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# Digital Divide in Educational Environment (Libraries) in Developing Nation: Challenges and Prospects

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## ABSTRACT

Digital technology has created changes in the geographical of learning. In developed societies, a paradigm shift from purely conventional knowledge creation approaches systems is already evident. Technological change is major contributor to the growth and development of the information society. Unequal access to information and communication technologies leads to digital divide and effects the growth and development of the society by powering some people who have availability of information and depriving others who do not have access to information. The discrepancy in access to internet and digital technology will continue to limit the transformative potential of the fourth industrial revolution and its impact on information services delivery. At the moment, a significant number of the world's population is still not connected to the internet due to various reasons. These gaps are mostly present in libraries in the developing nations. The paper portrays the challenges of digital divide and describes its impacts on information environment in the developing world. Also the conceptual clarification of digital divide is discussed in the traditional socio-economic sense as it relates to information service delivery. Hence it is imperative to understand the full extent and complexities of these technological gaps if we are to effectively chart a new course in information service delivery. The why and how digital divide may be bridged is discussed. The paper concludes that all hands must be on deck if the developing nations must benefit from this new innovation that changes the face of the entire universe.

**Keyword:** Digital Divide, Developing Nation, Libraries, Challenges, Prospects

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## INTRODUCTION

The concept "digital divide" was introduced by Larry Irving, Jr., former United States Assistant Secretary of Commerce for Telecommunication and Communication in the mid-1990s in order to focus public attention on the existing gap in access to information services between

those who can afford to purchase computer hardware and software necessary to participate in global information network (Boje & Dragulanescu, 2013). Noah (2010) submits that digital divide is a gap between those who have real access to information and communications technology and who are able to use it effectively, and those who don't have such access. This means that

digital divide refers to the gap in usage and access to digital infrastructure and services between individuals, scholars, businesses or geographical areas, and it remains significantly wide for emerging economies, e-learning and educational development. Its effect is more devastating in academic environment where libraries are involved in information services deliveries. In other words, digital divide refers to the gap in usage and access to digital infrastructure and services between individuals, scholars, businesses or geographical areas, and it remains significantly wide for emerging economies, e-learning and educational development. Its effect is more devastating in academic environment where libraries are involved in information services deliveries. Wilson (2004) defines the digital divide as “an inequality in access, distribution, and use of ICTs between two or more populations.” According to him, there are eight aspects of the digital divide thus: physical access, financial access, cognitive access, design access, content access, production access, institutional access, and political access.

Digital divide has also imparted on scholars, researchers, lecturers, and the entire university communities, due to lack of computers, internet accessibilities, and digital infrastructure in libraries. Digital divide has also imparted on scholars, researchers, lecturers, and the entire university communities, due to lack of computers, internet accessibilities, and digital infrastructure in libraries. Okedije (2004) posits that the significant number of academic and public commentary about disproportionate levels of access to the internet between scholars in developed and developing countries is as a result of digital divide, which entails information gaps. Digital technology has created challenges in the geographical of learning thereby forcing the third world to be knowledgeably backward. In developed societies, a paradigm shift from purely conventional teaching approaches to e-learning systems is already evident, while scholars in the developing nations are still battling with traditional method of informational harnessing. Shenglin, Simonelli, Ruidong and Bosc (2017) posit that digital divide prevents libraries, scholars, researchers and lectures in developing countries from harnessing the full benefits that information and communication technologies can deliver.

However, the disparity is not only determined by access to webs but also to high cost of ICT facilities and all component of IT that are used in libraries for researchers, lectures and academic communities. For instance non-affordability and availability of ICT facilities in libraries in developing world is affecting access to knowledge and information accessing (Suchak & Eisengrein, 2010). What this entails is that most academic libraries in developing nations are lagging behind in ICT infrastructures such as software, hardware

etc. In some libraries where there are available there are either obsolete or out of date, thereby making the library and librarians not live up to its mandate.

In view of the foregoing, the United Nations Information and Communication Technology Task Force (UNICTTF) commenting on the issue of digital divide, states that “In recent years, as information and communication technologies have become the backbone of the global information economy and given rise to the information society, more attention has been focused on the gap in access to information and communication technologies between developed and developing countries. This gap has come to be known as the ‘digital divide’. But how big is it was not confirmed”. Also in 2004, the University Institute of Technology (UIT, USA) deliberated on the event: “Building digital bridges” at which the concept of the digital divide was resumed based on differences in connectivity, now also including the difference in connection velocities between dial-up and wireless.

The United Nations at its 2017 International Community Conference on “ICTs and Education in Third World”, acknowledged that there was a growing digital divide between developed and developing countries. The consequence of this, according to the world body, is the inability of libraries in developing countries to sustain healthy levels of sustainable information harnessing due to lack of ICTs infrastructure. Undoubtedly, access to the foundational infrastructure of the information age is indispensable for exploiting the prospects of new technologies for development. Analyses of the digital divide reflect evolutionary trends. In initial evolutions by scholars and policy makers, the challenges of “access” focused primarily on the relative lack of computers etc. This aspect of the digital divide was also noted as a significant problem in libraries in developing countries as evidenced by disproportionate access rates in tertiary institutions. This is the trust of this paper.

## **DIGITAL DIVIDE: A BRIEF HISTORICAL PERSPECTIVE**

Although the term ‘digital divide’ is a recent concept, it has emerged as the chief catalyst of the exponential development taking place in the realm of digital technology. The digital revolutions stem from the spectacular progress that has been made in the area of microelectronics leading to the digitalization of images, sounds and data (Hargittai, 2012). The author posits that the first years of digital divide (1999–2002), research investigation of the concept concentrated on a narrow meaning of access. This was in fact physical access, obtaining the hardware and software of digital media and a connection to the Internet. Physical access was correlated with general demographics such as economy,

income, level of education, age, gender, and race. The frames, according to him, were sociological (social capital) and economic (diffusion of a technology in the market and the adaptation choices of consumers). After some time, communication and media scholars in particular called attention to issues of beyond access and skills or training required for users to access ICTs which most librarians, scholars and lectures in developing countries did not have. This impediment from developing nations keeps widening the information gap which result in deepening the divide.

Drawing from Hargittai (2012) submission, Van-Dijk (2015) emphasizes that the problem of digital inequality does not end after physical access has been attained but actually starts when the use of digital media is incorporated into daily life. He submits that in the decade between 2005 and 2015, the second-level divide became the focus of most digital divide researchers. As such, Schweitzer (2015) concludes that digital divide terms described an uneven distribution of information and communication technologies (ICTs) in society which challenges are believed to reinforce social inequalities and to cause a persisting information or knowledge gap in libraries amid those scholars, lecturers etc with access to and using the new media ("haves") and those without ("have-nots").

## LIBRARIES AND DIGITAL DIVIDE

Like other fields of human endeavor, there is no aspect of human activities that digital processing is not applicable including libraries. Digital technology is of particular importance when information is to be gathered, processed, store, retrieved and evaluated (Kennedy & Davis, 2010). The importance of ICT in libraries the world over is no longer an issue in contention. The issue in contention is how libraries can ensure their continuous derivation of the benefits from new opportunities afforded by ICT. Digital divide is a phenomenon that limits the numerous uses from benefits and advantages that ICT brings to libraries. This shows clearly the distinction between libraries without walls and those with walls and the degree of effectiveness and efficiency, when ICT is used in the provision of information services and performance of library task (Tuomi & Namaala, 2017). Ideally, ICT is expected to have a major impact on the management, structure, and work activities of libraries (Nkanu & Okon, 2010). Technology is dynamic, and so should be education.

Furthermore, Librarians who want to remain relevance in their professions must acquire new skills that will help them become more productive in this technological age. Adjustment takes time and will be painful for many, but this is the new paradigm in information palace where ICT

is gradually replacing traditional method of information harnessing in developed nations with sufficient resources to access ICT, while the third world are lagging behind. By implications, libraries in developing countries are recognizing that they cannot compete in the new global world unless they take advantage of the ICT revolution. The hard truth is that countries that do not undertake measures to enhance their ICT infrastructure in their libraries risk not just being marginalized but also being completely bypassed in the new global order.

Experience has shown that countries like Singapore, Malaysia and Korea has demonstrated bold actions in taking their libraries into the digital age (Noah, 2010). An Orbicom study on Monitoring the "Digital Divide" that sought to qualify the digital and knowledge divide based on nine sample countries' libraries-India, China, Senegal, Mexico, South Africa, Colombia, Canada, Finland and Malaysia showed that "the magnitude of the gap between developed and developing countries is enormous". The study also revealed that African continent continues to lag behind in the availability, affordability, and use of ICTs in their libraries (Gillian, 2016). The author maintained that digital divide continues to enlarge as the gap of economic development and educational level between countries enlarges. In other words, the difference of economic development between countries is a main cause of digital divide.

Moreover, the appearance of digital divide urged us to review our optimistic enthusiasm about the digital utopia that promised to unify humanity as far as the right of information and development is concerned. In fact, the information and communication revolution, like all revolutions, carried along with it a new and more important gap between social classes and nations. Nkanu and Okon (2010) assert that the concept of digital divide refers to the widening imbalances of access to ICTs in libraries in developing nations, and, is perceived in the light of the following postulations:

There is a gap that exists between traditional and modern methods of processing, storing, analyzing, retrieving, providing and using information in libraries.

There is inequitable access to ICTs and other Internet-related technologies associated with the provision and use of information services in libraries.

There are imbalances of access to ICT among libraries, and these imbalances have implications for equitable access to quality information service delivering in libraries.

It is imperative that we understand and bridge the real digital divide ravaging the developing nations' libraries (Kofi Annan, 2003). Thus, in order to bridge the gap that exists between traditional and modern methods of information storage, retrieval and harnessing in the digital age, the application of ICT resources is mandatory to all information providers. It is imperative to state that the use

of ICT in library operations must be seriously emphasized for them to be relevance in this present dispensation.

## **LIBRARIES AND THE CHALLENGES OF DIGITAL DIVIDE**

Challenges from digital divide refer to what constitute barriers to information harnessing in libraries in developing nations. Some of the challenges entail lack of ICTs facilities, poor funding, globalizations, economic meltdown, migrations, and poor research developments.

These and much more are affected by inequitable and ineffective access to the internet and digital technologies in libraries in developing countries. Lack of telephones and computers, low network transmission capacity and deficient telecom infrastructure increase the difficulties to start digital libraries for developing countries. Also lack of software, hardware and cost of Internet service impede the development of digital information technology in libraries in developing countries. The outcome made libraries in developing countries became more backward as they are isolated by digital technology and information resources. Essays (2018) asserts that why libraries in developed countries enjoy the convenience of low-cost and high-speed information, it is the contrary in the case of libraries in developing countries. The imbalanced in distribution of information is closely related to imbalanced in distribution of global knowledge and economic wealth.

According to Kituyi (2018) billions of scholars especially in developing nations lack current information. These challenges, he asserts, are particularly acute for libraries in Sub-Saharan Africa, in remote Island States, and in several landlocked countries. He warns that if these challenges are left unaddressed, the yawning gap between under-connected and hyper-digitalized countries will widen, exacerbating existing inequalities.

Also there are several related barriers such as high cost of access, inappropriate or weak policy, inefficient provision of telecommunication network and lack of development of the educational sectors etc. The divide threatens and deepens the gaps among educational institutions through various challenges such as:

### **Economic Dislocation**

There is no gainsaying that economic depression has been the bane of underdevelopment of Third World countries. Economic development is unarguably believed to be critical in bridging the digital divide and a key predictor of ICT usage in libraries in developing countries. Islamic Relief (2007) laments that poor economic status clearly shows that libraries and average individual scholar in sub-Saharan Africa cannot purchase a computer.

Mutula (2011) expresses the same view when he states that digital divide in sub-Saharan Africa and the entire African nations is been exacerbated by financial difficulties which hamper easy procurement of relevant ICT facilities. The resultant effect is, according to him, declining budgetary allocations to universities and their inability to make meaningful investment in programmes that would enhance availability and access to digital technologies. Decreased budgetary allocation to universities which extends to libraries has contributed to the slow development of digital library and information services. The author gives example of the University of Botswana whose government budget for 2004 made no pronouncement for capital development for the only state-owned Institution. South Africa and other African countries are not exceptions. It is important to state, at this juncture, that economic depression should not be taken as the pretext for the dwindling educational development in Africa. It is on record that there are countries that suffered economic crises and whose educational systems are far better than what is experienced in African countries. Krugman (2008) captures this succinctly:

“The world is lurching from crisis to crisis,” explains Krugman (2008) “all of them crucially involving the problem of generating sufficient resources (Money). He stressed that from Japan in early 1990s onward, Mexico in 1995, Thailand, Malaysia, Indonesia and Korea in 1997, Argentina in 2002, and African nations just about everyone in 2008 to date are facing economic depression. He argued that depression in economics is back and developing nations are mostly affected. Accordingly, level of economic dislocation in the developing nation is better imagined than experience, these has imparted in libraries and also contributed to poor educational disadvantage, poverty and illiteracy”.

The quotation above clearly shows the sympathetic nature of African libraries resulting from the perceived economic depression affecting their countries.

### **Poor Budgetary Allocations**

The digital divide in educational sectors in developing nations is also exacerbated by inadequate budgets for institutional developments. Johnson (2011) started that, though Africa has about 13% of the world’s largest population it receives a mere 1% of global expenditure on education. He conclude that up to forty million children of school-going age are known not to attending school; less than one third progress to secondary education, and only

3% receive any form of tertiary education. Libraries and information centers in developing nations have suffered from serious budget shortfalls. This points to a bleak future for libraries in developing nations in terms of ICT infrastructure that aids information harnessing. Economy dislocations have led to inadequate budget allocations to tertiary institutions in developing nations, thus imparting a slow pace of technology infusion, inadequate human resources development/capacity building, insufficient and obsolete infrastructure and exorbitant cost of information materials Adetoro ( n.d.).

### Poor Research and Development

Dutta-Bergman (2014) posits that the difficulty for practitioners in all fields of science and engineering such as in agriculture, doctors, economics, in all its forms, to access information in the libraries on new methodologies and processes within their respective fields continues to inhibit improvement of the way researches are carried out. It is imperative to note that universities in developing nations generally suffer from a shortage of scientists, doctors, and engineering etc. for research and development due to non-availability of current information to work with. So when the libraries are not stocked with current information and the scholars are so poor that they cannot afford to purchase current information, the option is to leave the country for greener pastures. Lecturers and researchers now prefer to migrate to developed countries where they have good libraries with facilities for research.

### Lack of ICTs infrastructure

*Despite acknowledging the importance* of socio-economic and institutional change to support ICT for development, the information palace in developing countries is perceived mainly in technical terms as the construction of telecommunications infrastructures is in bad shape. Most libraries in developing nations suffer from lack of ICT infrastructures, in some libraries where there are available they are out of date or obsolete. The fact still remains that obsolete ICTs infrastructure contribute to information gaps, poor access to network connectivity, poor literature development, the end result is digital divide. The issue of ICT for information acquisition gives scant attention to the demand side in terms of questioning the very purpose for which educational communities need knowledge, and what knowledge is appropriate for particular groups (Gillian, 2016).

Krishna and Madon (2012) analyzed the proceedings of a recent IFIP WG9.4 Conference on ICTs and Development that was held in Bangalore. They found that of the papers submitted were descriptions of pilot projects

that aimed to establish the necessary infrastructure to facilitate communication and the processing and transmission of information by electronic means. According to them, few papers addressed the more fundamental question of how communication, information and knowledge can be effectively used as critical elements for the overall educational development. Hence, libraries in developing nations face the problem of inadequate bandwidth to facilitate effective access and use of the internet resources to assist patrons.

Mwiyeriwa and Ngwira (2013) assert that the quality of the internet connectivity on account of limited bandwidth has hampered effective access to network by researchers in sub-Saharan Africa and the entire African nations. Mutula (2011) in his research carried out in some African university libraries ascertained the extent of under-utilization of ICT facilities; he stated that such under-utilization has been reported at universities libraries of Zambia, Nairobi, Copper Belt University all in Zambia and Botswana. He posits that the poor utilization was attributed partly to inimical policies such as unnecessary restrictions on access to the technologies at the University of Nairobi library.

### Globalization Factors

Globalization and technological innovations are processes that have created a new global change in the entire world. Globalization remains a popular and controversial topic, the controversy stems from inequities in the way globalization has developed and spread. Globalization does not just relate to education and economic matters, it is encompassing. According to Daouas (2011) it is multi-dimensional, affecting all aspects of life: economic, education, cultural, environmental, social, and political. Globalization is the process by which ideas, people, goods, services, and capital integrate economies, knowledge and societies the world over (Aninat, 2012). It creates an increase in the flow of trade, information, and capital, and gives people more mobility. In spite of these positive imputes, there are problems with globalization, especially in developing nations.

Omoweh (2000) describes the situation as legacies of colonialism and neo-colonialism, the politics of the post-colonial state, poverty, foreign domination, instability, institutional and infrastructure decay, and dislocation. He confirmed that benefits of globalization have not accrued equally across countries, that it also has negative effect on educational institutions in third world. According to him rather than helping to upgrade libraries in tertiary institutions in developing nations out of the doldrums, the inequalities and barriers to information and development further aggravate the situations. He maintained that with

rapidly increasing trends of globalization spearheaded by the political and economic institutions of the advanced industrialized nations, the grossly uneven spread of ICTs around the world came to be seen as a digital divide at a global scale. So global digital divide is a special case of the digital divide, the focus is set on the fact that "Internet has developed unevenly throughout the world" causing some countries to fall behind in technology. This is a global divide, and is often characterized as falling along what is sometimes called the north-south divide of "northern" wealthier nations and "southern" poorer ones causing migration in the third world.

## **BRIDGING THE DIGITAL DIVIDE IN DEVELOPING NATIONS**

Bridging the digital divide by libraries of the developing nations, especially Africa, will require a multi-prolonged approaches. This entails borrowing best practices (best brain) from around the world and adapting in our higher institutions libraries. There is also the need to appeal to our best brains in Diasporas to come home and help to install strong ICT base in academic and other kinds of libraries. This effort, when taken, will greatly compliment the effort of African for the Economic Development of Africa 1980-2000 and New Partnership for Africa's Development (NEPAD) who from 1980-2000 spear-headed development agenda for Africa, with emphasis on finding solutions to bridge digital divide gaps in libraries in universities in Africa (Chasia, 2012).

Another measure is for the leaders of developing nations' governments and all who are overseeing the affairs of education to realize that they must move forward in their individual nations to enhance the dilapidated future faced in libraries through proper funding. By extension government will need to be proactive in reducing the digital divide phenomenon that pervades the entire university communities through the provision of ICTs infrastructure in libraries. Vice chancellor of universities should know that the library is the hearth bite of the university, so it should be properly funded in other to meet its mandate in information service. This can be achieved through the development of a policy and legal regulatory environment conducive to the creation of a robust national information infrastructure, including a regulatory environment that would increase competition and keep prices down. Government should also consider lowering or removing import duties and/or sales taxes on ICTs for libraries.

Consequently, Nkanu and Okon (2010) in their wisdom posit that developing nations must accept one basic fact which is, ICTs are enablers of innovation in the managerial and operational processes in libraries. It is imperative for authorities in developing countries to

identify the problems in the ICT area then attempt to eliminate them, in other to move education forward. In harmony with Nkanu and Okon's view, is the advice given by FaÃ§anha (2014) that ministers of educations in federal and states, vice chancellors of universities and librarians, intellectuals, scholars, researchers, lecturer, etc. should have imputes in the importance of the issue for the fight against information gaps and other problems that post treat to upgrading the information status through the provision of ICTs facilities in libraries in their various universities in other to minimize the disparities in information delivery.

A lot of benefits abound the developing nations' educational institutions for bridging digital divide. First and foremost, it will enable students, researchers, lecturers, laboratory technologist, doctors etc., to access library resources, including technology and support services that would promote academic excellence and provide the needed skills to harness digital opportunities. Secondly, when technology is integral into library environment, it will create multiplier effects, which among other things will impact on researcher, teaching, and also increase improvement in the type of scholar's life. Digital Dividends (2011) asserts that the benefits from digital divide refer to innovative ways of bridging the global digital divide and creating social and educational benefits to the majority who are marginalized from accessing the internet. Drawing from the above, Mutual (2011) submits that affordable access to information infrastructure and the effective use of the knowledge gained through such use are reported to be key factors for economic and educational sustainability and improved social conditions that will be beneficial to information users.

## **CONCLUSION**

That digital technology provides new opportunities for rich reuses of content in many libraries is not in doubt. The progress has changed the world of libraries and information deliveries especially in the developed world. But significant obstacles have hindered developing nations to take advantage of this global development. Such obstacles include poor economy, lack or inadequate infrastructure, and insufficient budgetary allocation. Equipping the libraries with ICTs infrastructure will contribute in closing the digital divide gaps and will also play a critical role in the development of the emerging education. It will improve the social and intellectual equality of scholars, benefit researchers, lectures, and individual development and enhance knowledge empowerment. To close the gaps provided by digital divide, developing countries need to invest more in manufacturing of ICT infrastructure.

Finally, to guard against new forms of inequality, the



international community must do more to help developing countries' libraries to close the connectivity or information gaps. Government and policymakers and other leaders in ministries of education both at state and federal levels should coordinate their efforts and adopt innovative solutions to tackle all the challenges especially in the area of budget allocations.

## RECOMMENDATIONS

Drawing from the challenges faced by developing countries as a result of the ever-widening digital divide between them and developed nations, the paper proffers the following recommendations as critical for bridging of the gaps:

### Improved economy

Sound economy has been identified as one of the factors drive ICTs. Nations that have strong economy are at advantage as far as provision of ICT facilities is concerned. African countries must endeavour to improve their economy to be able to partake in the global information delivery. It is imperative to state that some African countries have what it takes to provide adequate infrastructure for ICT growth. What is important is for African governments to fight corruption in all its ramifications.

### Improved budgetary allocation

Poor budgetary allocation to educational institutions is the main reason behind inadequate provision of current and relevant digital information services by libraries. Adequate provision of funds to libraries or their parent bodies is critical to the growth of education. Scholars of library and information science have observed that budget cuts are the cause of inadequate and obsolete ICT infrastructures in our libraries. Government at all levels is hereby implore to provide sufficient funds to libraries for the purchase of adequate ICT facilities.

### Provision of adequate ICT infrastructure

This is another critical element of growth in information dissemination and retrieval. All the necessary hardware, software, and sufficient bandwidth must be in place for any meaningful ICT development to take place. Therefore, developing nations must ensure adequate provision of vital components of ICT in libraries in order to limit or bridge the technological gaps that exist between

their libraries and those of the developed nations.

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