virtual reference desk, pathfinders online.org, frequently asked questions, question point reference services, user orientation and feed-back, online current awareness, electronic reference sources just to mention but a few. Electronic library use allows students to have access to global information resources, beck and call most especially the Internet for their academic prowess.

Computer Self-Efficacy of Undergraduates

Computer self-efficacy is based on self-efficacy. The term self-efficacy as seen by Hopper (2019) refers to an individual's confidence in their ability to complete a task or achieve a goal. It is a person or level of confidence about his/her ability or capability to carry out or attain a set goal and produce results while computer self-efficacy is the degree of an individual's perceived ability to use a computer. Self-efficacy consists of three dimensions strength, magnitude and generalizability. Strength refers to the confidence possessed by an individual in his ability in various computing tasks; magnitude is an individual with high computer self-efficacy, while generalizability reflects the scale to which judgment is limited to a particular computing action (Bandura, 2012). Computer self-efficacy plays a positive and significant role among individuals in making decisions involving computer adoption and usage. Dabas and Pandey (2015) referred to computer self-efficacy as an individual's self-evaluation or personal assessment of one's ability to use a computer gadget for a variety of tasks.

Computer self-efficacy is the perception of performing specific computer-related tasks within the domain of general computing. Champa (2016) stressed that the high computer self-efficacy of the individual is more likely to increase the use of a computer and decrease an individual's computer anxiety. Mensah and Lebbaeus (2013) opined that computer self-efficacy is when an individual believes that he or she is capable of performing a task with the use of a computer. Hauser, Paul, Bradley and Jeffrey (2012) affirmed that computer self-efficacy is divided into general and specific; general computer self-efficacy refers to the belief that a subject can perform well across a variety of computer tasks while specific computer self-efficacy refers to the belief that the subject can perform well using a particular technology such as programming and database development. Hsia, Chang and Tseng (2014) propounded that computer self-efficacy is the perceived ease of use of a computer to perform a task. This perceived ease of use of the computer is born out of the daily use of the gadget to perform a specific task.

Computer self-efficacy is a significant determinant of performance which operates partially, independent of the level of skills possessed. It also involves a generative capability in which an individual must organize cognitive, social and behavioural sub-skills into integrated courses of action. As such, an undergraduate student who possesses a high level of computer self-efficacy might use the computer more (Oyewole, 2017). Computer self-efficacy is divided into two different levels which include; general and advanced. General computer self-efficacy refers to an individual's judgment of his or her ability to perform across multiple computer application domains. Hauser, Paul, Bradley and Jeffrey (2012) proclaimed that general computer self-efficacy refers to the belief that a subject can perform well across a variety of computer tasks. Specific computer self-efficacy refers to the belief that the subject can perform well using a particular technology such as programming, database development, etc. Advanced computer self-efficacy refers to an individual's perception of efficacy in performing specific computer-related tasks within the domain of general computing.

There are also four identified principal sources of computer self-efficacy according to Lunenburg (2011) citing Bandara (1997), and Antoine (2011), which are mastery experience or past performance, vicarious experience, verbal persuasion, and physiological states or emotional cues. Mastery experience or past performance, occurs when people try to do something and are

successful. According to Bandura (1994), mastering experience is the most effective way to boost self-efficacy since students are more likely to believe they can do something new if it is similar to something they have done. Vicarious experience means when one watches someone like himself accomplish something, he would like to attempt similar tasks. Verbal persuasion means that people are more likely to perform a task when they are persuaded verbally that they can achieve or master a task. Physiological states or emotional cues show whether one will be successful or fail in a task depends to a large extent on the physical and emotional state in which someone attempts to do something.

In addition, Teo and Ling-Koh (2010) pointed out that computer self-efficacy has three dimensions which include basic computer skills, media-related skills, and web-based skills. These dimensions show the extent to which an individual can use a computer. Sam, Othman, and Nording (2011) asserted that the frequency of use of computer likely increase computer self-efficacy because the more you use a computer system the better and well-informed your speed and level of usage increase. In terms of academic prowess, Schlebusch (2018) emphasized that soaring computer self-efficacy levels are an important factor in assisting students to be academically successful in the present technological era. Umar, Azeez and Haruna (2020) concluded that computer self-efficacy is the belief in one's ability to perform a desired outcome using a computer. In the context of this study, computer self-efficacy can be defined as an individual's decision toward his or her capability of computer use. Thus, this belief has an influence on the choice of activities, degree of effort expended, and persistence of effort to use the computer

Computer Self-Efficacy and Use of Electronic Library Undergraduates

This area examines articles that are related to the study and are based on the opinions and positions of different authors. However, the review of the literature has shown that not much has been done by researchers to test computer self-efficacy and the electronic library use of undergraduates. Few studies have defined aspects of computer self-efficacy and the use of library resources and services that are electronic. Oyewole and Oladepo (2017), opined that computer self-efficacy is a significant determinant of performance which operates partially, independent of the level of skills possessed to use an electronic library. They further pointed out that computer self-efficacy involves a generative capability in which an individual must organize cognitive, social and behavioural sub-skills into integrated courses of action. As such, an undergraduate student who possesses a high level of computer self-efficacy might use the electronic library more.

Loar (2018), opined that computer self-efficacy is associated with a variety of positive learning processes and outcomes of using electronic information in the library. Aktag (2015), acknowledged that the more the duration of computer usage increased the computer self-efficacy level of students and also the use of electronic libraries. Wolverton, Guidry-Hollier and Lanier(2020), affirmed that electronic library resources are technology dependent, and there is, therefore, a need for computer self-efficacy to use them. Undergraduate students are expected to use electronic library resources while at the university to improve the quality of their academic work. For them to be successful in the use of the available electronic library resources, undergraduate students need to acquire and practice the skills necessary to explore electronic

libraries. To fully maximize the potential of electronic library resources, there is a need for computer literacy. This is necessary considering that searching in the electronic environment requires knowledge of the structure of databases and requires instructions which must be input into the computer by the searcher.

The electronic nature of electronic library resources, however, demands that undergraduates be confident and skilled in the use of computers (Umar, Azeez & Haruna, 2020). They further established that the use of electronic library resources by students in developed countries is well-recognized, while their use in less developed countries is still in its infancy. Several reasons such as low bandwidth, erratic power supply, inadequate provision of computers, and low computer self-efficacy were reported to be attributed to the low frequency of utilization of electronic library resources in developing countries by the authors. Hauser, Paul, Bradley and Jeffrey (2012) explained that the level of skills possessed by the student is a significant determinant of computer self-efficacy in order to operate partially or independently. This involves a generative capability in which an individual must organize cognitive, social and behavioural sub-skills into integrated courses of action while using the computer. Several findings have established that in determining the level of computer self-efficacy and electronic library use, there is evidence that undergraduate computer self-efficacy level is high (Oyewole & Apotiade, 2016; Fabunmi, & Awoyemi, 2017; Eserada, Okolo & Ideh, 2019; Alahakoon & Somaratne, 2020; Olawale & Popoola, 2021).

The use of electronic library resources, it can, therefore, be assumed that students with high computer self-efficacy would be more likely to take advantage of electronic library resources when compared to students with low computer self-efficacy, as the latter may lack confidence or shy away from using computer-based resources (Giles & Kent, 2016; Chen, 2012). According to Champa, (2016), computer self-efficacy is an essential factor to consider in terms of using electronic library resources that are computer-based and information-oriented. Nevertheless, frequent use of computers is likely to increase the computer self-efficacy level of a student when using the computer. This was deduced by Clayton, Njoroge, Reed and Suh (2017) that students have lower computer self-efficacy today than students from ten years ago.

Similarly, Aktag (2015) established that the duration of computer usage increased the computer self-efficacy level of students and also the use of electronic library resources. Pellas (2014) asserted that computer self-efficacy is an important factor that influences electronic library resource utilization in the technological world and that the extent to which undergraduate demonstrates confidence in the use of a computer can also determine the extent to which they will use electronic library resources since the resources are accessed via computers. In other words, the level of computer self-efficacy possessed by undergraduates will determine their level of usage of electronic library resources.

Literature Review (Empirical Review)

Relationship between computer self-efficacy of undergraduates and electronic library use

S/N	Author (s)/Year	Title of Article	Study Area	Method	Findings
1	Bello & Ajoviyon (2021)	Influence of computer self-efficacy on the use of electronic information resources among Polytechnics students	Ogun State, Nigeria	Survey research	Revealed that students will utilize the electronic information resources if they have the necessary computer self-efficacy.
2	Umar, Azeez & Haruna (2020)	Relationship between computer self-efficacy and use of electronic information resources by undergraduate students of Federal University of Kashere	Gombe State, Nigeria	Descriptive survey research design	Revealed that the extent to which each sampled student's use of electronic information resources is often directly proportional to the level of his/her computer self-efficacy.
3	Ebijuwá & Maba wonku (2019)	Computer self-efficacy as a predictor of undergraduates' use of electronic library resources in Federal Universities	South-West Nigeria	Descriptive survey research design/	Revealed that there was a significant relationship between computer self-efficacy and use of electronic library resources ($r = 0.13, p < 0.05$). The finding also pointed that computer self-

					efficacy influenced undergraduates' use of electronic library resources in federal universities in South-west, Nigeria.
4	Sadiku, Issa, Salman, Omopupa & Rabin (2017)	Influence of users' computer self-efficacy and perceptions on satisfaction with electronic libraries in universities in Nigerian	Northern, Nigerian	Descriptive survey research	Revealed that computer self-efficacy of users with electronic libraries were high, even though their perceptions of electronic libraries were low. There was a strong relationship between computer self-efficacy and satisfaction with electronic library ($r(951) = .164, p = .000$), a positive correlation between perceptions and satisfaction with electronic library ($r(951) = .334, p = .000$). It was therefore

					concluded that the satisfaction of users with electronic libraries in the universities in Northern Nigeria would largely be influenced by their level of computer self-efficacy and perception.
5	Oyedapo, Shabi & Awominire (2019)	Influence of self-efficacy on electronic resource utilization by undergraduates in three Nigerian universities.		Descriptive survey research design	Revealed that undergraduates in federal universities possessed a high level of self-efficacy. The finding further pointed that undergraduates' level of e-library resources utilization was low. However, the study established a statistically significant relationship between self-efficacy and e-library utilization, a statistically significant difference in e-library utilization of

					undergraduates in the three selected universities.
6	Tella, Tella, Ayeni&Omoba (2007)	Investigation on self-efficacy and use of electronic information as predictors of academic performance		Descriptive survey research design	Revealed that significant correlation exists among use of electronic information, self-efficacy and academic performance with electronic information ($r = 0.2779^*$) and self-efficacy ($r = 0.1559^*$). The reason for this relationship or correlation may be because academic performance often depends on students' personality variables
7	Nwosu, Achukwu, Akuezuilo&Uzoekwe(2015)	Computer self-efficacy, computer-related technology dependence and online learning readiness of undergraduate students		Correlational research design	Revealed that there was a significant relationship between computer self-efficacy, and computer-related technology dependence of undergraduates ($r=.323$, $p<.05$). It was

					also deduced from the findings, that the use of electronic libraries by undergraduates is a function of computer self-efficacy.
8	Olawale&Popoola (2021)	Investigate computer self-efficacy and facilitating conditions as correlates of behavioural intention to use electronic information resources by MBA students	Federal Universities in Nigeria	Descriptive survey research design	Revealed a positive relationship between perceived behavioural control or computer self-efficacy of electronic information resources and MBA students' behavioural intention to use electronic information resources in Nigeria Universities ($r = .276$, $n = 1015$, $p (.000)$. The finding further revealed that computer self-efficacy is positively related to use of electronic library information resources.

9	Oyewole&Oladipo (2017)	Examine the influence of information needs and computer self-efficacy on the use of electronic reference services by undergraduate students in a Nigerian University	Federal University of Technology, Akure.	Descriptive survey research design	Highlighted that there is a significant positive relationship between computer self-efficacy and the use of electronic reference services by undergraduates
10	Eserada, Okolo&Ideh (2019)	Computer self-efficacy as a determinant to the use of online public access catalogue: a case study of selected universities	Niger Delta	Descriptive survey research design	Established that the major access points through which information is accessed using OPAC are Author, Title and Subject access points, Keyword search, Simple search, basic search, Boolean search method and phrase. The findings also exhibited that a positive computer self-efficacy may be more akin to using OPAC in an electronic library.
12	Wu &Yeh (2012)	Examined the effects of undergraduate students' competence on usage of library electronic collections at National Taiwan University	Taipei		Revealed that most of the students were not confident about their capabilities in

		(NTU)			using library electronic resources. A low correlation was found between students' levels of computer competencies and their frequency, familiarity and perceived importance of electronic resources.
13	Israel &Edesiri (2016)	Undergraduates' computer skills and the use of online information resources, a case study of Library and Information Science Students	Delta State University, Nigeria.	Descriptive survey method	Revealed that 98.5% agreed that computer skills enhance their use of online information resources as well as being confident in using online information resources due to their level of computer skills respectively
14	Sadiku&Kpakiko (2017)	Examined the relationship between computer self-efficacy and use of electronic resources by students in Nigerian university libraries	One University each was selected from the six geopolitical zones in Nigeria.	Descriptive survey research	Established that computer self-efficacy and the use of e-resources had a significant influence on the satisfactory use of libraries, but the use of e-resources

					was more significant to the satisfaction of library users. The finding further added that students who were computer-competent expressed interest in using the library's electronic resources and at the same time exhibited higher self-efficacy in electronic library use.
15	Omwanghe&Ogiamien (2021)	Examination of computer self-efficacy as a predictor of the use of automated library systems by users in university libraries	Edo State	Descriptive survey research	Revealed that library users in the university libraries understudy have a high computer self-efficacy. The findings further revealed that there is a significant relationship between computer self-efficacy and the use of automated library systems by library users.

16	Nwobu, Oyewole & Apotiade (2016)	A case study on computer self-efficacy as a correlate of online public access catalogue use also expressed a relationship between OPAC and computer self-efficacy, especially in the Nigeria context	Federal College of Education (Technical) Lagos, Nigeria	Descriptive research design	Revealed that most of the respondents 125 (61.6%) searched the OPAC through the title and 53 (26.1%) used the OPAC twice a week. The finding also revealed that the majority of the study had high computer self-efficacy, as there was a significant positive relationship between computer self-efficacy and the use of OPAC ($r = .430^{**}$; $df = 202$; $p < 0.01$). Based on the findings, was deduced that the use of the Online Public Access Catalogue (OPAC) by students has a lot of advantages and computer self-efficacy is a factor that could determine its
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					effective utilization.
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METHODS

Research Design

The correlational research design was adopted for this study. The correlation research design according to Nworgu (2015) refers to a design that seeks to establish what relationship exists between two or more variables, as well as indicate the direction and magnitude of the relationship between the two variables. In correlation research, data are collected to determine the degree of relationship that exists between two or more variables. The choice of this design is relevant and appropriate because it seeks to establish a relationship between the two variables (computer self-efficacy and electronic library use).

Area of the Study

The study was conducted in Southern, Nigeria. The area consists of three geopolitical zones which include South-East, South-West and South-South. This study is more concerned with the tertiary level of education in the area. Specifically, there were 10 federal, 17 state and 8 private universities at the time of this study. Furthermore, all the universities in Southern Nigeria have functional electronic library systems that are equipped with adequate computers, Internet connectivity and bandwidth for students, staff and researchers' utilization. More so, the rationale behind the choice of universities in Southern Nigeria for this study was informed by LIS undergraduates' underutilization of electronic libraries when they are supposed to be pace-setters to other undergraduates in the use of electronic library information resources.

Population of the Study

The population of this study consists of all 10, 345 LIS undergraduates from ten federal, seventeen state and eight private universities in Southern, Nigeria (LIS HOD Office, 2020/2021 Academic Session). The study was carried out using LIS undergraduates because they are the future of the librarianship profession in universities. The table below is the population distribution of respondents according to the institution.

Table 1: Population Distribution Respondents by Institution

S/ N	Name of Institution	Ownersh ip	No. of Reg. LIS Undergraduates					Zone
			100L	200 L	300 L	400 L	Total	
1	Michael Okpara University of Agriculture, Umudike, Abia State	Federal	74	59	44	37	214	South-East
2	NnamdiAzikiwe University, Awka, Anambra State.	Federal	90	105	119	43	357	
3	University of Nigeria, Nsukka, Enugu State.	Federal	65	63	78	90	298	
4	Abia State University, Uturu, Abia State.	State	85	94	78	49	306	
5	Anambra State University of Science and Technology, Uli, Anambra State.	State	11	19	21	23	74	
6	Ebonyi State University, Abakaliki, Ebonyi State	State	54	63	0	0	117	
7	Enugu State University of Science and Technology, Enugu, Enugu State.	State	118	98	105	81	402	
8	Imo State University, Owerri, Imo State	State	129	95	72	56	352	
9	Madonna University Okija, Anambra State	Private	3	1	6	2	12	
10	University of Portharcourt	Federal	113	95	89	95	392	South-South
11	University of Benin, Benin City, Edo State.	Federal	88	79	62	65	294	
12	University of Calabar, Cross River State.	Federal	120	137	115	117	489	
13	University of Uyo, Akwa Ibom State.	Federal	102	98	72	69	341	
14	Niger Delta University, Wilberforce Island Bayelsa	State	51	47	0	0	98	
15	Cross River State University of Science and Technology, Calabar, Cross River.	State	216	118	96	59	489	
16	Delta State University, Abraka, Delta State.	State	115	127	121	118	481	
17	Ignatius Ajuru University of Education, Rumuolumeni,	State	102	88	71	55	316	

	Rivers State.							
18	Rivers State University, Port-Harcourt	State	105	119	205	85	514	
19	Rivers State University of Science and Technology, Nkpolu Rivers State.	State	122	110	103	81	416	
20	Ambrose Ali University, Ekpoma Edo State.	State	48	39	32	33	152	
21	Benson Idahosa University, Benin City, Edo State.	Private	71	58	47	38	214	
22	AdekunleAjasin University, Akungha, Ondo State	State	73	69	51	54	247	South-West
23	Federal University of Oye-Ekiti, Ekiti State.	Federal	78	64	47	30	219	
24	University of Ibadan, Ibadan, Oyo State.	Federal	115	137	121	159	532	
25	University of Agriculture, Abeokuta, Ogun State.	Federal	115	83	55	45	298	
26	Ekiti State University, Ado Ekiti, Ekiti State.	State	69	58	44	42	213	
27	Tai Solarin University of Education, Ijebu- Ode, Ogun State	State	90	81	68	73	312	
28	Lagos State University, Ojo, Lagos State.	State	92	87	74	62	315	
29	Adeleke Ajasin University, Akungba Akoko, Ondo State	State	185	0	0	0	185	
30	Adeleke University, Ede, Osun State.	Private	92	73	52	54	271	
31	Ajayi Crowther University, Ibadan, Oyo State.	Private	88	84	71	77	320	
32	Babcock University, Ilishan-Remo, Ogun State.	Private	110	92	79	91	372	
33	Crescent University, Ogun, Ogun State.	Private	63	51	42	58	214	
34	Fountain University, Oshogbo, Osun State.	Private	61	54	41	49	205	
35	Leed City University, Ibadan, Oyo State.	Private	97	86	69	64	316	
			3,210	2,731	2,350	2,054	10,345	

Sources:2020/2021 Academic Session Retrieved from Universities LIS Departmental Office.

Sample and Sampling Technique

The sample size for this study is 1,017 undergraduates. This was derived by taking 10% of the entire population. It should be noted that Ebonyi State University Abakaliki, Niger Delta University, Wilberforce Island and Adekunle Ajasin University have been excluded from this study because they do not have a 200-400 level of study at the time of this study. Therefore, the total population figure for the three universities has been removed from the sample. Also, the entire population of Madonna University, Okija was used as a sample since the population figure is small. The sample is regarded as adequate because Seaberg (1988) and Grinnell and Williams (1990) suggested that, “in most cases a minimum of 10% sample should be sufficient for controlling sampling error”. However, combinations of sampling techniques were used for this study. Firstly, the purposive sampling technique was used to sample the 10%. Secondly, the quota sampling technique was used to determine the sample size for each university as well as the levels of study. See the tabular representation of sample size according to level and institutions

The Study Sample Size

S/N	Name of Institution	100 level	200 level	300 level	400 level	Total
1	Michael Okpara University of Agriculture, Umudike, Abia State	7	6	4	4	21
2	NnamdiAzikiwe University, Awka, Anambra State.	9	11	12	4	36
3	University of Nigeria, Nsukka, Enugu State.	7	6	8	9	30
4	Abia State University, Uturu, Abia State.	9	9	8	5	31
5	Anambra State University of Science and Technology, Uli, Anambra State.	1	2	2	2	7
6	Enugu State University of Science and Technology, Enugu, Enugu State.	12	10	11	8	41
7	Imo State University, Owerri, Imo State	13	10	7	6	36
8	Madonna University Okija, Anambra State	3	1	6	2	12
9	University of PortHarcourt	11	10	9	10	40
10	University of Benin, Benin City, Edo State.	9	8	6	7	40
11	University of Calabar, Cross River State.	12	14	11	12	49
12	University of Uyo, Akwa Ibom State.	10	9	7	7	33
13	Cross River State University of Science and Technology, Calabar, Cross River.	22	12	10	6	50
14	Delta State University, Abraka, Delta State.	12	13	12	12	49
15	Ignatius Ajuru University of Education, Rumuolumeni, Rivers State.	10	9	7	6	29
16	Rivers State University, Port-Harcourt	11	12	21	9	53
17	Rivers State University of Science and Technology, Nkpolu Rivers State.	12	11	10	8	41
18	Ambrose Ali University, Ekpoma Edo State.	5	4	3	3	15
19	Benson Idahosa University, Benin City, Edo State.	7	6	5	4	22
20	AdekunleAjasin University, Akungha, Ondo	7	7	5	5	24

	State					
21	Federal University of Oye Ekiti, Ekiti State.	8	6	5	5	24
22	University of Ibadan, Ibadan, Oyo State.	12	14	12	16	54
23	University of Agriculture, Abeokuta, Ogun State.	12	8	6	5	31
24	Ekiti State University, Ado Ekiti, Ekiti State.	7	6	4	4	21
25	Tai Solarin University of Education, Ijebu-Ode, Ogun State	9	8	7	7	31
26	Lagos State University, Ojo, Lagos State.	9	8	7	6	30
27	Adeleke University, Ede, Osun State.	9	7	5	5	26
28	Ajayi Crowther University, Ibadan, Oyo State.	9	8	7	8	32
29	Babcock University, Ilishan-Remo, Ogun State.	11	9	8	9	37
30	Crescent University, Ogun, Ogun State.	6	5	4	6	21
31	Fountain University, Oshogbo, Osun State.	6	5	4	5	20
32	Leed City University, Ibadan, Oyo State.	10	9	7	6	31
Total						1,017

Instrument for Data Collection

The questionnaire was used as an instrument for data collection. The questionnaire is divided into two sections entitled “Undergraduates’ Computer Self-Efficacy Questionnaire” (UCSQ) and “Undergraduates’ Electronic Library Use Questionnaire” (UELUQ) respectively was used to collect data from the respondent. The computer self-efficacy scale was adapted from Murphy’s (1989) self-efficacy scale. While, the electronic library use scale was adapted from Umar, Azeez and Haruna’s (2020) computer self-efficacy and electronic resources use scale.

Reliability of the Instrument

To ascertain the internal consistency of the items, the instruments were administered to 20 LIS undergraduates in the Federal University of Technology Minna, Niger State of Nigeria, which is not part of the researchers ‘area of the study because they share similar characteristics. Data collected were analyzed using the Cronbach Alpha method to measure the internal consistency and reliability of the instrument. The alpha value of the reliability of the instrument resulted in the coefficient of each cluster, cluster A 0.876 and B 0.885 of the different clusters for each of the two instruments respectively. The overall reliability indexes for the two clusters A and B was 0.88 respectively. These reliability coefficients were considered high enough for the instruments.

Method of Data Collection

The data will be administered to the respondents personally by the researcher with the help of one research assistant in each LIS Department in the Universities under study. The research assistants who are staff of the LIS Department in the Universities were briefed on how to

administer and retrieve the questionnaires from the respondents. The spot method of administration was employed by the researcher.

Method of Data Analysis

The data collected was analyzed using inferential statistics. The research question was analyzed using Pearson's Product Moment Correlation Coefficient (PPMC) and the hypothesis was tested using simple linear regression. The decision on the research question was based on the values assigned to the different statements. In deciding the research question, Nwana's (2007) opinion was used, thus the correlation coefficient (r) with the score:

0.00- 0.20	=Very low relationship
0.20- 0.40	=Low relationship
0.40- 0.60	=Moderate relationship
0.60-0.80	=High relationship
0.80-0.90	=Very high relationship
1.00	=Perfect relationship

Presentation of Results

Research Question: What is the relationship between computer self-efficacy and electronic library use among LIS undergraduates in universities in Southern Nigeria?

Hypothesis: There is no significant relationship between LIS undergraduate computer self-efficacy and electronic library use in universities in Southern Nigeria.

Table 1. Pearson r on Undergraduates' Computer Self-efficacy and Electronic Library Use

Variables	N	Computer Self-efficacy	Electronic Library Use	P-value	Remark
Computer Self-efficacy	983	1.00	.19	>0.05	Significant Positive Relationship
Electronic Library Use	983	.19	1.00		

Table 1 presents Pearson's correlation (r) between undergraduates' computer self-efficacy and their electronic library use and the summary of regression analysis. The correlation coefficient (r) of .19 shows that there was a very low positive relationship between LIS undergraduates' computer self-efficacy and their use of the electronic library. The table further revealed that the relationship was significant, $f(df;1,981) = 36.37p < 0.05$. Since the p -value was less than 0.05, the null hypothesis was rejected. The analyses of research question one and hypothesis one indicated that there is a significant positive relationship between computer self-efficacy and electronic library use among LIS undergraduates.

Discussion of Findings

The finding of this study corroborates Oyewole and Oladepo (2017) highlighting that there is a significant positive relationship between computer self-efficacy and the use of electronic reference service by undergraduates in the Federal University of Technology Akure (FUTA), Ondo State, Nigeria. The finding of this study substantiates Omwanghe and Ogiemien (2021) that there is a significant relationship between computer self-efficacy and the use of automated library systems by library users. The finding of this study approves Olawale and Popoola (2021) that computer self-efficacy is positively related to the use of electronic library information resources.

Similarly, this finding aligns with that of Oyedapo, Shabiand Awominure (2019) that there is a significant relationship between self-efficacy and electronic library utilization by undergraduates. This finding was further buttressed by the finding of Ebijuwa and Mabawonku (2019) who found that there was a significant relationship between computer self-efficacy and the use of electronic library resources by undergraduates in federal universities in South-West, Nigeria. This finding also agrees with Nwosu, Achukwu, Akuezulo and Uzoekwe (2015) that there was a significant relationship between computer self-efficacy and computer-related technology dependence of undergraduates. Thus, computer self-efficacy and computer-related technology dependence predicted students' electronic library use and online learning readiness in the university environment. However, the result of this finding disagrees with Wu and Yeh (2012) who found a low correlation between students' levels of computer competencies and their frequency, familiarity and perceived importance of electronic information resources.

Conclusion

The main thrust of this study was to investigate the correlation between computer self-efficacy and electronic library use among LIS undergraduates in universities in Southern Nigeria. Thus, electronic library use is an extremely complex concept that is influenced by the computer self-efficacy factor, however, the present study concludes that computer self-efficacy significantly correlates with electronic library use among LIS undergraduates in universities in Southern, Nigeria.

Recommendations

Based on the findings of this study, the following recommendations were made:

- 1 Electronic library use thrives in an electronic environment and as such the university management should provide an enabling environment (adequate funding, training on electronic resources and internet facilities) and funding bodies should support university library management financially towards actualizing these electronic services.
- 2 The university authorities and the Nigeria Library Association (NLA) including the Nigeria University Commission (NUC) should collaborate to tailor the LIS curriculum to reflect information and communication technological courses with innovations prevalent in this 21st century like what is obtainable in developed world.

Also, they should ensure that the teaching of computer skills to LIS undergraduate in universities is promoted. This is to ensure that the low level of electronic library resource usage among LIS undergraduate changed to high and is sustained for their adequate academic prowess.

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Librarians' Preparedness Towards Robots' Usage in Nigerian Academic Libraries

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Abstract

The purpose of the article is to investigate librarians' preparedness towards the usage of robots in Nigerian academic libraries. The research is a survey that is based on the positivist paradigm. The questionnaire served as a tool for gathering data. From each of the university libraries, 20 academic librarians were chosen using the snowballing sample technique. The study's findings indicate university libraries in Nigeria are not particularly prepared to accept and employ robotic technologies. Notwithstanding the significant advantages this technology has to offer for library operations, it shows that university libraries across the nation are not yet ready to employ it. The study concludes that despite the significant advantages this technology has to offer in terms of library operations, university libraries across the nation are not yet ready to adopt its use. The study, among others, recommended that academic librarians should be made aware of the advantages of robotics adoption and application in library operations and the management of the libraries may offer an alternate power source for the libraries, such as solar electricity and generators. This would ease concerns about a lack of reliable power that might prevent academic libraries in Nigeria from adopting and using robotic technologies.

Keywords: Preparedness, Academic librarians, Robotic technologies, University libraries, Nigeria

Introduction

University libraries' fundamental duties include producing, organising, and facilitating simple access to timely and correct information for students, academic staff, and other library users. These activities assist teaching and learning in university environments. By gathering, preserving, and making information resources available to students, academic staff, and other users, university libraries are required to support research procedures and academic activities. Because they play a key role in the university system, university libraries are crucial to university education. By supporting the institution's teaching, learning, and research activities, they help the organisation realise its goals and objectives. University Libraries use robotic technologies to facilitate and enhance library operations, improve library services, and promote efficiency to efficiently carry out their mandate.

Robotics has been characterised by many academics in various ways. Robots are mechanical devices that automate tasks under direct human supervision or following a pre-established plan and a set of general rules (Talaviya et al., 2020). According to Abraham (2019), robotics refers to a class of machines that can be utilised to execute a variety of computer-programmed automated tasks. From these two definitions, it can be concluded that robotics is a branch of artificial intelligence that deals with motor and continual tasks as well as machine learning. The Fourth Industrial Revolution must be mentioned while discussing robotics (4IR).

Moreover, the CEO and Chairman of the World Economic Forum recognised the sociological and economic transformation at the Davos, Republic of Switzerland event and coined the term "Fourth Industrial Revolution" (Ocholla and Ocholla, 2020). They went on to explain that while the Second Industrial Revolution utilised electric power for mass manufacturing, the First Industrial Revolution used water and steam power to mechanise production. The Fourth Industrial Revolution, or the digital revolution that has been going on since the middle of the past century, is building on the Third Industrial Revolution, which used electronic and information technology to automate production (Ocholla and Ocholla, 2020).

Internet of Things (IoTs), big data analytics, cloud computing, augmented reality and robotic systems, simulation prototypes, and 3D printing are among the new 4.0 technologies listed by Kamble et al. (2018) as making up 4IR. This means that "a fusion of technology that is blurring the boundaries between the physical, digital, and biological domains, which is collectively known as cyber-physical systems," is what the Fourth Industrial Revolution is recognised for (Schwab, 2017). The Fourth Industrial Revolution has altered library operations in a variety of ways, especially with the employment of robotic technologies. According to Harada (2019), the word "robot" has been used in a variety of contexts, therefore there isn't a single definition that can be considered appropriate. Having stated this, he classifies a robot as "something that works on behalf of a human, which automatically and continuously performs particular processes or procedures". Robots can be categorised using several factors, such as their functions, missions, and forms (Harada, 2019). Robots are mechanical devices that automate operations under direct human supervision, a predetermined programme, and a set of basic rules using AI approaches (Talaviya et al., 2020). Additionally, Harada (2019) categorises robot functions into three categories: industrial robots, which are robots that perform autonomous work automatically on

behalf of a human in a production or industrial environment; robots used in a hazardous working environment, which are frequently used in accident sites, particularly where it is very challenging for people to work; and finally, robots for daily life support, which are robots that frequently provide human support. These robots carry out their tasks for organisations while mimicking human form and motion.

According to Tella (2020), robotics and AI are tightly related. This suggests that machine learning and perceptual and motor tasks are both important to robots. According to Wang and Siau (2019), a robot is a device that can perform complicated tasks through automation operations that are programmed by a computer. Since libraries offer an expanding range of digital library services and resources, which are relatively simple for robots to track, using robotics in libraries will be of significant advantage and open up prospects in library operations. Both in industrialised and developing nations, a large number of libraries, particularly university libraries, have embraced the use of robotic technologies to facilitate their job.

Statement of the problem

Journals, magazines, books, CD-ROMs, e-resources, reference materials, and a wide variety of other informational resources are available at Nigerian university libraries. These materials, which cover a wide range of topics, are aimed at the academic communities. Automation is widely used in university libraries for a variety of library services, including acquisition, cataloguing, serials, and others. The use of robotic technologies, however, would reduce the need for human engagement in a variety of library tasks. Based on this, evaluating the readiness of robot deployment as an advancement in automation in Nigerian university libraries will undoubtedly reveal the state of such libraries' readiness for the use of robotic technology. According to Tella (2020), robots are frequently used in university libraries in developed nations as machines that carry out automatic activities. It was observed that Nigeria, as a developing country, is working on implementing the technology, notably in the university libraries.

There is, however, a dearth of empirical studies on academic librarians' preparation for and awareness of the use of robotic technologies in Nigerian university libraries. There were just three publications published on the aforementioned topic between the years 2010 and 2023, according to a search of Scopus, the largest database for the humanities and social sciences. These studies are mostly opinion pieces and none of them focused on university libraries. To the best of the researcher's knowledge, the literature at the time did not address whether academic libraries were prepared to adopt robotic technologies in the libraries of Nigerian universities. Existing research shows that robotic technology has been used in intelligent libraries in a variety of ways. Most applications are still in the theoretical stage, which is somewhat constrained and at the same time cannot be put into practice. There are several causes behind this, including the lack of funding for university research, particularly in poorer nations, the challenges associated with collecting large amounts of data, and the limitations of data mining. Also, there is a paucity of AI skill teams and AI thinking in the library industry. Based on this, this study seeks to ascertain the academic librarians' level of preparation for the use of robotic technology in university libraries in Nigeria.

Research questions

The following research questions guided the study:

- 1) What are the levels of preparedness of university libraries towards robotic technologies in terms of technological infrastructure, policy framework and human development for the adoption and use of robotics in the libraries?
- 2) What available services that university libraries handle using robotic technologies?
- 3) Are librarians aware of the potential benefits of robot technologies to library operations?
- 4) What are the challenges that university libraries may face in the adoption and use of robotic technologies?

Literature review

Similar to the Internet of Things, 3D printing, augmented reality, and virtual reality, robotic technologies are disruptive. Particularly in the industrialised world, these disruptive technologies have completely changed how libraries and information services are provided. Fundamentally, the automation of information storage and retrieval is made possible by robotic technology. Robots have been used in libraries, particularly in wealthy nations. Academic libraries use robotic technologies in a variety of ways, including autonomous shelf reading robots, telepresence, chatbots, and humanoid robots for maintaining circulation data and providing reference services (Tella, 2020).

Coleman (2017) asserts that by using scan radio frequency identification (RFID) tags, which are connected to books to generate reports on books, robots may also be utilised efficiently in academic libraries to scan shelves and for self-navigation, particularly at night. A robotics club, which may be utilised to teach kids how to code through robots, can also be beneficially hosted by a library makerspace. Asemi and Nowkarizi (2021) assert that robotic technologies are utilised in academic libraries for real-time browsing of printed documents via a web interface, which contributes to this. This suggests that patrons of the library will interact with computers and robots to have the requested materials automatically retrieved. Since computer algorithms and software simplify academic library operations and make librarians' jobs incredibly simple, the adoption of robotic technologies has had a significant impact on library operations, particularly in terms of giving users access to timely information and improving library efficiency.

In the United States, academic libraries were polled in 2017 by Wood and Evans (2018). 56.3% of academic librarians acknowledged that the introduction of robotics in academic libraries will change librarianship, according to the data. This suggests that the use of robotics in academic libraries will result in several improvements to user experience. This has been made possible, according to Cotera (2018), who claims that the use of robotic technologies in academic libraries in industrialised nations has completely revolutionised the user experience and made the material more approachable, logical, and amusing. According to Liao (2019), several libraries in Singapore employ robots to help library personnel with tasks including sorting returned books, reading shelves, and transporting library resources. This suggests that the existence of robots in academic libraries affords librarians the chance to have enough time to concentrate on other

pertinent and significant library information service delivery activities targeted at ensuring users are satisfied.

According to Tella (2020), robotic technology can be used in university libraries in Nigeria in several different ways, such as for security, user assistance, and shelving and cataloguing library resources. In addition, robotic technologies are particularly relevant in automated storage and retrieval systems (ASRSs), and this has aided in space management in library operations (Payne, 2007). From this, it can be concluded that robotics applications created the technical framework for the development of intelligent academic libraries. The adoption of robotic technology in academic libraries can be influenced by several aspects, including modular architecture, self-learning, and vivid language (Shivarama and Choukimath, 2019).

According to Tella (2020), who is exploring the advantages of AI in libraries, robotics increase the operational efficiency of libraries by optimising collection analysis, visualisation, preservation, and lowering costs related to service delivery. A strong foothold for libraries in the new scholarly information landscape is established by robots, according to the author, who also claims that it can be easily integrated with current workflows and infrastructure. Robotics also helps libraries and librarians achieve their new goals. Academic libraries would not be able to make use of these advantages of robots if they did not respond to its application. The reactions to the use of robotic technologies in academic libraries must therefore be investigated.

The role of robotic technologies in library operations and librarianship has been acknowledged by some professional bodies in the field, including the South African Library Association, the American Library Association, and the International Federation of Library Associations and Institutions (IFLA). According to an IFLA Trend Report, robotics is relevant for libraries and librarianship since it can be employed with the semantic web and search, as well as with translation and cloud computing advancements (Wang, 2014).

In academic libraries, robotic technology was investigated by Ali et al. (2020). The study's main objectives were to learn how libraries are coping with the use of technology and what part librarians would play in the future of robots. The writers looked at academic literature, strategic plans for university libraries, and library programming. The study's findings showed that librarians did not react well to the use of technology in libraries. The study's findings also showed that it is challenging for librarians and library managers to incorporate this technology in library systems because of a lack of understanding and awareness about the advantages and cost savings that it could offer to the library. Similarly, Adebayo et al. (2018) observed that library managers will exhibit trust in the adoption and deployment of AI when they are adequately aware of the necessity of providing routine services through the application of the technology.

The preparation for the use of robotic technologies in university libraries depends on several criteria, including the availability of appropriate data, the requirement for policy documentation, the deployment of necessary software and algorithms, and, finally, expert expertise (Martinez-Plumed et al., 2021). The amenities required for the efficient use of robotic technology in university libraries are listed by Qomariyah et al. (2020) in a study on Indonesian university libraries. Documents outlining policies and procedures, technical know-how, and organisational

resources, such as human and technological resources, are some examples. According to Decker (2015), adequate technological infrastructure, including a high WiFi connection zone, must be installed in libraries for the effective deployment of robotic technologies. He continues by stating that there needs to be a written policy in place. The use of robotic technologies would, however, result in less frequent human engagement with library operations.

Methodology

The research is a survey that is based on the positivist paradigm. The data-gathering tool was a questionnaire, which was utilised in research by Lund et al. (2020) and Owolabi et al. (2022). Purposive sampling was used to select six university libraries based on ownership. The selected university libraries were federal and state-owned in North Central Nigeria (See Figure 1). In addition, the six (6) chosen universities also possessed the infrastructure and personnel required to support ICT development in their university libraries.

Furthermore, among the six universities that were specifically chosen, 120 academic librarians were chosen. From each of the university libraries, six (6) academic librarians were chosen using the snowballing sample technique. Based on their understanding of IT and familiarity with robotic technology, this was done. The office of the leaders of the ICT/automation units was our first port of call, and they pointed us in the direction of the academic librarians who are knowledgeable about robotics. Before distributing the questionnaire, the respondents were asked for their informed consent.

Table 1: List of universities in North Central, Nigeria

Name of the university libraries	Type of Ownership	State
Kogi State University, Anyigba	State	Kogi State
Nasarawa State University, Keffi	State	Nasarawa State
Benue State University, Makurdi	State	Benue State
University of Abuja	Federal	FCT
University of Ilorin	Federal	Kwara State
University of Jos	Federal	Plateau State

Results and discussion

This section presents the results of the findings based on the research questions as designed in the questionnaire.

Research question 1: What are the levels of preparedness of university libraries towards robotic technologies in terms of technological infrastructure, policy framework and human development for the adoption and use of robotics in the libraries?

The goal of the study was to determine the degree of robotic technology readiness among university libraries. The levels of readiness in terms of the digital infrastructure, policy framework, and human capacity were determined using the following criteria. The majority of respondents (60%) acknowledged that the deployment of AI technologies is impacted by their lack of digital infrastructure. In all, 28% of those polled said they lacked a framework for a policy that would direct the introduction of robotic technologies into Nigerian university

libraries, while 12% said they had enough staff to operate the equipment. The results of this study supported those of Tella (2020), who discovered that despite the presence of human resources that will enable resource usage, many African countries lack the facilities and legislation that will encourage access to and use of robotic technologies.

Research question 2: What are the available services that university libraries handle using robotic technologies?

The goal of the study was to determine which library tasks could benefit from robotic technology. Robotic technologies can be employed in a variety of library operations, including cataloguing, categorization, reference services, acquisition services, and a host of others, according to all of the respondents. According to Tella (2020), many academic libraries in developed nations use robotics for a variety of library tasks. This study supports her results. He also points out that humanoids and chatbots are frequently utilised in libraries to maintain circulation records. This study also supports the findings of Murphy (2015), who contends that the adoption of robots for shelving, finding library materials, cataloguing and classification, security, responding to repetitive reference queries, and ASRSs in many university libraries in the USA has aided in the provision of library services.

Research question 3: Are librarians aware of the benefits of robot technologies to library operations?

All of the respondents from the six (6) university libraries that were chosen acknowledged that they were aware of the potential advantages of robotics in library operations, such as library automation (43%), innovation in library operations (23%), efficient service delivery (15%), and lastly (13%), the admission that adopting robotics in libraries will raise their stature. This might be because their selection was based on their understanding of how ICT is used in library operations. This study validates the findings of Kushins (2018) who claimed that academic librarians at the Hunter Library of North Carolina State University in the USA admitted that they are aware of the utility and importance of AI technology in library operations. The research also supported Wheatley and Hervieux's (2019) assertion that academic librarians in the United States and Canada are aware of the use of AI in library activities. The results of this study also support those of Nakhoda and Tajik (2017), who discovered that academic librarians at the University of Tehran are aware of the potential benefits of AI technology for libraries. The research by Owolabi et al. (2022), Frey and Osborne (2017) and Choudhury et al. (2018) supported these findings.

Research question 4: What are the challenges that university libraries may face in the adoption and use of robotic technologies?

The study aimed to pinpoint different challenges that university libraries can experience when adopting and utilising robotic technologies. According to the respondents, the biggest obstacle to the adoption of robotic technologies in university libraries will likely be a lack of funding, which will be cited by 48% of them, followed by unstable power supplies (30%), fear of job loss (22%),

and poor telecommunications facilities (3%) in that order. The results of this study are consistent with those of Odeyemii (2019), who claims that a lack of adequate power supply is a significant obstacle to the adoption of robotic technologies in Nigerian university libraries. The results of Oladokun et al. (2023) and Asogwa et al. (2015), who discovered that insufficient funding and intermittent power supply are some of the obstacles to the development of robotic technology in academic libraries in Nigeria, support the conclusions of this study.

Conclusion

It's not particularly impressive that university libraries in Nigeria are ready to adapt and deploy robotic technologies. It is an obvious sign that despite the significant advantages this technology has to offer in terms of library operations, university libraries across the nation are not yet ready to adopt its use. Yet, given that many nations around the world, particularly industrialised ones, have adopted the usage of technology, this research on readiness will be important for the adoption of the technology. It is imperative to inform librarians that the introduction of robotics in libraries will not result in job losses. This is essential since many librarians fear losing their jobs as a result of the adoption of new technologies. Also, several preparations must be made before robotic technologies relevant to libraries can be deployed.

Recommendations

From the findings of the study, the following suggestions were made:

- 1) The university libraries should provide the required guidelines for the use of these technologies, and staff members must participate in a variety of training sessions that will encourage their adoption and usage.
- 2) Academic librarians should be made aware of the advantages of robotics adoption and application in library operations. The administration of libraries should also provide cash for the purchase of the facilities that are required to support the efficient implementation of the technology.
- 3) The management of the libraries may offer an alternate power source for the libraries, such as solar electricity and generators. This would ease concerns about a lack of reliable power that might prevent academic libraries in Nigeria from adopting and using robotic technologies.

The study's limitations stem from the fact that just a small number of librarians from each of the chosen university libraries were chosen and that it only covers six (6) of the nation's university libraries. Thus, additional research is required that will cover more university libraries in various parts of the nation and concentrate on both academic librarians and paraprofessional staff who work in libraries. There is also a need for additional research that will look at how prepared other higher education institutions, such as polytechnics and schools of education, are for robotic technologies. Despite its limits, this study adds to our understanding of the literature, policies, and practices in these fields. The study's conclusions are crucial for university library administration in determining the actions that must be performed for the successful adoption and usage of robotic technologies. They could use this research as a guide. The empirical analysis of this work also advances the field of social informatics in Nigeria. The study's conclusions are

crucial to different library administrations in Nigerian university libraries because they offer a thorough examination of the infrastructure that must be taken into account for the deployment of robotics there. Finally, the study's conclusions led to the creation of a useful support document that can open up further possibilities for the deployment of robotic technologies in Nigerian university libraries.

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Influence of Management Styles and Information Anxiety on Job Performance of Library Personnel in Academic Libraries in Lagos State, Nigeria

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Abstract

This study investigated the influence of management styles and information anxiety on the job performance of library staff in academic libraries in Lagos State, Nigeria. The study adopted a descriptive design with a study population and sample of 197 librarians and library officers in 14 academic libraries in Lagos State. A structural questionnaire titled “Management Styles, information Anxiety and Job Performance (MSIAJP)” was used for data collection which had a coefficient reliability of $\alpha = .9091$. Data was analysed using frequency distribution; percentages, mean, and standard deviation together with regression and correlation analysis run on SPSS. There is a significant relationship between management styles and job performance of library staff in academic libraries ($r = .306$, $P < 0.05$). There was no significant relationship between the management styles of library staff in academic libraries ($r = .051$, $P > 0.05$). There was a significant combined effect of the management styles and information anxiety on the job performance of library staff ($F(2,192) = 10.327$, $P < 0.05$). Job performance of library staff in academic libraries is a function of many factors including management styles and information anxiety. This present study has been able to establish that both management styles and information anxiety have a major influence on the job performance of library staff. It is therefore recommended that library management should endeavour to create a favourable information environment that promotes access to useful information for decision –the library

management should ensure that work is designed in a way that improves employees' feeding of satisfaction and commitment to the work.

Keywords: Academic library, Management style, Information anxiety, Job performance, Nigeria

Introduction

Academic libraries are the hub of any higher institution. They are integral parts of all tertiary education systems be it universities, research institutes, polytechnics and colleges. The entire academic programmes of any institution are centred on its library. Academic libraries' main goal is to offer quality service to the user community but this is highly dependent on the calibre of library personnel who, to a large extent, determine the quality of service delivery (Ajie, Soyemi and Omotunde, 2016). According to Madukoma and Popoola (2012), libraries encourage teaching, research, conservation of knowledge and general information use in all aspects of life in their parent institution, including the promotion of reading culture in the university environment.

The contribution of the various employees and academic and non-academic staff in the achievement of organisational goals cannot be overlooked. The non-academic staff plays complementary roles, while the academic staff members are primarily involved in teaching, research and community services. The non-academic staff provides the required enabling environment to ensure the achievement of success on the tasks embarked on by academic staff and for the benefit of the smooth running of these institutions (Aman, 2010). The non-academic staff performs mainly administrative functions and some technical duties. They range from skilled, semi-skilled and unskilled tasks. They are made up of professional/administrative, secretarial, clerical, grounds, technical/works (electricians, plumbers and masons, laboratory workers, media specialists, and sports assistants) and staff of the library and finance departments, drivers, food services personnel, security staff, ventures staff, counsellors/social workers, and the student development services workers (Martinelli, 2015).

The managers of any organisation or institution want effective and efficient productivity from the staff; the reason being that it is said that the best thing to happen to any organisation, big or small, is the attainment of set goals and objectives. This, in most cases, is reflected in an increase in the level of productivity through work performance (Madukoma and Popoola, 2012). According to Oyewole and Popoola (2013), the job functions of library staff involve selecting, acquiring, organising, and disseminating, among others. Thus, the quality of library services is hinged on the level of personnel job performance and has been the concern of all stakeholders. However, management styles and information anxiety may affect the job performance of library personnel in academic libraries.

Management style is simply construed as a way to manage an organisation. It is the general approach of a manager in dealing with people at work and exercising authority over subordinates to reach organisational goals (Quang, 2002; Hartzell, 2006). Effective management style is the extent to which a leader continually and progressively leads and directs followers to a

predetermined destination agreed upon by the whole group. It is the manner of approach to issues by managers towards achieving the goals of their organisations by transforming various resources available to them into output through the functions of management (Field & Dubey, 2001).

The essence of management in any organisation is to provide leadership and a sense of direction for the employees. There are different forms of management styles being practised in organisations today such as the democratic style of management, autocratic management style, participative style and laissez-faire style of management. The impact of management styles on job functions and job performance in libraries and other organisations cannot be underestimated. For instance, Sirbu, (2015) argued that the anticipated outcome of practising any style of management in organisations is increased job satisfaction among employees.

For employees to accomplish their jobs, managers must encourage individuals who report to them, co-workers supervisors or customers. Because of this, for effective and efficient organisational management, the human factor must be critically looked at from the employee performance. Management and employees often rely on information to accomplish their given tasks and for effective decision-making. Irrespective of the nature of management being practised in any organisation, the result is to achieve some mode of effectiveness and efficiency. The foundation of management styles and practices can be presented by looking at the different management styles: participatory management, democratic management, autocratic management, dictatorship, laissez-faire and many other published styles of management.

The advancement in communication technologies has redefined information handling and usage among employees and employers. As a result of this, one of the most serious problems confronting employees and managers in libraries and other organisations in this information age is the need to deal or cope with the overflowing information. Information anxiety relates to the apprehension about finding, selecting, processing, interpreting, managing and applying information. It is caused by “the ever-widening gap between what we understand and what we think we should understand” (Conhaim, 2001: 11). Anxiety is a psychological condition that is unavoidable due to the nature of human lives today. Controlled and mild anxiety is essential for a dynamic human society and human development (Khadiji, 2006). Anxiety, especially in learning and decision-making, has long been recognised as a factor in various stages of job performance. Information anxiety is a feeling of an abundance of data or the inability to find or interpret them properly (Aghaei, Soleymani and Rizi, 2017).

Objectives of the study

The main objective of the study is to investigate the influence of management styles and information anxiety on the job performance of library staff in academic libraries in Lagos State, Nigeria. The specific objectives are to:

- i. determine the management styles adopted in academic libraries in Lagos State;
- ii. find out the level of information anxiety among library personnel in academic libraries in Lagos State;

- iii. examine the level of the job performance of library personnel in academic libraries in Lagos State;

Research questions

The following research questions are to be answered in the study.

- i. What are the management styles adopted in academic libraries in Lagos State?
- ii. What is the level of information anxiety among library staff in academic libraries in Lagos State?
- iii. What is the level of the job performance of library staff in academic libraries in Lagos State?

Hypotheses

The following null hypotheses will be tested in the study at a 0.05 level of significance:

- Ho1: There is no significant relationship between management styles and job performance of library staff in academic libraries in Lagos State.
- Ho2: There is no significant relationship between information anxiety and the job performance of library staff in academic libraries in Lagos State.
- Ho3: There is no significant relationship between information anxiety and management styles of library staff in academic libraries in Lagos State.

Literature Review

Job performance refers to how effectively employees accomplish their tasks and responsibilities (AbuAlRub, 2004). Greenslade and Jimmieson (2007) developed a well-validated scale to measure job performance, based on an established job performance model. Their scale consists of 41 behaviours with eight dimensions of job performance. These include (1) task performance consisting of four dimensions: provision of information, coordination of care, provision of support and technical care, and (2) contextual performance consisting of four dimensions: interpersonal support, job-task support, compliance and volunteering for additional duties.

Rotundo and Sackett (2002) identified three components of job performance, namely task, citizenship and counterproductive performance. Their prime objective was to determine the relative importance of each component to managers when rating the performances of their subordinates. Both task performance and counterproductive performance were given the greatest weight. Campbell, McCloy, Oppler and Sager (1993 cited Schepers, 2014: 21) defined performance as “goal-relevant actions that are under the control of the individual, regardless of whether they are cognitive, motor, psychomotor, or interpersonal”.

To achieve adequate job performance, there is a need for good management. Therefore, management involves organising and directing a group of people to accomplish specific

tasks. Also, it has a unique purpose and outcome that is needed to maintain a healthy organisation. The history of management science provides managers with a background into what came before so they are well grounded in the past. They continue to use some past theories in coping with management problems today. Additionally, society has changed remarkably, providing current management theorists with new insights and challenges (Sullivan and Decker, 2005; Marquis and Huston, 2009).

Wittgenstein (2006) described management as the managerial process of forming a strategic vision, setting objectives, crafting a strategy and then implementing and executing the strategy. A good management style is a blend of both efficiency and effectiveness. There is no point in acting efficiently if what managers are doing will not have the desired effect. Management techniques can be viewed as either bottom-up, top-down or collaborative processes. Stoner et al (1997) in Ghias and Ahmed (2012) described management as the process of planning, organising, leading and controlling the work or members of an organisation and using all available organisational resources.

According to Martinelli (2015), management describes the complex behaviour of those responsible for the decisions that determine the allocation of resources, both human and physical, within an organisation. The role of general managers is multifunctional: decision-maker, strategic leader, human relations expert, custodian of institutionalised values, mediator between business and society, negotiator and power broker. Managers act in a set of institutional contexts and display specific cultural attitudes and styles of action. According to the simplified model of firm behaviour under perfect competition, the managerial function is limited to a set of highly rigid decision rules for determining price and output. In real market situations which deviate from the perfectly competitive, market forces are only one of the variables in the complex context where business management takes place. Other key variables concern the corporate organisation, the larger group of organisations in which the firm is embedded, state policies and legal systems, and the strategies of both internal and external stakeholders of the firm. The general management function is therefore a very complex one, which includes a set of managerial roles and implies various forms of managerial behaviour and style.

Effective job performance, over the long term, requires managers' styles, careful planning and effort both by management and by workers. Job performance can be greatly influenced by the employee's characteristics, the manager's personal characteristics and management style being adopted, as well as the nature of the work itself (Saeed, Azizollah, Zahra, Abdolghayoun, Zaman & Peyman, 2011). Management style was found to be the key variable in predicting and creating professional workplaces (Nichols, 2003). According to Upenieks (2003), who pointed out that, hospitals would attract and retain more qualified nurses; the more participative the nurses perceived their managers' leadership style to be, the more satisfied they were.

Methodology

The research design adopted for this study was the descriptive survey research. This design was considered appropriate since the variables of interest have all existed and are studied as they were. The study adopts the total enumeration method also known as the census method. This implies that all members of the population are also considered as a sample for this study. With this, the sample size for the study is 197 respondents which include 108 librarians and 89 library officers, which spreads across all the libraries.

The target population for the study comprises the 197 staff of academic libraries in Lagos State. These include librarians and library officers. The libraries under investigation consisted of the university and college libraries in Lagos State. The questionnaire is the main instrument to be used for the data collection for this study. The questionnaire is titled – Management Styles, Information Anxiety and Job Performance (MSIAJP) Questionnaire. This research adopted a questionnaire with standardised scales, which have been widely used by researchers in various studies. Four subscales are derived from the MSIAJP Questionnaire.

These four dimensions are the Management Styles Scale (MSS), Information Anxiety Scale (IAS), Job Performance Scale (JPS) and Challenges to Job Performance. The questionnaire was made up of Likert-type questions which are measured on a four-point scale using the following: SA = Strongly Agreed; A = Agreed; D = Disagreed; SD = Strongly Disagreed.

Data Analysis:

Data were coded and analysed using the Statistical Package for the Social Scientists (SPSS). Descriptive statistics such as frequency counts, percentage, mean and standard deviation were used for the research questions. Pearson Product Moment Correlation and Regression analysis were used to discover the statistically significant relationship and differences between information anxiety, management styles and job performance of library staff. Multiple regression analysis was also used to determine the joint influence of management styles and information anxiety on the job performance of the respondents. A total of 197 copies of the questionnaire were administered to respondents in the University libraries out of which 154 copies were duly completed and returned and were founded valid for analysis. This represents a total of 78.2% response rate as revealed in Table 4.1, which is a very good result.

Demographic characteristics of respondents

Figure 1: Respondents distribution by section/department as presented below:

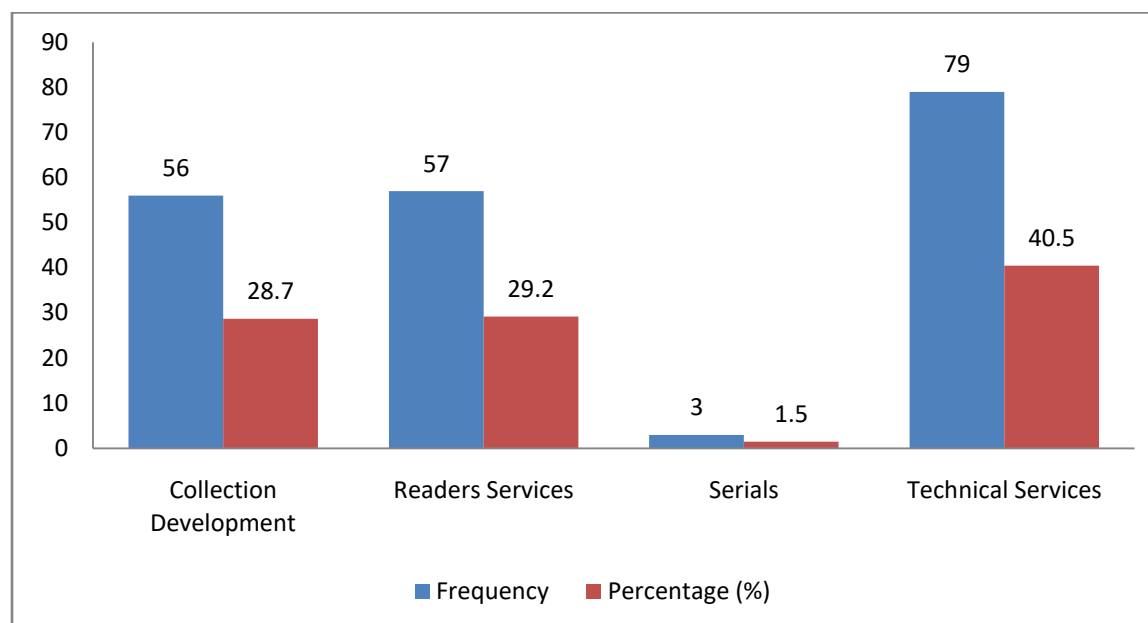


Figure 1 shows that the majority 79(40.5%) of the respondents were in the technical services section/department, 57(29.2%) were in the readers services section/department, 56(28.2%) respondents were in the collection development department and 3(1.5%) were in serials section.

Figure 2: The distribution of the respondents by gender as presented below:

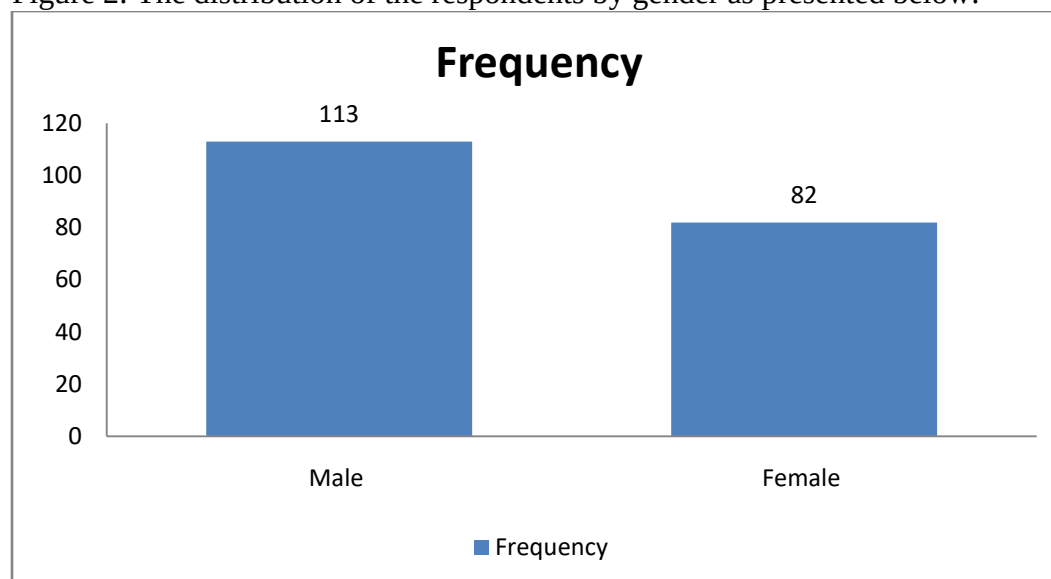


Figure 2 reveals that the majority 113(57.9%) of the respondents were male while the remaining 82 (42.1%) were female. This infers that there were more male staff than females in the libraries. These respondents cut across all the libraries.

Analysis of Research Questions

There were four research questions and seven hypotheses formulated for this study to achieve the set objectives. Answers to these research questions and hypotheses are provided below:

Research question 1: What are the management styles adopted in academic libraries in Lagos State?

Table 1: Management styles adopted in academic libraries of the respondents

S/N	Management Styles	Always	Mostly	Often	Occasionally	Rarely	Never	Mean	S.D
Autocratic management styles									
7	He/She often decides without consulting others	19(9.7%)	24(12.3%)	14(7.2%)	32(16.4%)	56(28.7%)	50(25.6%)	1.81	1.653
8	People have learnt not to question his/her judgment, as he/she rarely back down when he/she is truly passionate about something	12(6.2%)	29(14.9%)	25(12.8%)	49(25.1%)	43(22.1%)	37(19.0%)	2.01	1.506
9	He/She pushes the employees to work even harder even though some of the employees are already hard-working	31(15.9%)	44(22.6%)	24(12.3%)	17(8.7%)	22(11.3%)	57(29.2%)	2.35	1.906
10	He/She would urge the employees to beat their previous records	38(19.5%)	90(46.2%)	30(15.4%)	9(4.6%)	21(10.8%)	7(3.6%)	3.48	1.348
11	The superiors do not take into consideration the ideas and suggestions of the subordinates	17(8.7%)	16(8.2%)	30(15.4%)	20(10.3%)	48(24.6%)	64(32.8%)	1.68	1.654
12	The manager supervises subordinates closely with little or no degree of freedom	13(6.7%)	27(13.8%)	29(14.9%)	14(7.2%)	71(36.4%)	41(21.0%)	1.84	1.580
Democratic management style									
13	Decisions made by the manager are always by a voting system	21(10.8%)	11(5.6%)	23(11.8%)	36(18.5%)	52(26.7%)	52(26.7%)	1.75	1.612
14	He/She receives employees' approval before making any changes to their working conditions or role, even if it is just for a day	36(18.5%)	37(19.0%)	27(13.8%)	51(26.2%)	24(12.3%)	20(10.3%)	2.74	1.598
15	Employees constantly challenge his/her ideas and strategies because they know they are welcome to do so	25(12.8%)	16(8.2%)	41(21.0%)	33(16.9%)	46(23.6%)	34(17.4%)	2.17	1.615
16	He/She entrusts tasks equally to his/her employees	33(16.9%)	69(35.4%)	44(22.6%)	28(14.4%)	10(5.1%)	11(5.6%)	3.28	1.349
17	Provide direction, but allow the group/team to make its own decisions	38(19.5%)	63(32.3%)	39(20.0%)	44(22.6%)	10(5.1%)	1(0.5%)	3.37	1.204
18	Encourages members to determine goals and procedures, and stimulates members' self-direction	62(31.8%)	50(25.6%)	42(21.5%)	23(11.8%)	12(6.2%)	6(3.1%)	3.56	1.366
19	Supports the teamwork method and always coaches and leads staff to achieve the organisational goals	100(51.3%)	56(28.7%)	18(9.2%)	13(6.7%)	7(3.6%)	1(0.5%)	4.16	1.122
Participative management style									
20	He/She consults a variety of people when making decisions, but they tend	36(18.5%)	62(31.8%)	48(24.6%)	23(11.8%)	20(10.3%)	6(3.1%)	3.27	1.340

	to agree with his/her original idea anyway								
21	People see him/her as a leader but not a manager	54(27.7 %)	51(26.2 %)	62(31.8 %)	13(6.7%)	9(4.6%)	6(3.1%)	3.56	1.260
22	The managers encourage staff to think strategically and participate in the formulation and implementation of competitive strategy	69(35.4 %)	69(35.4 %)	44(22.6 %)	6(3.1%)	6(3.1%)	1(0.5%)	3.95	1.032
23	Allow staff to be involved in decision-making, not only strategic decisions but also tactical and operational ones	40(20.5 %)	70(35.9 %)	32(16.4 %)	36(18.5 %)	14(7.2%)	3(1.5%)	3.39	1.281
24	Allow staff to be personally responsible for the quality of their work, because it allows for achieving the established collective objectives	49(25.1 %)	76(39.0 %)	43(22.1 %)	18(9.2%)	5(2.6%)	4(2.1%)	3.69	1.144
25	Allow staff to take appropriate action to satisfy the customer, meet their needs and expectations, and guide the activities of the company to them	55(28.2 %)	82(42.1 %)	33(16.9 %)	13(6.7%)	9(4.6%)	3(1.5%)	3.78	1.157
26	The leader requires the staff to have commitment and self-control	84(43.1 %)	72(36.9 %)	22(11.3 %)	11(5.6%)	4(2.1%)	2(1.0%)	4.10	1.055
27	Improves the introduction and evaluation of more ideas from staff	96(49.2 %)	69(35.4 %)	20(10.3 %)	4(2.1%)	5(2.6%)	1(0.5%)	4.25	.965
Laissez faire management style									
28	He/She believes that people will come up with the best working methods when given minimal instruction	43(22.1 %)	42(21.5 %)	77(39.5 %)	22(11.3 %)	10(5.1%)	1(0.5%)	3.43	1.134
29	He/She learnt that people will never fail to positively surprise him/her if he/she leaves them alone	26(13.3 %)	47(24.1 %)	63(32.3 %)	32(16.4 %)	20(10.3 %)	7(3.6%)	3.03	1.296
30	He/She does not pay much attention or control over minor details	21(10.8 %)	29(14.9 %)	33(16.9 %)	46(23.6 %)	33(16.9 %)	33(16.9 %)	2.28	1.585
31	He/She prefers employees to get back to him/her rather than getting in touch himself/herself	57(29.2 %)	31(15.9 %)	51(26.2 %)	25(12.8 %)	18(9.2%)	13(6.7 %)	3.23	1.544
32	The manager provides the necessary information for employees to carry out their tasks	103(52.8%)	44(22.6 %)	29(14.9 %)	12(6.2%)	5(2.6%)	2(1.0%)	4.14	1.143
33	The manager allows employees to make decisions and manage work on their own	35(17.9 %)	42(21.5 %)	56(28.7 %)	35(17.9 %)	18(9.2%)	9(4.6%)	3.07	1.379
34	He/She gives the employees the opportunity not to depend on the managers	34(17.4 %)	40(20.5 %)	52(26.7 %)	43(22.1 %)	12(6.2%)	14(7.2 %)	2.99	1.423
Overall mean = 87.41, SD = 38.25									

Table 1 reveals the manifestation of different kinds of management styles in academic libraries. As far as an autocratic management style is concerned, the majority 46.2% indicated that the manager would mostly urge the employees to beat their previous records with the highest mean score of 3.48, while 36.4% of the respondents indicated that the manager rarely supervises subordinates closely

with little or no degree of freedom (Mean=1.84). Concerning the democratic management style, the majority 100(51.3%) of the respondents indicated that the manager always supports the teamwork method always coaches and leads staff to achieve the organisational goals (Mean=4.16) and always encourages members to determine goals and procedures, and stimulates members self-direction (Mean=3.56).

Research question 2: What are the levels of information anxiety among library staff in academic libraries in Lagos State?

Table 2: Levels of information anxiety among library staff in academic libraries

S\N	Information Anxiety	SD	A	D	SD	Mean	S.D
35	I have to manage so much information in my daily life that it takes me a long time to complete even simple tasks	28(14.4 %)	41(21.0 %)	93(47.7 %)	33(16.9 %)	2.33	.922
36	I regularly feel overwhelmed by too much information these days	23(11.8 %)	74(37.9 %)	64(32.8 %)	34(17.4 %)	2.43	.9.09
37	It is sometimes hard for me to concentrate because of all the information I have to assimilate	23(11.8 %)	55(28.2 %)	91(46.7 %)	26(13.3 %)	2.38	.862
38	There is so much information available on topics of interest to me that I have trouble choosing what is important and what's not	32(16.4 %)	62(31.8 %)	68(34.9 %)	33(16.9 %)	2.48	.960
39	I have to process so much information that it frequently takes me too long to get things done promptly	34(17.4 %)	58(29.7 %)	77(39.5 %)	26(13.3 %)	2.51	.933
40	I feel overwhelmed learning a new subject or topic because there is so much information	31(15.9 %)	65(33.3 %)	67(34.4 %)	32(16.4 %)	2.49	.949
41	I am confronted by an avalanche of Email, phone and text messages each day	20(10.3 %)	46(23.6 %)	90(46.2 %)	39(20.0 %)	2.24	.890
42	When I search for information on a topic of interest to me, I usually get too much rather than too little information	31(15.9 %)	111(56.9 %)	24(12.3 %)	29(14.9 %)	2.74	.901
43	I have so much information to manage daily that it is hard for me to prioritize tasks	23(11.8 %)	52(26.7 %)	80(41.0 %)	40(20.5 %)	2.30	.927
44	I am stressed out by the sheer volume of information I have to manage daily	27(13.8 %)	40(20.5 %)	97(49.7 %)	31(15.9 %)	2.32	.904
45	It seems like the volume of information available is increasing exponentially in a relatively short period	29(14.9 %)	105(53.8 %)	36(18.5 %)	25(12.8 %)	2.71	.874
46	I feel like I can't keep up with all the new developments in my area of expertise	17(8.7%)	27(13.8 %)	107(54.9 %)	44(22.6 %)	2.09	.842
47	I sometimes feel numb and incapable of action because of all the information I have to process daily	18(9.2%)	32(16.4 %)	109(55.9 %)	36(18.5 %)	2.16	.833
48	I feel like my attention span is becoming shorter and shorter because of information overload	16(8.2%)	32(16.4 %)	107(54.9 %)	40(20.5 %)	2.12	.828
49	I regularly feel pressed for time because of all the information I have to deal with	21(10.8 %)	53(27.2 %)	93(47.7 %)	28(14.4 %)	2.34	.855
50	I am unsure about how to manage the information at my disposal	17(8.7%)	30(15.4 %)	112(57.4 %)	36(18.5 %)	2.14	.819
51	I am unsure about how to begin a search for information in general	17(8.7%)	29(14.9 %)	96(49.2 %)	53(27.2 %)	2.05	.878
52	I get confused trying to find specific	18(9.2%)	26(13.3 %)	98(50.3 %)	53(27.2 %)	2.05	.881

53	information I get confused trying to use the library's website	12(6.2%)	%) 26(13.3 %)	%) 104(53.3 %)	%) 53(27.2 %)	1.98	.809
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54	I don't know what to do next when the information I need is not readily available (e.g. cannot find information online, etc.)	30(15.4 %)	30(15.4 %)	100(51.3 %)	35(17.9 %)	2.29	.947
55	I enjoy learning new things about finding information	108(55.4 %)	68(34.9 %)	12(6.2%)	7(3.6%)	3.43	.773
56	I enjoy learning new things about using technology (e.g. computers).	121(62.0 %)	61(31.3 %)	9(4.6%)	4(2.1%)	3.54	.690
57	I feel comfortable searching for information	118(60.5 %)	61(31.3 %)	14(7.2%)	2(1.0%)	3.52	.684
58	In general, I am comfortable using technology (e.g. computers).	102(52.8 %)	60(30.8 %)	19(9.7%)	14(7.2%)	3.28	.920
59	I feel like I am bothering other colleagues if I ask a question	32(16.4 %)	36(18.5 %)	90(46.2 %)	37(19.0 %)	2.32	.965
60	There is always too much information to process every day	26(13.3 %)	88(45.1 %)	57(29.2 %)	24(12.3 %)	2.59	.870
61	Most available information is not relevant to my immediate needs	18(9.2%)	64(32.8 %)	81(41.5 %)	32(16.4 %)	2.35	.862
62	Working through the information sources is always time-consuming	35(17.9 %)	92(47.2 %)	51(26.2 %)	17(8.7%)	2.75	.864
63	The information available online is cumbersome and unorganized	33(16.9 %)	79(40.5 %)	54(27.7 %)	29(14.9 %)	2.60	.949
Overall Mean = 72.53, SD 33.48							

Table 2 revealed a high level of information anxiety among library staff in academic libraries as the majority 182(93.3%) of the respondents agreed that they enjoyed learning new things about using technology (e.g. computers) (Mean=3.54), followed by a relatively large number of 179(91.8%) of the respondents that agreed that they feel comfortable searching for information (Mean=3.52). More so, 176(90.3%) of the respondents agreed that they enjoy learning new things about finding information (Mean=3.43), followed by 162(83.1%) respondents who agreed that in general, they are comfortable using technology (e.g. computers) with (Mean=3.28). this was followed by 142(72.8%) respondents who agreed that when they search for information on a topic of interest, they usually get too much rather than too little information (Mean=2.74), and 134(68.7%) respondents who agreed that it seems like the volume of information available is increasing exponentially in a relatively short period with a mean value of (Mean=2.71), 114(58.5%) respondents agreed that there is always too much information to process every day with (Mean=2.59), while, 112(57.4%) of the respondents agreed that information available online is cumbersome and unorganized with (Means=2.60).

Research question 3: What is the level of job performance of library staff in academic libraries in Lagos State?

Table 3: Level of the job performance of library staff in academic libraries

S/N	Job performance	Excl	V.Good	Good	Fair	Poor	Mean	S.D
64	Ability to perform library routing works	74(37.9%)	81(41.5 %)	37(19.0%)	3(1.5%)	-	4.16	.780
65	Contribution to the overall development of the library	54(27.7%)	89(45.6 %)	43(22.1%)	8(4.1%)	1(0.5%)	3.96	.842
66	Meeting of approved goals of his/her section (e.g. cataloguing, Reference, Circulation, Serials, etc)	60(30.8%)	86(44.1 %)	40(20.5%)	7(3.6%)	2(1.0%)	4.00	.868
67	Ability to work with co-workers	54(27.7%)	101(51.8 %)	32(16.4%)	4(2.1%)	4(2.1%)	4.01	.843

68	Punctuality and regularity to work	60(30.8%)	96(49.2%)	34(17.4%)	3(1.5%)	2(1.0%)	4.07	.796
69	Ability to attend promptly to requests from clients	64(32.8%)	95(48.7%)	29(14.9%)	4(2.1%)	3(1.5%)	4.09	.832
70	Meeting minimum requirements for promotion	49(25.1%)	101(51.8%)	37(19.0%)	8(4.1%)	-	3.98	.780
71	Communication skills	65(33.3%)	90(46.2%)	34(17.4%)	5(2.6%)	1(0.5%)	4.09	.807
72	Contribution to the overall development of the College	62(31.8%)	86(44.1%)	38(19.5%)	9(3.6%)	-	4.03	.837
73	Coordinating ability	60(30.8%)	88(45.1%)	42(21.5%)	5(2.6%)	-	4.04	.792
74	Creativity and diligence at work	72(36.9%)	75(38.5%)	42(21.5%)	6(3.1%)	-	4.09	.838
75	Ability to provide leadership	58(29.7%)	97(49.7%)	36(18.5%)	4(2.1%)	-	4.07	.750
76	Assessment of quality of work performed	54(27.7%)	97(49.7%)	35(17.9%)	9(4.6%)	-	4.01	.803
77	Performing work schedule on time	54(27.7%)	93(47.7%)	34(17.4%)	10(5.1%)	4(2.1%)	3.94	.917
78	Ability to work with minimum supervision	61(31.3%)	92(47.2%)	36(18.5%)	4(2.1%)	2(1.0%)	4.06	.820
79	Ability to perform administrative duties	59(30.3%)	97(49.7%)	33(16.9%)	6(3.1%)	-	4.07	.770
80	Assessment of quality of work performed	46(23.6%)	109(55.9%)	32(16.4%)	7(3.6%)	1(0.5%)	3.98	.770
81	Ability to perform competently under pressure	52(26.7%)	92(47.2%)	40(20.5%)	8(4.1%)	3(1.5%)	3.93	.880
82	Ability to anticipate problems and develop solutions in advance	49(25.1%)	94(48.2%)	37(19.0%)	10(5.1%)	5(2.6%)	3.88	.931
83	Skills in the use of information technology (IT)	42(21.5%)	106(54.4%)	35(17.9%)	8(4.1%)	4(2.1%)	3.89	.858

Table 3 shows that the level of job performances of library staff in academic libraries was very good as the majority 109(55.9%) of the respondents indicated an assessment of the quality of work performed with (Mean=3.98) followed by a relatively large number of 106(54.4%) of the respondents that indicated skills in the use of information technology (IT) with (Mean=3.89), followed by 101(51.8%) respondents that indicated the ability to work with co-workers and meeting minimum requirements for promotion with (Mean=4.01 and 3.98) respectively. Other areas in which the level of job performances of library staff in academic libraries was very good included the following: Ability to provide leadership, assessment of the quality of work performed and ability to perform administrative duties with (Means=4.07, 4.01, 4.07); Punctuality and regularity to work with (Means=4.07), Ability to attend promptly to requests from clients with (Mean=4.09), Ability to anticipate problems and develop a solution in advance with (Mean=3.88), Performing work schedule on time with (Mean=3.94), Ability to work with minimum supervision and ability to perform competently under pressure with (Mean=4.06 and 3.93) respectively.

Test of Hypotheses

The following null hypotheses were tested at a 0.05 level of significance

Ho1: There is no significant relationship between management styles and the job performance of library staff in academic libraries in Lagos State.

Relationship between Management styles and job Performance of Library Staff

Variables	N	Mean	Stand-Dev	Df	R	Sig. P	Sig
Management styles	154	51.2000	10.06658	152	.306**	.000	Sig.
Job performance of library staff	154	47.4923	8.65452				

Table 4 shows a high level of relationship between management style and job performance of library staff in academic libraries(Df= 152, N= 154, $r = .306$, $P < 0.05$). Based on this, the null hypothesis is rejected. Therefore, there is a significant relationship between management styles and the job performance of library staff in academic libraries in Lagos State.

Ho2: There is no significant relationship between information anxiety and the job performance of library staff in academic libraries in Lagos State.

Table 5: Relationship between information anxiety and job performance of library staff

Variables	N	Mean	Stand-Dev	Df	r	Sig. P	Sig
Information Anxiety	154	31.1128	7.59663	152	-.373	.011	Sig.
job performance of library staff	154	47.4923	8.65452				

Table 6 shows a correlation between information anxiety and the job performance of library staff in academic libraries(Df= 152, N= 154, $r = -.373$, $P < 0.05$). Based on this, the null hypothesis is rejected. Therefore, there is a significant relationship between information anxiety and the job performance of library staff in academic libraries in Lagos State. The table further revealed a negative influence of information Meanwhile; it implies that a unit increase in information anxiety reduces the job performance of library staff in academic libraries. Moreso, to further understand the proportion of influence impacted by information anxiety on job performance of library staff, the determinant of coefficient r^2 ($-.373$)² was estimated=0.0053. This implies that the information anxiety factor accounted for a 5.3% variation in the prediction of the job performance of library staff in academic libraries.

Ho3: There is no significant relationship between information anxiety and management styles of library staff in academic libraries in Lagos State.

Table 7: Relationship between information anxiety and management styles

Variables	N	Mean	Stand-Dev	Df	r	Sig. P	Sig
Information Anxiety	154	31.1128	7.59663	152	-.051	.483	Not Sig.
Management styles of library staff	154	51.2000	10.06658				

Table 7 shows a low level of information anxiety on the management styles of library staff in academic libraries (Df= 152, N= 154, $r = -.051$, $P > 0.05$). Based on this, the null hypothesis is accepted. Therefore, there is no significant relationship between information anxiety and management styles of library staff in academic libraries. The table further revealed a negative influence of information anxiety; meanwhile, it implies that a unit increase in information anxiety will increase the tendency for adaptability with management styles of library staff in academic libraries. Moreover, to further understand the proportion of influence impacted by information anxiety, the determinant of coefficient r^2 $(-.051)^2$ was estimated = 0.0026. This implies that the information anxiety factor accounted for a 2.6% variation in the prediction of management styles of library staff in academic libraries.

Table 8: Summary of regression for the joint contributions of independent variables to the prediction of the job performance of library staff

R =.312
R Square =.097
Adjusted R square =.088

Model		Sum of Squares	Df	Mean Square	F	Sig. P
1	Regression	1411.239	2	705.620	10.327	.000(a)
	Residual	13119.499	152	68.331		
	Total	14530.738	154			

Table 8 reveals a significant combined effect of the independent variables (management styles and information anxiety) to the prediction of the job performance of library staff. The result yielded a coefficient of multiple regressions R of .312, multiple R-square = .097 and Adjusted R-square = .088. This suggests that the two factors when combined accounted for 8.8% ($\text{Adj. } R^2 = .088$) variation in the prediction of the job performance of library staff. Other factors accounting for 91.2% variation in the prediction of the job performance of library staff are beyond the scope of this study. The ANOVA result from the regression analysis shows that there was a significant combined effect of the independent variables on the dependent variable, $F(2, 152) = 10.327$, $P < 0.05$.

Discussion of findings

The study found that some of the managers in the academic libraries exhibited an autocratic management style because the manager would mostly urge the employees to beat their previous records, and push the employees to work even harder even though some of the employees are already hard working. The study also discovered that a democratic management style is highly prevalent in libraries. This was very evident as the manager always supports the teamwork method and always coaches and leads staff to achieve the organisational goals; as well as always encourages members to determine goals and procedures, and stimulates members' self-direction. It was established by Nielsen, Yarker, Brenners, Randall and Borg (2008) there is a positive relationship between transformational style and its follower's well-being through mediation from work characteristics. Abu Mansor, Choon, Mohamed and Ishak (2012) examined the relationship between the management style practised by managers and employees' well-being in an international bank in Malaysia. This particular study examined the type of management style (autocratic, democratic, paternalistic and laissez-faire). Results revealed that the branch manager practised a paternalistic management style. Besides that, employees working under managers are healthy physically, psychologically, and socially. In addition, there is a rather weak but positive relationship between paternalistic style with physical and psychological health.

It further revealed that the participative management style was also common as the manager always improves the introduction and evaluation of more ideas from staff, and always requires the staff to have commitment and self-control. Similarly, Bono and Ilies (2006) discovered a relationship between charismatic leadership positive emotion and mood. Apart from this, the management style which is practised by transformational leaders was found to have a positive association with employee performance and well-being (Tseng, 2010). Also, the Laissez-faire management style in the library always provides necessary information for employees to carry out their tasks while he often believes that people will come up with the best working methods when given minimal instruction.

Nguyen, Mia, Winata and Chong (2017) investigated the effect of transformational leadership style and management control system on managerial performance. The study found that transformational leadership style has a significant positive and direct effect on managerial performance. Also, Shao, Feng and Hu (2017) investigated the impact of top management leadership styles on ERP assimilation and the role of organisational learning. Thus, a theoretical model was developed and tested with data collected from organisations that have used ERP systems for at least 1 year. The study found that the influence of transformational leadership on organisational learning was strong but mediated by the learning culture and that of transactional leadership on organisational learning was weak but direct.

Ogunola, Kalejaiye and Abrifor (2013) reported that employees were found to be more responsive to the autocratic management style due to the nature of the work in the industries. Kocher, Pogrebna and Sutter (2013) found that managers who preferred efficiency were more likely to exercise an autocratic management style by ignoring the preferences of their team

members. It was also reported that equality concerns have no significant impact on management styles. Yu, Fang and Wang (2016) study found that in an environment of high innovative culture, the new participative management style relates positively to technical specialities and technology management knowledge of professional skills for engineers low on traditionalist. It was also reported that in the workplace of a low innovative culture, the new authoritarian management style relates positively to business function knowledge of professional skills for engineers high on traditionalism. Omolayo (2007) reported that workers under a democratic style of leadership do not experience a higher sense of community than workers under an autocratic style.

It could be deduced from the above result that the participative management style is the most adopted style followed by the laissez-management style and then the democratic style. The least prevalent management style in the libraries was the autocratic management style. This was supported by Katopol, (2014) who pointed out that there is a significant relationship between the management style of principals and the job satisfaction of librarians of public libraries in Tehran City. The more participatory management style, the more job satisfaction can be seen in the librarian.

There was a high level of information anxiety among library staff in academic libraries. Most of the staff enjoys learning new things about using technology (e.g. computers); they feel comfortable searching for information; enjoy learning new things about finding information; being comfortable using technology (e.g. computers). Meanwhile, the staff affirmed that when searching for information on a topic of interest, they usually get too much rather than too little information, while it was acknowledged that the volume of information available is increasing exponentially in a relatively short period, and working through the information sources is always time-consuming. Also, there is always too much information to process every day, while the information available online is cumbersome and unorganized. According to previous studies, Dholakia and Bagozzi (2001) found that individuals with minimal prior knowledge and experience are likely to exhibit high levels of frustration during information search tasks. Aghaei, Soleymani and Rizi's (2017) study on information-seeking anxiety showed that the highest level of anxiety was caused by the fear of being unable to obtain necessary information at a timely fashion. These results are similar to those reported in the studies by Bowers (2010), Lu and Adkins (2012) and Erfanmanesh (2011b).

Aghaei, Soleymani and Rizi (2017) reported that regarding barriers to access to information resources, the most important causes of anxiety are a lack of familiarity with information resources the lack of reliable information resources and the quality of retrieved information while the least important causes of anxiety were judging the relevance of retrieved information and the quality of information. Information anxiety is a major problem for decision-making and can have negative effects on an individual's ability to seek relevant information (Khadivi, 2006).

There was a high level of job performance among library staff in the academic libraries. This is measured by the assessment of the quality of work performed, skills in the use of information technology (IT), ability to work with co-workers and meeting minimum requirements for promotion. Other areas of job performances of library staff in academic libraries included the ability to provide leadership, assessment of the quality of work performed and ability to perform

administrative duties; punctuality and regularity to work; ability to attend promptly to requests from clients; ability to anticipate problems and develop a solution in advance, Performing work schedule on time, ability to work with minimum supervision and ability to perform competently under pressure. The finding is in line with previous studies such as Onosote (2005) and Opeyemi (2008) which established that there is no significant difference in the job performance of workers based on their gender and that information requirement and use have a significant relationship with the job performance of employees in their organisation in Nigeria.

Conclusion

Job performance of library staff in academic libraries is a function of many factors including management styles and information anxiety. This present study has been able to establish that both management styles and information anxiety have a major influence on the job performance of library staff. Different management styles exist in academic libraries in Lagos State which could also apply to libraries in other states. It was discovered that both participative and laissez-faire management styles were most common among the library managers while the autocratic style still manifests in some areas. Information anxiety does not have any positive correlation with job performance and management styles. This simply implies that with information anxiety, library staff will continuously experience negative job performance because they will find it difficult to make any meaningful decision.

Recommendations

The following recommendations are made based on the findings of the study;

1. Library managers are encouraged to adopt a management style such as the participative or democratic style that promotes effective job performance among the staff. This will help to bring out the best in staff and at the same time achieve the organizational objective.
2. Library staff, including librarians and library officers, should make an effort to enhance their information management skills which will enable them to overcome the problem of information anxiety which negatively affects their effective job performance.
3. Library management should endeavour to create a favourable information environment that promotes access to useful information for decision-making, adequate information to work, and effective communication of information between management and staff
4. There is a need for periodic training and retraining of librarians and library officers in academic libraries to constantly update their skills and competency in information management. This will enhance their information handling and use for effective decision-making and improved job performance.

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New Media Technologies in Library Services Delivery in University Libraries in Bayelsa State

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Abstract

The study investigated “New Media Technologies in Library Services Delivery in University Libraries in Bayelsa State”. It adopted a descriptive research survey with a population of 54 librarians drawn from four university libraries in Bayelsa State. A total enumeration sampling technique was used to select all the respondents. A questionnaire was used to gather the data. 54 copies of the instrument were distributed by the researcher and a research assistant and were retrieved and found valid for the analysis. The data was analyzed using simple percentages and presented in tables. The study revealed that new media used by the respondents were Facebook, WhatsApp, Twitter etc. These media were used in delivering library services such as user orientation, creating awareness, posting library events and overdue reminders among others. The study further revealed that relevant skills such as digital literacy and ICT were used in delivering library services with the new media. Inconsistent power supply and poor internet connectivity were identified as challenges. The study, therefore, recommended that the Government should ensure that the university libraries have a stable power supply and internet connection for proper utilization of new media in library services delivery.

Keywords: New media Technologies, Library Services, Services Delivery.

Introduction

University libraries support the community by delivering services to meet the teaching, research and learning needs of staff and students. They play a key role in the educational system of their parent institutions by providing a variety of services to a wide range of users in the academic environment. University libraries acquire, process, manage and disseminate information resources through which their parent institutions conduct research and produce high-level manpower. Library services delivery was done manually and the library materials were primarily in print format. These services were only available during opening hours. Most times, the information resources available in the library are inadequate to meet the information that is needed by patrons.

Many of the services delivered by librarians fall short of the role they play as information providers. There is no doubt that the traditional library and information services need improvement as a result of their limits and inadequacies. As a result of this, university libraries have incorporated new media technologies to improve their service delivery to remain relevant and to meet the information needs of their patrons. New Media refers to content made available using different forms of electronic communication made possible through the use of computer technology. The prevalent

examples of new media include internet-based concepts like, websites and blogs, social media and sharing platforms, chat rooms and integration of digital data with the telephones, such as internet telephony. These new media are used for library services delivery with content available on-demand through the internet. They are used to compose, create, produce, deliver and manage media including audio, video, images, information, interactive media virtual environment etc. They are also referred to as Web 2.0 and encompass communication technologies, such as social networking, virtual worlds and other social media forms etc.

The proliferation of new technologies has influenced the information-seeking behaviour of library users. Thus, library and information systems, resources, and services have transformed as well to effectively and efficiently respond to the anticipated and unexpected changing circumstances and expectations of the time. This is required to cope with unforeseen developments as well as to ensure relevance, appropriateness, affordability and enhancement of performance, productivity, effectiveness and efficiency in library and information services. As a result, the adoption of new media technologies to accommodate the change and transformation in library and information services become imperative. New media technologies are referred to as a generic term used to describe all forms of computer-based or web-related communication characterized by creative participation and interactive interfaces such as mobile phones, social networking sites and virtual worlds. New media technologies are also referred to as any type of application meant to transfer information via digital techniques, computerized systems or data networks.

New media technologies according to Zakari (2018) are new ideas, processes, procedures, methodologies, systems, phenomena, facilities, instruments, infrastructures or whatever that is strategically modified, transformed, provided or introduced to transform repositioned, sustained, ease, support and enhance services delivery. They are aimed at modifying and improving the existing systems. They include library automation such as KOHA, Evergreen and NewGenLib, OneDrive, cloud computing, digital libraries such as Fedora and enprints, metadata, barcode reader and Radio Frequency and Identification (RFID) technology, electronic information resources (e-book, e-journals, etc.), web 2.0 (Facebook, Twitter, WhatsApp, LinkedIn, etc.). email, etc. They encompass the technologies used in the provision of library and information services. Library and information services are those professional services rendered in the library to promote literacy in society. They include current awareness services, selective dissemination of information, digital reference services, electronic document delivery services, user orientation services, cataloguing and classification services, etc. These services are rendered by the university libraries to enhance learning, education, research, and personal development. University librarians all over the world need digital literacy skills; in managing digital resources, web literacy skills, digital marketing and communication skills and customer service skills etc. digital literacy skills will help library professionals improve their overall library and information services delivery for resource sharing, social networking, instant messaging, blogging and host of other digital library services-oriented activities. However, despite the benefits derived from

using these new media in promoting library services, there are challenges encountered by librarians in utilising new media technologies for effective service delivery.

Statement of the problem

Services delivery is the primary function of any academic library. Many of the library services in university libraries in Nigeria are delivered manually and the delivery of these services through traditional means has been cumbersome and time-wasting. Traditional library services restrict users to the available resources available within the library collections only. Moreover, access to information is limited to print resources and this places the patrons at a disadvantage with limited information resources. There is no doubt that the traditional library and information services need improvement as a result of its limitations and inadequacies. There is a need for re-designing the services to meet the demands of their users remain relevant and retain their place as information providers in this technology age. The inadequacies of traditional library services prompted university libraries to adopt new media technologies in library service delivery. The proliferation of new technologies has influenced the information-seeking behaviour of library users. Thus, library and information systems, resources, and services have transformed as well to effectively and efficiently respond to the changes and expectations of the time. However, observation showed that librarians in the university libraries in Bayelsa state are aware of the adoption of these new media but are not effectively utilizing them for library service delivery. Therefore, against this backdrop, this study investigated new media technologies in library service delivery in university libraries in Bayelsa state.

Purpose of the Study

The study investigated new media technologies in library services delivery by librarians in university libraries in Bayelsa State. The specific purposes were to:

1. Find out the new media Technologies used by librarians in service delivery in university libraries in Bayelsa State.
2. Examine library services delivery with the new media technologies by librarians in university libraries in Bayelsa State.
3. Find out the skills required by librarians in the use of new media technologies in library service delivery in university libraries in Bayelsa State.
4. Find out the challenges encountered by librarians in the use of new media technologies in library service delivery in university libraries in Bayelsa State.

Literature Review

Services Delivery by Librarians in university libraries

Universities are known for producing manpower for the economy of the nation. For the successful completion of university academic and professional programmes, the university libraries support both the students and staff to achieve their purposes by providing information resources and quality services. This is achieved through the core functions being performed by the staff of the libraries which are: collection development, cataloguing, circulation, dissemination and preservation of information

resources as well as setting up a sustainable platform for ICT adoption and implementation towards the university education system. According to Aina, (2014) opined that library services were been rendered by librarians and such services include: library notices, Online Public Access Catalogue (OPAC), loans, reservation, registration, dissemination of information, current awareness and reference service. Other library services are library orientation, information literacy programmes and electronic resources. According to Husain and Nazim's (2015) study librarians rendered services such as public access catalogues, electronic resources, physical and web-based reference services and online general services to their users. Eze and Uzoigwe's (2013) study on library service provision revealed that services such as user education, user orientation, reference, Internet, bibliographic, electronic databases, reprographics, interlibrary loan and exhibition and display services were rendered to library users. In the same vein, Ishola (2014) asserted that the university libraries studied rendered translation, registration, abstract and indexing, documentation, and current awareness among others. Services delivered to the users could be through conventional, virtual or hybrid methods. Abubakar (2011) stated that library services are delivered to users conventionally or electronically. Alabi, Nduka and Olatise's (2011) investigation on service provision revealed that the majority of the respondents' 38 percent indicated that they rendered library orientation, followed by 31 percent who rendered library education programme, 23 attested to training on electronic resources while six percent rendered library outreach programme.

NewMediaTechnologiesUse by Librarians for Service Delivery in University Libraries

New Media Technologies often referred to as Web 2.0 encompass a wide variety of web-related communication technologies, such as blogs, Wikis, online social networking, virtual worlds and other social media forms. These social media platforms have become an increasingly familiar tool employed by university libraries to market their resources and services to current and prospective patrons (Collins &Quan-Haase, 2012). Social media are internet-based platforms which enable people to generate, distribute or exchange information in different forms such as text, images, audio and videos. Bashorun et al., (2018) described social media as a communication forum that allows users to electronically disseminate information and share knowledge. Social media involves the use of network applications to convert one-way communication into an interactive online conversation between two or more people (Dixon, 2012).

Collins and Quan-Haase (2012) investigated the adoption and usage patterns of social media tools by academic libraries in Canada. The focus was on Facebook, Twitter, YouTube and Flickr as these were seen as the most common social media tools in Canada. The study showed that Twitter was the most used social media tool among academic libraries and was followed by Facebook. YouTube was the least used. Monagle and Finnegan (2018) reported that 85% of the respondents agreed that they used social media for other purposes which included the promotion of library services. The respondents used Twitter, followed by Facebook while the use of Google+ and LinkedIn

by the respondents was on average. Weerasinghe and Hindagolla (2018) revealed that the majority of the respondents (78.4%) indicated the use of personal account social media in the workplace. The authors also found that librarians used Facebook (90%), LinkedIn (55%), Twitter (17%) and ResearchGate (eight percent) in their workplace while five percent did not use any social media.

Zohoorian-Fooladi and Abrizah (2014) revealed that Facebook was used by librarians in the three academic libraries studied. However, the results also revealed that social media spaces such as Blog, YouTube and Twitter were used at a low level. A similar investigation carried out by Chu and Du (2012) revealed that Facebook and Twitter (63%) were found to be highly used by librarians among the eleven social media spaces listed. Closely followed social media spaces used by the librarians were Instant messaging (44.4%) and Blogs (26%) while other social media spaces 5 were used at less than 19%. Anwyll and Chawner (2013) revealed that Facebook and Twitter were found to be the major social media spaces used by librarians to communicate with library patrons. In the study of Xie (2014) also revealed that among the ten universities studied, three of them used social media space such as Blogs, Facebook, Flickr, Pinterest, Podcasts, RSS feeds, social news websites, Twitter, and YouTube to deliver services to their users. The findings also showed that the frequencies of social media use were indicated as hourly, daily, weekly, and monthly.

Baro, Idiodi, and Godfrey, (2013) in their study on awareness and use of social media by librarians in university libraries in Nigeria found that social media space such as Facebook was highly used by librarians while the least used social media space was Flickr, RSS feed, podcast and social bookmarking. In the Nigerian context, the study of Omeluzor et al., (2016) on social networking tools in library service delivery in South-East academic libraries reveals that some librarians used social media in libraries for delivery of library services. Ogunbodede and Ivwighrehweta (2020) investigated librarians' use of social media in promoting effective library service delivery in university libraries in the Edo and Delta States. The findings of the study revealed that the majority of librarians mostly use Facebook and WhatsApp platforms to provide library services. It was also discovered that they use these social media platforms to create awareness about library resources and services and also to share library news and events.

Challenges of New Media Use for Service Delivery

Librarians in the course of rendering library services have encountered various challenges due to the present state of university libraries especially in Nigeria. Some of these challenges are identified as inconsistent power supply, poor internet connectivity, lack of literacy skills, poor ICT infrastructural facilities, lack of cooperation among librarians, and low interest of librarians in learning and utilizing new media. Madhusudhan and Nagabhushanam (2012) conducted a study on web-based library services in universities. Militating factors were inadequate computers and slow internet connection. Muneja and Abungu's (2012) study reported that a lack of technical

knowledge on the use of social media was a challenge to their application by librarians in Tanzania towards rendering library services.

Hamid, Chang, Waycott and Kurnia (2011) examined the use of online social networking and revealed that barriers such as infrastructure, control and supervision, time, skills, cultural differences and language were identified for low utilization of social media at the lecturers, students and higher education levels. Nnadozie (2016) study revealed that the lack of modern ICT equipment was identified as one of the factors that hindered effective information delivery. Emwanta (2012) examined the challenges of ICT application in Nigerian university libraries. The survey research method was used for the study. One hundred professional librarians from three universities in the South-east comprised the study population. A questionnaire was used for data collection while descriptive statistics was applied to the results presentation. Eighty percent of the questionnaires were returned and found useful for data analysis. Among the institutional factors that inhibited the effective use of ICT for information service delivery, over 98 percent of the respondents indicated that unreliable power supply and inadequate maintenance issues among others were recorded.

Ejedafiru (2010) investigated the challenges of rendering library services among four federal university libraries in Nigeria. His findings revealed that the state of the heart of ICT infrastructure such as the computers and the Internet was a problem in rendering such service. Ahmed's (2014) study of some public libraries in Bangladesh reported that the major challenges to the effective use of IT-based service were the absence of IT facilities and the lack of IT-skilled library personnel. Ezeani and Igwesi (2012) submitted that issues of awareness among librarians in developing countries, lack of social communication regulations, bandwidth problems and unreliable power supply have contributed to the non or low use of social media for service delivery in university libraries in Nigeria. In a study conducted by Anyaoku, Orakpor and Ezejiofor (2012) on knowledge and use of Web 2.0 by librarians in Nigeria, the findings revealed that 70 percent of the librarians studied indicated no access to Internet connections in their libraries. In the same vein, Adetimirin (2009) study found that only 11 percent of the librarians studied accessed and used institutional-based internet facilities while the majority relied on cybercafé. The findings further indicated that slow internet connection, cost of bandwidth and skills in internet facilities hinder its use among information professionals in Nigerian university libraries studied. Bwalya (2014) examined the virtual library services in two university libraries in Zambia. The findings revealed that major constraints to virtual library service delivery were poor Internet connection and low bandwidth.

Abdelraheem and Ahmed's (2015) study submitted that poor infrastructural facilities such as the slow speed of Internet connection and the non-availability of smartphones in Sudanese universities were major inhibitors to the use of social media. Similarly, Madhusudhan and Nagabhushanam's (2012) result showed that the majority of the respondents indicated slow internet connectivity as the major barrier to accessing web-based library services. According to Baro and Asaba (2010), the status of internet

connectivity in Nigerian university libraries showed that very few university libraries had steady and dependable internet access for use. A Pakistan study by Arif and Moshood (2012), found that the unavailability of computers and internet facilities hindered effective service delivery in the libraries studied. Muneja and Abunju's (2012) study on the use of social technology platforms in delivering library services among selected libraries in Tanzania revealed unreliable power supply, and poor internet access as barriers to service delivery. Abubakar (2011) discovered that poor internet connectivity and lack of ICT equipment in many academic libraries had hindered improved library service delivery. Similarly, Eze and Uzoigwe's (2013) study showed that 93 percent of the respondents agreed to poor ICT such as electronic facilities and other barriers such as the high cost of ICT facilities maintenance and the lack of a conducive office environment. Ugwuanyi and Ejikeme's (2011) study on new-era librarians in four universities in Nigeria found that respondents admitted that the most prominent among the challenges militating against the application of ICT were unreliable power supply, high cost of ICT equipment and problems of hardware and software repairs. So also, Ajala and Ojo (2011), found inconsistent power supply as a major challenge of electronic document delivery service. In the same vein, Ajayi, Shorunke and Akinola (2013) revealed inadequate power supply and obsolescence of ICT facilities among others as issues peculiar to the use of ICT in the tertiary institutions studied.

Methodology

The study adopted a descriptive research survey with a population of 54 librarians from four university libraries; in Bayelsa State. These Universities are the University of Africa Toru-Orua, (UAT) Niger Delta University (NDU) Amassoma, Federal University Otuoke (FUO) and Bayelsa State Medical University (BMU) Amara Yenagoa, Bayelsa State. A total enumeration sampling technique was used to select all the respondents. A questionnaire titled New Media Technologies for Library Services Delivery was used to gather the data. 54 copies of the instrument were distributed by the researcher. 54 copies were retrieved and found valid for analysis. Data was analyzed using simple percentages and were presented in Tables.

Results

The findings of the study are presented according to the research questions.

Table 1. New media Technologies used by librarians in library services delivery.

New media tools used	Frequency
Facebook	48(88%)
WhatsApp	45(83%)
Telegram	31(57%)
Twitter	38(70%)
YouTube	5(9%)
Instagram	15(28%)

Table1 revealed that 48(88%) and 45(83%) of the respondents indicated that they utilize Facebook and WhatsApp in library service delivery. While 38(70%) and 31(57%) of the respondents agreed that they use Twitter and Telegram in library services delivery. 15(28%) and 5(9%) also agreed to the use of Instagram and YouTube in library services delivery respectively. This means that new media technologies used by university librarians in Bayelsa state in service delivery are Facebook, WhatsApp, Twitter, Telegram, Instagram and YouTube respectively.

Table 2: New media technologies for library services delivery.

Library services delivery	Frequency
Book reservation	32(59%)
Overdue reminders	47(89%)
Create awareness services about library resources and services	51(94%)
Online chat	36(66%)
Electronic document delivery	47(89%)
Posting of library events	38(70%)
User orientation	51(94%)
Digital reference services	23(42%)

Table 2 revealed that the respondents use new media technologies in library service delivery. 51(94%) indicated that they use it for user orientation and to create awareness services about library resources and services. 47(89%) and 47 (89%) of the respondents agreed that they use it for electronic document delivery and overdue reminders, 38(70%) and 36(66%) agreed that they use it for posting library events and online charts. 32(59%) agreed that they use it for book reservations. While 23(42%) use it for Digital reference services. This means that university librarians in Bayelsa state use new media technologies in library services delivery, such as creating awareness about library resources and services, user orientation, electronic document delivery, overdue reminders, posting of library events, information literacy skills and book reservation as well as digital reference services.

Table 3:Skills required by librarians in the use of new media technologies in library services delivery

Skills in the use of new media	Frequency
Digital literacy skill	51(94%)
Digital resource management skill	45(83%)
ICT skill	51(94%)
Digital marketing /customer service skill	41(75%)
Communication skill	45(83%)
Web literacy skill	37(68%)

Table 3 revealed that the respondents need skills in the use of new media 51(94%) of the respondents agreed to the use of digital literacy skills and ICT skills 45(83%) agreed to the use of digital resource management skills and communication skill, while 41(75%) and 37(68%) of the respondents agreed to the use of digital marketing/customer service skill and web literacy skill respectively. This means that the skills librarians in university libraries in Bayelsa state use in library services delivery with the new media are, digital literacy skills, ICT skills, digital resource management skills, communication skills, digital marketing/customer service skills and web literacy skills.

Table 4: Challenges encountered by librarians in the use of new media technologies in library service delivery

Challenges encountered	Frequency
Inconsistent power supply	35(64%)
Lack of digital literacy skill	37(68%)
Poor ICT infrastructural facilities	41(75%)
Lack of cooperation among librarians	21(38%)
Poor internet connectivity	45(85%)
Low interest of librarians in learning and utilizing new media in service delivery	25(46%)

Table 4 revealed that the respondents encounter challenges in the use of new media technologies. 45(83%) and 41(75%) of the respondents agreed that poor internet connectivity and poor infrastructural facilities constitute a challenge in library services delivery with the new media. 37(68%) and 35(64%) of the respondents agreed that lack of literacy skills and inconsistent power supply also constitutes a challenge, while 25(46%) and 21(38%) agreed that low interest of librarians in learning and utilizing new media in library services delivery and lack of cooperation among librarians constitutes a challenge to in library services delivery. This means that university librarians in Bayelsa state encounter challenges like poor internet connectivity, poor ICT infrastructural facilities, lack of digital literacy skills, inconsistent power supply, the low interest of librarians in learning and utilizing social media and lack of cooperation among librarians, which are challenges encountered by librarians in the use of new media technologies.

Discussions of findings

The results of the study regarding the new media technologies used by librarians in library service delivery and it was revealed that librarians use Facebook, WhatsApp, Twitter, telegram Instagram and YouTube in Bayelsa State University libraries. The findings of the study were in line with the study of Ogunbodede and Ivwighreghweta (2020) who revealed that the majority of librarians mostly use Facebook and WhatsApp platforms to provide library services. Similarly, Collins and Quan-Haase (2012) found that Facebook, Twitter, YouTube and Flickr were seen as the most common social media tools in Canada.

Findings further indicated that library services delivery with the new media technologies by librarians in university libraries in Bayelsa State were user orientation, creating awareness, posting library events, overdue reminders, electronic document delivery, online chat, digital references, and book reservation. The finding is in tandem with the study of Ogunbodede and Ivwighrehweta (2020) who revealed that the majority of librarians mostly use Facebook and WhatsApp platforms to provide library services. The authors also discovered that they use these social media platforms to create awareness about library resources and services and also to share library news and events. In the same vein, the study of Eze and Uzoigwe's (2013) study on library service provision revealed that services such as user education, user orientation, reference, Internet, electronic databases, exhibition and display services among others were rendered to library users.

Furthermore, the study also investigated librarians' skills in the use of new media technologies in library service delivery in university libraries in Bayelsa state. The study revealed that ICT skills, digital literacy skills, digital resources management skills, digital marketing/customer service skills, communication skills and web literacy skills were identified as the skills required by librarians in the use of new media in library services delivery. This study validates the study of Ogunbodede and Ivwighrehweta (2020) and Eze and Uzoigwe (2013).

Finally, the findings of the study revealed poor internet connectivity, inconsistent power supply, poor ICT infrastructural facilities, lack of cooperation among librarians, lack of digital literacy skills and low level of librarians in learning and utilizing new media technologies were challenges encountered by librarians in the use of new media technologies in library service delivery. This corroborates the findings of Hamid, Chang, Waycott and Kurnia (2011) who revealed that barriers such as infrastructure and lack of skills, among others, were identified as challenges. Also, Nnadozie's (2016) study revealed that the lack of modern ICT equipment was identified as one of the factors that hindered effective information delivery. Muneja and Abungu (2012) further supported that a lack of technical knowledge on the use of social media was a challenge to their application by librarians in Tanzania towards rendering library services. This also validates the findings of Adetimirin (2009) which indicated that slow internet connection and skills in internet facilities hinder its use among information professionals in Nigerian university libraries. Similarly, Madhusudhan and Nagabhushanam's (2012) study result showed that the majority of the respondents indicated that inconsistent power supply and slow internet connectivity was a major barrier to accessing web-based library services.

Conclusion

From the findings of the study, it was revealed that the new media technologies used by the respondents in library services delivery were Facebook followed by WhatsApp. The findings also revealed those new media technologies were used for library services

delivery such as creating awareness services about library resources and services and user orientation programmes. The finding showed that the skills needed by librarians in the use of new media were digital literacy skills among others. Poor internet connectivity and inconsistent power supply were identified as challenges.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Librarians should endeavour to acquire the necessary skills needed in the use of new media technologies for them to remain relevant in their profession. Therefore, they should improve their ICT skill and learn how to utilize these new media effectively in library service delivery.
2. University management should endeavour to make the power supply consistent since these new media facilities cannot be effectively utilized in the absence of a power supply.
3. All librarians in Nigeria should take a bold step to learn and utilize these new media in library service delivery in order to remain relevant in their profession as information providers in this technological era.

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Prospects of Law Information Literacy in Promoting Career Excellence among the Undergraduate Students of University of Abuja

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Abstract

The study investigates the prospects of law information literacy in promoting career excellence among undergraduate students of the University of Abuja. The study aims to ascertain undergraduate law students' knowledge of the concept of information literacy, determine the relevance of information literacy in promoting law undergraduate students' career excellence while in school, identify ways information literacy can add credence to law students in school and transition into practice and to determine constraints to adopting information literacy as a course by law undergraduate students. A sample of 125 students was randomly selected for the study. The questionnaire was designed to collect data from the respondents. The obtained data were analyzed using frequency tables and mean scores of four-scale ratings. The study reveals that the majority of law undergraduate students lack a clear knowledge of the concept of information literacy in a profession that is information seeking incline. This should be a major concern for the profession, knowing that the legal profession is entrusted with the mandate to control and enforce the body of rule of conduct binding force of a particular society or nation. The study uncovers information literacy knowledge is an eye opener to law undergraduate students of the need for information in their career. The knowledge serves as an influencer that drives the need for the acquisition of information that enhances their study and research work by applying it ethically in the profession and findings also reveal that the knowledge and skills acquired through the information literacy course will empower the students with search skills in finding and accessing authentic and needed information, and how to create, locate, analyze, interpret, and communicate it. The researcher suggested that law information literacy should be integrated into the law curriculum for a better understanding of the concept. Provision of qualified human resources should employed and engaged in the teaching of the course.

Lastly, the students should be encouraged to take the course information literacy serious as the acquisition of information is the bedrock of their profession.

Keywords: Prospects, Law information literacy, career excellence, undergraduate students, university of Abuja

Introduction

Information spurs knowledge and skill acquisition for experts in all subject areas. With the regular trend of transition in various disciplines, information serves as a rejuvenator in all persons craving to stand out among their counterparts in a field. Stand to be corrected; law as a profession is information seeker incline, which means tolling with their information literacy translates to stiffing life out the profession. According to Devika (2021), Law is defined as a large body of rules and regulations based mainly on general principles of justice, fair play, and convenience, which have been worked out and promulgated by governmental bodies to regulate human activities and define what is, and what is not permissible conduct in various situations. Devika further states that law is a pattern of conduct to which actions do, or ought to conform. Also, Ijas (2023) adds that law is a principle and regulation established in a particular community by an authority and applicable to its people, whether in the form of legislation or custom and policies recognized and enforced by State authority. From the definition, the law as a profession can only remain relevant when the professionals are adequately empowered with their information literacy knowledge to facilitate the retrieval of information for decision-making when arises.

Literacy in the context of the Association of College and Research Libraries (ACRL), (2006) helps develop individuals' intellectual abilities of reasoning and critical thinking and enables them to learn how to learn. Therefore, the integration of information literacy into the law faculty curriculum will mean life assurance for quality professionalism as a lawyer without adequate information is a casualty about to happen. Knowing the indispensable worth of information in human capacity building and knowledge development, law students must be fully guided and trained to be skillfully literate in information creation, the value, use, evaluation of the source, and confirmation of the source authenticity. Thus, the above, knowledge will promote quality education excellence in the students both in school and in transition to the workplace. Being literate means one ability to interpret identified gathered data as information needs that are processed and organized into meaningful useful knowledge.

With, the challenge of accessing Lawyer's information needs to address clients' needs makes the incorporation of information literacy into the legal education curriculum imperative as the knowledge acquired serves as a pointer to identify problems, how information can be generated, where to seek the right information, how to evaluate the source, and how to use it judiciously to benefit the profession in a competitive knowledge society where information is at the tip of one finger. Waller, Miller, and Schultz (2019) Information literacy is the ability to find, evaluate, organize, use, and communicate information in all its various formats, most notably in situations requiring decision-making, problem-solving, or the acquisition of knowledge. It is a combination of research skills, critical thinking skills, computer technology skills, and communication skills. Similarly, Yi and Meiya (2019) observed that information literacy will help

to cultivate in law students the ability to find legal information, control and use legal resources and pay attention to their training on legal research thinking. Therefore, the use of a variety of legal information retrieval tools, the comprehensive use of retrieval skills, and the cultivation of legal information analysis and processing ability are the key points that will help law students improve their ability to solve practical legal problems.

Forster, (2017) agrees with Yi and Meiya view that one must know when research evidence or other relevant legal, business, personal, or other information is required, how to find it, how to critique it, and how to integrate it into one's knowledge base. Also, Donatus, Obinyan, and Osezua (2020) noted that information literacy empowers students and practitioners specifically lawyers and their students with valuable insights that ensure quality academic and research outputs capable of expanding career opportunities in the burgeoning information economy. Furthermore, information literacy enhances users' search skills of finding and accessing needed information as well as the ability to analyze and evaluate search findings. Garner and Rugg, (2005) also added that information literacy blends legal and ethical issues with the use of information, appropriate citation, and referencing to acknowledge other people's work.

Information literacy is a set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and a comprehensive set of capabilities that use the information to create new knowledge and participate reasonably in the learning community (Association of College and Research Libraries (ACRL), 2016; Yu, 2016; and Gregory, 2017). While, ALA/ACRL/STS (2000) sees information literacy as a set of abilities to identify the need for information, procure information, evaluate the information, and subsequently revise the strategy for obtaining the information, and how to use it ethically and legally to engage in lifelong learning. Information literacy incorporates a set of skills and abilities that everyone needs to undertake information-related tasks; for instance, how to discover access, interpret, analyze, manage, create, communicate, store, and share information (Chartered Institute of Library and Information Professionals (CILIP), 2018). The preceding views are indicators for the urgent integration of information literacy into the law curriculum with the dynamic nature of professionalism in the field.

The researchers' plot study influenced this work, knowing how significant the profession is in a highly competitive knowledge society faced with one challenge or the other. It is most worrisome that the majority of the students lack the relevant skills and knowledge to know what information is needed, what sources to consult for the authenticity of the information, and how to evaluate the information to address their problem independently of the library staff. The question is what happens when they move into the practice after graduation from the institution? The study aimed to examine the following objectives:

1. Ascertain undergraduate law students' knowledge of the concept of information literacy
2. Determine the relevance of information literacy in promoting law undergraduate students' career excellence while in school
3. Identify ways information literacy can add credence to law students in school and transition into practice

4. Determine constraints to adopting information literacy as a course by law undergraduate students

Methodology

The study was conducted at the University of Abuja to investigate the prospects of law information literacy in promoting the career excellence of undergraduate students. A sample of 125 students was randomly selected for the study. This is to ascertain whether the students know the prospects of information literacy in adding value to their careers both in school and in the transition to practice. The questionnaire was designed to collect data from the respondents. The obtained data were analyzed using frequency tables and mean scores of four-scale ratings. That is any mean score of 2.50 and above is considered positive and accepted and any score below 2.50 is regarded as negative and rejected.

Results

Table 1: Distributions of Administered Questionnaire to Respondents

S/No	Level	Number of Students	Percentages
1	100	32	25.6
2	200	26	20.8
3	300	29	23.2
4	400	38	30.4
	Total	125	100

Table 1 above shows the distributions of questionnaires that were administered to the four levels of law undergraduate students of the University of Abuja. One hundred and twenty-five questionnaires were administered and were all duly completed and returned, representing 100% as the response rate.

Table 2: Law Students' Knowledge of the Concept of Information Literacy

S/N	Items	SA	A	D	SD	Means	SD	Decision
1	I have a clear knowledge of the concept of information literacy	21	15	46	43	2.11	1.06	Disagreed
2	As a student, I lack the knowledge of the concept of information literacy	39	19	52	15	2.65	1.04	Agreed
3	I heard the word information literacy but never cared making enquire about its meaning	53	24	31	17	2.90	1.10	Agreed
4	I got the knowledge from the lecture hall	20	0	64	41	1.99	0.98	Disagreed
5	I knew about the information literacy concept from personal study	48	22	34	21	2.77	1.13	Disagreed

Table 2 contains the knowledge of the concept of information literacy by law students which included clear knowledge of the concept of information literacy, lack the knowledge of the concept of information literacy, heard the word information literacy but never caring to enquire of its meaning, got the knowledge from the lecture hall and knew about the information literacy

concept from personal study. These have mean scores of 2.11, 2.65, 2.90, 1.99, and 2.77 respectively, which indicate agreement and disagreement.

Table 3: Relevance of Information Literacy in Promoting Undergraduate Law Students Career Excellence

S/N	Items	SA	A	D	SD	Means	SD	Decision
6	As an individual information literacy skills will enable me to identify the need for information in my study and research work	68	35	20	2	3.35	0.80	Agreed
7	The knowledge will awaken the craving for information acquisition	32	49	28	16	2.77	0.97	Agreed
8	This will enhance my ability to use information ethically in my career	47	56	20	2	3.18	0.75	Agreed
9	Information will empower me to legally engage in life-long learning	70	22	16	17	3.16	1.10	Agreed
10	To see timely information as a key factor in the law profession	44	38	10	33	2.74	1.19	Agreed

Table 3 shows the responses of the students on the relevance of information literacy in promoting career excellence. The respondents agreed with all items that it is a major factor that will promote their career with the following mean scores: 3.35, 3.18, 3.16, 2.74, and 2.77.

Table 4: Ways Information Literacy Skills Will Add Credence to Law Students' Transition into Practice

S/N	Items	SA	A	D	SD	Mean	SD	Decision
11	Knowledge acquired in information literacy can be used for search skills in finding and accessing needed information with ease	61	49	15	0	3.36	0.69	Agree
12	The knowledge will help to create, store, manage, analyze, interpret, communicate, disseminate, and apply the information for results independently	39	55	28	3	3.04	0.79	Agree
13	The knowledge can be used to navigate the legal information retrieval tools in solving practical legal challenges	13	80	19	13	2.74	0.78	Agree
14	The knowledge can be used in organizing workshops to facilitate access to legal information in both manual and digital formats.	47	64	14	0	3.26	0.64	Agree

Table 4 uncovers ways information literacy skills can add credence to law students' transition into practice with the means scores of 3.36, 3.26, 3.04, and 2.74 respectively, which indicates agreement.

Table 5: Constrains to Adopting Information Literacy as a Course by Undergraduate Law Students

S/N	Items	SA	A	D	SD	Means	SD	Decision
15	The Relevance of information literacy is not clearly defined in the profession	62	7	31	25	2.84	1.23	Agreed
16	Lack of lecturers' interest in integrating information literacy into the law courses	16	21	49	39	2.11	0.99	Disagreed
17	Lack of experts to teach the course information literacy	28	12	51	34	2.27	1.09	Disagreed
18	No senate approval for the course	9	30	69	17	2.24	0.77	Disagreed

Table 5 identifies the relevance of information literacy not clearly defined in the profession with a mean score of 2.84 which indicated accepted. Lecturers' lack of interest in integrating information literacy into law courses, lack of experts to teach the course information literacy, and no senate approval for the course with the means scores 2.27, 2.24, and 2.11 respectively which means not accepted.

Discussion of Findings

The discussion is based on the findings of the study in line with its objectives.

Law undergraduate Students' Knowledge of the Concept of Information Literacy

The study reveals that the majority of law undergraduate students lack a clear knowledge of the concept of information literacy in a profession that is information seeking incline. This should be a major concern for the profession, knowing that the legal profession is entrusted with the mandate to control and enforce the body of rule of conduct binding force of a particular society or nation. To this end, the profession will be living below its expectations without basic information literacy skills, information birth knowledge that makes one intelligent, and most times the knowledge translates into an understanding of a subject matter for impactful application. This agrees with the study of Lawal, (2014) says it is practically difficult for one to achieve the target of planned studies without putting some basic information literacy skills to work. The study further noted that information literacy skills are required to equip people with decisive literacy skills that will assist them to be independent life-long learners.

Relevance of Information Literacy in Promoting Law undergraduate Students' Career Excellence while in school

The study uncovers information literacy knowledge is an eye opener to law undergraduate students of the need for information in their career. The knowledge serves as an influencer that drives the need for the acquisition of information that enhances their study and research work by applying it ethically in the profession. It reveals that it fosters the desire for life-long learning in the students. This is in line with the study of Waller, Miller, and Schultz (2019) that said information literacy skills allow students to work more independently, to engage with the research 'cutting edge', to appreciate the plural and contested nature of the subject, and to place

their work within its broader academic context. The study further states that Information literacy is essential for academic success, effective functioning in the workplace, and participation in society as knowledgeable citizens. Similarly, Yi and Meiya (2019) observed that information literacy will help to cultivate in law students the ability to find legal information, control and use legal resources and pay attention to their training on legal research thinking.

Information Literacy and Credence to Law Students in School and Transition into Practice

The study reveals ways information literacy can help value law undergraduate students. The knowledge and skills acquired through the information literacy course will empower the students with search skills in finding and accessing authentic and needed information, and how to create, locate, analyze, interpret, and communicate it. Also, the knowledge enhances the student's ability to navigate legal information retrieval tools in solving practical legal challenges. Similarly, Donatus, Obinyan&Osezua (2020) affirm that the importance of information literacy skills cannot be overemphasized as they equip students and practitioners with valuable insights that guarantee quality academic and research outputs capable of expanding career opportunities in the burgeoning information economy.

Constraints to Adopting Information Literacy as a Course by Undergraduate Law Students

The results identify the relevance of information literacy not clearly defined to the students and that translates to their non-chalant attitude about the quest for information which was identified as the main constraint to adopting it. Also, the lack of lecturers' interest in integrating into the legal curriculum constitutes another hindrance. The study is contrary to that Lawal (2014) noted information literacy skills deficiency among undergraduate law students in many countries which suggests that many are ill-prepared for the workplace. The study added that little research has been undertaken in the field of legal information literacy in contrast to many other academic areas. From the assertion above, for law undergraduate students to see the need for information as the backbone of their career the integration of information literacy into legal education.

Conclusion

In conclusion, it is very that law undergraduate students cannot strive to the height of their careers without embedding information literacy skills in them through the integration of information literacy into the legal education curriculum. As literacy skills give credence to the students' careers and the transition to practice.

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Resistance to Change in Academic Libraries: The University of Ilorin Experience

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ABSTRACT

Since libraries are developing organisms following Ranganathan's thesis, its success or failure depends on an awareness of the causes and mechanisms of opposition to change as well as the ability to effectively address its manifestations. In light of this, this study used the academic library at the University of Ilorin as a case study to examine librarians' perspectives on change resistance and potential solutions. The study was targeted at 20 librarians in the University of Ilorin library, while a total enumeration sampling method was adopted. The questionnaire was used to collect data from the respondents, and a 100% (20) response rate was achieved. The data collected were processed and analyzed with descriptive statistical tools of frequency counts and percentages. Results revealed that there was a change in the library (70%), while incidents of resistance were also witnessed in areas such as gossiping on duty (100%), staff missing deadlines (75%), seeking joint action of colleagues (65%) and refusing to learn a new task (60%). The study further provides strategies on what Library managers could do to reduce or solve the problems of resistance to change in the library and information service environment. In light of the findings of the study, it was recommended amongst others that, librarians must not only focus on access, organization, storage, and retrieval of information but, they should also become change agents and ensure a proactive role in the diffusion of technological innovations.

Keywords: Resistance to change, Academic Libraries, Librarians, Solutions, University of Ilorin

Introduction

In this modern era, anything will change because change is everywhere, including in an organization (Damawan & Azizah, 2019). Change is inevitable. The rule of everchanging applies to all organizations, hence every organization is always focusing on making changes and improving their existing system to the benefit of customers, and users, particularly in the

information service environment. Certainly, the need for change is usually forced by external internal organizational factors. According to Junnaid et al (2020), organizational external factors such as new regulations, enlarged competition, modern technologies, labour unions, climate change, etc one part call for change. In the other part, internal factors such as the introduction of new technologies, management policies, and product/service specifications would necessitate change.

In the library situation, the origin of change is rooted in the fifth law of library science by Ranganathan, which says “The library is a growing organism”. This is an invitation to change now and then. Growth simply implies change, and academic libraries face challenges presently more than ever- the advent of technology has turned the table, and changed the unchallenged role of libraries as the providers of convenient, comprehensive information which meets a whole range of needs for the public. For this reason, Weiner (2003) reveals that academic libraries are faced not only with an unprecedented rate of change but also very real challenges to their existence in contemporary society. There can be no doubt that this is a time of great change for libraries, particularly in academic libraries in the area of acquisitions, information technologies, technical services, resource sharing, and other areas of library operations and services, even in training requirements for staff to be more efficient and effective in exploiting the new information technology. Libraries must establish strategies that will make the change seamless to not interrupt operations and services. It is not all plan changes that can be successful and can be accepted by all employees but with good leadership systems, resistance to change can be minimal and manageable. Resistance is a negative reaction of employees inhibiting change, (Damawan & Azizah, 2019).

Statement of the Problem

Resistance to change occurs in multi-dimensional, it can lead to persistent reduction in output, increase in the number of quits, requests for transfer, chronic quarrels, hostility, wild cat or slowdown strikes. Changes may gradually happen in the library and several organizations. Hence, it occurs in work methods, in routine office procedures either in the location of a desk, in personnel assignments and in job titles in the academic library. The solutions to these problems are as follows: people should be allowed to participate in making the change, and understanding the true nature of resistance, management is advised to take concrete steps to deal constructively with the staff's attitude and librarians can also make their effort at meetings of staff where change is being discussed. It is obvious, that in organisations people believe there is no need for change, it will make it harder to meet their needs and the risks outweigh the benefits and think they cannot make the change. They also believe the change will fail or that sometimes, management handles the change improperly and change is inconsistent with their values.

Objectives of the Study

Generally, resistance is an individual reaction that arises from opposition to change. The current study specifically focuses on the following:

1. To find out the opinion of respondents on resistance to change in the university library;
2. To investigate academic libraries' reaction to change in the library;
3. To document the areas affected by change over the years, as experienced by respondents;

4. To provide an understanding of the problems faced by the agents of change;
5. To offer recommendations that will help library management in the change process, based on the results of the study.

Research Questions

1. What are the opinions of the respondents on resistance to change in the University library?
2. What are the academic library's staff reactions to change?
3. How documents are affected by change over the years as experienced by the respondents?
4. How the understanding of the problems faced by the agent can be provided?
5. What are the machinery that will help library management in the change process?

Review of Related Literature

The library and allied literature include several articles discussing change and resistance in organizations. It includes the following among others: innovation management in academic libraries, resistance to change, acquisitions management in changing times, and management of change in 21st-century libraries, just to mention a few. To make the study manageable, only a few of the relevant literature is reviewed, to give background to the study. We need to have a clear understanding of a few concepts before the brief literature review. Change, change agents, and change recipients. Ford et. al (2008) provide us with a brief and clear definition of the terms.

1. Change: A situation that interrupts normal patterns of organization and calls for participants to enact new patterns, involving an interplay of deliberate and emergent processes that can be highly ambiguous.
2. Change agents: Refers to those who are responsible for identifying the need for change, creating a vision specifying a desired outcome, and then making it happen. They are the people responsible for the formulation and implementation of the change.
3. Change recipients: Represent those people who are responsible for implementing, adopting or adapting to the changes.

Jantz (2012) concludes that many professionals are not familiar with the complexities of innovation, and that remains why they cannot achieve a high level of acceptance from the target people or community. According to him, library managers must promote an innovative environment in the library and increase the flow of new ideas. Diedrichs(1996) sounded the warning a long time ago (some twenty-seven years), that "libraries can expect lots of change for many years to come", and no aspect of library activities can expect to be spared. The author added, "Change is inevitable and accelerating every day". But adds that we must read the details of all management theories and follow through. Damawan and Azizah (2019) remarked that "factors that cause resistance to change are individual and situational factors, but strategies can overcome resistance to change". Adedoyin et. al (2011) assert that "change is no more a matter of choice, however, it is the most important obstacle to surmount by individuals and organizations that desire to survive".

Fordet. al (2008) observed that “overcoming resistance is an issue of agents effectively managing the agent-recipient relationship”. Agents must be willing to see “resistance” as a product of their actions. Junnaid, et. al(2020) observed that leaders' effectiveness and competencies in leading the change have become essential in initiating the change and people management. To this effect, management must make sure that a proper communication process must be followed so that every individual is well acquainted with the system.

Examination of research literature has shown that: Change is inevitable in any organization; The fifth law of Library Science is about change; Change agents and change recipients have roles to play for any change to succeed; Leadership management is crucial to effect change; Obstacles to change are not insurmountable; Technological innovations and applications to library operations and services will always be reasons for change.

In critical look and observation change is a moving from the present situation to a desired future target. Change management is a practical activity focused on both configuring the future desired situation and managing the perfect transition through different intermediary stages until the desired situation is achieved. Change in an organisation's library is represented by any change in the organization's state of affairs. As a discipline, change management focuses on voluntary organizational change in response to environmental factors, or on the organization's initiative, a change that must be managed to achieve a desired future condition (Srivastava & Agrawal, 2020; Georgalis et al, 2015).

Change management has been also defined as “the process of continually renewing an organisation's direction, structure and capabilities to serve the ever-changing needs of external and internal customers” (Sundus et. al, 2017, p.17). Change management refers to the achievement of an optimal design of the path leading from the starting point to the goal. Pursuing this interpretation of the concept, change management does not involve defining the content of the goal itself, nor developing the methods to achieve such corporate goals or strategies (Guidetti et al, 2018). A classification of changes, of high importance for change management, is from the perspective of the types of events that generate the need for change. Based on these types of events, there are three main categories of change (Kinicki& Williams, 2020: Brisson-Banks, 2010).

1. “Closed change”: There is certainty as to what has happened the causes and measures to be taken.
2. “Contained change”: There is reasonably certain knowledge of what has happened, the causes and measures to be taken.
3. “Open-ended change”: There is a broad disagreement as to what has happened, the causes and the measures to be taken.

However, the argument over employees' reluctance to change within the service industry has persisted over the years, and a multitude of mixed-method, qualitative, and quantitative research has been undertaken, producing a diversity of conclusions. The association between technostress and resistance to technology adoption was the focus of a survey done by Hanif, Naeem, and Bhatti (2021) among 150 Library and Information Science (LIS) professionals employed in the university libraries of Punjab, Pakistan. The research found that technostress had an effect on the resistance to technology adoption in university libraries ($p > .05$, $\beta = -0.338$). The employment

of new technical instruments in the library, which made the job more difficult, and managing technology were the main causes of technostress. The study also found that resistance is more common in men and older adults and that respondents who are nervous or anxious about using computers and other technology are also more likely to resist. To address the complexity of the quickly changing AUL environment, Gunapala, Montague, Reynolds, and Vo-Tran (2020) conducted a qualitative constructivist research study to examine the current change management strategies of the chief librarians in 18 public Australian University Libraries (AULs). According to the study's findings, library management faces substantial problems in the fast-evolving AUL environment, necessitating appropriate changes to policy and practice. Resources, relevance, stakeholders, strategy, governmental policy, and university infrastructure are further factors that help Australian public sector university libraries handle change effectively.

By distributing a structured questionnaire to 100 library and information workers working in academic and research sector libraries in India, Prakash (2010) surveyed to determine the reasons behind the resistance. Results indicated that lack of a proper attitude toward change (89.76%), lack of management support (86.36%), lack of highly motivated employees (82.96%), lack of adequate training (80.68%), lack of a supportive or conducive work environment (80.68%), lack of customer orientation (78.4%), lack of developed competencies for the transformed environment (73.86%), lack of adequate resources and infrastructure (73.86%), difficulty in understanding fast and complex changes in the environment (70.46%), and deep-rooted dogmas and technophobia (63.63%). According to an exploratory study (Mabunda & Du Plessis, 2022) conducted at the University of Johannesburg (UJ) library involving 12 library managers and 65 Information Librarians, library assistants, supervisors, and specialized support staff, it was found that employees resist change when their comfort zone is threatened; and what they know is becoming threatened because the new initiative or change tends not to be aligned with their current knowledge and skills. Additionally, Mabunda and Du Plessis's results from 2022 showed that resistance to change may be caused by not understanding what would happen when it is implemented; this finding indicates and supports that knowledge management (KM) might be a feasible solution. Findings from a case study involving 50 junior and senior library staff members employed at the University of Ghana Library in Ghana (Dadzie & Mensah, 2021) showed that, resistance to the transfer was most directly related to resistance (73.1%), followed by the lack of prior information on the transfers (65.4%). In addition, the study emphasized the importance of communication, organized processes, and transparency as techniques to facilitate change and facilitate implementation. The study concluded that managing regular staff rotation is important for the growth of the UGL system and the institution as a whole.

Results of another case study research study (Makanga, 2019) conducted among 28 library employees revealed that the Technical University of Kenya Library leadership was committed to change, had developed a strategic plan for the library, and included library staff in a change management program for successful results. The study also discovered that developments in the economy ($M = 3.10$), the educational system ($M = 3.05$), and information technology ($M = 3.35$) all had an impact on change (forces for change) at the TUK library. The Library of Congress Classification (LCC) and the implementation of the KOHA library management system, along with staff training and capacity building, were the two major transformation projects carried out by TUK Library. The results of another South African case study research (Plessis & Mabunda,

2016), which included 21 participants and examined how change in terms of technology is managed in a decentralized academic library in a higher education institution, emphasized the significance of change management in academic libraries and the necessity of effective communication. This study also demonstrated that participants' capacity to adapt to change depended largely on their motivation as well as the training and seminars they attended. The study concluded that since not everyone responds to change in the same manner, it is crucial to manage change to get everyone on board. A qualitative study (Mwendwa, 2015) conducted at the library of the Catholic University of Eastern Africa (CUEA) with 67 participants (including the university's library management, the head of the ICT department, and library staff/users) observed that libraries face several difficulties when managing change in automated systems, including rapid technological change, system change resistance, inadequacy of skills in system implementation, and poor change management strategies.

In Nigeria, the findings of a positivist study (Oluwole & Olatokunbo, 2017) among 50 librarians at the University of Lagos (UNILAG), the Lagos State University (LASU), and Babcock University showed that the introduction of new technology has not necessarily resulted in resistance among the librarians in the surveyed institutions. Nevertheless, some of the respondents expressed resistance to new technology, with the University of Lagos (UNILAG) having the most. According to Oluwole and Olatokunbo's (2017) study, some potential causes of change resistance include lack of rewards for successful implementation of technological change (27.1%); the impact of technological change on patrons' loyalty to the library (22.9%); fear of the new technology's uncertain outcomes (25.0%); lack of the necessary knowledge, abilities, and resources (24.9%); lack of required skills by change agent to adopt the new technological change in my library (22.9%); lack of adequate training to accommodate the new technological change (27.1%); desire to maintain the current positions in the library (20.9%); lengthy planning before the technological change is delivered (27.0%); understanding why technological change is happening and why it's necessary (29.1%); and long periods of planning before the technological change is delivered (20.9%). The study also found that demographic factors including gender, age, experience, years spent working at the current library, and education had no discernible impact on librarians' resistance to technology.

According to Oluwole and Olatokunbo's (2017) study findings, offering adequate training programs to improve job performance and address change reluctance, empowering staff members toward the change process and listening to them to meet their needs, and having a strong reward system that rewards performance, are strategies that be employed by academic libraries to lessen librarian resistance to technological changes. Despite the abundance of literature on change management in organizations, it is important to emphasize that the literature on change management in libraries places more emphasis on technology advancements and innovations than on personnel changes. The introduction of new technology, work regulations, and routines did not always result in resistance to change, according to certain study findings. This is the research lacuna the study intends to fill.

Theoretical Exposition

Every progressive organization and society must embrace change. As a result, a plethora of theories, models, and frameworks, including those in library and information science, have been

proposed to clarify the speculative origins, effects, and management of change resistance globally. The Kurt Lewin (1952, 1958) theory of change management, the Nolan, Norton S-Curve IS model (1976), Kotter's (1995, 1996, 2000) process and eight-step model for radical change, Nadler's Congruence Model (1998), and the Prosci (2007) ADKAR model for change management are just a few of the theories mentioned above. Out of all the proposed theories, this study is informed by the Prosci (2007) ADKAR model, created by Prosci founder Jeff Hiatt about two decades ago after researching the changing patterns of more than 700 firms. According to Prosci Inc. (2022), the acronym "ADKAR" stands for the five results that a person must get for a change to be successful: (a) awareness of the need for change, (b) motivation to support and participate in the change, (c) knowledge of how to change, (d) The ability to apply desired abilities and behaviours, and (e) reinforcement to keep the change going. The awareness and desire phases of the ADKAR change management model are meant to help you leave the situation you are in now, when change is required but has not yet started. Reinforcement concentrates on the future while knowledge and skill are acquired during the transition (see Figure 1).



Figure 1: A diagram of Prosci (2007) ADKAR model

Source: Prosci Inc (2022). The Prosci ADKAR Model.
<https://www.prosci.com/methodology/adkar>

The ADKAR Model, which is utilized by thousands of change leaders worldwide, focuses on individual change by assisting people as they go through a specific transformation and addressing any barriers or bottlenecks they may encounter. Organizational changes frequently fail, according to Malhotra (2023), because staff members do not see the value of adopting the change or how to do so successfully. They only recognize that something is changing. Additionally, leaders frequently lack the skills necessary to successfully engage people throughout change and deal with any possible opposition. The ADKAR Model tackles these issues by providing employees with the knowledge, motivation, and skills necessary to effectively navigate organizational transitions as well as leaders with the appropriate methods and tools. The ADKAR Model helps leaders and change management teams to concentrate their efforts on what will motivate individual change and consequently produce organizational results by describing the objectives and results of effective change. The ADKAR model is relevant to this study because it would enable the study's investigators to pinpoint any change-related roadblocks for library staff so that it may assist these people in moving through the shift. More so, it is recognized for its outcome-oriented change management approach that seeks to reduce organizational change resistance.

Methodology

This study used a hybrid of qualitative and quantitative research methodology and analysis. The study covered only one academic library, hence descriptive research of a case study type of design was adopted. A case study, as defined by Creswell and Creswell (2018), is a thorough examination of a particular subject, such as a person, group, location, occasion, business, or phenomenon. The delicate nature of the subject matter, together with the benefits of a cost-effective design and quick data collecting, led to the adoption of this study design. The study targets are the academic librarians in the university library. The reason for this was to make the project manageable and to use it as a pilot study. A total of twenty academic librarians were covered, and a total enumeration sampling method was used. A validated and pretested (Cronbach's alpha reliability coefficient value of 0.833) questionnaire was designed for the sample to cover the four major areas which adequately address the objectives set for the study.

- a) Profile of Librarians.
- b) Opinion of academic Librarians on resistance to change in the library.
- c) Experience in resistance, and areas of service affected by change.
- d) The solution to resistance in libraries.
- e) Comments of respondents on how to manage change in academic libraries.

In the profile section, the eight questions requested information on status, gender, age, unit, headship, experience with change and areas affected by the change. The second section of the questionnaire addressed the opinion of respondents on change in the library. The section of the survey asked respondents to state whether they agreed or disagreed with the eight statements about change. The study used the experiences of academic librarians to gain insight into the issue of change and resistance in libraries. The goals of the study are to understand how librarians have reacted to instances of change in the library and to find out from the open-ended comments the view of librarians generally about change in the university library. In general, respondents were asked to describe their personal opinions and perceptions on a five-point Likert scale. There were eight demographic questions and one-ended one. Eighteen statements were used to elicit participants' perceptions about change in the university library. The choice of only academic librarians was based on several factors and assumptions. These were as follows:

1. Academic librarians were deemed to be persons who head divisions/units and would be the ones to facilitate the change process.
2. They would also be the ones to identify the resistance of subordinates to change.
3. It was assumed that the opinions of participants were a critical factor in accomplishing change in the library, and if not carried along, they could also show some resistance.

The administered questionnaires were retrieved back on the spot and, generated a 100% retrieval rate. Data analysis was done using descriptive statistical tools of frequency counts and percentages.

Results

This section presents first, a demographic analysis based on the distribution of responses by gender, status, age, and years of experience.

Table 1: **Demographic Responses (n = 20)**

Gender	N	Percentage %
Male	13	65
Female	7	35
Years of Experience		
5	2	10
6-10	8	40
11-15	2	10
16-20	2	10
21-25	6	30
25 above	-	-
Status	N	Percentage %
Assistant Librarian	2	10
Librarian II	13	65
Librarian I	2	10
Senior Librarian	3	15
Age Range of Respondents	N	Percentage %
20-30	1	5
31-40	1	5
51-60	15	75
61 and above	3	15
Experience of change in the Library	N	Percentage %
Yes	14	70
No	6	30
Head of Division/unit	N	Percentage %
Yes	11	55
No	9	45

The result shows that more than half [65%] of the respondents were male. Table 1 reveals that close to half 8 [40%] of the respondents had between 6-10 years of experience. On the age range of the respondents, the majority 15 [75%] of the respondents were between 51-60 years. Answers to questions on respondents who were head of division/unit revealed that slightly more than half 11 [55%] occupy headship positions in the library. Respondents were asked to indicate if they had experienced any form of change in the library. Of the total number of respondents, 14 (70%) have experienced one form of change or the other. Respondents were specifically requested if the change covered organizational structure, operations and services. All the respondents who experienced change indicated that their experiences covered the three areas indicated. This shows that more than half of the respondents 14 [70%] were competent based on their experience to respond to change in the library.

Opinion questions

This section deals with participants' responses to statements about resistance to change. Some highlights are presented in Table 2. In the highlights, “strongly agree” and “agree” are categorized as “agree”, and “strongly disagree” and “disagree” are categorized as “disagree”.

Table 2: Opinions of Participants on Resistance to Change

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Sure
INCIDENCE OF RESISTANCE					
Refusing to learn a new task is a sign of resistance.	12(60%)	-	6(30%)	-	2(10%)
Setting up an alternative approach or simply working in the old way rather than implementing is resistance	-	10(50%)	5(25%)	3(15%)	2(10%)
Seeking joint action of colleagues is a sign of resistance.	13(65%)	-	5(25%)	-	2(10%)
Gossip is the most common way to show resistance to change	8(40%)	12(60%)	-	-	-
Intentionally missing deadlines could be a way to show resistance to change	-	15(75%)	2(10%)	-	3(15%)
To pay lip service to a new idea but fail to comply with change shows a lack of support for change	-	14(70%)	-	5(25%)	1(5%)
CAUSES					
Supervisors giving mixed messages is a weapon to resist change	6(30%)	11(55%)	2(10%)	-	1(5%)
When supervisors do not provide adequate resources or information, it could be a way to resist change	-	16(80%)	4 (20%)	-	-

Table 2 shows that the overwhelming majority (60%) agreed that refusing to learn a new task is a sign of resistance. Thirteen (65%) agreed with the statement that seeking joint action of colleagues is a sign of resistance. All the respondents (100%) agreed that gossip is the most common way to show resistance to change. This agrees with Diedrich's (1996) position that “gossip” is the most common way to show resistance and a form of sabotage. Again, 75% of the respondents agreed that missing deadlines could be a way to show resistance to change. An overwhelming majority (70%) agreed that lip service to a new idea but failure to comply with change shows a lack of support to change. The majority (85%) of the respondents agreed that when supervisors do not provide information or resources, and when supervisors can use mixed

messages, it could lead to change resistance. Damawan and Azizah (2019) say that the attitude or behaviour of an individual that frustrates the purpose of change goals can be interpreted as resistance.

Solution to Resistance

There is no problem without a solution. Since change is inevitable, resistance must be expected, whether minimal or big. Here, ten statements sought the opinion of respondents on the solution to resistance (Table 3).

Table 3: Solution to Resistance

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Sure
Change should be gradual, not sudden	12(68%)	5(25%)	-	1(5%)	2(10%)
Peer pressure should be discouraged.	3(15%)	15(75%)	-	-	2(10%)
Let resisters of change be part of the project.	7(35%)	12(60%)	1(5%)	-	-
Reduce the frequency of meetings among staff if possible.	1(5%)	7(35%)	11(55%)	-	1(5%)
Continuous assessment of methods and approaches of leadership may be necessary	6(30%)	14(70%)	-	-	-
Transparent leadership will not reduce the incidence of resistance.	5(25%)	5(25%)	8(40%)	-	2(10%)
An environment that allows subordinates to express ideas will suppress resistance.	7(35%)	11(55%)	1(5%)	-	1(5%)
When leaders speak often and frankly about change, there may not be any resistance.	12(60%)	8 (40%)	-	-	-
Relating directly with all the staff and not supervisors will stop resistance	10(50%)	2(10%)	6(30%)	1(5%)	1(5%)
When things seem not to work out, counselling and warning about behaviours should be tried.	5(25%)	15(75%)	-	-	-

From Table 3, most respondents 17(85%) to statement one agreed that change should be gradual and not sudden, to avoid resistance. Also, 18(90%) agreed that peer pressure should be discouraged as a solution to resistance. Responses to statement number three reveal that a good number (95%) of respondents agreed that resisters of change should be part of the project. This could be a way to secure their loyalty. In response to statement number four, less than half

8(40%) agreed that a reduction in the frequency of meetings among staff would solve the problem of resistance.

All the respondents 20(100%) agreed that when there is a continuous assessment of methods and approaches of leadership it would stem the wave of resistance to change. An overwhelming majority 18(90%) agree that transparent leadership will reduce the incidence of resistance. Curiously though, most (90%) respondents to statement number seven agreed that an environment that allows subordinates to express ideas has no relationship with transparent leadership. All the respondents 20(100%) agreed that when leaders speak often and frankly about change, there may not be any resistance. In response to statement number nine, slightly more than half 12(60%) respondents agree that when management relates directly with all staff and not supervisors, resistance will stop, while 7 (35%) disagreed and 1 (5%) was not sure. Statement number ten and the last question attempted to find out the place of counselling, warning about behaviours as a solution to change. All respondents 20 (100%) agreed that the measure would be a solution to resistance. Of all the ten statements, only numbers five, eight and ten had 100% agreement responses.

Open-Ended Question Results

The only open-ended question in Section C of the survey provided qualitative responses that both supported the general study results and elicited further information. The question asked respondents to provide additional comments that will assist in managing change in libraries, bearing in mind that “the library is a growing organization”. Of the total respondents, more than half 13 (65%) offered useful comments that have been grouped thematically:

- i. a good relationship is essential at the leadership level for a successful change;
- ii. resistance is destructive and should be controlled in order not to affect service;
- iii. everyone in the leadership position i.e division/unit should be involved in the change process;
- iv. open library policy will reduce resistance ;
- v. cooperation is required in all organizations;
- vi. democratic leadership is necessary to avoid resistance;
- vii. the library should organise training and seminars that will focus on library goals.

Putting the results of the study and the comments of the respondents together, one can safely say that the problems facing change in the library and any other are not insurmountable if only the change agents and change recipients are ready to work together.

Conclusion

Our research has highlighted librarians' opinions about resistance and solutions to change in libraries. Data presented suggest the library had experienced resistance in one way or the other. It is noteworthy that those who are change agents need to do a great job that is, being responsible for the relationship with change recipients, as well as the tactics of change. There is much to be realised in the library work with relationship to change by understanding and accepting its

benefits and challenges. Librarians are to expect a lot of changes for many years to come. No aspect of library operations and services is exempted.

The limitation of this study is in the number of respondents surveyed and the library; being a case study approach. There is also a need to carry out a similar study that will include a wider geographical area in Nigeria. The study could go further to determine the most common reasons for resistance to change in academic libraries, and how to manage the process. This will help librarians gain a clearer understanding of how change could be properly managed in libraries.

Recommendations

In light of the findings of the study, the following recommendations are made;

1. change should not be associated with urgency, it should be gradual to give room for adjustment;
2. change agents should take charge of dialogues that may come up at the end of the process;
3. change agents must consider how the change impacts the lives of workers at work and outside, even before implementation;
4. recipients should be allowed to ask for clarifications even when the process is ongoing;
5. a general sensitization should be carried out among all workers to clear doubts and deal with their fears.

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