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The Nexus between Web Technologies and Library Services: A Panacea for Achieving Sustainable Development Goals in Nigeria

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Abstract

Information is a vital tool for development and for a nation to achieve Sustainable Development Goals (SDGs), the citizens must have access to relevant, updated and adequate information on all the seventeen goals. Libraries as information hub can provide such access and even guarantee effective utilization through series of services. The upsurge of new technologies has greatly influenced the library offerings in terms of products and services. Today, libraries are compelled to adopt web technologies if they must improve on their services delivery in order to satisfy information of users towards the achievement of better livelihood as enshrined in SDGs. Hence, this paper examines the different versions of Web technology (from web 1.0 to web 5.0) and their application in libraries. It emphasizes the rationale for adopting web technologies in libraries. Again, the paper describes the seventeen SDGs and presents different strategies libraries could adopt for the actualization of the goals. The constraints to the adoption of web technologies in Nigerian libraries were also discussed. It was recommended among others that government should increase financial allocations to libraries in order to implement web technologies and train and retrain librarians to acquire relevant competence needed for digital environment.

Keywords: *Web Technologies, Library Services, Sustainable Development Goals (SDGs)*

Introduction

The emergence of new and emerging technologies has greatly influenced the library and its services. As such, the mode of information gathering, storage, retrieval, dissemination and delivery has drastically changed, giving birth to open source, open archives, open contents, open research and lots more. Libraries, all over the world, are becoming more information conscious by embracing emerging technologies with a view to aim of changing from storehouses to digital information hubs, thereby meeting the information needs and expectations of the 21st century users.

A growing number of new and emerging technologies for libraries exist ranging from big data, quick response codes, augmented reality, block chain technology, artificial intelligence, cloud computing, to web technologies, among others (Adeyinka & Toofeeqat, 2016). Among the emerging technologies, web technologies seem to be the most popular, significant, affordable, flexible, flair, and practicable. Web technology is a generic term referring to the many mark-up languages and multimedia packages that are used in conjunction with one another with the aim of providing seamless access to information.

In past decades, web technology has undergone a dramatic transition with significant improvements. Web technology started as Web 1.0 and transited through Web 2.0, Web 3.0, Web 4.0, and today, Web 5.0. This shows that web technology is revolutionary in nature and the appellation added to the word "Web" differentiates the various conventions or generations as well as indicates a new and improved version. As noted by Baro & Godfrey (2015) the emergence of web technologies have not only changed the image of libraries, but has brought new terminologies to the practice of librarianship. It has introduced words like Library 2.0, Librarian 2.0, User 2.0, Information Literacy 2.0, Learning 2.0, etc, depending on the version.

Be that as it may, web technologies have brought new tools and techniques relevant to library practice which has become a determining factor for information accessibility and utilization. Web technologies offer to libraries great opportunities to provide new forms of information products and services in support of sustainable development. Every nation of the world whether developed, developing or underdeveloped, needs adequate and reliable knowledge to bring about development and the sustainability of such development. Libraries are expected to provide ultra-rapid access to the richest sources in the world's collection and provide learning spaces where people gain interactive and creative experiences for sustainable development.

Nigeria like any other country desires all round development of individuals and society in socio-economic, education, health, economy, politics, culture, biodiversity, law and order, among others. The sustainability of such development is equally important to guarantee reduction of all forms of misery, poverty, malnutrition, insecurity, oppression, unemployment, etc, in the society. Although, the issue of sustainable development has received widely acclaimed attention in recent years, the level of results is far below the expectations. This could be attributed to some factors including knowledge gap among the constituencies – government, workers, citizens, partners, etc.

It therefore behooves libraries to adopt web technologies to transform both information products and services in order to bridge the knowledge gap between web technologies and library services. This paper seeks to extensively explain Web technologies and the different versions; rationale for adopting Web technologies in libraries; and the roles of libraries in achieving the sustainable development. The paper also discusses the constraints to effective adoption of Web technologies and gives useful recommendations.

Versions	Year	Major Characteristics	Limitations
Web 1.0	From 1997 – 2003	• Read-only web • One-way communication • Static websites (pages)	• This web can only be understood by humans (web readers). It has no machine compatible contents. • The web master is solely responsible for updating and managing the contents of the website. • Lack of dynamic representation.
Web 2.0	• From 2004 – 2006	• Read-write-publish web • Two-way communication. • Decentralization of authority • Rich and fun user experience • Active participation of users • Dynamic contents	• Constant iteration cycle of change and update to services. • Limited interconnectivity and knowledge sharing across community boundaries. • Breach of ethical standard concerning the use of web 2.0. • Lack of personal privacy. • High number of frauds and hackers.
Web 3.0	• From 2007 – 2011	• Read-write-execute web • Machine readability • Resource pooling • Web Personalization • Use of mobile devices	• Redundancy in data that arises from vastness of pages in the Internet. • Vagueness of users' queries and concepts from the content providers. • Inconsistency in operations • Freedom to post views which sometimes might be misleading and fake. • Breach of security policy by users.
Web 4.0	• 2012 - ??	• Read-write-concurrency web or Mobile web • Wireless communication • Availability of semantic markups • Parallel to the human brain	• Lack of privacy • Migration of online functionality into the physical world. • Standardization issues on connections and programming language that will be understood by all devices.
Web 5.0	• It is a vision of the not-so-far-off future	• The Sensory and emotive web. • High degree of convergence between cyberspace and physical space.	Not yet ascertained.

Figure 1: Web Technology Versions, Year, Characteristics, and Limitations (Khanzode & Sarode, 2016)

Web Technologies and their Applications in Libraries

Web technologies have undergone series of development which has given birth to different versions. These versions are discussed below with emphasis on their applications in libraries.

Web 1.0: The first implementation of web technology, representing the web 1.0 also known as static web or read-only web, allow users to search for information and read it (Christian, Tom, & Tim, 2009). This first generation web technology is often referred to as the World Wide Web (WWW) or Internet. From the beginning, (sounded like the start

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of an incredible tale) there was AOL, Geocities and Hotmail. It allows library users to search for information from millions of static websites which existed during the dot-com (.com) boom. Web 1.0 could be considered as Read Only web. In other words, library users can only search for information and read it without being able to interact or contribute to the contents. Web 1.0 does not support active information flow from consumer (library user) to producer (creator of Internet information). Most libraries today provide Web 1.0 technology or Internet to enable users have access to wide-range of electronic resources to satisfy their information needs. Libraries can also supplement their services by exploiting the Internet. This web 1.0 becomes the foundation for Web 2.0.

Web 2.0: This second generation web technology which was invented by Darcy DiNucci in 1999 is commonly referred to as wisdom web, social web, read and write web, and participative web. It harnesses the features of Web 1.0 in a more interactive and collaborative manner making it a more mature technology with user-generated content and "read-write" interactivity. This interactivity, according to Baro & Godfrey (2015) is all about open communication, interpersonal networking, personalization and individualism using different platforms and tools. This era has dramatically changed the landscape of libraries leading to the development and evolution of web-based services and applications such as Facebook, Twitter, MySpace, LinkedIn, FAQs, instant messaging, video sharing, blogs, feeds, wikis, vodcast, podcast, and other interactive tools. These Web 2.0 tools can be actively used in libraries for imparting information literacy, marketing of library services, collaborating with people, creating current awareness, providing reference services, social tagging and bookmarking, image and video sharing, among others (Akwang, 2019). As noted by Armitage (2010), the presence of Web 2.0 in the "digital lexicon" gave a good start to Web 3.0.

Web 3.0: This is also known as Semantic Executing web or Read-Write-Execute web. The aim of web 3.0 is to drive the Web technology towards a more collaborative way of sharing knowledge. It combines a semantic markup and web services, which gives the potential for applications to speak to each other directly and for broader searches for information through simpler interfaces. Apart from humans, web contents can be readable by machines. Aghaei, Nematbakhsh, & Farsani (2012) state that web 3.0 links, integrates, and analyzes data from various data sets to obtain new information stream. Web 3.0 can be adopted in libraries to improve data management, support accessibility of mobile internet, simulate creativity and innovation, encourage factor of globalization phenomena, enhance user's satisfaction and help to organize collaboration in social web. It allows Metadata of contents from various libraries to be seamlessly accessible and searchable from single user friendly interface just like portal. Another important feature of Web 3.0 is that it allows web contents to be readable by both human and machines. According to Gavanakoppa & Kumara (2014), the importance of Web 3.0 is embedded in the fact that it allows libraries to offer new services like Web OPACs, geo tagging, virtual reference service, widgets, 3D web with higher bandwidth and processing power, among others.

Web 4.0: This version is also referred to as the Mobile web, Read-Write-Execution web, Utra-intelligent Electronic agent, Symbiotic web, and Ubiquitous web (Fowler & Rodd,

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2013). The authors note that Web 4.0 is not really new but it is an alternate version of what had existed. What makes it different from Web 3.0 is the inclusion of Artificial Intelligence to its functionality. Web 4.0, according to Solanki & Dongaonkar (2016) is an "always-on" world where humans including librarians can "self-upgrade" through technology extensions. It has the capability of connecting all devices in the real and virtual world and facilitates interaction between human mind and machines in symbiosis. That means, Web 4.0 technology allows librarians, users, and machines to coexist at the same time to offer value-added services. Biziwe & Mkhathali (2019) note that whilst the application of this technology is entirely new, some libraries are already making use of its processes for storage and retrieval of resources, security of library materials, analysis of data, etc. The Web 4.0 is marked by a wide range of technological development for libraries including RFID, Makerspace, cloud computing, big data, drone technology, augmented reality, etc, (Biziwe & Mkhathali, 2019). The web 4.0 tools are used in libraries to enhance the resources security and storage capacity, promote collaborative and digital scholarship among librarians, and increase visibility and accessibility of research output among others (Lamptey, Baidoo, Hassan, & Holmer, 2016).

Web 5.0: This web is also referred to as "the next web", "highly intelligent web" or "the telepathic web". The discussion on Web 5.0 in most cases is with the related predictions because it is still in a development mode with the true shape still forming. It is expected to be highly advanced and complex such that humans will be able to communicate with the Internet through thoughts, feelings, and emotions. In other words, this web will focus on interaction between humans and computers. This interaction will purely be neuro-technological allowing a website to perceive the users feeling and emotions and respond appropriately. For example, users with headphones on will interact with content that responds to their emotions or changes in facial recognition. Though this version of web technology is still futuristic, but there is high need for librarians to work on their ICT competency to able to function effectively.

Rationale for Adopting Web Technologies in Libraries

Web technologies have revolutionized the library system and have also given birth to renewed ways of doing things in all facets life, including the educational sector of which the library is a part. Its adoption in libraries have accelerated human resources potentials by providing enhanced opportunities for library and information science professionals, improved and varied forms of information in products and services. Khan and Ali (2007) and Omekwu (2010) outlined the rationale for adopting web technologies in libraries thus:

i.   To save the time of the users.
ii.   To provide equal opportunities for access to all users
iii. To enhances on-line real time communication with other side network users.
iv.   To enhance information dissemination for any number of users at any time.
v.   To facilitate exchange of e-mail and e-resources files in a global environment.
vi.   To enhance availability and variety of information in different locations and also in different formats for research

vii.   To emphasize less dependence on library staff to accomplish the library and information services

viii.   It contains volumes of information resources with internet for easy access

ix.   To save cost

In a similar view, Thomas (2017) enumerated the rationale for the adoption of web technologies in libraries to include:

- e-content generation and management
- Virtual university, virtual libraries and virtual learning
- Wireless networking and remote access
- Users and librarians have more web space
- e-learning, online discussion platforms
- Higher level computing facility
- Every user as well as staff has access to updated knowledge
- Higher rate of information consumption

Other rationale for the adoption of web technologies in libraries includes that; it helps in improving technology proficiency by providing a platform for entertainment, recreation and interactive learning to facilitate collaborative learning. They also ensure improved knowledge sharing and provide affordable, efficient and very effective communication platforms. Web technologies enhance safe and secure storage of documents e.g. Google Docs and Dropbox and provide easier and faster access to information, when and where it is needed, though with a low level of complexity needed to use some of them (minimum skills), like web 2.0.

On the whole, it is the duty of library and information professionals to keep abreast with the latest technological trends to provide web-based services and personal assistant to their users so as to provide improved information resources and services. The rationale behind the adoption of Web Technologies also lie in the fact that libraries vis-a-vis librarians are obliged to utilize these technological tools to reach a large number of users beyond the library and institutional walls.

Libraries all over the world have had the routine of disseminating information traditionally through the prosaic operations like cataloguing and classification, abstracting and indexing, bibliographic compilation, Current Awareness Services (CAS), Selective Dissemination of Information (SDI) and Reference Service. The rationale for utilizing Web Technology in the library as stated by Longshak (2010) is to "extend human capability" through the enhancement of these routine traditional library services which had been provided manually. The author stated further that Web Technology's incursion into the library rather than will take our jobs as feared by most librarians, will in fact create numerous opportunities for libraries and librarians.

Sustainable Development: Conceptual Overview

Development is a multi-faceted process aimed at improving the standard of living in any society. It connotes growth, improvement, expansion, differentiation, progression,

among others. Sustainable, on the other hand, is perceived to be a paradigm for thinking about the future in which environmental, societal, and economic considerations are balanced in the pursuit of development and improved quality of life. Sustainable development is therefore the overall change and improvement in any society, as it relates with individual progress. To Abata-Ebire, Adebowale, & Ojokuku (2018), it is a programme that is developed to meet the needs of the present generation without compromising the needs of the future generation.

Sustainable development covers a wide range of interrelated interest in environmental, economic, social, and political, all within the limits of the world's natural resources. Before now, there was Millennium Development Goals (MDGs) which galvanized a global campaign from 2000 to 2015 to ensure the reduction of extreme poverty in its various dimensions. In 2015 during the 70th session of the United Nations General Assembly, there was a decision for the adoption of the post-2015 development agenda which resulted in Sustainable Development Goals (SDGs).

The SDGs have significantly expanded on the scale and contents of the now faced out MDGs, focusing on global development with-and-for sustainability. The SDGs (17 in number) are development agenda for a 15-year period (2015 - 2030), which reflects an approach that sees the environment, economy, and society as embedded systems. The SDGs are presented below:

Goal 1	No Poverty
Goal 2	Zero Hunger
Goal 3	Good Health &Well-being
Goal 4	Quality Education
Goal 5	Gender Equality
Goal 6	Clean Water& Sanitation
Goal 7	Clean Energy
Goal 8	Decent Jobs& Economic Growth
Goal 9	Industry, Innovation & Infrastructure
Goal 10	Reduced Inequalities
Goal 11	Sustainable Cities & Communities
Goal 12	Responsible Consumption
Goal 13	Protect the Planet
Goal 14	Life Below water
Goal 15	Life on Land
Goal 16	Peace and Justice
Goal 17	Partnership for the Goals

Figure 2: Sustainable Development Goals (SDGs)

Libraries and Sustainable Development Goals

It is widely accepted that information remains the fluid for any meaningful development and libraries as purveyors of information are powerful and pervasive force for achieving sustainable development. Libraries acquire relevant and reliable print information resources in the form of books, journals, reference sources, government documents, newspapers, etc and make them easily accessible to a defined community. Access to electronic resources is also provided to connect users to the world of knowledge. Most libraries, especially in the developed world are redefined as facilitators to a world of information far beyond physical collections and electronic resources. Today, libraries are becoming learning spaces where users are not expected to only consume information but to create knowledge from the information consumed.

Be that as it may, libraries and librarians need to take action and demonstrate a high level of commitment towards achieving sustainable development. Ubale & Yahaya (2016) reiterate that they are expected to be at the forefront in contributing to the actualization of SDGs by the target date of 2030. This clarion call demands that librarians study the 17 SDGs which are about 169 associated targets, identify the "practical hurdles", how to surmount them as well as develop strategies to help achieve them within the timeframe. This can only be achievable if libraries adopt web technologies to services delivery. It is believed that these technologies would enhance the accessibility, analysis, creation, sharing, and management of information among communities. Below are strategies that could be adopted by libraries to achieve SDGs in Nigeria.

SN	Goals	Strategies
1.	No Poverty	To ensure that poverty is alleviated or eradicated, both rich and poor people should have equal rights to economic resources, basic services, land, inheritance, natural resources, etc. Libraries should take initiatives using appropriate web technologies to conduct user analysis; provide training on basic computer skills and other literacy skills; increase access to physical and digital information; provide in diverse formats a wide variety of relevant knowledge that could lead to prosperity practices; make readily available information on employment and investment opportunities and other activities that could improve means of livelihood of the people.
	Zero Hunger	To ensure that extreme hunger is eradicated, there should be proper functioning of food commodity market and allied occupations, and timely access to relevant information. With web technologies, libraries could facilitate timely access to agricultural, commercial, market, scientific and technological information; promote interaction among users for update in related practices; link farmers to financial institutions, governments, NGOs, etc, for loans and other forms of interventions; provide research output on agricultural innovations like improved seed species, prevention of plant and animal diseases, recommended farm practices; create awareness of entrepreneurship opportunities including marketing strategies and channels, cooperative activities, etc.
3.	Good Health & Well Being	To ensure good health and well being, there should be universal access to health care services and increased capacity to access and use health and neighborhood information. Through web technologies libraries could provide up-to-date information on environmental sanitation, refuse disposal, natural resources management, etc; create awareness on the available fee, free or subsidized health care delivery services; provide information on how to benefit from local and international health intervention agencies; collaborate with medical institutions to repackage medical research outcome into posters and extension visuals.

4.	Quality Education	To achieve quality education, a good number of youths and adults should acquire relevant skills, including technical and vocational skills, for employment decent jobs and entrepreneurship. Web technologies ensure that libraries disseminate information that people access anytime anywhere and use them to inform themselves on various areas of life. Libraries, also educate people on how to access and evaluate information independently through literacy programmes; provide creative spaces where users consume information and also create knowledge from the consumed information.
5.	Gender Equality	To achieve gender equality, women should be given equal rights to political responsibilities, social responsibilities, education and economic attainments, empowerment opportunities, decision-making, etc. Libraries should use the enabling technologies to create awareness on the existing empowerment programmes for women and girls; the empowerment of women; organize workshops and talk presentations on issues related to women like girl child abuse, women's rights, gender equality, violence against women, etc; publish activities of leading women professional associations like Association of Women in Nigeria, International Federation of Women Lawyers, Medical Women Association of Nigeria, Nigerian Association of University Women and a lot more.
6.	Clean Water & Sanitation	To ensure availability of clean water and sanitation management, libraries should provide access to hygiene-related information; organize campaigns, talk shows, and symposia on safe drinking water, water treatment methods, and general sanitation.
7.	Clean Energy	To guarantee clean energy, the public should have access to affordable, reliable, and modern source of power without any pollution tendency. Libraries should provide access to information that will expose the different types clean energy (such as solar energy, wind energy, geothermal) and how to build and maintain energy infrastructures; create public awareness on energy related issues through campaigns and social networking tools; ensure that users get reliable access to light and electricity within and around the library to read and study effectively.
8.	Good Jobs and Economic Growth	To achieve this goal, there should be productive employment and decent work for all women and men, including young people and persons with disabilities. Libraries should publish up-to-date employment opportunities and requirements, and application process using web 2.0 tools and display boards; train users on computer literacy skills to be able to apply for jobs; provide access to information on job security, personnel management, etc; sensitize government, organizations, and individuals on the need to create more employment opportunities through live campaign programmes.
9.	Industry, Innovation and Infrastructure	This goal is achieved when there is significant increase in access to ICTs. Libraries should adopt affordable web technologies in services delivery; ensure users have access to 24 hour Internet facility; establish creative spaces in libraries to support creativity and innovation among users; encourage users to be involved in video conferencing, webinar, and other relevant communication tools; provide access to learning resources that could be of recreational value
10.	Reduced Inequalities	This goal is achieved when citizens are guaranteed orderly, safe, regular, and responsible migration and mobility within and among countries through the implementation of planned and well-managed policies. Libraries need to provide access to information on legal, health, housing, childcare, education, and any other related issue about daily life; provide support through training and sensitization on civic values, government opportunities, and citizenship education.
11.	Sustainable Cities & Communities	To achieve this goal, there should be strengthening efforts to make cities and human settlements inclusive, safe, resilient, and sustainable. Libraries are expected to preserve and provide access to cultural and natural heritage; create awareness on possible risk and disaster factors; adopt and implement policies and plans towards mitigation and adoption of disaster risk management strategies at all levels in the community.

12.	Responsible Consumption	This goal ensures sustainable consumption and production pattern in all nations. Libraries should collaborate locally, regionally, and internationally on inter-library lending to ensure everyone has access to relevant information; encourage companies and organizations to adopt sustainable practices and integrate sustainable information into their reporting circle.
13.	Protect the Planet	To achieve this goal, there should be improved education and awareness on human and institutional influence on climate change, its mitigation, adaptation, impact reduction, and early warning. Libraries need to provide access to data, research, knowledge and information on climate change.
14.	Life below Water	To guarantee life below water, coastal and marine areas with the resources need to be conserved and preserved in line with national and international law. Libraries should provide access to data, research, knowledge and information about coastal conservation and preservation of ocean, seas, and marine resources..
15.	Life on Land	This goal is achieved when the threats from man and nature to land is reduced. Libraries should provide access to resources that could educate people on the management of land, forest, and ecosystem as well as its degradation and recovery.
16.	Peace & Justice	To ensure peace and justice, the public should be aware and able to protect their fundamental freedoms in accordance with national legislation and international agreements. Libraries need to provide public access to information on the rights, privileges, duties, and obligations of citizens. Librarians should attend on invitation any civil society meeting in order to contribute to the development of any government or non-government action plan for the country.
17.	Partnership for the Goals	Libraries are partners for achieving Sustainable Development Goals within the timeframe. With web technologies, libraries can seek for partnership with relevant agencies to provide access to relevant resources anytime anywhere at no or low cost; train librarians and users to acquire knowledge, attitudes, skills, and competences required to provide, access, use, and communicate information in ways that respect human rights; provide innovative facilities and maintain them for optimal function.

Constraints to Adoption of Web Technologies in Nigerian Libraries

i. **Inadequate Funding:** There is generally inadequate funding for education in Nigeria. This has led to poor budgetary allocation for the sector which invariably affects the implementation of web technologies for sustainable development in Nigeria. Government considers it not relevant or too expensive to procure facilities for web technologies in libraries.

ii. **Inadequate Skilled Staff:** Most times employment is done based on connection or "god fatherism" and not on merit. Those employed lack the requisite skills to perform library services especially in a digital environment. This has exerted negative influence on the job performed in the library as the few available skilled staff will be overworked.

iii. **Poor Internet Connectivity:** The level of Internet connectivity is very low owing to poor government investments in Information and Communication Technologies. Where it is available, users are faced with the problem of low bandwidth. Low bandwidth occasions poor data transfer or exchange which makes it difficult to access the web fast.

iv. **Poor Electricity Supply:** Adoption of web technology cannot be successful without constant power supply. The problem of epileptic or poor electricity supply in Nigerian

libraries is really is serious impediment. It makes it difficult to implement web technologies even as alternative power supply is farfetched.

v. **Unwillingness to Adapt to New Technology:** Most librarians are afraid of learning new technologies to enhance library services which in turn stifle the entire system. Libraries seem not to be proactive in adopting and adapting to to new technology, perhaps due the financial involvement which generally results from fear or dislike of advanced technology or complex devices such as computers.

vi. **Resistance to Change:** Human beings viz a viz librarians are generally resistant to change as they are not ready to let go of the old ways of doing things and embrace the new. Most old fashioned librarians refuse to embrace modern technologies because they feel it will rub in on their time or that it is difficult to learn and utilize.

vii. **Lack of Proper IT-related Training and Orientation:** Many librarians in Nigeria are not versed in modern technologies, especially the web technologies whose versions are evolving every day. As a result, they lack proper grounding towards accepting and utilizing these phases of web technologies as they have poor knowledge of web technologies.

viii. **Proliferation of Duties by Libraries:** Librarians are generally faced with a myriad of duties to perform. In such a case, librarians encounter the challenge of offering very tedious, traditional routine library services such as cataloguing, references services, circulation services, etc.

Conclusion and Recommendations

Librarians' relevance in sustaining development goals therefore lies in embracing challenges and widening their technological skills towards the adoption and utilization of web technologies over the next few decades. This paper therefore provided an overview of the evolution of Web 1.0 to Web 5.0. The rationale for adopting web technologies in libraries was highlighted. It further discussed what the role of libraries should be, as they utilise web technologies in a bid to achieve Sustainable Development Goals. Constraints to adoption of web technologies were also examined. The paper equally achieved its primary objective of emphasizing the nexus between web technologies and library services which can be further consolidated through the following recommendations:

i. There should be provision of stable power supply that will encourage users in exploring technological tools in the web rather than resort to the traditional method of information delivery.

ii. Government should encourage libraries to make available the required technological services by increasing financial allocations to libraries' which will in turn encourage higher productivity in acquiring and utilizing web technological tools.

iii. Capacity building programmes should be sponsored by various library authorities, government and other education stakeholders. Librarians should be trained and re-trained regularly to acquire competence on the utilization of web technologies through seminars, workshops and on the job training. Thus,

building proactive librarians that will embrace these technologies and make users competent participants in the use of these technologies.

iv.   Higher authorities should instill the "can do" spirit into librarians to eliminate the phobia of the unknown. This can be done through the provision of information technological tools and giving them hands-on experience on each facility to get them equipped for the unseen world of technologies and for smooth functioning of the libraries.

v.   Librarians should carry out orientation programmes for library users on a regular basis to enable them understand the entire web services available in the libraries.

vi.   Libraries should be allowed to recruit library and information professionals with information science or computer science background as a matter of priority.

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