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CHALLENGES AND OPPORTUNITIES OF 5TH INDUSTRIAL REVOLUTION AND ROLES OF ACADEMIC LIBRARIANS IN COLLEGES OF EDUCATION LIBRARIES IN GOMBE STATE, NIGERIA

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Abstract
The study investigated challenges and opportunities of 5th Industrial Revolution and the changing roles of academic librarians in Colleges of Education Libraries in Gombe State, Nigeria. The study was guided by descriptive research design. The study population consisted 45 of academic librarians in College of Education libraries in Gombe State, Nigeria. Since the total number of academic librarians was not large, census method was used to gather the data. This study integrated quantitative methods approaches which allow richer and better result for every unit of the population that was studied. The study also found that that challenges of poor skills and competencies, poor knowledge of handling digital technologies, financial constraints and lack of stable power supply to improve digital information service delivery were still pertinent among College of Education libraries in Gombe State. The findings of the study indicated that the librarians leverage on the opportunities of the 5th industrial revolution to connect cyber, virtual and physical space in advancing information service delivery in libraries. The paper concluded that the opportunities brought by 5th industrial revolution have advance information service delivery in recent time. The paper recommended that knowledge of digital technology should be strengthened to enhance productivity in the delivery of information by librarians in college of education libraries.

Keywords: 5th Industrial Revolution, Challenges, Opportunities, Academic Librarians, Colleges of Education

Introduction

College libraries being aspect of academic libraries are pivotal contributors to the academic success of Colleges of Education, fostering intellectual growth, facilitating research endeavours, and enhancing overall excellence teaching, learning and research development by providing a diverse range of resources and promoting information literacy (Abayomi, Adenekan, Abayomi, Ajayi, & Aderonke, 2021). These libraries serve as indispensable technological hubs that cater for the academic community, playing a vital role in advancing scholarly pursuits and educational excellence (Adetayo, 2023). The 5th Industrial revolution is presently connecting cyber, virtual and physical space with advancement in digital technology which has made communication, collaboration, information flow and work easier. The 5th industrial revolution also reflects and guides our way of life and thinking through robotic technology, artificial intelligence, cloud computing, big data, social media, smart phones, digital cameras, sensors and Internet of Things which currently contribute significantly in global information provision and dissemination (Hussain, 2019).

The 5th industrial revolution in college libraries has shaped and reshaped information service delivery thereby enhancing paradigms shift. However, observable gaps still exist in comprehensive implementation of digital transformation which was the whole marks of the 5th industrial revolution. (Farag, Mahfouz & Alhajri 2021). The 5th industrial revolution leverage through big data and data analytics, robotic technology, artificial intelligence, cloud computing, big data, social media, smart phones, digital cameras, sensors and Internet of Things by contributing significantly in global information provision and dissemination. This development requires a critical role of academic librarians to fully exploit these technological advancements for quality information delivery (Garoufallou & Gaitanou 2021; Luca, Narayan & Cox 2022). Recognising the significance of 5th industrial revolution in cutting-edge technologies into college libraries, scholars have emphasised its potential to enhance service accessibility, optimise operational efficiency and increase engagement among librarians and patrons (Ogar & Dushu 2018; Pierce 2022). However, despite the importance of 5th industrial revolution in college libraries, challenges of providing quality information service by academic librarians still persists. (Farag et al. 2021).

Statement of the Problem

The 5th industrial revolution is characterized by digital transformation and innovations to advance research output in academic libraries worldwide. However, the inability for some academic librarians in developing countries to play a critical role to take advantage of the 5th industrial revolution to deliver quality information service delivery is still a mirage. The central argument in various studies indicated that the inability of librarians to utilize the benefits of the 5th industrial revolution to transform digital content and services is still a challenge in many colleges of education libraries in Nigeria. Challenges such as lack of technical know-how with digital skills, poor knowledge of using various digital resources, poor skills to advance search strategies and poor funding to develop or procure digital technology systems were identify as a major setback for

librarians to advance the 5th industrial revolution in college libraries in Nigeria. The question is, do the librarians in college of education libraries in Nigeria have the knowledge of the 5th industrial revolution to advance the digital technologies to transform the services of libraries for effective quality information delivery? This evidence needs to be gathered in order to provide an understanding of the actual challenges and opportunities of 5th Industrial Revolution. This study therefore explored and established the prevailing information provision gaps in and the changing roles of Librarians in College of Education Libraries in Nigeria.

Objectives of the Study

The objectives of the paper are to:

1. identify challenges of 5th Industrial Revolution and Roles of academic librarians in Colleges of Education Libraries in Gombe State Nigeria
2. identify opportunities of 5th Industrial Revolution and roles of academic librarians in Colleges of Education Libraries in Gombe State, Nigeria

Review of Related Literature

5th Industrial Revolution and the Role of Academic Librarians in College Libraries

Libraries are essential to learning, research, generation and preservation of knowledge as well as dissemination of information. Librarians are the custodian of information and knowledge in the libraries. Librarians as professionals are critical stakeholders in ensuring that libraries achieve their mandate. The 5th Industrial Revolution is considered as opportunity offered by ICTs and other digital technologies that foster librarians to assume new thinking towards information service delivery (Aithal, & Aithal, 2023). Librarians now use robots in combination with RFID technology and data of bibliographic record to give access to the patrons and general users quality library services through cutting-edge technology (Ajani, et al, 2022). Such kind of newest technology is considered to be the part of new industrial revolutions.

However, evidence from literature indicates that many librarians are still lagging behind in acquiring digital knowledge (Cox & Mazumdar, 2022). For example, Ansari's (2013) study indicates that librarians in Pakistan find it difficult to keep pace with new technologies in providing library services to meet up with the expectation of the 5th industrial revolution. Similarly, Eserada and Okolo. (2019) states that librarians in developing countries still find it difficult to download and search online resources, use web technologies, access online information, locate and navigate uniform resource locators (URLs) and perform basic Internet search. A study by the Echedom and Okuonghae, (2021) indicates that academic librarians in some parts of African countries still find it difficult to perform basic tasks of online searching, web technology, understand and use computer hardware and software and perform basic Internet search activities due to poor digital literacy.

Despite these problems, 5th industrial revolution has opened up opportunities for librarians to develop skills in information sharing, media literacy, digital technology, learning ability, communication, digital content creation, digital identification and information and communication technology (ICT) services (Ogar & Dushu, 2018) maintains that librarians require

digital literacy in operating computers, ICTs and other digital facilities for personal and professional development. Oke and Fernandes (2020) also maintains that the ability to access and successfully use digital information is central to nearly all professionals working in libraries and information centers in closing the gaps in digital access and skills. According to Owolabi, et al. (2022), the 21st century librarians are no longer just the guardians of books; they are information providers in an environment that is constantly changing and driven by digital technology. Cox and Mazumdar, 2022) observe that many academic libraries in developed countries employ librarians who are well versed, equipped and grounded in the use of ICTs to perform their duties and participate in the digital information services.

The 5th industrial revolution is considered as a phenomenon offer by digital technology revolutions that foster librarians to assume new thinking towards information service delivery (Adjei, 2023). Librarians and libraries now use Internet of Things (IoT), artificial intelligence, smart phones, social media, cloud computing, robots in combination with RFID technology and data of bibliographic record to give access to the patrons and general users quality library services through cutting-edge technology (Ajani, et al 2022). Such kind of newest technology is considered to be the part of the fourth industrial revolutions.

Challenges of the 5th Industrial Revolution in College of Education Libraries

Challenges of the 5th industrial revolution in academic libraries in developing countries have led to a wide gap in the way information is delivered with digital technologies. However, in the context of this paper, the major challenges identified are as follows:

Poor Digital Literacy Competence: Digital literacy competence enables librarians in academic libraries to make use of digital technology revolution to participate in new social and intellectual order (Ali, Naeem & Bhatti, 2020). However, librarians with poor digital literacy will not be able to access computers and databases which can lead to serious resentment in the delivery of information services. Failure of some librarians in academic libraries to develop digital competence poses a big challenge in achieving the goals of meeting contemporary society's digital revolution and information delivery.

Inadequate Digital Training Skills: Inadequate digital training and re-training have become a huge problem affecting librarians working in academic libraries in developing countries to carryout library functions in a digital environment. Poor knowledge of digital technology transformation as a result of inadequate training has hindered the effective use of digital technologies in academic libraries. Many librarians working in academic libraries in African countries and particularly Nigeria still finds it difficult to integrate digital literacy skills for effective information service delivery due to poor training. Training is an important component to understand new digital technologies as they emerge, to identify the opportunities in them and manage the risks. Training in digital intelligence will grow over time as the new technology evolves. However, due to poor digital training, many librarians find it difficult to provide library services through digital objects such as text, images, video and audio, and with poor methods of access and retrieval and for the selection, creation, organization, maintenance and sharing of collection.

Poor Attitude and Perceptions towards Digital Literacy: While digital technology revolution can equip academic librarians with the skills to interact and communicate using digital technology, poor attitudes towards the use of digital technology remain a challenge (Oke, & Fernandes, 2020). Building digital skills requires technical, social and intellectual activities. The poor attitude and perception towards digital technology make it challenging to transform digital technology revolution and capabilities among librarians. However, some academic librarians in developing countries are not competent to take on the challenging role of fourth industrial revolution in 21st century information service delivery. They perceive digital technology as a threat to their jobs. Hence, they are reluctant to embrace new technology. Many librarians lack confidence in the face of increasing information and media technology. This slows service delivery and retards productivity

Lack of Digital Technology Awareness: Lack of awareness and understanding of new digital technologies such as mobile Internet access, cloud-based computing, the Internet of Things, digital data, artificial intelligence and an increase in computer-driven decision-making and other forms of automation have become a big challenge for librarians in recent times (Oke, & Fernandes 2020).

Digital technology evolved as a result of change that has continually taken place in a technology-driven environment. Librarians require awareness and understanding of digital technologies as well as interaction with these technologies for decision-making (Ajani, et al 2022). Amid these changes in digital technology, academic librarians are expected to continuously upgrade their knowledge and equip themselves in digital technologies to serve twenty-first century library users. Lack of digital technology awareness is still observable among librarians in developing countries including Nigeria in transforming digital content and technology for proper use.

Poor Usage of Digital Technologies: Poor knowledge of use of digital technologies such as ICT infrastructure, Internet, artificial intelligence, cloud computing and online access still remained a big challenge to transform library services. The usage of digital technology revolution in Nigeria to includes lack of adequate digital skills among librarians and users, low information literacy levels, media and computer literacy. Poor usage of digital technologies especially prohibitive costs in developing countries to gain access to the Internet is still frequent among academic librarians Ajani, et al. 2022).

Opportunities of the 5th Industrial Revolution in College of Education Libraries

The dynamic and evolving intersection of emerging technology and libraries is unmistakably evident in the transformative journey libraries have undertaken. As custodians of knowledge, college libraries have consistently embraced emerging technologies to enhance their operations and services, evident in transitions from card catalogues to OPACs and from traditional reference desk services to 24/7 online and virtual reference services (Kim 2020; Hotsonyame 2023). The core mission of academic library services, centred on organising information resources for easy access, aligns seamlessly with the implementation of innovative technologies that accelerate information retrieval (Chakarova & Trabert 2017). In the midst of the digitalisation ushered in by

the 5th industrial revolutions, college libraries are increasingly integrating advanced technologies to promote quality information service delivery (Echedom & Okuonghae 2021). The 5th industrial revolution promotes the advancement in digital and virtual environments where wireless and digital resources have grown rapidly in the past decade and users search for information via digital devices to retrieve information from across the world (Liao et al. 2018) similarly, the 5th Industrial Revolution (5IR) embraces the concept of harmonious collaboration between humans and machines, paving the way for a revolution and transformation in thinking about human– machine collaboration and its use for greater societal well-being (Ajani et al. 2022). Academic libraries are the pivotal forefront of these transformative technologies because the advent of ICTs and the evolution of World Wide Web (WWW), smartphones, tablets, robots, e-books, game machines and even light bulbs have enabled people to develop digital literacy for many reasons; governance, communication, entertainment, education, research and learning.

This movement is fuelled by the recognition that the 5th industrial revolution enables computer systems to emulate complex human capabilities, automating processes, enhancing stakeholder satisfaction, and creating new avenues for communication and improved services (Marr 2019; Sheikh, Prins & Schrijvers 2023). This technological leap necessitates academic libraries to envision novel ways of disseminating information to meet evolving user needs requiring both management and staff motivation to effectively incorporate AI into academic library service (IFLA 2020). The opportunities provided by the 5th industrial revolution within academic libraries yields numerous benefits, foremost among them being heightened service efficiency (Oyetola et al. 2023). These opportunities encompass round-the-clock service availability, precise cataloguing, and a reduced workload for librarians. The 5th industrial revolution with the use of digital technology has the capability to automate repetitive jobs like cataloguing, indexing and data management, enabling librarians to dedicate their time and skills to more intricate activities. In developed countries, studies Cox et al. (2019) and Huang (2022) suggest that librarians use the opportunities provided by 5th industrial revolution to embrace new roles such as content provision through the evolving information landscape. The opportunities provided by 5th industrial revolution is beneficial, as it increases the efficiency of services by including 24/7 availability of services, accurate cataloguing, and reduced workload for librarians.

Research Methodology

This study was guided by descriptive research design. The study population consisted 45 of academic librarians in colleges of education in Gombe State. In this study, since the total number of academic librarians was not large, census method was used to gather the data. The population units of the study consisted of 45 academic librarians across colleges libraries in Gombe State. This study integrated quantitative methods approaches which allow richer and better result for every unit of the population that was studied. Therefore, forty-five copies of structured questionnaires were distributed to the study population. Of the 45 copies of the questionnaire administered, 38 copies were returned. Data analysis was carried out using frequency count and simple percentages. Statistical package for social sciences (SPSS) software was used as tool for data analysis in the study.

Data Analysis

This section is concerned with data presentation, analysis, interpretation and discussion of findings. The results are presented and analyzed based on the research questions by the researchers.

To **establish challenges of 5th Industrial Revolution and Roles of academic librarians in Colleges of Education Libraries in Gombe State**. To address this objective the researcher identified challenges of academic librarians that hinders effective service delivery in colleges of education libraries in Gombe State. The respondents were given statements the challenges of 5th Industrial Revolution and Roles of academic librarians in Colleges of Education and they were to answer by stating their level of agreement with them using a scale: Strongly Agree (SA) = 4, Agree (A) =3, Disagree (D)=2 and, Strongly Disagree (SD)= 1 respectively. Table 1 shows the statements that the respondents were presented with and how they responded.

Objective 1: Establish challenges of 5th Industrial Revolution and Roles of academic librarians in Colleges of Education Libraries in Gombe State

Table 1: Challenges **of 5th Industrial Revolution and Roles of academic librarians in Colleges of Education**

S/N	Challenges of 5th Industrial Revolution	SA	A	D	SD
1	Poor digital literacy competence enables librarians in colleges of education libraries to make use of digital tools to deliver quality information service delivery	18 47.3%	10 26.3%	7 18.4%	3 7.8%
2	Inadequate digital training of librarians to provide effective service delivery	8 21.0%	25 65.7%	4 10.5%	1 2.6%
3	poor attitudes and perceptions towards the use of digital technology remain a challenge	30 78.9%	8 21.0%	0 0%	0 0%
4	Lack of awareness and understanding of new digital technologies such as mobile Internet access, cloud-based computing, the Internet of Things,	15 39.4%	16 42.1%	5 13.1%	2 5.2%

The findings revealed that 28 (73.6%) of the respondents indicated that they have poor digital literacy competence that enables librarians in colleges of education libraries to make use of digital tools to deliver quality information service delivery, while 10 (26.3%) had divergent view. Similarly, the finding also showed that 33 (86.8%) of the respondents revealed that they have iinadequate digital training of librarians to provide effective service delivery, while 5 (13.1%) had contrary opinion. On the aspect of the poor attitudes and perceptions towards the use of digital technology remain a challenge, 38 (100%) of the respondents strongly agreed or agreed with the statement while none of the respondent disagreed or strongly disagreed. The finding also showed that over 31 (81.7%) of the respondents supported that they have lack of awareness and understanding of new digital technologies such as mobile Internet access, cloud-based computing, the Internet of Things, while 7 (18.4) had contrary views. The implication of this finding is that Challenges of 5th

Industrial Revolution still persist among academic librarians in Colleges of Education. The **finding is in line with a study by** Oyetola et al., (2023) who affirmed that failure of some librarians in academic libraries to develop digital competence poses a big challenge in achieving the goals of meeting contemporary society's digital revolution and information delivery. The study also corroborates with the study by Owolabi et al., (2022), who justified that the poor training of some academic librarians cannot be overemphasized especially in the area of cloud computing, Internet of Things and digital collections to connect, collaborate and share knowledge, information, document, photo, video,

Objective 2: Identify opportunities of 5th Industrial Revolution and roles of academic librarians in Colleges of Education Libraries in Gombe State, Nigeria

Table 2: Identify opportunities of 5th Industrial Revolution and roles of academic librarians in Colleges of Education Libraries in Gombe State, Nigeria

S/N	Opportunities of 5th Industrial Revolution	SA	A	D	SD
8	Librarians embraced emerging technologies to enhance their operations and services	15 22.0%	20 52,5%	3 7.8%	0 0%
9.	Librarians are increasingly integrating advanced technologies to promote quality information service delivery	12 31.5%	26 68.4%	0 0%	0 0%
10.	Librarians embrace the concept of harmonious collaboration between humans and machines, paving the way for a revolution in libraries	17 44.7%	20 52,5%	1 2.6%	0 0%
11.	Helps to identify library user information need and proffer quick solution to their needs.	28 73.6%	10 26.3%	0 0%	0 0%
12.	Utilize ICT for proper services to users	12 31.5%	25 65.7%	1 2.6%	0 0%
13.	Promote information literacy through advocacy programmes for community services.	10 26.3%	17 44.7%	9 23.6%	2 5.2%

Analysis from the study revealed that 35 (92.1%) of the respondents indicates that Librarians embraced emerging technologies to enhance their operations and services, while 3 (7.8%) disagreed with the statement. Similarly, 38 (100%) of the respondents strongly agreed or Agreed that Librarians are increasingly integrating advanced technologies to promote quality information service delivery, while none of the respondents strongly disagreed or disagreed with the statement. On the aspect of Librarians are increasingly integrating advanced technologies to promote quality information service delivery, 37 (97.3%) of the respondents strongly agreed or agreed with the statement, while only 1 (2.7%) opposed to the statement. The finding also showed that 27 (71.0%) of the respondents maintained that they promote information literacy through advocacy programmes for community services, while 11 (28.9%) had divergent view. The finding of the study implies that academic librarian utilizes opportunities of the 5th industrial revolution to embrace new roles through the evolving information landscape. The findings are in line with study

conducted by Ajani et al. (2022) and Adjei (2023) argued that academic librarians utilize opportunities of the 5th industrial revolution to embrace new roles such as content provision, data exploration and evolving digital technology landscape.

Conclusion

The 5th industrial revolution in college of education libraries is meant to bridge the prevailing information provision gaps in the teaching, learning and research needs of the users. This is because digital technology revolutions have become an essential instrument for development and advancement of librarians globally in the provision of effective library services. The findings of the study indicated that the challenges of 5th Industrial Revolution still persist among academic librarians in Colleges of Education. The study concludes that challenges of technological skills, knowledge, funding and poor training still persist among academic librarians in colleges of education libraries. Crucially, the focus of the 5th industrial revolution should be on knowledge sharing and capacity-building initiatives to equip library professionals with the skills they need to use digital technology effectively. In addition, developing adaptable and scalable digital technology models tailored to different resource environments is critical to promoting inclusivity and equitable access to technological advances. The study also concludes that opportunities of the 5th industrial revolution to embrace new roles such as content provision, data exploration and guiding users through the evolving information landscape. However, many Colleges of Education libraries in Nigeria are still lagging behind to transform digital technology services to facilitate easy access to information beyond the traditional information service delivery in the library.

Recommendations

Based on the findings of the study, the study recommended that:

i. There is a need to close the gaps in challenges of poor digital literacy, improve training, create awareness on the use of digital technology among academic librarians in college libraries
ii. There is also a need to utilize opportunity to integrates advanced technologies to promote quality information service delivery by academic librarians

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