

DIGITAL TRANSFORMATION AND INNOVATION OF ACADEMIC LIBRARIES: A CONTENT ANALYSIS

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Abstract

This study reviews literature on the digital transformation and innovation of academic libraries. Content analysis methodology was used to review literature. Various search engines including Alta Vista, Yahoo and Google were used to search for relevant studies carried out between 2010 and 2022 on the digital transformation and innovation of academic libraries. The literature review also retrieved sources from books, journals (print) and online databases such as Library and Information Science Abstract (LISA), Science Direct, EBSCOHOST, Emerald, Africa Journal Online (AJOL) and Google Scholar. Purposive sampling was used for identifying literature on digital transformation and innovation of academic libraries. Forty Five (45) publications were selected. Digital transformation and innovation of academic libraries identified in the literature include: Transformation of Digital Resources, Digital Transformation towards Library Collections, Digital transformation in the management of digital technologies, Digital technology as platforms for innovation and creativity, Digital Transformation for Interaction. Findings from the articles reviewed show that academic libraries from developed countries have utilized digital technology to transformed library services for development. However, findings also show that academic libraries from developing countries, especially Africa, are still lagging behind to transform digital contents to provide effective information services in the library. The paper concludes that despite changes brought by the digital transformation and innovations, disparities still exist between developed and developing countries in transforming library services with digital contents. The paper recommends that academic libraries should intensify in rigorous research in areas of digital technologies to transform digital innovations.

Key Words: Digital Technologies, Digital Transformation, Digital Resources, Library and Information Services, Academic Libraries

Introduction

Digital transformation and innovations has influenced contemporary societies in all sectors of life; such as social, political, economic, personal and professional spheres. The 21st century is characterized by digital transformation and innovations. Today, digital technologies such as robotic technology, artificial intelligence, cloud computing, big data, social media, smart phones, digital cameras, sensors and Internet of Things (IoT) are contributing significantly in transforming global phenomenon in the areas of education, commerce, health, agriculture, economy and telecommunication (Singh, 2019). Despite the critical role of digital transformation and innovations across the world, literature shows disparities between the developed and the developing countries (United Nations, 2017). While developed countries like Britain, the United States of America, Canada, France and Germany have harnessed the emergence of digital transformation and innovations to foster development, developing countries like Morocco, Liberia, Tunisia, South Sudan and Malawi still find it difficult to progress into a technology-driven environment, global economy and knowledge-based society (UNESCO, 2017).

In spite of these challenges, digital transformation and innovations has brought sustainable development that embraces advancement and revolution in Africa. Today, many African countries such as South Africa, Kenya, Egypt, Nigeria, Botswana and Ethiopia now utilize knowledge of digital transformation and innovations to improve Health, Education, Aviation, Economy, Security, Industrialization, Banking and Finance as well as Agriculture (African Digitalization Maturity Report, 2017). Also, the emergence of mobile and media technologies has witnessed development and transformation in digital literacy (International Telecommunication Union, 2017). Adaja and Ayodele (2013) opine that advances in computer technology, telecommunication, mobile technology services and social media platforms have facilitated the creation of interaction among many African countries not only to seek for information, but also to exchange ideas and knowledge via email, teleconferencing, chatting and other avenues for digital technology development.

Globally, the advent of ICTs and the evolution of World Wide Web (WWW), smartphones, tablets, robots, e-books and game machines have enabled academic libraries to develop quality digital technology in order to improve communication, collaboration, education, research and learning (Howe, 2016). Many academic libraries in the United States of America, the United Kingdom, Canada and France have increased their level of performance and quality of research to ensure efficient and effective information resources provision in the technology driven environment library (Raju, 2014; IFLA, 2017 and Coldwell-Neilson, 2017). Digital technology has assisted academic librarians in assuming a thinking and innovation towards timeliness in research as well as increase discovery and creation of new fields of inquiry (Hussaini, 2019).

In spite of these positive trends, recent research conducted indicates that quality of information service delivery in academic libraries in developing countries had decrease due to low digital technology development to accomplish library tasks as well as enhance access to quick information for research activities (Hussain 2019; Singh, 2019). Bernard, (2017) also stresses that academic libraries in developing countries suffered set back due to inability to transform digital content and services for effective library services. Similarly, Yacob in Obidike and Mole (2015) findings reveals that inadequate computerisation, insufficient infrastructure, and scarce human capacity were some of the major challenges towards digital transformation among librarians in an educational institution in South East Nigeria. In spite of these gaps, digital transformation and innovations has given rise to new modes of organizing, processing and accessing information resources in the academic libraries.

Statement of the Problem

The 21st century is characterized by digital transformation and innovations to advance research output in academic libraries worldwide (Reynolds, 2016). However, the inability for the academic libraries to provide quality information service delivery with digital technology to deliver effective information services is still a challenge (Lamptey, 2016). The central argument in various studies indicated that inability to transform digital content and services for effective library services as a result of high costs of digital technology equipment's, accessories, operations and services in developing countries (UNESCO, 2017; Hussain, 2019). The argument also noted that poor digital technology development in Africa and problems of poor knowledge of digital technology by academic librarians resulting from inadequate training have hindered the effective digital transformation and innovations of academic libraries. (Atram, 2017; Anyim, 2018). The question is, does academic libraries in developing countries have the require digital technologies to transform the services for effective quality information delivery? It is against this background the paper intends to explore digital transformation and innovations in academic

libraries to bridge the prevailing information provision gaps in teaching, learning and research needs of the users.

Objectives of the Study

The objectives of the paper are to:

1. Identify digital transformation and innovation of academic libraries
2. Determine coverage of digital transformation and innovation of academic libraries in the Literature
3. Establish challenges of digital transformation and innovation of academic libraries

Literature Review

The 21st century academic libraries are characterized by digital transformation and innovations where wireless and digital technology have grown rapidly in the past decade and users search for information via digital devices to retrieve information from across the world in a seamless manner (Davies, 2016; Howe, 2016; International Telecommunication Union, 2017). Digital technologies are those information resources that can only be accessed by the use of computers and other ICT devices. These materials may require the use of a peripheral device directly connected to a computer or computer network (Hallam, 2016). There are different types of digital technologies that transform library services such as Digital video Disc (DVD), the Internet, Online Public Access Catalogues (OPAC), electronic books, electronic journals and electronic index (Hallam, 2016). Digital technologies are materials that can be conceived and created digitally or by converting analogue materials to a digital format (State Library of Victoria, 2018).

The importance of digital transformation and innovations cannot be over emphasized. This is because it foster access to networked information resources such as bibliographic databases, remote library catalogues, bulletin boards, discussion groups, downloading remote files, acquiring software, ordering and subscription of online information materials and communication with other libraries (Ayoku & Okafor, 2015). Study conducted by Anunobi and Emezie (2016) indicate that digital transformation and innovations enhances quality access to digital collection of information resources is still a challenge in developing countries. This problem according to Odu and Omosigho (2016) is due to poor penetration of digital technology in Africa. Echezona, Ibegbulem and Nwegbu (2015) observed that lack of steady growth of online access to information to transform the whole concept of academic libraries into a global-information-connected community is still a serious concern. Therefore, the provision of cutting edge digital technology to transform library services facilitates research output among library users and access to information resources in academic libraries.

Methodology

The paper used various search strategies to locate literature on the digital transformation and innovation of academic libraries. Online databases, including Library and Information Science Abstract (LISA), Science Direct, EBSCOHOST, Emerald, Africa Journal Online (AJO), Google Scholar were searched for relevant literature. Information was also retrieved from books and conference proceedings covering Internet competencies. Furthermore, journal articles were consulted because they offer relatively concise and up-to-date research findings. The literature search targeted abstracts of publications to help identify relevant articles on the digital transformation and innovation of academic libraries. The searches focused on articles published between 2012 and 2022 and excluded those that were not published in the English language.

A purposive sampling technique was used for the selection of publications for this paper. The review search is in four phases. This was based on the coverage of digital transformation

and innovation of academic libraries identified in the literature. At the beginning of the literature search, 331 articles were retrieved based on digital transformation and innovation of academic libraries related keywords for search strategy such as digital transformation, digital technology, digital innovations and academic libraries. After reviewing each title of the publication, 98 articles were eliminated because the titles did not address the area of study. The second phase of the search focused on the abstract of each article. Eighty one (81) articles were eliminated because the key elements of the abstracts did not on the digital transformation and innovation of academic libraries. In the third phase, 78 articles were also eliminated because the articles focused on libraries in general while the focus of this paper is on the academic libraries. The last phase eliminated 29 of the articles because they discussed digital transformation and innovation in general while this paper's focus is digital transformation and innovation of academic libraries. Therefore, out of the 331 articles retrieved, only 45 articles were selected for inclusion in the review. This paper employed content analysis in reviewing the literature. According to Rani, Yadav and Jain (2016), content analysis is a research methodology that builds on procedures to make valid inferences from text. Flick (2015) views content analysis as accurate, precise, reliable, replicable and valid.

Result and Discussion

This section presents the findings from the articles reviewed. The findings are covered under the following sub-headings: digital transformation and innovation of academic libraries; coverage of digital transformation and innovation of academic libraries in the literature; and the challenges of digital transformation and innovation of academic libraries

Digital Transformation and Innovation of Academic Libraries

The first objective sought to identify the digital transformation and innovation of academic libraries. The literature revealed the following major digital transformation and innovations presented in Table 1.

Table 1: Identified Digital Transformation and Innovations

	Digital Transformation and Innovations	Frequency	Percentage (%)
1	Digital technology as platforms for innovation and creativity	07	15.5
2	Digital Transformation for Interaction	09	20
3	Transformation of Digital Resources	10	22.2
4	Digital Transformation towards Library Collections	11	24.4
5	Digital transformation in the management of digital technologies	08	17.7
Total		45	100

Source: Literature Review, 2023

As evident in Table 1 above, 11 (24.4%) articles identified digital transformation towards Library Collections as one of the key digital transformation and innovations in academic libraries; followed by transformation of digital resources 10 (22.2%) and digital transformation for interaction 9 (20%), in that order. Digital transformation in the management of digital technologies was mentioned by 8 (17.7%) articles. Only 7 (15.5%) articles mentioned Digital technology as platforms for innovation. The implication of this finding is that digital transformation and innovation have assisted the academic libraries to rapidly transform information via digital devices.

Coverage of Digital Transformation and Innovation of Academic Libraries in the Literature

Objective 2 of the study was to establish the coverage of digital transformation and innovation of academic libraries in the literature. The coverage is viewed from 3 different perspectives: resources of the article, geographical spread; and methodology. Table 2 displays the resources of review:

Table 2: Sources of Review

	Sources of Review	Frequency	Percentage (%)
1	Google scholar	7	15.5
2	Emerald	8	17.7
3	EBSCOHOST	6	13.3
4	Library and information science abstract	6	13.3
5	Africa journals online	9	20
6	Journals (Print)	4	8.8
7	Books	3	6.6
8	Newspapers (Print)	2	4.4
Total		45	100

Source: Literature Review, 2023

Table 2 shows that 9 (20%) articles were retrieved through Africa Journal Online. This was closely followed by Emerald with 8 (17.7%). Other various resources used for locating the literature on digital transformation and innovations of academic libraries were: online databases, including Library and Information Science Abstract, EBSCOHOST, books, print journals and newspapers. The implication of this finding is that there is a huge difference in terms of numbers in between the sources published through the ICT and other digital technology than print.

Table 3 presents the geographical location of digital transformation and innovations. The geographical location is reviewed from various continents: Africa, Asia, United States of America and Europe respectively.

Table 3: Geographical Spread of the Publication

	Location	Frequency	Percentage (%)
1	United States of America	13	28.8
2	Europe	11	24.4
3	Asia	9	20
4	Africa	12	26.6
Total		45	100

Source: Literature Review, 2023

It is apparent from Table 3 that 13 (28/8%) of the publications were from the United States of American (USA). This was followed by 12 (26.6%) which emanate from Africa; 11 (24.4%) from Europe and only 9 (20%) from Asia. The implication of this finding is that more academic publications on digital transformation and innovations of academic libraries are from developed countries than developing countries.

Table 4 presents the method of data collection used in the reviewed literature. Various methods of data collections such as questionnaire, questionnaire and interview, survey and focus group and questionnaire and observation were identified in the literature respectively.

Table 4: Methods of data collection of the literature

	Methods of Data Collection	Frequency	Percentage %
1	Questionnaire	8	17.7
2	Questionnaire and Interview	11	24.4
3	Questionnaire and observation	10	22.2
4	Survey and focus group	9	20
5	Interview	7	15.5
Total		45	100

Source: Literature Review, 2023

Table 4 shows that 11 (24.4%) articles used the questionnaire and Interview; followed by 10 (22.2%) that used a combination of questionnaires and observation. Survey and focus group were used in 9 (20%) articles while questionnaire only were the preferred in 8 (17.7%) of articles and Interview only were 7 (15.5%) articles respectively. This implies that Questionnaire and Interview were more used as a means of collecting data by the literature identified

Challenges of Digital Transformation and Innovation of Academic Libraries

Objective 3 aimed at establishing challenges of digital transformation and innovation of academic libraries. The literature reveals the major challenges as follows:

- a. **Poor Digital Technology Competence:** this means that many librarians working in academic libraries in developing countries facing challenges of digital technology competence in the area of creating folders, blocking an address, customizing email, spamming emails, tagging an email, hanging paragraphs, bookmarking, referencing, footnotes and page notes, drop-cap and watermarking.
- b. **Inadequate training: poor training and retraining:** This implies that inadequate digital training and re-training have become a huge problem affecting academic libraries in developing countries and most especially from Africa. Poor training in integrating traditional training and digital technology skills among the librarians posed serious challenges for librarians to provide effective library services.
- c. **Poor attitude and perceptions towards digital technology:** some librarians perceive Internet as a threat in taken over their job and fear. This leads to low service delivery and retards productivity of the librarians.
- d. **Lacks of digital technology awareness and its services in library** are some of the challenges facing librarians from developing countries
- e. **Poor Usage of Digital Resources:** Poor knowledge of ICT infrastructure and affordable online access, absence of in- depth digital skills and information searching behaviour are challenges facing academic libraries to transform digital resources.

Discussion of Findings

The position of academic libraries is central in the provision of information via the digital transformation and innovations. This is because the changes brought as a result of digital transformation and innovations are not only reflected in the activities of the library alone, but the role of academic libraries in transforming the social and technological landscape in the digital era (Einasto, 2017).

This section discusses the various findings under the following sub-headings: Digital transformation and innovations of academic libraries, coverage of transformation and innovations, methodology used and various challenges associated with digital transformation and innovations.

Digital Transformation and Innovation of Academic Libraries

A study conducted by American Library Association (2013) highlights that digital transformation enhances academic librarians' ability to respond to the fast-changing future of libraries through creative thinking and innovation in response to the digital world. UNESCO (2017) states that digital transformation is more than the ability of librarians to acquire digital competence to use computer and other digital devices, but the ability to be creative and innovative to communicate digital resources effectively. JISC (2015) highlights that with the digital transformation and Web 2.0 technologies, librarians have a new, more dynamic role in the knowledge- driven society. Kumar and Rao (2014) recognize that the presence of the web experience and other digital devices has created a new environment for librarians to interact with digital technology. Therefore, in the context of this study, literatures identify digital transformation in academic libraries as follows:

Transformation of Digital Resources: Digital transformation has served as a tool for collaborative, creative and recordable communicative techniques essential for academic libraries to share, communicate, and collaborate for effective digital resources. In this regard the findings reveal that 10 (22.2%) articles transformation of digital resources as an important component of digital transformation and innovations of academic libraries. Eshet-Alkali (2012) findings corroborates with the finding by emphasizing that digital transformation require digital resources and devices to operate maximally for effective information service delivery. The finding is also in agreement with studies carried out by Hussain (2019) that digital transformation is rapidly evolving in information explosion on changing the digital resources such as e-journals, e-books, mobile based services, institutional repositories, tutorials, multimedia content and the Internet. However, gaps still exist as many academic libraries in developing countries still find it difficult to identify and manage digital resources to transform digital library environment.

Digital Transformation towards Library Collections: Digital transformation serves as tools for academic libraries to improve collections by creating, searching, storage and retrieval of digital data in any medium such as text, image, sound and dynamic images. Eleven (24.4%) articles show digital transformation towards library collections as key elements of digital transformation and innovations of academic libraries. Ogochukwu (2015) argues that digital transformation has revolutionized new thinking through library collections in digital transformation and innovation in hypertext links for navigation; support multimedia content along with text and network accessibility. Digital transformation has led librarians to develop new thinking toward transforming library automation, digital and virtual libraries, virtual conference, web-cast, pod-cast, community and online learning, Web 2.0 and library 2.0 technologies (Campbell, 2015). However, many academic libraries in developing countries still find it difficult to digitally transform library collections in Purchasing/subscription of e-resources, designing and developing of digital data repositories, implement the open educational resources platforms, develop mobile apps and mobile library websites and enhances research advocacy for effective library collections (Singh, 2019).

Digital transformation in the management of digital technologies: Digital technology management has created innovative idea for academic libraries to locate, manage, organize, understand, and evaluate library services. Finding from article reviewed indicated that 8 (17.7%) concentrates on digital transformation in the management of digital technologies as an important

components of digital transformation and innovations. Einasto, (2017) findings also indicates that the ability to access and manage various digital technologies especially electronic databases, online reference enquiries, interlibrary loans, digitisation, and electronic publishing requires digital transformation and innovations of academic libraries. (Ajayi, Shorunke and Aboyade, (2014); Abdul- Kareem, (2018) and Anyim (2018) emphasizes that one of the vital components of digital transformation is the ability of academic libraries to create, manage, search, use, store and preserve local publications and information of national and international interest accessible on a subscription or pay-per-view basis. In this sense, it is an extension and enhancement of information storage and retrieval mechanisms that manipulate digital information in any medium (i.e. text, image, and sound, static or dynamic images) and exist in digital networks. However, gaps still exist as not all academic librarians has the skills and competence to manage, search, use, store and preserve electronic version of information resources to transform the frontier of library services.

Digital technology as platforms for innovation and creativity: Digital transformation and innovations offer academic libraries to locate, evaluate and create requires creativity in multiple digital formats from a wide range of sources via Internet and other digital technologies. In this regard the findings reveal that 7 (15.5%) articles transformation as platforms for innovations and creativity as an important component of digital transformation and innovations of academic libraries. This finding connotes with studied conducted by Singh, (2017) that nowadays, the impact of digital transformation and innovations of academic libraries depends digital innovation and creativity offered to access the electronic resources from anyplace at any time. Innovations and creativity of digital transformation by academic libraries to access, communicate and use digital technologies such as computers, smartphones, Internet and web tools, multi-media platforms require digital creativity. Digital literacy of librarians to make use of the OPAC catalog of the library, the e-journals, e-book and other digital material require digital creativity that facilitate searching, evaluation and retrieval of the electronic material (Ekere, Omekwu & Nwoha, 2016). However, gaps still many academic libraries in developing countries especially Africa are creative and innovative to transform library services to enhance digital technology services as new digital platforms for information disseminations.

Digital Transformation for Interaction: Digital transformation provides robust interaction thereby democratizing the global dissemination of information. The United Nations Educational, Scientific and Cultural Organization's (UNESCO, 2017) emphasize that the rapid development of technology has transformed the way academic libraries work and interact with library users. Various researches have been conducted on the ability to transformed academic libraries with network of users across the globe through interaction (Adamou, 2017). Despite the importance of digital transformation which allows for flow of information for interaction with the use of digital resources, it appears that not all academic libraries in developing countries has required digital technologies to interact for information sharing, information usage and information dissemination (Singh, 2019).

Coverage of Digital Transformation and Innovation of Academic Libraries

The findings reveal that 9 (20%) articles were retrieved through Africa Journal Online, while 8 (17.7%) were retrieved from Emerald publications. The implication of this finding is that there is a huge difference in terms of numbers in between the resources published through the Internet than print. This means that publications through the Internet are faster and easier to access than print.

Geographical Spread of Publication Location

The findings indicate that 13 (28.8%) of the publications were from the United States of America (USA) while 12 (26.6%) were emanate from Africa; 11 (24.4%) from Europe and only 9 (20%) from Asia. The implication of this finding is that more academic publications on digital transformation and innovations of academic libraries are from developed countries than developing countries. This means that digital transformation and innovations of academic libraries are more prominent in developed countries than those from developing countries. As such, there is still gap in publications on digital transformation and innovations between developed and developing countries. This finding is in agreement with Echezona and Chigbu (2015) who suggest that many academic libraries in developing countries are still lagging behind in transforming academic libraries with digital technologies.

Challenges of Digital Transformation and Innovations in Academic Libraries

Literature review reveals numerous challenges of digital transformation and innovations in academic libraries which have led to a wide gap in the way information is delivered with digital technologies (Odu and Omosigho, 2017). However, in the context of this study, the major challenges identified are as follows:

Poor Digital Technology Competence: Digital technology competence enables librarians to make use of digital resources to participate in new social and intellectual order (E-safety Support, 2013). Poor digital technology to access computers and databases led to serious resentment of academic libraries in the delivery of information services. Digital transformation and innovations has become a requirement for deriving maximum benefit from digital technology development without which academic libraries would be confronted with a wide gap in meeting with the changes of modern society in information delivery (Shopova, 2014). The benefit of digital transformation and innovations to enable academic libraries to demonstrate ability to evaluate and use information critically from relevant and authoritative sources online (Coldwell-Nelson, 2013). However, failure of some academic libraries to develop digital technology competence poses a big challenge in achieving the goals of digital transformation and innovations.

Inadequate Digital Literacy Training: Inadequate digital training and re-training have become a huge problem affecting academic libraries in developing countries to carryout library functions in a digital environment (Echezona, 2015; IFLA, 2017). According to Uwaifo and Azonobi (2014), poor digital transformation and innovations of academic libraries as a result of inadequate training has hindered the effective use of digital technology in academic libraries. Many academic libraries in developing countries still find it difficult to integrate digital technology to transform skills with the traditional method of information service delivery due to poor training (Rose, Eldridge and Chapin, 2015).

Poor Attitude and Perceptions towards Digital Literacy: While digital transformation and innovations can and has equipped academic libraries to interact and communicate using digital technology. However, poor attitudes towards digital transformation and innovations remains a challenge (Beetham and Sharpe, 2010; Beagrie, 2013; Ryan, 2015). Building digital technologies requires technical, social and intellectual activities. The poor attitude and perception towards digital technology make it challenging to transform and develop digital innovations and capabilities among academic libraries (Rouse, 2016). However, some academic libraries in developing countries are still facing challenges of digital transformation and innovations in 21st century in the delivery of information (Abubakar and Adetimirin, 2015). Many academic 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 (IFLA, 2017; UNESCO, 2017).

Digital transformation and innovations 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 (Baharuddin, Izhar, Mohamad and Hasnol, 2016). Amid these changes in digital technology, academic libraries are expected to continuously upgrade digital technologies to serve twenty-first century library users. According to Baro and Asaba (2010) and Ochezona (2015), 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 Resources: Poor knowledge of ICT infrastructure and affordable online access, absence of in-depth digital skills and information searching behaviour are challenges facing academic libraries to transform digital resources. Oduwale and Sowole (2016) identify problems in the usage of digital resources including lack of adequate digital skills among staff and users, low information literacy levels, media and computer literacy. Poor usage of digital resources especially prohibitive costs in developing countries to gain access to the Internet is still frequent among academic librarians as identified by Salaam and Adegboire (2010).

Summary of the Findings

From the literature reviewed, it is inferred that academic libraries from developed countries have utilize digital transformation and innovations to transform academic libraries to facilitate the core mandate of academic institutions teaching, learning and research activities. Similarly, librarians from developing countries have joined their counterparts from the developed countries to provide library services using the digital technology to remain relevant in the digital era. It was also noted that digital transformation and innovations have assist academic libraries to facilitate easy access to information beyond the traditional service delivery. This is because the 21st century academic libraries are characterized with digital transformation and innovations.

It was also revealed that it is desirable for librarians to acquire digital technology competence for gaining knowledge, training, understanding various digital technology tools in order to apply digital innovations for effective library services. The literature also revealed that academic libraries in developing countries are facing numerous challenges of digital transformation and innovation of academic libraries, such as, poor digital technology poor training of digital technology, lack of digital technology awareness, poor attitude and perception towards digital technology and poor digital resources. Hence, many academic libraries are still lagging behind in transforming the services of libraries with digital technology services and innovations

Conclusion

Digital transformation and innovations has become a standard tool which developed countries have adopted in academic libraries to access, network and provide effective information services. Digital transformation and innovations are an essential communication, collaboration, interaction, creativity and contents that offer academic libraries to locate evaluate and create requires creativity in multiple digital formats from a wide range of sources via digital technologies. Digital transformation and innovations has also become a platform that

transforms academic libraries to facilitate easy access to information beyond the traditional information service delivery in the library. Twenty first century academic libraries have transformed library service into a digital and virtual environment where books and journals are now available as e-books and e-journals. However, many academic libraries in developing countries are still lagging behind in transforming academic libraries with digital technologies.

Recommendations

Based on the findings and discussion, the paper recommends that:

1. There is need for academic libraries from developing countries to identify and utilize digital transformation and innovations to transform library services.
2. There is need for academic libraries to widen coverage of digital transformation and innovation of academic libraries to transform digital innovations.
3. There is need for academic libraries in developing counties especially Africa to strategize means to mitigate the challenges of digital transformation and innovations

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