Faculty Roles and Changing Expectations in the New Age

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Chapter 10
Faculty Using E-Journals in Developing Countries: Issues and Challenges

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ABSTRACT

Information and communication technologies (ICTs) have affected every sphere of human endeavor, including teaching, learning, and research. The evolution of ICTs has brought about the emergence of electronic journals (also known as e-journals). This chapter focuses on electronic journals and their importance in teaching and research. It covers the evolution of e-journals in the education landscape and current trends in the use of e-journals in developing countries. The chapter also examines the challenges of e-journal usage in developing countries and made recommendations.

INTRODUCTION

The application of information and communication technologies (ICTs) in the education context has revolutionized teaching and research. ICTs, especially the Internet, have transformed the formats and access to educational resources like texts, journals, theses, and so on. Educational resources, which hitherto were only available in print formats, now have electronic versions. Materials which could only be read in print form can now be accessed by multiple users through the Internet.

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In institutions of higher learning like Universities, one of the most important information resources for teaching and research are journals. Omotayo (2010) opined that journals are the most valued information communication channel for researchers and academics. The production of journals dates to the 17th century, and their importance has not diminished. Academic journals contain current research findings and scholarly communication in given fields of study. The quality of any given research or scholarly work is measured by the number of articles reviewed and cited from reputable journals. Further, academics and scholars are rated globally by the number of articles and research they have published in reputable journals. When a journal appears in electronic version and may be viewed and accessed through the Internet, it is referred to as e-journal. Before the middle of the 20th century, journals only existed in print format. With the emergence of ICTs in education, this has changed.

Most journals are now published in print and electronic versions as well. Cole (2004) stated that there were 115 e-journals in existence in 1995. The same author alluded that the number had increased to 1300 within three years in 1998. By the year of 1999, the figure had increased to about 10,000 and by 2004, the number of e-journals in existence globally had increased to 30,000. The emergence of the "open access" and "open archiving" initiatives has brought about an unprecedented increase in the number of e-journals now accessible through the Internet. Major publishers of academic books and journals have also taken advantage of the Internet and online opportunities to market, sell, and create access to their products on subscription basis. Some journals are now exclusively published in electronic versions only.

Consequently, individuals and libraries are forced to purchase electronic journals (also called e-journals) for teaching and research. Trends in the academia show that faculty and researchers have become more interested in the use of e-journals, rather than journals in print format for their academic endeavors. This paradigm shift has become a global trend which cannot be ignored.

Organization of the Chapter

This chapter focuses on issues and challenges affecting faculty use of electronic journals for teaching and research from the developing countries perspectives. It begins with the transformational impact of ICTs on academic institutions as well as information resources paving the way for open access initiative and how the development has increased e-journal use. This was followed by a brief discussion on the historical development of e-journals: how they have gained prominence among electronic resources as used in the present education landscape was presented taking cue from literature. This chapter discusses the potential benefits of e-journals for teachers and researchers, as well as the challenges involved. The chapter proposes solutions to foreseeable problems and suggests directions for future research.

Overview of Developing Countries

There is no universally accepted approach for classifying nations as either developed, developing, or underdeveloped. Several parameters have been proposed as guidelines for such classifications. While some of the ranking considered socio-economic indicators, others employed technological indices. Research and development considerations have also been observed (Gaillard, 2010). The latter noted that nations could also be categorized as industrialized, newly industrialized, emerging countries, developing, and least developed. The focus of this chapter is on developing countries as the title suggests. Developing countries are countries facing specific social, economic, and environmental vulnerabilities (Fantom & Serajuddin, 2016). In the chapter, however, developing countries are defined as sovereign states that are

not yet highly industrialized relative to the industrialized ones and have low human development index. These countries are found mainly in Africa, South America, parts of Eastern Europe, and Asia. In the contemporary world, developed countries—geographically located in Europe, North America, and parts of Asia—are highly industrialized and have an edge in science and technology. They also possess greater levels of wealth, with stable governance structure. Due to their low-level industry, human development and socio-economic bases, developing countries are far behind their developed counterparts in terms of ICT acquisition, accessibility, and application. As a result, many aspects of developing economies are less competitive: including education and research. The motivation to change this informs this chapter.

BACKGROUND

The Concept of E-Journals

Vannevar Bush first described the e-journal in 1967 as a part of Memex proposal. According to Tenopir (2003), the first e-journal was created in the form of a project named "to test networking computers as a means of improving scientific communications." Because of this project, the first publicly acknowledged e-journal was produced in 1980. Earlier in 1976, the New Jersey Institute of Technology came out with the first proto-type e-journal named Chimo (a weekly newsletter). Most of the e-journals came into the picture from the late 1980s to 1990s; the most popular of them being Psycoloque edited by Stevan Hamad in 1989. In contrast, Bashorun, Jain, Sebina, and Kalusopa (2013) reported that the first journal to appear electronically (Electronics Letters Online) was circulated through the Online Computer Library Center between 1994 and 1995 by the Institution of Electrical Engineers. The authors noted that the online distribution of e-journals began between 1995 and 1996 with significant immediate success recorded. In the last decade, a few studies have been carried out (e.g., Madondo, Sithole, & Chisita, 2017; Makori, 2015; Shaqour & Daher, 2010) on the use of electronic journals: the consensus is that in many cases, academics will find full-text e-journals more convenient than the print formats. Literature suggests that academic use of e-journals might be influenced by many factors such as: awareness of electronic resources (Msagati, 2014), information needs, and demographic factors (Tyler & Hastings, 2011).

At the beginning of the 21st century, growth in student numbers, developments in distance learning, changes in copyright licensing, and lack of funding prompted academic institutions to consider the use of electronic resources to meet the emerging challenges (Islam et al., cited in Daka & Muyunda, 2016). The concepts of "wired campus" and "virtual university" implied that more students and faculties will demand for electronic resources; these demands have increased pressure on libraries to provide more electronic resources and online services. Islam et al, further reported that the development of electronic journals in the early 1990s and the onset of electronic publishing appeared to be a solution to the problem. Libraries and their parent bodies reasoned that e-journals could be archived electronically, thereby saving space.

Electronic journals were also considered advantageous because the risk of loss, theft or damage is lessened and, perhaps, costs will be significantly reduced. Another advantage of e-journals over the print versions is the ease and convenience of access and use. From one's personal computer either in the office or the home, one can access to e-journals at any time. Expectedly, electronic journals have become an increasingly important part of academic library collections. Although many libraries are experiencing budget cuts, e-journals have not proved to be the panacea that library staff and university faculty had hoped for. The use of electronic journals has created new challenges such as archiving, copyright, cata-

loguing, site licensing, remote access, hardware requirements, and journal design. Various terminologies are used to describe e-journals, e.g., virtual journals, paperless journals, and online journals.

According to Ashikuzzaman (2013), e-journals could be categorized based on *contents* (research or scholarly e-journal, general public or popular e-journal, and trade or industry e-journal) and *availability* (free online e-journal, free along with print subscription e-journal, and priced e-journal). Prior to the above classifications, Fattahi (2002) had grouped e-journals into three groups considering the presence or absence of their printed copies:

- Journals which have not stopped the publication of printed copies and are now also available in electronic copies: both formats are published at the same time
- Journals which originally appeared in print form but have now stopped the publication of printed format and now appear in electronic format only
- Journals which originally have been published in electronic format only and have remained so

Faculty Use of E-Journals

Academics in developing countries are fast adapting the Internet as a source of information for teaching and research. Omotayo (2010) observed that many faculties accessed e-journals through the Internet. E-journals are either open access or subscription based. Open access implies that the contents of such journals are accessible to everyone free of charge. On the other hand, subscription-based journals require the payment of charges to gain access to their contents. Global trends indicate that the use of e-journals has become very popular among faculties. In a review of the literature on the subject, Tenopir (2003) analyzed the results of over 200 studies of the use of electronic resources (including e-journals) in libraries published between 1995 and 2003. The review concluded that electronic journals have been rapidly adopted by faculties globally: it observed that user behavior varies according to subject discipline.

Nicholas, Rowlands, Huntington, Jamali, and Salazar (2010) reviewed the conclusions of many papers that used log analysis to study the use and users of electronic journals. These papers gave contradictory conclusions on the volume of use of subscriptions but showed a high degree of concentration in the use of the titles and a clear preference for PDF rather than HTML format. They also provided useful information on the behavior patterns of users and observed the growing preference for searching as the main means of accessing information. E-journals are mostly accessed through online databases. Thanuskodi (2010) identified ten electronic journal sources to include:

- All Health Net
- Blackwell Synergy
- Science Direct
- Highwire Press
- LWW Online
- MedBio World
- Ingeta
- Health Inter Network India
- Medind
- Springer Link

The above list is not exhaustive. Many more databases, publishers, and aggregators now exist. One of the most important aspects of study in the use of e-journals is that of the variables determining behavior in the use of electronic resources. Studies have identified different behaviors according to such variables as discipline and age. About subject discipline, it seems that teaching and research staff in natural (hard) sciences who were in fact the first to adopt electronic journals are the most active users of titles in an electronic format. This may be because involvement in research is the best predictor of the use of electronic resources. Age is another factor that can influence usage of e-journals. Of all the demographic factors hypothesized as determinants of e-journal use among faculty members in Landmark University in Omu-Aran, Nigeria, Aregbesola, and Oguntayo (2014) found age as the most significant. Another study also reported that more than half of the faculty members under the age of 40 indicated that they were using e-journals as compared with only 14% of those over 40, although more than 80% of the total respondents indicated that they would consider using e-journals in the future (Tommey & Burton, 1998).

Despite the peculiar challenges of ICTs in developing countries, it is interesting to note that faculties in these countries are gradually adopting the use of e-journals. Mtega, Dulle, Malekani, and Chailla (2014) studied the use of agricultural databases in Tanzania by agricultural researchers. They found that usage was low, due to poor institutional ICT infrastructures, ignorance of URLs, slow Internet connectivity, low information literacy levels, and limited budget for e-resources. Smith (2007) examined the situation in South Africa, finding that lack of bandwidth was a major problem, and the range of electronic journals in the respondents' field of interest was limited.

Adeleke and Emeahara (2016) citing Ehikhamenor who observed from his study that though 77.5% of Nigerian scientists rated electronic journals as "important" or "very important," their rating was based on expectation rather than actual usage. Azubogu and Madu (2007) observed that faculties of the Imo State University in Owerri, Nigeria, have resorted to the use of computer and Internet technologies to search for information because the university's library lacked funds to subscribe to scholarly and research journals. Funding and other challenges earlier mentioned have hindered libraries in developing countries from providing electronic resources and online services to patrons including faculties. Many faculties in developing countries heavily rely on their university libraries to satisfy their information needs. The libraries rely on government funding, which has been dwindling due to economic recession.

The interventions include: International Network for the Availability of Scientific Publications (INASP) initiative, through the Programme for the Enhancement of Research Information (PERI); African Journals Online (AJOL) initiative; Access to Global Online Research in Agriculture (AGORA), JSTOR, Journal Donation Project (JDP); HINARI (Health InterNetwork Access to Research Initiative) access to Research for Health Program, which provide access to electronic journals for academics in developing countries. The scholarly Journal Archive (JSTOR) is a non-profit organization with a dual mission to create and maintain a trusted archive of important scholarly journals and to provide access to these journals as widely as possible. The archive, which is an online initiative spans many disciplines. Institutions of higher learning and their faculties in developing countries have access to this online archive if their university libraries are beneficiaries (Omotayo, cited in Ejimofo & Ohaji, 2008). Another important initiative is the JDP. The initiative builds archives of scholarly journals in developing countries: it started in 1990 and many developing countries especially in Africa are beneficiaries. It offers subscriptions to more than 2,000 journals from 238 publishers. The project sends donated journals from publishers to libraries, purchases journals for libraries at a discount (usually 50%) using grant funds or passes on the discounts to libraries that can purchase journals through JDP. However, this initiative deals with print journals.

MAIN FOCUS OF THE CHAPTER

The Role of E-Journals in Teaching and Research

Faculties are saddled with the responsibilities of teaching and research. Teaching has to do with impacting predetermined knowledge into students (both undergraduates and postgraduates) with the aim of achieving educational objectives. On the other hand, research has to do with identifying and studying societal or research problems, with the sole aim of proffering solutions and creations of knowledge.

In the academia, teaching and research are intertwined with complementary correlations, where the knowledge derivable from the latter defines the quality and efficacy of the former. By default, research outcomes are disseminated through reputable journals, prior to further extractions and distillations into other teaching and learning resources such as reports, textbooks, handbooks, and their corresponding electronic versions. Most often, the information and knowledge communicated through these sources are superseded faster than expected due to the unending efforts aimed at extending the frontiers of knowledge in all human endeavors. This factor impels scientific enquiries with results plough back into the process for onward transmission using same medium. Electronic journals are thus justified as vehicle for producing and communicating scholarly discourse in the knowledge economy, an era driven by technological innovations. Malemia (2014) has noted the following as features of e-journals:

- Speed and ease of access
- Currency and recency of research materials
- Enhances research efforts
- Helps in the preparation of classes and improves teaching
- Broadens ones' knowledge base
- Contains relevant information for teaching and research publications

Electronic information plays a pivotal role in enhancing research and development activities and improving the efficiencies of an individual (Kumar & Singh, 2011). Through the Internet, electronic information resources positively support the intellectual growth of academic institutions as well as fostering individual self-development (Izuagbe, Hamzat, & Joseph, 2016). Electronic journal as a communication channel for the academic and research community has gained tremendous global prominence and acceptance among researchers, faculties, and students. Kodandarama and Kumar (2014) studied the awareness and usage of e-journals and e-books by students and researchers of the University of Mysore, India. Their findings show that 55% of research scholars and 73.6% of students feel that the e-journals available on the Web are dependable and suitable source of information for both research and academic purposes. Implicitly, this perceived utility of electronic journals has led to several consortia initiatives by research-based institutions to promote scientific enquiry by ensuring the availability and accessibility of scholarly resources beyond the four walls of a library building (Gulati, 2004; Ouma, 2007). This assists libraries in providing services to users with maximum convenience.

Importantly, use of e-journals stimulates capacity building in teaching and research. It is obligatory for faculty to teach courses in Research Methods as a precondition for the award of degrees among students of institutions of higher learning. The success recorded by faculty and knowledge gained by students through this endeavor will form a strong basis for sound scholarly judgments of academic reviews and analysis by students which in turn promote diversity and originality in assignment completion and proj-

ect writing. Similarly, it stimulates faculty ability to reference scholarly evidence in their assessment of literature (Pitchford, 2012). Faculty ability to familiarize students with e-journals contents could motivate them toward aligning themselves to a particular research field. Achieving this is subject to factors, e.g., faculty chose modes of delivery (e.g., lecture) that seem most likely to familiarize students with research and how it is communicated. Students learn to locate, evaluate, synthesize, and make optimum and ethical use of sources of information. The speed of access and Web technology built into electronic journals is a huge motivation that enhances teaching and research capacity for faculty. Electronic journal use has the potentials to expand the depth of individuals' knowledge base to a broader scope to fulfill their research and teaching objectives (Kumar & Singh, 2011).

Presumably faculty and researchers (novices included) want to see their papers published in reputable journals with wide visibility and high impact. The knowledge that universities and other research-based institutions rate faculty research output based on these elements (e.g., impact factor and citations) (Dixon, 2009) underpins the need for quality of scientific enquiry. Academic journals require the works of prospective authors to publication guidelines prior to submission. This measure of authority and quality control (Rauh & Galloway, 2013) enable the journal streamline paper focus and ensure consistency. These may include but not limited to:

- Scope of the journal
- Research interests
- Field of specialty
- Aim, style, and quality of writing
- Patterns of referencing
- Non-alignment with academic dishonesty (plagiarism)

Armed with this information, faculty select journals and other outlets that will best communicate their research findings to their target audiences: thereby increasing citations and visibility, which in turn, enhance their prospects for promotion. Familiarity with e-journal use accelerates faculty expose and present faculty with multiple options for publication consideration. E-journal use provides faculty with a few factors for measuring the impact and quality of academic and online journals. Similarly, at the beginning of each academic session, teaching staff in institutions of higher learning generates a reading list from veritable sources to guide students' course work. While some of the materials are obtained directly from primary sources (e.g., journals), others are generated from secondary sources (e.g., textbooks). The practicability of the list generated to its intended purpose is predicated on the teachers' predisposition to research. Again, the contents of the materials guide students in the development of research skills and expose them to citation patterns (inclusive of e-journals as Internet source) in consonance with global best practices. To broaden the scope of this discussion, the specific role of e-journals is outlined below.

Benefits of E-Journals in Research

Enhance Research Visibility

Research competence is also a prerequisite for success in the teaching profession in higher education. The "publish or perish" policy in the higher educational sector is thus a motivation towards ensuring intensive engagement of proactive production of research among faculties for career progression. Strongly cor-

roborating this position, Smith (2015) noted that in many fields, academic survival and promotion depend on research-based publications. Similar view has earlier been reported by Korthagen, Loughran, and Lunenberg (2005) and Cochran-Smith (2005). The communication of research outcomes to the intended audience requires a medium that promises wider research visibility which in turn extends the frontiers of knowledge in a particular field of research. The ability of e-journals to reach everyone irrespective of geographical location is made possible through the Internet. Since all research undertakings are based on existing theories and principles, electronic journals are therefore the ideal research communication mechanism for improving access to resources, increase research visibility, and communication of contents (Bhardwaj, 2014) thereby fostering quality of collaborative research.

Promotion of Collaborative Research

Sankar and Kavitha (2016) bibliometrically analyzed *The Asia-Pacific Journal of Management Research and Innovation* considering the period 2005 to 2015. One of the research objectives was the determination of the extent of collaborative authorship in the journal. The study shows a dominance of joint author contributions which account for 55% as against the 45% for single authorship. The information that aided this result was obtained from the statistic compiled from the electronic journal website. Indicatively, e-journals' potentials in keeping track of trends in a particular field of research and accelerating collaborative and transnational research outweigh that of its print counterpart. Negahban and Talawar (2009) concur that electronic journals are indispensable in the 21st century, mainly because they provide better, faster, and easy access to information than information accessed through print media.

Promotion of Qualitative Research

Researchers' needs and expectations in the 21st century emanates from the drive to access relevant and accurate information to satisfy the evolving research requirements in all fields of human knowledge. Another unique feature of electronic journals that guarantees the production of quality research is currency of information which is widely acknowledged in electronic information resources literature (Egberongbe, 2011; Iwehabura, 2009; Vakkari, 2008). Undoubtedly, the quality of any research produced depends largely on the quality of information resources available during carrying out the research. Since e-journals are often updated more frequently, their ability to provide access to current information and add value and worth to the quality of research globally has resulted in library managers being pressured to respond to the dynamic needs and expectations of users (Nyamache et al., 2011). That is, e-journals ensure access to up-to-date information for researchers beyond the physical precinct of the library.

E-journals provide links where related information can be located and retrieved. Corroboratively, Velmurugan (2013) affirms that through the numerous search techniques, e-journals provide extensive links to explore additional resources or related contents for research and other scholarly purposes. These features make projects and term paper writing convenient and interesting. Earlier, Opeke (2004) opines that the introduction of electronic journals has lessened the challenges associated with accessing quality research materials on one hand and the removal of time and storage constraints on the other hand.

Benefits of E-Journals in Teaching

Promotion of E-Learning

The role of scholarly communication in expediting teaching and learning as well as fostering intellectual relationships between students and facilitators/instructors whether in a synchronous or asynchronous environment is phenomenal. For instance, the Internet and the World Wide Web (also called the Web) have become veritable channels for the promotion of scholarship through a wide spectrum of learning platforms like online learning, distance education, or electronic learning and training. Whatever the nomenclature, Web-based learning promotes virtual education where instructors and learners' interaction is made possible using interactive technologies. These concepts are the rationale for propelling the ongoing library revolution with evolving paradigms such as digital and virtual libraries where collections and services emphasis is basically electronic. Through these models, a library and its entire information stock can be accessed on a wider scale than otherwise. To meet the ever-increasing information needs of users, libraries are currently making huge financial commitment to subscribe to various online databases with emphasis on e-journals due to their scholarly application.

Most e-journals are hosted in online databases (e.g., ProQuest e-journal central, ScienceDirect, EBSCOhost, and JSTOR): some of which come equipped with interesting and motivating features that facilitate the share of learning materials via email and other communication outlets thereby bringing innovativeness, flexibility, and convenience into the electronic learning models. Therefore, students in an e-learning environment could navigate a library's e-journal databases/collections and match relevant articles to their course/topic of interest using different mobile devices. Egberongbe (2011) citing Dadzie enumerates the advantages of e-journals which include: access to information sources that might be out-of-reach to users due to geographical locations or finances, access to more current information, and provision of extensive links to additional resources related contents. The innovativeness built into e-journals is an efficient motivation and avenue through which the library extends its information service provision to support and foster virtual learning with geographical considerations posing no limitations.

Promotion of Assignment

The transition from print to electronic media has not only resulted in the growth of electronic information but has provided users with new tools and applications for information seeking and retrieval (Ani & Ahiauzu, 2008). Accordingly, e-journals are key components of learning models, strategies, and pedagogical tools. Evidence abounds, that e-journals hold several benefits for students' academic success in both electronic and traditional learning environments. For example, assignments meant to be discussed or carried out in either environments are greatly facilitated when relevant information required for its completion are readily available and accessible. By design, e-journals enable the provision of speedy access to electronic information anytime and anywhere, flexibly allow the simultaneous sharing of information among many users for assignment decisions-making among others. Oduwole and Sowole (2006) reiterate that the ease of access and use of e-journals helps in various intellectual decision-making.

E-journals could support learning from different standpoints. For example, the motivation and promotion of collaborative learning/education is greatly expedited by e-journals (Yang & Cornelious, 2005). Lowry (2009) studied interactive assignments for online students and found the course to be encouraging among students who collaboratively engaged in solving assignments. This platform enables students develop professional skills for identifying and using sources of information appropriately in their quest for solving assignment and other academic purposes. Today, instructors in the collaborative learning environment, in conjunction with academic librarians, develop lessons to teach students information literacy skills, create study guides for courses, and maintain bibliographic lists for certain programmes whether physically or virtually (Weaver & Barnard, n. d.); the authors further found that 83% of the students surveyed used instructor-supplied e-journal articles while 59% used textbooks.

Challenges of E-Journal Acquisition in Developing Countries

No discourse on the challenges of electronic resources in developing countries is complete without a mention of digital divide. It forms the basis for the classification of the world population as "information elite' and 'information ignorant." Digital divide has implications for the ICT acquisition, accessibility, and level of deployment in any nation.

Digital Divide and Lack of Infrastructures

Digital divide may be defined as a technological gap about access to, use of, and impact of ICTs among a group of people either within a country or between two or more countries. The gap between countries is termed global digital divide. It is a disparity in the availability, accessibility, and deployment of ICT infrastructures between the industrialized or developed and underdeveloped countries. The concept has gained importance because it carries educational and socio-economic inequality consequences. Ogunsola and Okusaga (2006) posited that the line of demarcation between the developed and developing countries is not income (criteria of wealth) but technology (criteria of skill). Digital divide is anchored on inequalities that the emergence of and access to ICTs have either inherited or widened. Indicators show that there is a significant difference between developed and developing countries in terms of availability, affordability, access, and use of ICTs. In its report in 2010, the International Telecommunication Union (ITU) observed that 72% of the population in developed countries are Internet users, while just 21% of the population in developing countries are Internet users (ITU, 2010).

The digital divide is measured through the digital opportunity index (DOI). DOI is an internationally accepted ICT indicator developed to measure and capture technological divides. The digital opportunity index classifies and measures the divide in three categories: 1) opportunity; 2) infrastructure; and 3) utilization. *Opportunity* encompasses accessibility and affordability. *Infrastructure* includes network indicators and availability of facilities. *Utilization* relates with ICT usage and quality. Ogege (2010) observed that developing countries had very low scores and performed very poorly in the global digital opportunity index indicator released by the ITU in 2005. No developing country appeared in the digital opportunity index first 25 top economies. This implies that developing countries are inherently disadvantaged as far as availability and access to ICT infrastructures and electronic resources are concerned. Consequently, it is more expensive and difficult for academic institutions in developing countries to acquire, access, and maintain ICT infrastructures and facilities required to manage electronic resources like e-journals.

Most developing countries do not have basic infrastructures needed as foundation on which to run electronic resources. Poor electricity supply and telephony system are common occurrences in developing countries. It is common place in some countries for individuals and institutions to purchase and maintain power plants due to irregular electricity supply from their countries' national grid. Access to adequate bandwidth to run efficient Internet system is also a major challenge. Though the severity of these challenges may vary from country to country, academic institutions and faculties in these countries have a lot of hurdles to cross in terms of infrastructures in their quest for access to electronic resources including e-journals.

Paucity of Funds and Corruptions

Availability of funds is a major determinant in the acquisition and use of electronic resources including e-journals. Funds are needed to acquire and install basic infrastructures and facilities needed to manage and use e-journals. Purchase, installation, and maintenance of electronic infrastructures and facilities are capital intensive. For instance, international publishers make their e-journals available collectively inform of databases; the annual subscription of these databases are paid for in hard (foreign) currencies. For developing countries which are on the negative side of the digital divide, these facilities and resources are much more expensive, considering foreign exchange and inflation rates. Unfortunately, most of these countries are among the poorest in the world. Their governments are unable to provide basic social amenities, not to talk of providing funds for acquisition of electronic resources. The recent economic recession around the globe has worsened the situation.

Lack of funds for virtually all sectors of the economy is a perennial challenge in developing countries. The education, science, and technology sectors are the least funded in many of these countries (Ogege, 2010). The United Nations' Educational, Scientific, and Cultural Organization (UNESCO) recommends that 26% of every country's annual budget be allocated to education. Over the years, the budget allocation for education in many developing countries has consistently fallen below this requirement. Within the education sector, universities get the bulk of the budgetary allocation. However, the funds allocated to each university are rarely sufficient to cater for recurrent expenditure like staff salaries and others. Consequently, capital projects like installation of ICT infrastructures and facilities are neglected. In many educational institutions, libraries are saddled with the responsibility of acquiring e-journals. Currently, libraries all over the world are experiencing budget cuts. Some libraries are barely able to pay staff salaries; after which there is no money left to acquire information resources for users. Sadly, faculties are also poorly remunerated, compared to their counterparts in developed countries; therefore, they are not able to provide some of the facilities needed to access e-journals for themselves.

A major reason for the paucity of funds in many developing countries is corruption. Though they are disadvantaged as far as the digital divide is concerned, a lack of financial integrity and accountability among persons in public service have contributed to the underdevelopment of these countries. If the little funds available (though inadequate) are well managed and rightly disbursed, some measure of success could be attained. The Global Corruption Report for Education (2013) revealed that endemic and systemic corruption was responsible for the waste of scarce public resources and the downward trend of the education sector in African countries. The report also shed light on the multiple dimensions and manifestations of corruption in African countries—embezzlement of national education funds in Kenya, the selling of fake diplomas in Niger, teacher absenteeism or sexual harassment by male lecturers in Nigeria. The United States Agency for International Development [USAID] (2002) identified five

behaviors which may be labelled as corruption: 1) blatantly illegal acts of bribery and fraud; 2) acts taken to secure a modest income by people paid too little or too late; 3) actions taken to get work done in difficult circumstances; 4) differences in cultural perspectives (perceptions of what constitutes a gift); and 5) behavior resulting from incompetence and lack of integrity. Whatever the form corruption takes, the consequences are catastrophic to the education sector. While public officials enrich their pockets, vital electronic resources needed for teaching and research are neglected, leading to economic sabotage and national underdevelopment.

Lack of Awareness

A major cause of under-utilization of e-journals by faculties is lack of awareness of the availability of these electronic resources. An awareness of the availability of e-journals would certainly influence faculties' use of the e-resources. Libraries are responsible for the acquisition of information resources including e-journals in any educational institution. They are also saddled with the responsibility of creating awareness of available resources. Vasishta (2013) opined that promotion is the decisive factor in the effective use of e-journals. Some libraries fail to create awareness of available e-journals within their academic community. Consequently, e-journal databases that may have been acquired with huge amounts of money are under-utilized. A few reasons may be given for why libraries fail to provide awareness services to their communities—lack of funds to carry out promotional activities, apathy towards awareness creation, and lack of ICT facilities and platforms for effective and efficient services (for instance, it is unnecessary to create awareness for e-journals when there are no ICT facilities that will aid their use). It has also been noted that some faculties do not attend the fora organized to create awareness of available electronic resources. Under-utilization of e-journals carries two implications: 1) the institution or donor wastes its money in the acquisition of these resources; and 2) faculties and researchers are not able to get reliable information sources and resources on which to build their researches.

Technophobia

Technophobia is the fear or dislike for computer and Internet-based devices. David, Lee-Kelly, and Barton (2003) classified technophobia into three dominant subcategories of technophobes: 1) the uncomfortable users; 2) the cognitive computerphobes; and 3) anxious computerphobes. The cognitive computerphobe really dislikes using any technology or computer related material and avoids using it. The anxious computerphobe approaches technology with caution and may overcome the initial phobia with time. Adeyemi (2009) opined that older faculties who are accustomed to reading hard copies of journals and books, find it very difficult to adjust to new technologies. However, many of these faculties may be classified as uncomfortable users and anxious computerphobes because they make necessary adjustments when compelled to do so. Persons suffering from technophobia are deprived of the benefits derivable from the use of technology in general and e-journals in particular.

Lack of Digital and Information Literacy Skills

Digital literacy is the ability to identify, search, and utilize required information in digital formats from different sources presented through ICTs. Lack of basic digital and information literacy skills is a major challenge and hindrance to faculty use of journals. Adeyemi (2009) observed that many faculties

(especially the older ones) are not digitally literate and consequently are not able to derive full benefits from the use of electronic resources including e-journals. Lack of digital and information literacy among faculties portents great danger to attaining digital inclusion in developing countries and subsequently, the United Nations' sustainable development goals. Faculties who lack digital and information literacy skills cannot expose their students to the use of electronic resources and the various benefits derivable from such platforms.

SOLUTIONS AND RECOMMENDATIONS

Bridging the Digital Divide and the Provision of Infrastructure

Bridging the digital divide in any nation requires the commitment of the government at the national, state and local or district level. The government must take ICT acquisition as a top priority. This would require allocation of a substantial amount of the nation's budget on the acquisition of ICT infrastructures and facilities and training. There should be an appropriate fiscal policy and discipline on ICT development on a short and long-term basis. The initial step would be to import required facilities. However, on the long run, persons would need to be trained abroad who would return home as indigenous ICT specialists. The indigenous ICT specialists would help to assemble facilities locally—and thus, reducing the cost of acquisition. Alternatively, foreign ICT specialists may be invited to help train selected individuals locally. Either way, the objective is to make ICT facilities readily available, accessible and very importantly cheaper to acquire. One big challenge of developing nations is political instability. There is incessant change of government. Unfortunately, each government comes with its own agenda: projects started by a government are abandoned by subsequent ones. Therefore, to forestall any hitch on the long-term plan for ICT acquisition and training, there is a need to formulate and legislate a national ICT policy document. Legislating the ICT policy document would compel any government to implement its stipulated contents at any point in time. Fortunately, the governments of many developing countries are becoming much more interested in ICT acquisition. A few like India and Malaysia are progressing very fast towards attaining self-dependence status.

Provision of Funds and Eradication of Corruptions

As noted earlier, paucity of funds is a perennial challenge in developing countries. The situation has become worse in the face of current global economic recession. Libraries and their parent organizations which are responsible for electronic journal subscriptions should begin to look for alternative means of generating funds rather than depending on government subventions and allocations. They should seek funds from corporate bodies, multinationals, philanthropic individuals, and donor agencies. In this regard, the Carnegie Corporation and MacArthur Foundation in the United States have contributed immensely to the development of educational institutions and libraries in developing countries in terms of ICT deployment. Institutions and libraries should take advantage of the opportunities provided by these bodies to subscribe to electronic journals, as well as acquire necessary facilities to use them.

Institutions and libraries can also take advantage of consortia platforms to reduce cost of acquiring electronic journals. Consortium provides opportunities to negotiate for cheaper prices based on number. However, efforts must be made to ensure that such consortia are sustainable on the long run. Furthermore,

the alumni base of institutions can also be exploited for better funding. This would require the institutions making appeals to their graduates or alumni to make donations towards projects in their alma mater.

No matter the funds provided, if corruption is not eradicated, no laudable objective can be achieved. Governments at all levels in developing countries should take up the responsibility of fighting and eradicating corruption. Like the example of Nigeria, special anti-corruption agencies should be set up to apprehend and prosecute corrupt officials in both public and private sectors. Severe penalties should be meted on convicts to serve as a deterrent to others.

Creation and Promotion of Information Literacy Programmes

Traditionally librarians offered current awareness service to patron by sending printed/photocopied journal articles or journal tables of contents to users in their fields of specialization. With the adoption of e-journals came the blooming of Real Simple Syndication (RSS) feeds, and email alerting by e-journal publishers and database vendors. Users are automatically alerted via e-mail when new issues of a journal are added to a database. The email usually contains the full table of contents including hyperlinks to articles in the issue. Some argue that because of this paradigm shift, electronic journal publishers or database providers have assumed the role of librarians and have taken over current awareness services and selective dissemination of information. However, Kiscaden (2014) discovered that many library users are not aware of tools available to create their own service, and that lack of awareness presents a barrier to adoption of RSS feeds. The onus is still on librarians to make individual users responsible for subscribing to email alerts or RSS feeds on their own. For effective current awareness services, the Liaison librarians should be responsible for the development and delivery of professional/specialized information services to support for faculty staff and students. To be effective, they can do the following:

Join Research Cluster. The library needs to maintain close collaboration with faculty, and students' research cluster to identify areas of need that could be addressed by the librarian. In agreement, Federer (2013) maintains that librarians possess the required expertise that researchers can harness to help them create better research output especially: performing database searches, locating materials relevant to their research, providing links to critical information in e-journals and citation assistance.

User Education and Awareness. Foote and Rupp-Serrano (2010), touting the need for awareness, believe that discoverability is paramount for the usage of e-resources. Similarly, in a comparative study of three medical universities in Iran, Anaraki, and Babalhavaeji (2013) discovered that awareness and utilization of e-journals were low resulting in the use of general search engines by students to meet their information needs. The library is expected to provide adequate platforms for user education and awareness campaigns. There are different methods of educating users about the acquired e-resources. Through seminars, workshops, YOU-Tube videos, formal and informal training and retraining for the faculty and students on how to carry out better and efficient online searches. Users need to know what the library has as per content, browser requirements, and issues concerning location and access points. Some libraries create information slides, while some libraries send links of their e-journals to their network of faculty and staff. Creating this awareness will result in increased usage and downloads.

Deliberate Inclusion of E-Journals in the Teaching and Learning Process: The library can provide platforms that will encourage lecturers to incorporate usage of e-journals for teaching and learning purposes. Establish a printed bulletin or online information on current e-journals available to keep lecturers updated. Encourage the usage of e-journals in teaching and learning as well as encourage students to do assignments involving the use of e-journals for their academic studies. Hossam and Chowdhury (2012),

narrating the experience of IUB (Independent University Bangladesh) library in Bangladesh, revealed that usage depends on class works given to students. He indicated that lecturers gave assignment and prompted the use of Emerald and ProQuest e-journal databases. As a result, these resources were heavily used by the undergraduate students of the School of Business.

FUTURE RESEARCH DIRECTIONS

Global trends indicate that there is a paradigm shift from "print" to "electronic" materials. Research studies carried out in developing countries show that the adoption of electronic resources including journals among faculties have been slow due to ICT challenges peculiar to these nations. These peculiar challenges in developing countries have been perennial: there is a need to properly investigate the remote causes of these challenges, with a view to proffering lasting solutions. Therefore, future research should focus the prevalence of e-journal usage among faculty. Testing hypotheses about who is more likely to use e-journals, and when, can uncover challenges and suggest solutions.

CONCLUSION

This chapter has dealt with the emergence and concept of e-journals and their usage among faculties in developing countries. It has also examined the role of e-journals in teaching and research. The chapter outlined the role of e-journals to include promotion of research visibilities of faculties, facilitation of collaborative and qualitative research, and promotion of e-learning platforms among others. The role of libraries in the acquisition, management, dissemination, and access creation of e-journals was also discussed. Challenges militating against e-journal usage in developing countries were examined and solutions were proffered. From the discussions in the chapter, electronic resources including e-journals have come to stay in the academia. Authorities of institutions, libraries, and other relevant agencies in developing countries must make provisions for the adoption of electronic resources especially journals to align with global trends. Faculties should realize that the world has gone digital; specifically, they either adapt to the changing academic environment or they will be sidelined and become irrelevant in the scheme of things. They should take personal responsibility for digital and information literacy and be empowered to take full advantage of the opportunities provided by electronic resources.

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E-Journal (Also Called Electronic Journal): A published periodical comprising of academic and research articles that can be accessed through electronic media.

Faculty: A lecturer in an academic department in a university.

Journal: A published periodical comprising of academic and research writings in each field of study or across multiple disciplines. It could exist in print (hard copy) and in electronic format.

Library: An organized collection of information resources used by students, faculties, and researchers for learning, teaching, and research.

Research: An empirical study of an identified problem to provide logical solutions, make new discoveries, or reach new conclusions.

Teaching: The act of imparting knowledge or giving instructions by a faculty to students.

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