STRENGTHENING SCHOLARLY PUBLISHING IN AFRICA: ASSESSING THE POTENTIAL OF ONLINE SYSTEMS

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ABSTRACT

This study investigated current publishing practices among scholarly journals in Africa, while exploring the potential contribution of online publishing systems to aid those practices. This study examined how current systems, largely involving traditional publishing methods, offer Africans limited opportunities and incremental gains in taking advantage of faster and wider dissemination of digital systems for scholarly communication. Issues about authorship, readership, editorial and peer review, as well as the level of science resources in African academic libraries, were studied. Using a well-articulated, mixed-mode research design, this study has assembled data from 286 key actors – journal editors, potential journal editors, librarians, IT administrators, faculty and postgraduate students – from sub-Saharan Africa during a 12-month period in 2007–09. Drawing on this data set, this study documents and analyzes the unparalleled availability of journals and other information resources made available to the African research community through digital technologies and publisher policies, as well as current constraints in ICT infrastructure, training, and support inhibiting the utilization of these same technologies in advancing African scholarly publishing efforts. This study establishes the high level of energy and excitement among journals editors, librarians, and IT administrators about the compelling new possibilities offered by new digital technologies. Drawing on what has been learned in this study, recommendations are made for tapping into the full potential of these technologies in strengthening research capacity, improving the quality of research, reducing Africa's isolation from the global scholarly community, and ultimately narrowing the information divide.
PREFACE

Ethics: Research associated with this dissertation was conducted with approval from the UBC Behavioural Research Ethics Board, ethical certificate number (H06-80584) B06-0584.
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ACKNOWLEDGMENTS

When I started my PhD program, I had some doubts about how this journey would pan out. As I reflect now on my four-year program, I can appreciate and relate wholeheartedly to Rose (1989), who said:

We live, in America, with so many platitudes about motivation and self-reliance and individualism … that we find it hard to accept the fact that they are serious nonsense. To live your … life on the streets … and to journey up through the top level of the American educational system will call for support and guidance at many, many points along the way. You’ll need people to guide you into conversations that seem foreign and threatening. You’ll need models, lots of them, to show you how to get at what you don’t know. You’ll need people to help you center yourself in your own developing ideas. You’ll need people to watch out for you (pp. 47–48).

I have been blessed to have met people whose encouragement, advice, prodding and empathy made me travel this path with certainty and success. Here, I acknowledge them:

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DEDICATION

As it is written, I have made thee a father of many nations, before him whom he believed, even God, who quickeneth the dead, and calleth those things which be not as though they were. (Romans 4:17)

This dissertation is dedicated to my dad, the late Kwaku Abode Esseh, who against all hope believed in me and called into my life those things which were not as though they were. Growing up in a poor household and poor neighborhood called Christian Village in Ghana, living in a one-bedroom apartment with a family of eleven, and without any hope for formal education, you saw into my future and called me “Dr. Smith”. Today, I am what you envisioned some 40 years ago. Thank you, Dad.

I also dedicate this thesis to my siblings whose pleasure in seeing me complete this program has been uplifting.
CHAPTER 1

BACKGROUND OF STUDY

1.1 Introduction

This dissertation is based on the tenet that information, and scientific research findings in particular, constitute a public good which society and individuals have an obligation to make as widely accessible as possible, and which individuals should be able to access as a basic right. John Willinsky, has termed this an “access principle” in which “a commitment to the value and quality of research carries with it a responsibility to extend the circulation of such works as far as possible and ideally to all who are interested in it and all who might profit by it” (2006, p. xii). The access principle calls for increasing access to research, and this dissertation explores the question of the potential for just such increases in the sub-Saharan African (SSA) context in the digital era. While pointing out how extending the circulation of knowledge adds value to published work, he argues for greater access as a basic human right: “Basic rights of participation ... are taken for granted by scholars who exist at the centers of publishing activity, even as they assume that these publications represent an open and free discussion of ideas, while in reality ... [circulation limits] define an intellectual periphery” (p. 106).

Such an access principle has a history that goes back centuries. The Chinese invention of paper provided means for mass dissemination and the storage of knowledge; books once owned by the privileged few, and treasured as symbols of
wealth and power, became more accessible through Gutenberg’s press; and scientific journals published in the late seventeenth century provided a new forum that ensured the concepts of openness and publicness became prominent in modern society, thus underscoring the relevance of access to information and inclusion. The access principle has found new currency on the back of recent developments in digital technologies. New technologies such as the Internet are having an impact on scholarly communication, and this can be seen in its superior speed and interactivity relative to print media; more importantly, and compared to traditional media, the Internet’s superior range and accessibility has helped greatly reduce the high cost of producing and distributing scholarly journals, such costs having proved in recent times antithetical to the ethos of knowledge sharing which underlies the access principle.

With the advent of the latest technological and information revolution in the 1990s, Willinsky questioned whether the research community would capitalize on this new publishing medium, already integral to the scholarly process, to extend and advance the circulation and exchange of knowledge. Would digital technologies allow for the free flow of information? Would they help establish an equitable global information order beyond the colonial legacies of “center” and “periphery” in the geopolitics of knowledge? To the extent that most of the world’s scientific activities are concentrated in a handful of countries, from a global perspective, these constitute the “center” while other countries stand at the periphery of world scientific activity (Maričić, 2002). This intellectual periphery, in practice, represents a lack of access to scholarly research in certain regions of the world due to communication, ideological
and economic barriers which work against engagement in this human endeavor (Maričić, 2002).

In this regard, further research on the access principle is very timely; the digital revolution continues to influence every aspect of scholarly communication in ways that demand that such questions be addressed. Research that aims to explore the current state of this access is in line, for example, with the ideals and principles of the United Nations Educational, Scientific, and Cultural Organization (UNESCO), which strives to promote cultural pluralism, the free flow of ideas, and the need for regulation of global exchanges and global societies of shared knowledge. As things now stand, too many people are denied access to basic information as a result of geographical location or social condition. It is against this background that this study was conceived and administered; specifically, this study sought to examine how globalization and the expanded use of information technology are affecting the adoption of online publishing systems in order to a) enhance African participation in global scholarly discourse, and b) explore ways of improving access to, and circulation of, African scholarship and research.

1.2 Purpose of the Study

The overall purpose of this study was to investigate current publishing practices among scholarly journals in Africa, while exploring the potential use of online publishing systems to aid those practices. Over the last decades, several initiatives have been conceived to improve information communication infrastructure and human capacity-building in Information Communication Technology (ICT) in Africa.
Now that access to research, Internet bandwidth, and librarians’ technical skills are improving, the next logical step is to direct these developments toward supporting local scholarly publishing initiatives designed to both increase access to African research and advance local research capacities. This study was therefore designed by the author to meet with and survey journal editors and academic librarians across sub-Saharan African universities in an effort to assess a) the current state of scholarly journal publishing, b) the level of technical infrastructure supporting access to knowledge for faculty and students, and c) the potential value of utilizing online journal management and publishing systems to increase both the reporting of African research and global access to it.

This study was designed to describe the current state of scholarly journal publishing by its editorial, production, economic, and institutional aspects, all of which will provide a baseline from which to assess changes in coming years. This study further seeks to better understand the various technical, editorial and scholarly issues involved in journal publishing today as well as the potential viability of online publishing systems from a variety of perspectives: journal editors and their IT staff, potential editors, interested faculty and students, university librarians, and IT administrators.

At a time when global access to knowledge is a fundamental requirement for economic development, when research is recognized as vital to evidence-based policy initiatives, and when higher education is increasingly seen as an important component in development, there is a pressing need to explore the current and potential new ways of having African researchers and scholars participate in the
exchange of global knowledge. This project thus aspires to research and develop one possible means of enhancing that exchange.

### 1.3 Research Questions

**Scholarly Journal Publishing:** What changes are underway in the editorial, economic, technical, and distribution patterns among sample African journals in this study? What are the major challenges and opportunities that lie ahead for these journals?

**Scholarly Communication Infrastructure:** What are the current levels and patterns of access to online/print resources, both African and global, among faculty and students participating in this study? What are the current levels of ICT-related resources in research libraries and academic centers in African universities, and what is their likely impact on online publishing? What are the social, scholarly, and economic factors affecting scholarly communication? How have changes in technical infrastructure over the last five years affected scholarly publishing and communication?

**Online Publishing Systems:** In what ways can online technologies (e.g., locally maintained open source software) be used to strengthen and support scholarly publishing? What are the related needs in infrastructure, and training, and support networks? What combination of campus units (e.g., libraries, IT services, university presses) could provide strong support for online publishing?
1.4 Significance of the Study

This study has sought to provide a more accurate and factual description of the current state of scholarly publishing in Africa through an empirical study designed to elicit information from active participants within the scholarly community: authors, editors, publishers, graduate students, faculty, scientists, librarians, IT staff and university administrators.

As a result of this analysis, a set of recommendations has been drawn up. These recommendations include establishing some form of Online Scholarly Publishing Sites (OSPS) in association with university libraries or other research institutional centers, which would be responsible for supporting vibrant online journal publishing and management systems. A second recommendation is for a publishing support and training unit for OSPS as part of the Publishing Studies program at Kwame Nkrumah University of Science and Technology in Ghana (see Appendix A)\(^1\).

By working in conjunction with institutional centers and university libraries, we can prepare students in a variety of capacities to provide support and training in establishing OSPS in research libraries which can operate as publishing sites for journals throughout Africa. This model has already been successfully implemented by the Brazilian government through the Instituto Brasileiro de Informação em Ciência e Tecnologia (IBICT) in Brazilia, which has assembled a team who are currently supporting over 500 Brazilian journals and using Open Journal Systems (http://www.ibict.br/). And just as IBICT continues to work with the Public Knowledge

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\(^1\) The factors that influenced the choice of Ghana and KNUST in particular are clearly explained in Appendix A.
Project on the development of publishing software, so the OSPS support and training unit at Kwame Nkrumah University of Science and Technology is a growing part of a global community that continues to evolve around the development of open source software as part of its sustainability strategy.

The research and academic community in Africa would do well to understand the nature and current state of scholarly publishing, not to mention the opportunity proffered by online publishing systems within the research community. During periods such as the present, when the emphasis is gradually shifting from teaching to research and from print to online sources, the production and dissemination of scholarly research is important to the professional development of both academic institutions and individual faculty members. This study shows how the current system of print journal publishing in Africa is under considerable stress and, as a result, how the research community in Africa has lost much of its ability to fulfill its original mandate.

This study explores the degree to which the research community in Africa is interested in employing new information technologies. At the same time, the research examines the limitation of this new medium and provides a cautionary note on moving too quickly from print to online publishing. Finally, the research information gathered within this study serves to inform journal publishing strategies and planning on economic, technical, editorial, and scholarly quality issues across the continent.
1.5 Statement of Problem and Rationale for the Study

There is no culture without knowledge production (Zegeye and Vembe, 2006), and throughout history, Africans have developed their own powerful culture of knowledge. In the words of Hamel (2005a), “the African spirit, ingenuity, creativity, cleverness, inventiveness and imagination gave birth to hominization, and humanization. Homo sapiens (scientist) and homo faber (technologist) were truly Africans.” As Hamel states further, “today, African knowledge continues to excel in many areas, such as in science, literature, theater and painting” (2005, p. 11).

Hamel’s sense of historicization here is persuasive, but the additional point has to be made that, while Africans have developed a powerful knowledge culture, the limitations placed on the transmission of African scholarship has limited African scholars and constrained their meaningful participation in the global exchange of knowledge. Be that as it may, the access principle calls on society to leverage technologies in order to improve not only access but also to create opportunities for greater African participation in global knowledge exchanges.

The underlying principle whereby a commitment to scholarship carries the obligation of broad dissemination finds various articulations in differing contexts. Some 50 years ago, UNESCO set out guidelines for the development of higher education in Africa, which included the “elucidation of, and appreciation for, African culture and heritage, and to dispel misconceptions of Africa, through research and teaching of African studies and the development of “a truly African pattern of higher learning dedicated to Africa and its people yet promoting a bond of kinship to the larger
human society” (UNESCO, 1963, p. 3). Yet no sooner had research libraries in
Africa and other parts of the developing world begun to build modest journal
collections in the hundreds and even thousands of titles during the 1960s and 1970s
than those collections were decimated by subscription price increases, currency
fluctuations, and local economic troubles. In Ethiopia, for example, Addis Ababa
University lost 70% of its 1,200 subscriptions to its institutional journals in the late
1980s (Rosenberg, 1997).

The introduction of the Internet in Africa has proven a source of hope for higher
education’s improved access to research and scholarship. Internet access across
the continent is now a reality, some 93% of university campuses operate networks,
the majority on leased lines, and satellite downlinks (VSAT) representing a close
second (Steiner, Tirivayi, Jensen, and Gakio, 2005). As a result of the support of
various organizations including the World Health Organization (WHO) and the
International Network for the Availability of Scientific Publications (INASP), African
research libraries have been able to obtain free access to a wide range of online
scholarly publications. It is time to shift attention to scholarly publishing as a means
of developing research capacities, as universities in the North and Africa work
together “by sharing their resources within [the] framework of formative projects”
[and] as Bonaventure Mvé-Ondo advocates, “with shared responsibilities and

2 Since 2000, INASP has been operating its Program for the Enhancement of Research Information
(PERii), which currently makes 11,000 full-text journals available to qualified countries, along with
database access and document delivery service, and additional titles (including e-books) are added
each year. This program is also supported by a series of workshops that develop local skills in
electronic resource library management.
benefits, by taking advantage of digital tools to do so, by gaining and producing knowledge together” (2005, p. 62).

The economics of scholarly research access in Africa are currently such that higher education institutions are paying 100 times more for Internet bandwidth than what a comparable college would pay in North America or Europe, even as the bandwidth of a typical institution may be little more than that of private home in the West (INASP, 2003). Still, efforts are underway to improve the situation by introducing market reforms and competition, improving bandwidth management within universities, and utilizing open source systems and software; meanwhile, it seems only prudent to continue with research and development projects aimed at increasing Internet access to faculty and students in order to further develop local research capacity and culture through such ventures as improved scholarly publishing systems.

Recently, the Partnership for Higher Education in Africa (a consortia of six major US foundations) announced plans to commit $350 million to African universities, with the intent of creating, among other things, “an eightfold increase in Internet bandwidth to a coalition of 11 African universities and two higher-education organizations” (“Six Foundations Commit”, 2005). Judith Rodin, president of the Rockefeller Foundation, has said that “knowledge, innovation and talent are critical currencies needed to thrive in today’s interconnected world, and Africa’s universities are increasingly looked upon to generate the ideas and talent necessary to address Africa’s challenges, on Africa’s terms” (“Six Foundations Commit”, 2005). The rise of “knowledge-based aid” is placing a greater emphasis on post-secondary education
and the building of research culture as a focus for development (King and McGrath, 2004).

Now that African universities have achieved far greater access to scholarly literature through increases in Internet access and open access initiatives, there have been expressions of concern over what Y. Z. Ya’u, Executive Director of the Computer Literacy Project (CLP) Nigeria, describes as “the resurgence of imperialism, this time represented by knowledge dependence” (2004, p. 11). Others, such as Silvia Federici and George Caffentzis, have addressed the undermining of “the production and distribution of knowledge in Africa,” making “it increasingly difficult for African intellectuals and professionals to carry on with their work and participate in the global exchange of ideas” (Federici and Caffentzis, 2004, p. 81). New methods of publishing are only one piece of the puzzle, of course, but supporting a strong academic journal culture among African universities would certainly contribute to creating “autonomous universities and an independent set of African scientists and lawyers,” which Federici and Caffentzis insist form “the necessary institutional support for the protection of ‘local’ knowledge” (p. 95).³

1.6 Research Design

This study required a combination of mixed-mode survey and workshop discussion, which generated both qualitative and quantitative analysis of research questions.

³ The Committee for Academic Freedom in Africa, of which Federici and Caffentzis are a part, has developed a code of ethics which calls on scholars to, for example, ensure that Africans “have the means of production and distribution of knowledge” and that African people’s “contribution to world culture” is valued (Federici and Caffentzis, 2004, p. 97).
The application of standard research principles in developing countries without allowing for the social, cultural and linguistic boundaries of these countries will fail to achieve the desired results. As noted in Chapter 3, getting people to complete questionnaires is always difficult and is perhaps more so in Africa. To compensate for these inadequacies, a strategic decision was made to transform the original data collection instrument into a multifaceted one – mixed-mode survey and workshop discussion – to be administered within a workshop setting. Essentially, the goal was twofold: to select a principal data collection procedure whose strengths suited the project’s aims, and to select a contrasting but complementary method whose strengths could add to the research design’s overall ability to address the research questions (Morgan, 1998).

Survey research is regarded by many as one of the most important methodological breakthroughs in the social sciences. Babbie (1995) noted that “survey research is probably the best method available to the social scientist interested in collecting data for describing a population too large to observe directly” (p. 550). It has been the most widely applied tool of empirical investigation for decades. It ensures that we “make factual as opposed to conjectural statements about the world—that is, statements based on evidence as opposed to statements based on suppositions or hunch” (Guppy and Gray, 2008). It is well defined, and it requires precise procedures which, when followed closely, yield valid and easily interpretable data.

Survey research can provide comprehensive insights into current practices in scientific and scholarly communication among the research community, as well as the various organizational and technical forces shaping scientific communication; at
the same time, it enables the researcher to gauge the attitudes and orientations of respondents towards the adoption of emerging electronic infrastructure for scholarly communication.

Another strategic consideration was the use of workshop discussion as an adjunct to the mixed-mode survey method. Publishing is often considered a cultural industry because it deals in meaning making and ideas, which help give shape and define the distinctiveness of a particular society. Understanding the complexities involved in scholarly publishing practices of a given society requires the researcher to allow the society itself to interpret its own environment and practices. It was thus necessary to anchor this research in the norms, values, and experiences of the population under study. Consequently, video and tape recorded workshops were particularly well suited for conducting research that provided qualitative data reflecting participants’ feelings, values, opinions, and attitudes (Courtois and Turtle, 2008, p. 2).

Finally, workshop discussion provided the opportunity to explore participants’ knowledge of and experience in scholarly publishing. They were encouraged to explore related issues using their own phraseology, based on their own ideas and priorities in the possibilities for utilizing online technologies to support journal publishing.
CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This literature review examines the scope, state and manner of scholarly publishing as well as the underlying challenges of scholarly communication in higher institutions in Africa. What became apparent in the process of this review, however, was the lack of adequate literature on scholarly publishing in Africa compared to other regions in the world. Furthermore, some of the literature available was based on opinions and speculations with little data to support the conjectures that were being made, while other studies that do exist are typically too narrow in their scope to be of value in understanding the situation across the continent. Still, there is much to be learned from the work that has been done.

2.2 Historical Perspective

Scholarly journal publishing, an authoritative voice of academic publishing, is characterized by successive, typically regular—monthly, quarterly or biannual—releases of issues containing original academic research and scholarship. The content of scholarly journals is usually established through peer review, a system employed to maintain standards, improve performance, and provide credibility (Page et al., 1997; Schauder, 1994). The route to publication can be lengthy, as content is verified, validated, revised, published and disseminated.
The genesis of scholarly publishing, which evolved unevenly around the world, dates to the second half of the seventeenth century in Europe and the nineteenth century in the United States (Tenopir and King, 2000). Among the earliest peer-reviewed research journals were the *Journal de Scavans* and *Philosophical Transactions of the Royal Society*, both published in the seventeenth century [1666/1665]. Until this time, private communication between scholars was largely accomplished through carefully crafted notes and letters. The meetings and activities of these early scholars were often referred to as constituting an “invisible college”. But as these societies began to witness growth in membership, regular meetings were augmented with “an expanding number of printed pamphlets and treatises” (David, 2008, p. 56), and years later the principal communication tool, scholarly journals. Since the seventeenth century, scholarly journals have served as the principal medium for communication among scholars (Kaur, 2007; Harter, 1998; Tenopir and King, 2000).

### 2.3 Higher Institutions and the Development of Scholarly Journals in Africa

In Africa, however, a panoply of factors has played a significant role in shaping the state of scholarly publishing. It is therefore essential that scholarly communication be situated within appropriate historical context to better picture the evolution and current state of scientific publishing on the continent. An attempt to present a historical perspective of journal publishing in Africa, however, is a challenging task because of the unavailability of literature in this area. A search in the most reliable
databases yielded almost zero results. My observation is that African journals are not indexed in the major international databases for a range of reasons that are disputable but outside the purview of this paper. What is examined in this dissertation, therefore, covers both reviewed and non-juried articles, with much reliance on monographs as well as conference proceedings, and reports from gray literature together with limited consultation with experts.


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4 *South Africa Journal of Science* was established in 1903 as the proceedings of the annual meetings of the SA Association for the Advancement of Science. <http://www.sajs.co.za/index.php/SAJS/about/editorialPolicies>

5 The *Military History Journal* (incorporating the *Museum Review*), established in 1967, is published by the South African National Museum Of Military History in association with the South African Military History Society, bi-annually, in June and December. The aim of the journal is to publish research and articles of interest concerning military history by members of the Society or the Museum or any other person who wishes to submit his or her work.

6 *African Communist* is the journal of the South African Communist Party. It is published quarterly as a forum for Marxist-Leninist thought.

7 First published as *Bantu Studies* in 1921, the journal included among its early editors and contributors many pioneering scholars in anthropology and linguistics: Schapera, Gluckman, Marwick, Mayer, Vilakazi, Rheinallt Jones, Doke, Cole, and Hammond-Tooke. Building on this legacy, the journal now casts its net more broadly and includes history, sociology, politics, geography, and literary and cultural studies.

8 *The Black Sash* was a journal concerned with human rights and how they were abused during the Apartheid Era.

9 *English in Africa* was founded in 1974 to provide a forum for the study of African literature in English. The journal also publishes scholarly articles on African writing in English with particular emphasis on research in new or underresearched areas in African literature.
An examination of these founding dates indicates that the production of scholarly journals is a post-independence phenomenon that accompanied the institutionalization of university education in Africa. This was a period when many countries in Africa begun to shake off the shackles of colonialism and commenced the onward move toward institutionalization of higher education.

In *The Scholarly Journal in The Production and Dissemination of Knowledge in Africa*, Adebowale (2001) states that, “the establishment and proliferation of universities and higher institutions in Africa from the latter half of the twentieth century influenced the development of scholarly journals on the continent” (p. 2). Paul Zeleza (1997, p. 14) also traced the history of journals in Africa to the establishment of universities on the continent, which were seen as an “ivory tower for cultural modernity and factories for economic development.”

The development of university education itself in Africa was piecemeal, and access by the indigenes was very limited for the simple reason that “the colonial authorities were generally suspicious of and opposed to the modern educated African elite and their nationalist demands for equality and freedom, and colonial civil servants feared African competition” (Zeleza, 2006, p. 2). Educating the indigenes was thought by the settlers to have the power to make them a “republic of letters” who might engage the new print technology to create an environment to foster cosmopolitan debate, reform and social mobilization against the colonial regimes. Even the few Africans whose voices found a place in the press were branded as dangerous African elites that had shown the “tendencies toward pan-Africanism, nationalism and hostility toward the settler population … and such elite class were in fact, malignant forces in
the health of indigenous communities, and the ‘de-tribalized native’ disrupted what would otherwise be a happy cooperation between Africans and their tutors in civilization” (Windel, 2009, p. 12).

Until the dawn of independence of African states, according to Zeleza (2006, p. 2), higher education of a university status was scarce and limited. Access to higher education was most possible abroad, and in Africa it was limited to only states that were controlled and protected by the British and French; territories controlled by Belgian and Portuguese had no higher institutions of learning.

The system of education at this point – called “industrial education” advocated by the United States and supported by Britain – was “designed to maintain the exploitative colonial relationship between white Europeans and black Africans” (Brown, 1964, p. 369; Windel, 2009, p. 1). It was a system, as observed by Malinowsky (1964, p. 655) that opposed the colonial system of education, designed “to educate Africans to an inadequate and inferior position within the lower caste of a mixed community.”

However, the unpopularity of and general discontent with the educational system by the people it was intended for, around this period, fostered movements for African independence in education, “Movements toward an independent school system with African teachers, literary curriculum, and anti-colonial political aims emerged in multiple sites” (Windel, 2009, p. 6). And with those movements, the stymieing of higher education in Africa was soon over. By 1950–60, most countries in Africa had succeeded in throwing off the shackles of colonialism and establishing university education, accompanied by a smattering of scholarly journals. The development and
growth of universities before and after independence is described in the following statement by Zeleza:

Colonial rule left behind very few universities; the majority of countries did not even have a single university, so that one of the key challenges for the new independent states was to establish or expand their higher education systems. Across Africa the growth in higher education after independence was nothing short of phenomenal. The new states embarked on ambitious development programs in which universities were seen as central for training a highly skilled labor force, creating and reproducing a national elite, and enhancing national prestige. ... the number of universities grew from less than three dozen in 1960 to more than four hundred in 1995 and several hundred more have perhaps been introduced since then with the explosion of private universities. (Zeleza, 2006, p. 4)

The new universities were larger, had a broader mission, were diverse and flexible in their structures and models, and they were more relevant to Africa’s developmental needs. They expanded their purview of knowledge “from the arts and social sciences to include professional fields of study such as business, medicine and engineering” (Zeleza, 2006); and were viewed, by the new states, as channels for cultural modernity and vehicles for socio-economic development (Agbo, 2005, p. 91). African historian, Zeleza (1998) further wrote:

Charged with this mission, and committed to the protocol of scholarly discourse, journals were founded – mostly in literature, history and political science, and development economics – to trace the teleological march of the once reviled “native” subject to respected national citizens and their society from underdevelopment to development.
Journals, as it may seem, were fostered and sustained by the development and growth of university education that held the promise for economic and social development.

The goal of nationalism, shared by governments and scholars of higher institutions of learning, created a symbiotic relationship between the state and the universities, which ensured extensive government funding for the universities (Teferra, 2003, p. 26). As Gaillard and Waast explain (as cited in Teferra, 2003, p. 25), “African universities experienced academic expansion with a record nine percent annual increase (more than developed countries) in the number of scientists and … made a valiant effort to build national research systems.” As more universities were established and student intake increased, there were more opportunities for scholarly publishing. At approximately the same time, the developing atmosphere of scientific discovery, collegiality, the quest for personal and professional advancement and the determination to emancipate the continent, required an improved means of communication; and the choice was the scholarly journal. Furthermore, as funding for academic institutions increased, and scientists sought an outlet for their intellectual product, so too did government’s capacity to support scholarly publishing increase. The result was the proliferation of journals (Zeleza, 1997, p. 15).

In Zeleza’s (1997, p. 14) assessment, journals established during this period “enjoyed widespread circulation.” He identified two journals – *Black Orpheus* and *Transition*, which had a large impact on the West – as the “most influential literary journals that flourished, providing writers, critics and students with an unprecedented
forum to exchange ideas and to share the intoxicating moment of Africa’s independence.” Now, unfortunately, they are published in the US.

Many years after independence, universities and research institutions remain the major centers of knowledge production in Africa, and the journal remains the major means of scholarly communication and a central unit of knowledge domain within the academic community (Teferra, 2004, p. 161; Zeleza, 1998, p. 18). However, over the years, the production of scholarly journals in African universities has seriously declined, and access to African research output is simply not accessible or available across the region or outside it.

The deteriorating economic state of most African countries in the 1970s and 1980s, the daunting task of nation building and the ensuing repression and starvation of (funds in) higher education along with undue state interference and control of universities soon affected research and knowledge production and for that matter the production of scholarly journal (Adebowale, 2001; Zeleza, 2002, p. 11; Teferra, 2003). Academic freedom of inquiry by faculty and students, and freedom to teach and communicate ideas and fact without state censorship or discipline, was brought to a halt. A 2002 World Bank publication, higher Education in Developing Countries Peril and Promise, reveals how the state controlled the universities “in the same way they managed roads, the army or customs…” (World Bank 2002, p. 63). Governments frequently appointed vice-chancellors and influenced faculty appointments and promotion; ministries designed and dictated degree requirements and curricula, and similar decisions were made on political grounds rather than on merit (World Bank, 2002, pp. 53, 63; Adebowale, 2001). This undue state
intervention affected and created a frosty relationship between the state and the academic communities “as academics began to question state research agenda and excesses of corruption, tribalism and incompetence among members of the ruling elites” (Adebowale, 2001).

The political climate for publishing became challenging because the state began to perceive publishing, as “irrelevant” academic research, “either because it was not ‘applied’ research or because African academics were adversarial… or because they blindly followed Western research themes” (Zeleza 2003, p. 101).10 The state became suspicious of and repressive towards academics, seeing them as perpetuating foreign ideology, and this left little or no room for scholars to engage in critical discourse. Zeleza explains further that this trend worsened in the 1980s when studies were published by people who obviously wanted to promote a particular course or support a particular viewpoint, like the World Bank (WB) and the International Monetary Fund (IMF), questioning the cost-effectiveness of universities.

It is impossible to discuss African higher education and research capacity building without discussing the important role of donors and international agencies, particularly the WB and the IMF. Since the 1980s, the WB and the IMF have consistently compelled African countries to adopt and implement Structural Adjustment Policies (SAP) designed and packaged by these donors. This SAP

included the removal of subsidies to student education, the introduction of cost-sharing measures in higher education (including user fees), the privatization and diversification of the higher education system, and currency devaluation (Metcalf, Esseh, and Willinsky, 2009). The WB/IMF insisted on educational reforms that promoted primary and vocational training because Africa “lacks both intellectual and technological capacity to sustain higher education” (Federici, Caffentzis, and Alidou, 2000, p. 39). The WB argued, in effect, that “higher education in Africa was a luxury…and that most African countries were better off closing universities at home and training overseas” (Brock-Utne, 2003, p. 8). Only since the turn of the century has the WB begun to get behind what it now calls “knowledge societies,” placing greater emphasis on higher education about themes of “knowledge sharing” as part of its direction for future support (World Bank, 2002, p. 107).

The misguided twentieth-century stance of the WB, which resulted in a shift in educational policy in the late 1970s and 1980s, led to a drastic decline in state resources for universities. University budgets for education were slashed by 26%, enrolment rates declined, and books from primers to biology textbooks became scarce commodities (Federici, Caffentzis, and Alidou, 2000). Meanwhile, student enrollments in universities in Africa increased by 61% between 1980 and 1990, from 337,000 to 542,700 (Saint, 1993, cited in Teferra, 2003, p. 26). For example, at the Kwame Nkrumah University of Science and Technology, Ghana, student enrollment to pursue the Publishing Studies program was 9 in 1992; by 2002 the enrollment for the same program had risen to 230.
However, growth in student population at the universities did not result in a corresponding increase in resources. Instead, government funds for universities drastically declined and had far-reaching consequences. Life on university campuses across the region was marked by overcrowded classrooms, collapsing and dilapidated buildings, and ailing water and electrical systems. University faculty lived and worked in similar conditions with below subsistence wages (Metcalf, Esseh and Willinsky, 2009, p. 96) Universities were without books; teachers and scholars were deprived of the material required to pursue their studies and follow the developments taking place in their disciplines elsewhere in the world, and of an ability to keep teaching and research up-to-date. As we know, the correlation between the level of funding of university education and the level of research production in a country is conversely related. Teferra (2003, p. 56) aptly remarks, “much of what goes on in the university thus has a direct bearing on the lives of these journals.” As financial resources for university education declined, the infrastructure and other resources for the creation and dissemination of knowledge declined, and the actual quantity and quality of national research and publication generated by the universities declined (Teferra, 2003, p. 29). Jacques Gaillard (2003, p. 15) emphasizes this point when he observes that the “severe cuts in [state] funding pushed institutions of higher education and research centers into steep decline.”

These crises not only affected the university system but also crippled every effort directed towards scientific research. Olukoju (2002) and Teferra illustrate the situation in the following statements:
First, outstanding scholars fled [their] countries’ tottering ivory towers for stable climate, others were distracted into pursuits aimed at ensuring their material survival, [while] others left the academia for business, still others vegetated as library facilities proved increasingly obsolete and grossly under funded. Olukoju (2002).

Teferra (2003, p. 29) corroborates Olukoju’s argument:

In fact, the primordial scholarly environment that emerged in the 1960s and the effort that gathered momentum to establish a high-powered scholarly and civic infrastructure lost its steam in the chaotic decades that followed. The small but critical numbers of scholars Africa managed to produce have left [for] overseas, forced by the serious plight at home to seek a better working and living environment elsewhere, rendering massive drain while those who remained behind watch themselves [become] academically stagnated and incapacitated.

These policies and conditions have meant that Africa has fallen behind the rest of the world in its contributions to global scholarship (Gevers and Mati, 2006; Mouton et al., 2008; Butcher et al., 2008, Gray, 2009, p. 6). According to the UNESCO Science Report 2005, while all the regions of the world – Asia, Europe, North America and Oceania – made a significant increase in their contribution to world scientific knowledge in the year 2000, Africa was the only continent that failed to make any significant contribution (UIS Bulletin, 2005, p. 6). The report concludes that in five years (1991–96), compared with Europe or with the rest of the world, Africa had lost 20–25% of its relative capacity to make contributions to world science (UNESCO Science Report, 2005, p. 183).

This is in part because academic research and knowledge production has been enmeshed in a net of economic, social, political and technological challenges. Ability
to access scholarly journals and monographs outside the continent has also been affected by declining national economies, diminishing library budgets, and escalating subscription costs. African countries have been pushed further to the margin of knowledge acquisition and production and subsequently isolated from the global community of scholars.

The inability of the universities to contribute to research meant that other actors had to surface as the producers and disseminators of research on the continent. According to Adebowale (2001), “this vacuum was filled by the proliferation of non-governmental organizations (NGOs) and other civil society actors” (p. 4). He states further that, “From the late seventies, scholarly publishing in Africa would be dominated by NGOs [and] today, some of the outstanding academic journals on the continent were either established or are being supported through the efforts of continental institutions” (p. 4). Gaillard and Waast (1993) assert that about 70% of the research resources of African universities come from external sources.

This historical overview of scholarly publishing in African universities brings to the fore some important questions with particular reference to the emergence and proliferation of electronic communication. Because of the already polarized and deteriorating state of scholarly publishing, have African universities the capacity – economic, infrastructure, human resources and socio-political will – to benefit from the advantages offered by new publishing systems? Will the transition to electronic forms of publishing from print further widen the gap or narrow the gap between researchers in the developed nations and their counterparts in the developing countries, and further marginalize already marginalized scientists and scholars in
developing nations? Knowing that higher education institutions in Africa are unlikely to recover in the near future from the funding attack they have experienced in the last three decades, what new publishing strategies and methods could be successfully employed to give African scholars a global presence in the scholarly community? The body of literature that could address these questions is limited and even where it exists it is fragmented, inaccessible or outdated. The aim of this research is to provide answers to these questions in a systematic way.

2.4 The Current State of Scholarly (Journal) Publishing in African Universities

Much has been said and written about the state of journal publishing in developed countries in the past two decades. Many individuals, task forces, committees and associations have conducted surveys and studies on scholarly communications with the purpose of sustaining the system. However, once again, searching through databases reveals that many fewer studies been devoted to understanding the state of scientific journal publishing in Africa, compared to studies in developed countries. Notable exceptions that give a good indication of the state of journal/scientific publishing in Africa in the mid- to late-1990s are contained in three remarkable works. Altbach’s (1998) review of The Role and Nurturing of Journals in the Third World looks at journals from the point of view of the international network and its impact on journal production in developing countries. He examines problems and prospects with contemporary journals, and the challenges of Third World journal publishing. Paul Zeleza (1998) examines the forces that have contributed to, and
constrained, the publication of scholarly journals in Africa in the last two decades. Specifically, he looks at the challenges of editing journals in Africa. The third, Damtew Teferra (1998), looks at the significance of information technology for African scholarly journals by examining the role of (Desktop publishing) DTP in African scholarly publishing, and level of ICT infrastructure etc. Other attempts have been made to present a portrait of journal publishing in Africa. Some of these initiatives consisted of looking at scholarly publishing as a whole (Darko-Ampem, 2005), and others were restricted to the study of individual countries (Aguolu, 1998; Pouris 2005; Olukoju, 2002). Far fewer have been the attempts to present a qualitative and quantitative overview of the state of journal publishing with emphasis on trends in number and size, trends in cost and price and the circulation trends of scholarly journals in Africa (Hussein and Priestley, 2002; Teferra, 2004).

This study, complemented with workshop reports, critically examines the current state – trends in number and size, in cost and price, and in circulation – of scholarly journal publishing in Africa. Over and above that, this research examines the state of journal publishing with particular reference to readership and authorship, editorial and peer review, and the role of digital technology in the publishing process.

2.5 Current Trends in Numbers

Although there are many common trends relating to scholarly publishing worldwide, there are a number of specific matters that affect African scholarly publishing. A review of many studies shows unstable trends in scholarly publishing in Africa. The 1960s to 1970s witnessed a rise in scholarly publishing. The rise continued to the
early 1980s and plateaued in the mid-1980s. In the late 1980s, scholarly publishing began to fall. This trend continued to the end of the 1990s (Adebowale 2001; Hussein and Priestly 2002; Teferra, 2003). For example, in a survey conducted in 1996, Jaygbay (1998) puts scholarly journals on the continent at 400 titles produced by forty-eight countries. A year later, the African Periodical Exhibit (APEX) catalogue listed 135 titles from 22 African countries and two years later this number further dropped to 70 titles from 16 countries (Adebowale 2001; Teferra 2003, p. 55). The continuous fall in the number of journals published from the late 1980s to the 1990s is an indication of the dwindling capacity by African scholars to contribute to global scholarly discourse.

Using the African scholarly publication index in the PASCAL database from 1991 to 1997 and in the ISI database from 1981 to 2000, the following trends are observed. The capacity to research and produce scholarship in Africa is concentrated in a few countries. Gaillard (2003, p. 17) observes that South Africa produced 3,000 publications in 2001, accounting for a third of the continent’s scientific literature indexed in the ISI database. This is followed by Egypt with a little under 2,000 publications. He explains further that South Africa and Egypt together with seven other countries—Morocco, Tunisia, Kenya, Nigeria and Algeria—account for three-quarters of African scientific production.

Another gloomy revelation from PASCAL is that the output per scientist is abysmally low compared to the rest of the world. “The PASCAL database shows that in 1991 African scientists’ production in terms of publication amounted to just four per cent of the publication output of European scientists. This figure fell to three per cent in
1997” (Gaillard 2003, p. 17). The implication is that, Africa, as claimed by Gaillard (2003, pp. 17–18), could not keep up with the production of knowledge in the 1990s. Worst of all, African scholarly publishing has been characterized by irregularities and uncertainties (Aguolu and Aguolu, 1998; Ganu, 1999; Yahia, 1999).

The most current and comprehensive database devoted purely to African published peer-reviewed scholarly journals is the Africa Journal OnLine (AJOL) database. It claims primarily to provide access and increase visibility to African-published research and indigenous scholarship worldwide. As of 2010, the AJOL database shows a total of 402 journals, 5,567 issues, 59,961 abstracts, and 48,469 full texts.

Circulation numbers for African scholarly journals are also very low. The APEX catalogue puts circulation numbers for African periodicals from 100 to 16,000. It is important, however, that this statement be treated with care, since this figure is not a representation of pure scholarly publications. Hussein and Smart (2002) describe it better by saying, “[The] higher circulation numbers are associated with the semi-popular magazines and society/association publications with the true scholarly journals usually having a circulation of less than 500, usually in the order of 100–200.” In another survey of African journal editors in a 1996 workshop, it was established that only one journal had more than 400 external subscribers. The rest of the journals had a maximum circulation of 50 or even less (Teferra, 2003, p. 57). This observation re-emphasizes the fact that African scholarly works are poorly distributed, barely marketed and hardly accessed. The worst situation is that most journals that enjoy high circulation outside the continent have very limited circulation within the continent (Teferra, 2003, p. 58).
If there is a correlation between level of circulation and the cost of producing a journal and hence the unit price of a journal, then journals with small circulation rates require a very high unit sales price to cover production costs, whereas journals with very large circulation rates can afford to sell at a lower unit price to cover production costs (Tenopir and King, 2000, pp. 247–248). Most scholarly journals from Africa publish research that has potentially low readership, and therefore publishers require large first-copy cost to recover costs of production. This cost is beyond the budget of most research institutions in Africa. To this end, the cost of publishing a single journal is so huge that research institutions cannot afford to publish a single volume before the demise of the journal.

2.6 Current Trends in Authorship and Editorial Process

There are many stakeholders who are actively involved in the business of scholarly publishing. Tenopir and King (2000) identify principal participants in the process of journal publishing to include creators and authors, reviewers/referees including editors, and the libraries. The following sub-sections examine the literature on the current state of scientists (authors and readers) as well as other participants and how their activities influence the production of scholarly journals in Africa.

2.6.1 Trends in Authorship

Authors are the creators and originators of ideas. They are, according to Tenopir (2000), the educationists, social scientist, scientists, and engineers who, through experiment, investigation, observation and experience, create new information. They
are the fountains from which ideas flow that eventually crystallize into scholarly journals. Ultimately, the key to any successful business of scholarly publishing hinges on their willingness to write and on their commitment to read (Tenopir 2000). It is therefore necessary to address the question of the proportion of authors/scientists who write in scholarly journals, the number of articles written by these scientists, the level of investment made in these scientists, the quality of what they write and the factors that impact the stewardship of these scientists in Africa. It will take a handful of indicators to address these questions.

The UNESCO Science Report (2005) analyses the current state of science around the globe, providing key indicators for world GDP, Gross Expenditure on Research and Development (GERD), and research personnel. Reporting on researchers in the world, the report shows that of the 5,521,440 researchers in 2002, 2,034,000 were from Asia, 1,843,400 were from Europe, 1,506,900 were from the Americas, 76,200 from Oceania, and 60,900, the smallest number of scientists, were from Africa. To be country specific, Burkina Faso has 200 full-time researchers in both the Public and Private Sector (PPS), Cameroon has only 300 full-time researchers in the PPS, South Africa has 13,500 full-time in the PPS, and surprisingly, Tanzania and Mozambique have no full-time researchers in the PPS (UNESCO Science Report, 2005, p. 183).

Turning to financial investment in African scientists, the situation is bleaker. The total intramural expenditure on research and development performed on the national territory during a given period is called Gross Expenditure on Research and Development (GERD). Dividing the GERD by the number of researchers in a country
will give us GERD Per Researcher. Reporting on GERD, UNESCO (2005) indicates that, in 2002, Africa’s GERD was just a fraction—0.6%—of the world’s GERD compared to Asia, which was responsible for 31.5% of the world’s GERD, Oceania 1.1% and Europe 27.3%. The figure of 0.6% GERD indicates a rosier picture than in reality: “South Africa is responsible for 90% of GERD in sub-Saharan Africa. Egypt and, to a lesser extent, Tunisia, Morocco and Algeria carry out practically all Research & Development in the Arab states of Africa,” (UNESCO Science Report, 2005, p. 7). The report further laments that, although there are positive signs of progress in a number of countries, because of the prolonged period of disruption, many countries in Africa “are struggling simply to get back to where they were in the 1970s and early 1980s. On the whole, the situation is deeply distressing and the distance to travel so far.” The downside of it is that expenditure per researcher amounts to a pittance in Africa. The question to address is: With this few researchers in Africa, and almost zero expenditure on them, how much contribution can they make to the production of scientific knowledge? The answer is not far-fetched.

The UNESCO Institute of Statistics (UIS) Bulletin on Science and Technology Statistics published a bibliometric analysis of 20 years of world scientific production, with special emphasis on developing countries. The report indicates that scientists’ contribution to scientific production is changing. The “developed countries’ share of world scientific publications has declined over the last 20 years. While developing regions such as Latin America and Asia are increasing their scientific production, Africa is not” (UIS Bulletin on Science and Technology Statistics, 2004).
In 1981, a total of 371,346 papers were included in the Science Citation Index (SCI). In 2000, this figure increased to 584,982, representing a 57.5% increase from 1981. According to the UIS report, in 2000, authors from North America produced 36.8% of the world’s total; authors from Europe published 40.2% of the total world output, up from 32.8% in 1998. Japan increased from 6.9% to 10.7% in 2000. The report further shows, at the other end of the spectrum, that sub-Saharan Africa publication was only 1% of the world’s total, “while the share of publications from the Arab states increased from 0.6% to 0.9% in 2000” (UNESCO Science Report, 2005, p. 183).

This report provides a bird’s-eye view of regional scientific output. When it comes to specific countries in Africa, a great resource is King’s (2004) bibliometric study, titled “The Scientific Impact of Nations.” In this study the picture for most African countries is gut-wrenching. Measuring the quantity and quality of scientific output, King presented a table that shows the rank order of nations based on the share of the top 1% of highly cited publications from 1997 to 2000. South Africa at 29th place in the rank order and the only African country on the list. From other data extracted from Ulrich’s database, there were about 43,500 peer-reviewed journals worldwide in 2004. Of this figure, only 327 peer-reviewed journals were published in the 47 countries of sub-Saharan Africa, averaging 6.9 journals per country. As pointed out by Smart (2005, p. 44) there is no definitive index of African scholarly literature, and accurate numbers are impossible to ascertain; however, based on information from African Journal Online, there are 402 titles listed on the site, averaging 4.07 per country.
The above indicators suggest certain conclusions or generalizations on the state of authorship of scientific journals in Africa:

a) The quality and quantity of scholarly articles tend to be low because of an unfavorable environment for African science authorship. For example, the low level of investment in scientists has translated into low salaries and negligible expenditure on equipment, housing and consumables. This implies poor working conditions, which obviously impact negatively on the productivity levels of scientists in knowledge production.

b) The low income of African academics, together with the impoverished state of university libraries, means that academics lack access to the up-to-date information they need to keep up with current developments in their field – a prerequisite for the planning, undertaking and reporting of new original research projects (INASP, p. 4)

c) The small number of scholars, coupled with the small number of scientific publications, makes it difficult for local journals to be published with the regularity and frequency required by international standards.

In addition to this empirical evidence, many factors influence the quantity and quality of scientific authorship, which require scientific investigation. For example, what is the amount of time spent by African authors reading scientific journals and scholarly monographs, what are the goals of African authors and readers of scientific journals, what usefulness and value do scientific information journals and monographs have for African scientists, what are the different modes and channels for accessing
scientific information by authors? Tenopir and King (2000, p. 128) found that, of all the resources required for a scientist to perform his duties, time and information are the two most important. They report that studies “over the years indicate that those who spend more time reading perform better or are high achievers” (p. 128).

Reviewing many different studies, Tenopir and King (2000) conclude that the total amount of time spent per university scientist writing an article and reading an article reflects their overall journal authorship. It is therefore necessary to investigate the amount of scientific information read by the African scientists, and the extent to which African scientists use journal articles and other documents as information input for scientific activities such as research and teaching. My attempt to investigate this issue using the existing literature yielded no results. The literature has little empirical evidence to provide any answers. Therefore, this study examines and presents factual data on these questions and a description of the current state of scholarly publishing including emerging trends in circulation, price and size of journals, frequency and regularity of publication. Attempts have been made to address questions on current trends in authorship and readership of scholarly journals, motivation to publish and factors that affect an author’s choice of a journal to publish in, and sources of access to information and the usefulness of information to the research community. The literature has little to say on why authors submit to a particular journal, what motivates them to publish, the mode of accessing scholarly articles, or challenges that affect them.
2.6.2 State of Editing/Peer Reviewing

The practice of peer reviewing, also known as refereeing, of scientific publications has been around for nearly 300 years. Its genesis has frequently been associated with the Royal Society of London, reported to have published the first scientific journal, *Philosophical Transactions*, in 1665, (Hames, 2007, p. 1; Kronick, 1990, p. 1321). The initial authorization for the publication of *Philosophical Transactions*, according to Zuckerman and Merton (1971, pp. 68–69), was the order that it be “first reviewed by some members” of the Council of the Royal Society of London. Since its institution, peer review has been observed as the process of “evaluating research findings for competence, significance, and originality by qualified experts” (Benos, Bashari, Chaves, Gaggar, Kapoor et al., 2007, p. 145).

Peer review holds an important position in the system of scientific knowledge production. Fundamentally “it maintains standards and ensures reporting is as truthful and accurate as possible” Hames (2007, p. 3). According to Goldbeck (2009), it confers legitimacy on the scientific journals, the authors and on the people who publish them and therefore able to influence the dissemination and progress of scientific research. It should be considered as a type of “scientific quality control or detection system” that ensures that only publications that are well conceptualized, planned and executed are made available to the scientific community (Hames, 2007, pp. 3, 7; Bloom, 1999, p. 789). Because of the reviewers’ important role in the scientific communication process, they have been rightly described as gatekeepers of science (Crane, 1967; DeGrazia, 1963; Hojat, Gonnella and Caeleigh, 2003, p. 75)
From several personal anecdotes and considerable opinion based on the literature, one can best describe the nature of editorial and peer-review process in Africa as arduous, if still inspired by pride and love of learning. The following is the personal story of an editor of an African scholarly journal:

The two scholarly journals I have edited have both [been] labors of love—and mainly single-handed efforts. The journal I currently edit has a proud record of 18 unbroken years in publication – rare in sub-Saharan African scholarly journals. My most recent predecessor was a member of the teaching staff who took on the publishing side as an extra commitment. (Pearce, 2003, p. 54)

She continues:

My responsibilities range over the entire production for each issue, from dealing with initial inquiries by potential authors to sending likely looking work to be refereed, handling all correspondence, receiving subscriptions and soliciting new ones, doing the copyediting and typesetting, and handling and supervising the production process. It is therefore less of a part-time commitment than it may appear and I never feel comfortable on holidays unless I have access to my email postbox, just in case I lose a remarkable author, alienate a subscriptions agency or miss out on a request to buy up our entire backlist. This is therefore the experience of one editor of one scholarly journal, with no claims that her experience is typical. (Pearce, 2003, p. 54)

Even though Pearce was modest in her last statement about the African editorship, based on the literature examined and the researchers experience, her experience is the archetypical rather than the exception. Teferra’s (2005) lament in the following quote makes Pearce’s experience the exceptio probat regularam, the exception that proves the rule.
Numerous institutions do not appropriately reward editors for their work; it is the same for reviewers also. Editors often work alone and without much—professional or technical—support. They juggle all responsibilities and duties of an editorial office by themselves acting as managing editor, copyeditor, production editor, marketing and distribution personnel and so on, often in addition to their regular teaching and academic responsibilities. (Teferra, 2005)

Describing the nature of peer review in Africa, Zeleza (1998, p. 29) says it is a poorly developed process, and though it is a policy of most African scholarly journals that their manuscripts must be refereed, in practice, some journals do not send manuscripts to be independently assessed. Pearce (2003, p. 57) says finding reviewers in Africa to review articles submitted to a journal is the beginning of the problems. In confirmation, Teferra says it is very difficult and sometimes just impossible to find reviewers in specialized subject areas to review an article and, sometimes when they are found, it takes them forever to finish the review, by which time, the author’s or editor’s interest in the publication wanes or the subject matter of the article has lost its relevance (Teferra, 2004; Zeleza 1998 p. 30). Both Zeleza and Teferra further question the integrity of the peer-review process. They think “the review process and the culture of unbiased critical judgment of scientific work are often not yet well developed” and that “this has the propensity in compromising the integrity of the work and scholarly ethics.” In the same vein, Zeleza believes that manuscripts are selectively assessed depending on the status of the author (p. 29). These problems, coupled with inadequate skills in editorial and review practices—copyediting, proofreading, design, layout and unreliable communication systems; the lack of resources for staff training and development, demotivated and “burnt-out”
staff; and poor distribution networks – have negatively impacted the image of scholarly journals coming from Africa. In addition, and sometimes related, to these problems, the quality of the majority of journals published in Africa, in page layout and design, graphics, copyediting, print quality and binding, remains poor (Altbach, 1998; Zeleza, 1998, p. 29; Teferra, 2005 p. 35; Pearce 2003). Pippa Smart (2005, p. 50) observes that, because of poor investment in writing and methodology skills, manuscripts submitted are of very poor quality and authors cannot improve the quality because they just do not have the skills. She concludes that “while many editors spend a great deal of time correcting submissions and liaising with authors, the lack of time and quantity or quality of submissions frequently leads to publication of weak articles—which is detrimental to both the journal and author” (Smart, 2005, p. 50).

When it comes to the “throughput” time for a published article (i.e., the average time it takes to convert a submitted article into a published article), Aina (as cited in Zeleza 1998, p. 30) reports that an article was written for publication in 1984, accepted for publication in 1987 and published in 1991. These undue delays, Bloom (1999, p. 789) observes, “[are a] the major temporal sink in the review process and affects a journal’s aggregate reputation.”

Finally, because of the above problems, journals from Africa are inaccessible, lack global presence and subsequently the significance of research is lost because few libraries in developed countries subscribe to them (Willinsky, 2006, p. 104). Cetto and Alonso-Gambia (1998) report that the head librarian of a major university in Europe confessed that “there is too little space left on the shelves to use it up with
journals that are not relevant even if they are received for free” (p. 89). After many years of doing research under the most difficult condition, African research is confined to the margins.

The literature so far on the editorial and peer-review process is largely anecdotal and largely based on the author’s experience. There has been little literature that systematically reviews issues about the editorial and peer-review process in Africa. While anecdotal evidence and opinions can be useful and provide a lead-in or a snapshot of a phenomenon, they are not necessarily representative of a typical experience and therefore do not provide sufficient evidence for scientific conclusions. This study employs a more systematic method to examine essential elements and issues involved with managing the editorial and peer-review process for scientific journals in Africa. This study further seeks to understand the motivation for one to participate in the editorial process in spite of it being arduous, demoralizing and uninviting. It further examines the role of technology in the editorial process and peer review.

### 2.7 The Research Libraries

University libraries are a critical part of any university’s research and teaching, and they play a crucial role in the creation, dissemination and consumption of knowledge and information. They are seen as intermediaries in scholarly communication systems in that they identify, locate and subsequently acquire materials to be used by their patrons (Tenopir and King, 2000, p. 97). Okerson (1996, p. 199) asserts that the library is the “indispensable mediator in the dialogue between writer and reader”
and therefore cannot be neglected in considering the dissemination of scholarly material.

Rodríguez and Angelica do Amaral provide one essential framework for evaluating libraries:

> The university library is necessarily a reflection of the social, political, economical and cultural organization of each country. In order to better understand university libraries, these should be studied at their environment, from which they cannot be separated. (2002, p. 4)

The above quotation implies that a healthy socio-economic and political environment is an indispensable and essential condition (*sine qua non*) for a healthy university and ultimately a healthy and thriving library. Guided by this framework, this section draws on previously published works of Rosenberg, Teferra, Altbach, Adebowale, Zeleza and others to understand current state of African university libraries and their role in supporting the scholarly community.

The deteriorating economic state of most African countries in the 1970s through to the late 1990s, examined by Adebowale (2001), Zeleza (2002, p. 11), and Teferra (2003), has been discussed in the early part of this chapter and therefore does not need repeating. But what is worth noting is the fact that these authors, including Rosenberg (1997, 1998a, 1998b), were all in agreement over the worsening social, political and economic environment and its impact on academic institutions and university libraries in Africa. In their estimation, the prolonged economic decline, unfavorable balance of payments and long-term debt financing, devaluation of currency, and high inflation rate, have led to the poor economic situation of many
African universities, in which there is a discernible steady decrease of government funding to universities. The decision of many governments in Africa not to fully fund university education is expressed by the educationist Kubi (2005) in the following statement:

Although, the government has acknowledged the role of university education … it has clearly stated its inability to act as the sole financier of tertiary education due to economic constraints coupled with the fact that there are equally important sectors of the economy that need to be catered for. (para. 8)

It is obvious that governments have lost any initial enthusiasm they had for university education, and at best, libraries are begrudgingly tolerated and are placed low on any national list of priorities. Since libraries in Africa depend on parent institutions for their operational budget, often there is no budget allocated to the libraries because the parent institutions themselves have inadequate funding to run the university system. The downside is that, when universities are able to allocate more money to libraries, expenditures on monographs and serials tend to decrease in real terms over the following years because of the upsurge in student population and constant weakening value of African currencies (Rosenberg, 1998a, p. 10).

### 2.7.1 Library Collections

In the midst of dwindling government funding for universities, the world has witnessed growth and maturation in science, founding of new disciplines and advancement in information technologies, which have resulted in an exponential proliferation of scientific literature. Scholarly monographs and journals have
witnessed growth of gargantuan proportions. The question of concern here is to what extent have African university libraries been able to maintain a comprehensive collection in support of the teaching and the research mission of academic institutions? What is obvious from the literature is that African university libraries have failed to maintain any significant level of collections. They have been unable to cope with the exponential growth and skyrocketing cost of scholarly resources. Journals in particular were priced out of reach of all individual and most libraries. The situation was made worse by the rising value of the US dollar against most local currencies; consequently, libraries in Africa were compelled to reduce the number of journals they buy.

Rosenberg (1998b, p. 74) observes in a study that “without exception, university libraries have been and continue to be underfunded … the amount now spent by universities from their own institutional funds on the purchase of books and journals is pitifully low.” Between 1993 and 1994, for example, the total expenditure on books and journals per student at the University of Ghana was $0.50, and $2.66 at the University of Cape Coast. The University of Dar es Salaam, Addis Ababa University and Kenyatta University spent a total of $9.00, $0.50 and $1.00 per student respectively. The expenditure per student for books and journals at Universidade Eduardo Mondlane in Mozambique for the same period was zero (Rosenberg, 1998a, p. 4). Ironically, at Kenyatta University, the lion’s share (93%) of the university library’s budget for 1995/96 was spent on university staff, only to have them take care of the empty shelves and deteriorating facilities (Rosenberg, 1998a, p. 4). This finding is consistent with the World Bank report of 2000, which says public
universities in Africa “devote up to 80 percent of their budgets to personnel and student maintenance costs, leaving few resources for infrastructure maintenance, libraries, equipment, or supplies—all key ingredients in maintaining a research establishment” (World Bank, 2000, p. 25).

According to Teferra (2003), since 1993, the University of Zambia has not allocated any funds to the library for the purchase of books and journals. Teferra points also to the University of Addis Ababa, which, in 1983, subscribed to 2,700 titles but lost its subscription to 2,574 titles because of its limited access to foreign exchange (p. 58).

Similarly, a study conducted in 13 African countries by the American Association for the Advancement of Science Library revealed that 28 out of the 31 university and research libraries studied had a serious cut in their subscriptions to journals since the mid-1980s (Teferra, 2003, p. 58). And in a 2000 survey, researchers and academics in developing countries ranked lack of access to subscription-based print journals as one of their most pressing problems (Tabachnikoff and Miller, 2008, p. 42).

The library’s inability to provide up-to-date scholarship “means that many scholars in Africa are disadvantaged. Their capacity to engage in cutting edge research is hampered by lack of access. They are isolated from formal communication networks, the global scholarly community and invariably remain behind research front, and are unable to set research agenda through cutting edge scientific publications” (Smart, Pearce, and Tonukari, 2004, p. 333).
This limited access is also reflected in the growing concerns of many scholars about the quality of available scholarly material and its relevance to their teaching efforts. The content of what is taught at the university generally harks back to what the teachers learned during their own degree studies, and students with no access to, have to rely on notes dictated by the teachers. And so the African scholar, scientist, researcher and student are behind their Western counterpart in the matter of access to information and therefore suffer a relative disadvantage (Goonatilake, 1993, pp. 259–267; Mchombu, 1991). According to Crowder (as cited in Mchombu 1991, p. 28) “many universities (and research centers) have lost their ability to make contributions in the theoretical and even applied sciences, and therefore to the solution of the continent’s problems.” In order to stay relevant and plug into global scholarly discourse, faculty and graduates students for lack of resources in their local libraries spent half their limited travel opportunities each year visiting libraries and bookstores (Willinsky, 2006, p. 102).

This is the lament of an African librarian, Ogunseitan (as cited in Arunachalam, 1999, p. 469): “Many people in our universities are not sure what is the state of science. Scientists often have to rely on what they are told, for example, by newspapers, by friends or by Time Magazine. How can such people ever become authoritative and confident scientists?”

Can the Internet and online publishing systems reverse this situation and allow research libraries to increase access to global research literature and increase global access to African research through indexing? This question provides justification for this study: reviewing the current state of research libraries with
special emphasis on ICT resources and how that is likely to impact scholarly communication.

2.7.2 Personnel in University Libraries

There is a sizeable number of articles and a few books on the development of library education in Africa (Lowrie, 1984; Marco, 1990; Gupta, 1997; Aina, 1998, Mchombu, 1991; Botha, 2007; Rosenberg, 1997). They typically highlight the role of notable individuals like Sidney Hockey (in Uganda), John Dean (Ibadan), Harold Lancour (Congo, Ghana) and Francis Otieno Pala (in Kenya) and organizations such as the British Council, UNESCO, and Carnegie in the development of libraries in Africa.

Aina (1999, p. 399) observed that, until recently, the majority of librarians in Africa were trained abroad. The first major effort at training librarians locally was in the early 1950s when UNESCO sponsored a seminar on the development of public libraries in Africa. By the early 1980s, the UNESCO World Guide indicated that there were only 16 African countries, and 19 library schools responsible for training and development of human resources for the continent (UNESCO, 1981) Today there are 28 institutions of higher learning in Africa that offer undergraduate and postgraduate courses in librarianship, information science, information management and related disciplines (Wilson, 2010).

But like most institutions in Africa, institutions responsible for training professional librarians have not escaped the historical baggage of economic hardship of many states in Africa, which invariably have affected university education. As noted
elsewhere in this chapter, the prolonged economic decline, and devaluation, unfavorable balance of payments and long-term debt financing, are visible in their impact on the state of education in Africa, and library education is not an exception. However, after many years of economic, social and political setbacks, the literature shows that training institutions in librarianship have done creditably well.

After almost 50 years of library education in Africa (Aina, 1999, p. 399), Rosenberg reports that, for most university libraries in Africa, “numbers of staff and numbers of adequately trained staff are at an acceptable level (Rosenberg, 1997, p. 34). Three years later, Carnegie validated Rosenberg’s study with a report titled “Revitalizing African Libraries: The Challenge of a Quiet Crisis” with the following statement. While acknowledging the challenges with professional development in Africa, the report says that “there is no lack of professionally trained librarians in university libraries” (Marton, 2000, p. 5). Gupta and Gupta (1997, p. 105), in their extensive review of library education in Africa, concluded in 1999 that, considering the slow and late development of library education elsewhere in the world, development in Africa is quite satisfactory.

This was the 1990s. The world has changed dramatically since then, and that change has introduced new challenges to the library profession. Libraries are confronted with digital technologies in the work place, information science concepts,  

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11 Aina reports that library education in Africa is barely 50 years old. The first major effort at training librarians locally was in the early 1950s when UNESCO sponsored a seminar on the development of public libraries in Africa. The seminar was held in Ibadan, Nigeria, in 1953. One of the resolutions at the seminar was the need to train librarians locally so as to suit the peculiar needs of the immediate environment. As a result of the conference, a fully fledged library school was established in Ibadan, Nigeria, in 1959. Since then, many library schools and information science schools have been established in the continent.
computer technology and knowledge management. These phenomena are designed to bring a shift in the ways we create, access and use information. The literature shows that the twenty-first century professional librarian in Africa is required to possess additional knowledge and skills required for work within the digital information environment (Baro, 2009, p. 215; Chowdhury, and Chowdhury, 2003). Tennant (as cited in Choi and Rasmussen 2006, para. 4) argued that “librarians are thus faced with the challenge of acquiring advanced knowledge and skills to augment what they have traditionally learned.”

Choi and Rasmussen (2006), in a study of what is needed to educate the future digital librarian, found out that, to remain competitive and relevant in the twenty-first century, “working in the real world of digital libraries,” one needs to be knowledgeable in “digital library design, digital preservation, digitization, and current digital technologies such as: OAI-PMH, metadata standards, XML, EAD, and TEI as well as courses on usability testing, human-computer interaction, Web design and applications, information retrieval, and cataloging” (para. 28)

Speaking of African library professionals, Baro (2009) thinks the same way:

Owing to the changing nature of librarianship resulting from the increasing amount of information available in digital format, DL education has become an important agenda within Library and Information Science (LIS) schools, to design and offer appropriate courses and teaching approaches for training competent digital librarians. (Baro, 2009, 215)

Chiware (2007, p. 4) agrees with Baro:

The training of librarians in information technologies that are used for building digital collections should be on hardware, software and networking
requirements for digital projects. This should involve the use of various computer hardware and software packages that are commonly used in building digital collections.


Although there is general consensus in the literature on the need for digital competency and skills for professional librarians in Africa, the literature is sketchy and inadequate on current level of skills on digital competency. While it is beyond the scope of this study to investigate in significant detail the skills/competency of library professionals, the study takes a limited look at the current level of ICT skills and competency among librarians in the sample and discusses how their skill can influence scholarly publishing or can enhance the activities of those involved in the creation and dissemination. In fact, as Campbell (2006) and Okoye and Anunobi (2008) pointed out, the digital age and subsequent transition from print to electronic media have compelled libraries to reposition themselves in order to be more responsive to the changing needs of the research community. A closer examination of the available skills/competencies of library professionals engaged in the information sector can only help understand how they can play an active role as equal partners/collaborators in the creation and dissemination of scholarship or how they can enhance the productivity of the research community.
2.8 Donor Support and Capacity Building in African Libraries

2.8.1 ICT Infrastructure

The issues of resource mobilization and sustainability as noted throughout this review continue to be among the most common challenges facing institutions of higher learning in Africa, particularly university libraries. Yet over the years, the literature suggests that many university libraries in Africa have made moderate but significant progress in the development of network infrastructure and research capacity (Partnership for Higher Education for Africa, 2003, p. 11; Africa University Network [AFUNET] and Bandele, 2009, p. 1).

While national governments are the main financiers of state universities, the literature seems to suggest that the international donor community is the kingpin of ICT infrastructure and research capacity development in Africa’s university and research libraries (Rosenberg, 1997; Alemna, Chifwepa and Rosenberg, 1999; Odero, 2003; Ng’ambi 2006; Akorful, 2007, p. 3; Odero and Mutula, 2007, p. 67).

Rosenberg (1997, p. 75), in his comprehensive review of the state of African university libraries, suggests that the continuous survival of university libraries in Africa, “lies in the support they have received from donor agencies, and that many libraries are highly dependent on external assistance for virtually any initiative—from acquisition of photocopiers, computers and staff training to the establishment of networks and databases. Odero and Mutula (2007) support that assertion when they stated, "Internet connectivity in some private universities …were all fully funded by
their parent institutions whereas public universities all depended on donor agencies, particularly the World Bank and Overseas Development Agency” (p. 71).

Furthermore, the WB (2009), in a report, “Accelerating Catch-up Tertiary Education for Growth in sub-Saharan Africa”, concurs with the position of the others that “The principal providers of funding for university research are foreign donor organizations” (p. 57). Finally, as recently as 2010, Tom Egwang, a Ugandan immunologist and founding director of Uganda's Med Biotech Laboratories, attributed the improved condition of African research capacity to continued dependence on foreigners who foot most of the bills: "If you look at any of the researchers who carry out any significant research in Africa, 99.9% of their funding comes from outside" (Egwang, 2010 in Nature News, 465). It is obvious from the literature the important role of donor organizations in Africa's capacity development effort.

The work of such organizations has been extensively documented, and the contributions they have made to library development in Africa have received due acknowledgement. In particular, Stephen Parker’s (1984) review of UNESCO’s role in developing countries provides an excellent account, and Beverly Brewster (1976) has charted the history of the US contribution between the years 1940 and 1970. The contribution of the British Council has been chronicled by Douglas Coombs (1988). And in recent years, Paul Sturges and Richard Neill (2004), Jones, Bailey and Lyytikäinen (2007) and others have documented the role of DANIDA, IDRC, NORAD and private foundations such as Carnegie, MacArthur, Ford, Andrew Mellon, and Rockefeller in supporting African universities currently.
For example, as mentioned above, the Partnership for Higher Education in Africa (a consortium of six major US foundations) announced plans to commit $350 million to African universities, with the intent of creating, among other things, “an eightfold increase in Internet bandwidth to a coalition of 11 African universities and two higher-education organizations” (“Six Foundations Commit”, 2005). The MacArthur Foundation finances projects in 65 countries with particular emphasis on “strengthening universities and academic infrastructure” (Akorful, 2007, p. 4). Between 2007 and 2010, the foundation committed about $10,760 million to Nigeria universities with the goal of developing ICT and research capacity (MacArthur Foundation, 2010).

The outcome of these initiatives is seen in the ICT infrastructural development across many institutions of higher learning in Africa. Steiner, Tirivayi, Jensen, and Gakio, (2004) observed that Internet access across the continent has been made possible in the twenty-first century, majority of university campuses are networked, using leased lines, and satellite downlinks (VSAT). The Africa University Network (2010), an organization working to enhance the ICT capabilities of African universities, has presented a poster showing the progress that some universities in Africa have made in ICT infrastructural development (AFUNET 2010). The Vice-Chancellor of the University of Education, Ikere, Nigeria, Prof. Samuel Oye Bandele, describes the current progress in level of ICT infrastructure: “The upgrading of African universities as shown by the acquisition of modern technologies and improved infrastructures is already leading to a gradual globalization of the environment of each university” (Bandele, 2009, p. 1).
Today, many functions in higher education in Africa have been affected by the increasing role of IT. Digital technologies have altered almost everything from course registration to library catalogs, from secretarial and administrative to human resource information systems, from teaching to research, from wikis or blogging to social networking. Responding to the growing dependence on IT, many universities in Africa have now established IT units/centers at various campuses across Africa to maintain all university networks, systems and tools and investigate new technology to assist the university community in their day-to-day duties. Although there is little information in the literature on the functions and responsibilities of these units, a closer examination of various university Websites gives a glimpse of what they were set up to do: the IT units of most of these universities are responsible for providing a help desk, managing the central computing facility, managing databases, developing network infrastructure, supporting electronic library resources, data security, document imaging, Web services, and electronic communications.¹²

After all that has gone into improving digital technology capacity in Africa, and now that Internet bandwidth and librarians' technical skills are improving, the next logical step in this strategy is to direct these developments toward the support of local scholarly publishing initiatives that will increase access to African research and advance local research capacities. This research examines how these ICT

infrastructural developments can be combined with online publishing systems to enhance scientific knowledge production and dissemination in Africa.

2.8.2 Improving Research Library Access and Resources

The growing recognition of the importance of access to knowledge in developing countries has also spurred a chorus of initiatives from organizations like INASP— with AJOL and PERii, WHO—with HINARI, UN(FAO)—with AGORA and eIFL.net originally initiated by Soros Foundation (Chan and Sely, 2005, pp. 5–6; Rosenberg, 2005 pp. 2, 8). The PERii program offers access to over 14,000 journal titles from 11 publishers plus approximately 20 databases, and country licenses available in Africa. The African Journals OnLine (AJOL), which hosts the tables of contents and abstracts of more than 250 journals with links to full text of over 80 titles, is accessible to university libraries across the continent. The HINARI (providing major journals in biomedical and related social sciences) and AGORA (providing journals in the fields of food, agriculture, environmental science and related social sciences) programs are available in all countries, and the eIFL program includes some journal packages, in particular EBSCO with over 10,000 titles (Rosenberg, 2005, p. 8).

This massive scale of support has been an important step towards improving conditions in African university libraries and giving African scholars access to research. Willinsky (2006, p. 102) is upbeat about this initiative when he remarks, “think of the difference that access to 2,000 life science journals will make to the University of Zimbabwe, for example, which has seen its journal collection in this
area dwindle from a high of 600 titles to 170 because of escalating subscription
costs over the last two decades.”

But, the reality is that these initiatives are leaving in their trail critical and
fundamental questions regarding content relevance, local capacity building and
indigenous knowledge production that need to be addressed. Glamorous reviews
abound on each cent spent by donors on every African institution of learning, but
conspicuously missing from the literature is the impact that these initiatives have on
the development of indigenous capacity. For example, what percentage of the
information in these packages is relevant to the needs of developing countries; what
percentage of information published in Africa is included in these databases in order
to give equal exposure for the work of scientists within these countries; and to what
extent do these packages go to strengthen indigenous knowledge production?

Pippa Smart (2005, p. 41) gives an example of a recent study that evaluated articles
on Medline. The study found that the topics covered in Medline had relevance to “the
United States and Europe, and are likely to have excluded the interests of Africa.”
These are staggering assertions. Altbach (1985, p. 142), an outstanding scholar and
authority on African higher education, observes that when it comes to content,
internationally circulated journals “tend naturally to cater largely for readers located
in the industrialized nations and not the small minority of their readers in the Third
World.” He states further that, “the Western journal generally pays relatively little
attention to Third World needs. They use scholarly and methodological paradigms
that are related to the major Western academic systems” (p. 133). He continues,
“the debates in their pages are Western debates, the scholarship reported is
Western scholarship based on Western concerns and using western data” (p. 133). These have given cause for concern over what is termed “the resurgence of imperialism, this time represented by knowledge dependence” (Ya'u, 2004, p. 11). It ignores the far-reaching consequences of intellectual and mental subjugation perpetuated by the domination of local information centers by foreign scholarship. Others, such as Silvia Federici and George Caffentzis, have addressed an undermining of “the production and distribution of knowledge in Africa,” making “it increasingly difficult for African intellectuals and professionals to carry on their work and participate in the global exchange of ideas” (Federici and Caffentzis, 2004, p. 81).

As Adebowale (2001) points out, the question is more than providing researchers in the developing countries with state-of-the-art content in mainstream science from the developed world. Rather, it is about ensuring that science content is produced efficiently locally and distributed effectively at home and abroad. In support of these views, Zeleza (cited in Willinsky, 2006, p. 104) suggests a “mutually beneficial network that reinforces productive capacity for all involved.” One that allows the “African research scholars to freely assert their intellectual autonomy; something they can achieve by publishing, without apology, in journals they control; by reading and citing each other, by demonstrating a greater faith in their own understanding of their complex and fast changing societies—for no one else will do that for them” (Willinsky, 2006, p. 104).

This concern of Zeleza is addressed by Willinsky (2006), who believes that the presence of the Internet provides the world with the opportunity to “establish an
equitable world information order, one that is moved beyond the colonial legacies of center and periphery in the geopolitics of knowledge” (p. 94). This position is what inspired this research: the conviction that the advent of the Internet, a new publishing medium already integral to the publishing process, has the potential to advance circulation and exchange of knowledge and to reverse the current state of declining access to research within an otherwise expanding global scholarly community. Considering the Internet as a new publishing medium may show that it provides better capabilities and a significant increase in access and circulation over print, and I am thus compelled to explore how this medium can contribute to strengthening scholarly publishing in Africa.

2.9 The Transition to Electronic Publishing

The gradual transition in scholarly publishing, specifically journal publishing, to electronic forms has been heralded as a promising avenue for research, easy access to information, increased access for users in the developing world and collaboration and fluid exchange of information between the North and the South. In addition, digital journal publishing, as it relates to financial and material constraints in developing countries, has the potential to circumvent the huge cost of paper and scholarly publishing subscriptions (Hussein and Priestley, 1999).

Unfortunately, electronic publishing has been viewed with a lot of skepticism, and the anticipated acceptance of online publishing has not materialized on the continent. There is tremendous inertia in academia, some scholars swearing that nothing can substitute for browsing bound printed journals. My concern is to
examine factors inhibiting the transition from print to online scholarly publishing in Africa in spite of the challenges—inaccessibility, lack of visibility, high production cost, poor print quality and inadequate circulation etc.—of traditional print journals. What are the overall implications of electronic journals to academia, publishers, libraries, researchers and those who fund them?

After careful examination of a heterogeneous collection of propositions backed with some qualitative data, observations, reportage and in some cases personal anecdotes, two lines of arguments emerged from the literature: those who are very optimistic about new communication technology and argue that the electronic medium holds the key to bringing African scientific scholarship out of the doldrums (Adebowale, 2002; Willinsky, 2006, 2003; Tomlins, 1998), and those who are optimistically cautious and therefore argue that the current digital revolution has serious potential to exacerbate the gulf between the North and the South (Arunachalam, 1999; Cetto, 1998; Chan, 2004).

Sulaiman Adebowale (2001), of the Council for the Development of Social Science Research in Africa (CODESRIA), holds the view that the Internet proffers great promise—speed, and easy access—for developing nations, “never seen in publishing since the advent of the Gutenberg printing press and desktop publishing combined” (para. 8). He debunks the argument that there is one Internet user for every 750 people in Africa, noting that “the figure could be misleading for journal publishers in this part of the world” (para. 10). He contends that Internet connectivity

13 UNDP World Development Report of 1999 estimated that there is one Internet user for every 750 people in Africa, 3 in North America and Europe, 125 for Latin America and the Caribbean, 200 for South East Asia and the Pacific, 250 for East Asia and 500 for Arab States, 2500 for South Asia.
in Africa started mainly in academic institutions, a place where scientific publishing occurs, and there is little evidence that the interest of universities in Internet usage has waned (para. 10). In defense of his position, he quotes a survey conducted by Jean Diouf (cited in Adebowale 2001), which states:

Eighty-five percent of researchers and libraries who use four journals published by CODESRIA have Internet access. It is noteworthy that 75 percent out of this particular group [i.e., the 85%] were from Africa alone (para. 10)

Ng’etich (2004), a sociologist and anthropologist expressing similar sentiment in a paper, “Old Problem, New Strategies: Internet as a Tool for Research in Africa,” believes that Africa is not only in a period of book famine but is “at the throes of digital famine” (p. 6). However, he has not dispensed with the idea that the Internet has the potential to solve these problems through electronic publishing and shared virtual libraries: African scholarship has long been undermined by lack of access and visibility, but the Internet affords African scholars the opportunity to break the chain of dependence. Failure to take the opportunities might result in Internet technology reinforcing the existing dependence on Western publications electronically as well (p. 9). Like many likeminded scholars, he concludes, “the ... Internet has the capacity to leapfrog Africa into the information age and narrow the information gap, which hitherto exists” (p. 1).

It should be obvious by now that the online environment portends interesting avenues for the developing world, and protagonists like Adebowale and Ng’etich and probably Willinsky, have good reasons to be upbeat for the developing world. However, bringing the literature examined to bear on this debate, it is important to
bring to the fore certain caveats, the ignorance of which will make it more difficult for the Third World to take advantage of the new information and communication technologies. This is where optimistic but cautious authors argue that the mal-distribution of access to ICT—telephone, computers, networks, Internet, bandwidth, socio-cultural and political factors—are major issues to be negotiated, misjudgment of any one of which could further isolate the developing world and reduce their role in the enterprise of knowledge production, dissemination and utilization (Arunachalam, 1999; Cetto, 1998; Teferra, 1998; Rosenberg, 2005).

As noted, it is a fact that a great deal of effort has been made to give to the research community in Africa access to growing quantities of electronic information resources. In 2004, INASP commissioned a survey of university libraries in English-speaking Africa. The purpose was, among other things, to provide an overview of the current state of digital libraries that are capable of supporting research universities. Below are some of the rather distressful findings.

Of the state of ICT, Rosenberg (2005, p. 7) says, “an adequate ICT infrastructure with a sufficient number of networked and Internet-connected workstations is essential if a library is to offer access to e-resources and develop e-services.” Yet 55% of the libraries in the study had a ratio of less than one computer to every 100 full-time equivalent (FTE) students, and 36% had a ratio of less than one computer to every 500 FTE students. Only 35% of libraries had 75% of their computers connected to the Internet, and 15% are not connected at all. Of bandwidth, the report indicates that many universities in Africa have an Internet connection of between 512 Kbps and 1.544 Mbps. Comparing this finding to what is available in
In the developed world, INASP reports that the current level of bandwidth in most African universities (512 Kbps to 1.544 Mbps) is what is typically used to connect individual homes in the West and cannot compare to Bristol University that uses a 2.5 Gbps link, which is 5120 times more than what the University of Dar es Salaam has (INASP, p. 1). The University of Jos, one of the better-connected universities in Nigeria with a student population of 13,000, according Miner and Missen (2005, p. 27), shares a single satellite connection, which provides 128Kbps, whereas the University of Iowa enjoys a 300Mbps connection to the Internet. The maximum data that a lecturer can download in the University of Jos is 128,000 bits of information per second, whereas a lecturer at the University of Iowa is able to download 3,000 million bits of information per second (p. 27). Teferra (2003, p. 79) observes that, in some countries, bandwidth for Internet access is very small, and downloading large files, even those that do not contain graphics and images, can be expensive and slow even if the information itself is free.

When it comes to cost, INASP (2003) reports the following:

- Makerere University pays about $22,000/month for 1.5Mbps/768Kbps (in/out), Eduardo Mondlane pays $10,000/month for 1Mbps/384Kbps, while the University of Ghana pays $10,000/month for 1Mbps/512Kbps.
- These figures indicate that African universities, outside of South Africa, are paying over $55,000/month for 4Mbps inbound and 2Mbps outbound.
- These figures are about 100 times more expensive than equivalent prices in North America or Europe.

In a study conducted at the six universities in Cameroon to evaluate Internet connectivity and access to both students and faculties, Willinsky, Jonas, Shafack and Wirsiy (2005, p. 6) found that only 10% and 40% of students and faculty
respectively had access to the university Internet. Surprisingly, the majority of faculty (76%) and students (75%) could use the Internet through public, commercial facilities rather than at the university or home. The cost of browsing at the commercial facilities for an hour is equal to a day’s average wage for the Cameroonian. Most importantly, the study asserts that the commercial Internet cafés are not licensed to provide access to free or discounted journals offered through programs like HINARI, AGORA and PERii.

Other infrastructural impediments, for example, lack of funds for purchase and maintenance of hardware and e-resources, frequent power cuts, limited library space, security of computers, speed and reliability of Internet connection, low levels of ICT literacy/electronic resource use among users, have debilitating effects on Africans in keeping pace with ever-changing communication technologies. These impediments cannot be ignored (Rosenberg, 2005, p. 14; Mine and Missen, 2005; Zeleza, 1997; Zell 1997).

Furthermore, Mine and Missen (2005, p. 35) suggest that the poor human infrastructural development—inadequate exposure and training of editors, academic staff and librarians in Internet and computing skills—is another challenge developing countries will have to overcome in order to build research capacity through online publishing. According to Rosenberg (2005, p. 14), the most important challenge faced by university libraries in Africa is that “Library staff were said to be particularly lacking in knowledge of teaching skills (for user education), electronic resource management (e.g. subscription negotiating skills) and electronic services
development. University administrators and academic staff were also found to have low level of ICT literacy.”

Complementing Rosenberg’s view, Zeleza (1997) and Teferra (1997) argue that most senior professionals running the universities in Africa, for example, were trained in a system that had not fully embraced fast-growing ICT, and they therefore still prefer the slow, paper-based peer-review process. Editors need to negotiate a steep learning curve when their journal goes online. Smart et al. (2004) observed that “there are no professional bodies in Africa that train editors, and only the most adventurous individual contemplates joining an (expensive) overseas professional body” (p. 333). They state further, “Commercially available training courses are beyond the reach of most universities and there are few, if any, courses designed to develop academic editing and publishing skills. Editors must learn by bootstrapping” (p. 333). Again, researchers are poorly remunerated and not properly recognized, which affects their morale and in turn affects scientific publishing.

Putting all these factors together, authors like Rosenberg, Teferra, Zeleza, Arunachalam and Pearce et al. have clearly established that, in spite of heavy donor investment, the dearth and expensive bandwidth, and debilitating economies in Africa pose structural disincentive, which has the propensity to widen the digital divide. These factors could account for some of the reasons why many countries in Africa are hesitant to make the transition from print to online scholarly publishing, in spite of the challenges with print journal publishing. Furthermore, the minimal communication technology essential for online journals and databases is lacking in
many developing countries, and this is a challenge to a successful implementation of online journal publishing African countries (Teferra, 2003).

Whichever way one looks at it, the point to reiterate is that the mal-distribution of access to ICT—telephone, computers, networks, Internet, bandwidth, as well as socio-cultural and political factors—are major issues to be negotiated, and the misjudgment of any one of these could further isolate the developing world and reduce its role in the enterprise of knowledge production, dissemination and utilization.

2.10 Economics of Online Journal Publishing

The literature reveals extremely complex economics for scholarly publishing, which is constantly undergoing considerable change, influenced by a host of stakeholders, each working hard to meet his or her own agenda. There are heated discussions and debates among these players. Such debates and discussions have no doubt generated different models, proposals, and methods for financing online journal publishing. Harnad (1997, pp. 18-27) outlines a model based on author page charges. Because publication is a vital component of research, Harnad argues that the costs of publishing should rest with the author and his or her institutions rather than the reader, who, as a taxpayer, has technically already paid for the research. This means that journals will be available for all users free of charge on the Internet (pp. 18–27). Halliday and Oppenheim report that this model is currently being tested on the New Journal of Physics (NJP) owned by the Institute of Physics Publishing (IoPP). Authors that submit papers to this journal are charged $500 before their
papers are published. Halliday and Oppenheim, (2001, p. 268) observe that the “primary factor militating against implementation of this model is the author fee” because authors are not used to contributing directly to the cost of acquiring journals. Fiswick, Edwards and Blagden (1998) propose that journals could be funded by a combination of author submission fee and subscription sales. They argue that the current system of journal publishing is flawed with inefficiencies. For example, referees, editors and authors are not paid, and those who consume (the readers) what is produced almost never pay; instead, they borrow from the library at no cost. Authors also do not make contributions to publishing costs even though they constitute the primary source of demand for published journals (Fiswick et al. 1998).

To correct these flaws, Fiswick (1998, p. 16) suggests a model that will see authors and readers contributing to publication costs, editors and referees being paid to encourage efficiency, and authors being paid royalties as a means of motivating them to submit high-quality papers to journals. Halliday and Oppenheim (2000) completely disagree with Fiswick’s model, saying, “their proposed solution is based on unsubstantiated assumptions about what motivates key players [authors] in the system. They present no evidence that academics wish to be paid for editing and refereeing journals articles. Further, direct financial remuneration for this work introduces motives that may themselves distort the system” (Halliday and Oppenheim, 2000, p. 63).

The literature further shows that the ongoing discussions or debate on economics of online scholarly journals is between two major players (stakeholders) within the
scholarly publishing community. The first group of stakeholders is described by Halliday and Oppenheim (2000, p. 59) as those who aim at an effective and affordable system for disseminating peer-reviewed scholarly journals. This camp is made up of people from within the scholarly community: faculties, librarians, scientists, students and institutional administrators. They argue that electronic publishing is cheaper than print publishing and that printing and distribution costs account for 70% of the total cost of journal production. This cost, however, is eliminated when one transits to online publishing (p. 59). They also believe, however, that “scientific research and ideas should neither be owned nor controlled by publishers, but should belong to the public, and should be freely available through an international online public library” (Wellcome Trust, 2003, p. 11).

On the other side of the debate are those with commercial interests whose preoccupation is aimed at exploiting the new technology to increase their profit margin rather than being concerned with using the new media to advance research and scholarship. These are corporate bodies whose functions as publishers are motivated by profit. They contend, as observed by Halliday (2000), that 70–80% of the costs of producing a journal are fixed, and variable costs like print and distribution account for only 20–30% of the total cost of production. Commercial publishers claim that other functionalities—ability to browse, search and print, good system performance, and links—found with online publishing more than compensate for any savings from print and distribution (p. 59). This debate has persisted for over a decade now, and yet there is not any economic model developed for online journal publishing that meets the needs of the various stakeholders: the commercial
publishers, the research community, and the originators and consumers of scientific research (Wellcome Trust, 2003).

The question is where do developing countries fit in these equations? Which of these models is tested, proven and applicable to developing countries? Little is found in the literature that addresses these questions. The literature reviewed so far is about the developed nations and the models that are being experimented with there, and thus contextualized within these nations. Little is known about how these models can be applied in developing countries where the economic, social, political and cultural environment within which scholarly publishing is practiced differs in so many ways from that of advanced countries.

For example, there are practical problems with the transition from currently paid subscription journals—in which the financial responsibility falls on the readers and libraries—to the online open access journal, in which the financial burden falls on the authors, the journals, research-funding agencies or government (Esseh, 2005). It is estimated that the average cost-per-article to an author to publish in an open access journal ranges between US$500 and US$1,600 and in some cases coalescing around US$3,000 (Houghton, Rasmussen, Sheehan, Oppenheim, Morris, Creaser, Greenwood, Summers, and Gourlay, 2009, p. 157). The challenge would be to ask authors, who have no source of funding for their research and are already disenchanted with an academic environment that is less supportive of authorship, to pay before their articles are published. This author-pay model is not realistic in Africa and has already been subjected to criticism because, as Abraham, Burke, Gray and Rens (2009) point out, “many felt it would disadvantage many authors from
developing countries and from disciplines, such as the humanities, that were not well endowed with research funding” (p. 27). Over the years, the funding of most scholarly journals in Africa has ceased to be the responsibility of governments; second, universities are not endowed with research funding; and third, local funding agencies have never played any active role in support of journal publishing. Therefore, to ask authors to pay before their articles are published may be a recipe for disaster.

Additionally, journal editors are overly anxious about other cost-related elements in online publishing: starting-up and maintenance costs, hardware and software costs, upgrading costs, connectivity and bandwidth costs, infrastructure costs, and value-added services costs. How are these costs going to be funded, and further, how can electronic publishing recover these costs? The literature so far offers little information that addresses these concerns. There is a complete lack of a body of research that has explored a cost model that allows the African scholar to assert financial autonomy over the publishing systems without depending on donor agencies for survival; a study that establishes a scientific model that factors in the economic, social, political and cultural environment of developing economies. Such an investigation is outside the scope of this study; however, this study provides a closer look at the various cost elements that affect print production and the digital implication for journal publishing.
2.11 Conclusion

Scholarly journal publishing is an area that is ripe for study, as little has been reported in the formal literature despite intense interest in the topic. The literature search did not yield systematic data on many broad issues confronting scholarly publishing in Africa, and this review has consistently pointed out the various gaps in the literature.

Although some relevant and useful studies have been reviewed, they are dated and there remain many questions that have not been addressed. There is not a current study that examines the essential elements in managing the editorial and peer-review process of scientific journals in Africa; there is little documentation and analysis of current African publishing practices from the perspective of journal editors, scientists, information technologists and librarians. There is little empirical study about the current level of digital competency and skills of library professionals and how that impacts the scholarly publishing process or enhances the activities of those involved in the creation and dissemination of scientific knowledge.

The most widely quoted studies, *Knowledge Dissemination in Africa*, and *University Libraries in Africa*, authored by the most acclaimed scholars in the field of scholarly publishing in Africa (Zeleza, Altbach, Teferra, 1998; Rosenberg, 1998), although still useful, have outdated statistics. Data from these studies are recycled in every new publication. The reality is that these data are not only dated but have become of less relevance in this rapidly changing digital age.
These studies were written in the context of their time, with due regard to the current
dominant ideas of that period, and those authors interpreted the evidence through
the eyes of their worldview. The world has, since the 1990s, changed drastically,
influenced by digital technologies. Over the past 20 years, these new digital
technologies have affected the production process of almost every aspect of
traditional print journals: from manuscript preparation through submission, editorial,
peer review, production, and distribution. Second, digital technologies seem to
provide answers to many limitations in the traditional scientific journal production
process; for example, issues relating to speed, timeliness, regularity of publication,
cost, visibility, accessibility and quality.

And on the heels of ubiquitous digital technologies and the sweeping transformation
of scholarly publishing, it is necessary that new studies, both qualitative and
quantitative, are carried out to investigate the current state of scholarly publishing.
They need to identify the underlying challenges and dilemmas of scholarly
publishing in African universities on the premise that appropriate and positive
measures could be taken only when a situation is well understood. This study
therefore addresses critical questions about scholarly publishing in sub-Saharan
Africa and the digital implication for editors, librarians and Information
communication technologists.

The current study examines the state of scholarly publishing in Africa, focusing on
emerging trends in authorship and readership of scientific journals, trends in
number, cost and circulation of Africa scholarly journals, usefulness of journals to
African scientists, and authors’ goals and incentive for publishing.
This study also highlights essential elements in the management of the editorial and peer-review process, the motivation and drive for reviewers and editors to participate in the process in spite of it being described as arduous, demoralizing and uninviting, the level of technical infrastructure supporting access to knowledge for faculty and students, the current level and patterns of access to online and print resources, both African and global, among faculties and students. This study further examines how changes in technical infrastructure over the last five years have affected scholarly publishing. It also provides a current review of the state of African libraries with regards to the level of ICT infrastructure, digitization, digital competency and skills of library professionals and how these impact or enhance the activities of those involved in the creation and dissemination of scientific knowledge. The research also analyzes the current level of bandwidth availability on universities campuses in sub-Saharan Africa and the role of the IT departments in supporting scholarly publishing. It further seeks to better understand the various technical, editorial and scholarly challenges involved in journal publishing today as well as the potential viability of online publishing systems from the perspectives of journal editors, faculty, students, university librarians, and IT administrators.
CHAPTER 3

RESEARCH ASSUMPTIONS

God suffers because there are such multitudes of souls to whom His sacred Word cannot be given; religious truth is captive in a small number of little manuscripts, which guard the common treasures instead of expanding them. Let us break the seal which binds these holy things; let us give wings to truth that it may fly with the Word, no longer prepared at vast expense, but multiplied everlastingly by a machine which never wearies—to every soul which enters life! (Johann Gutenberg as cited in Wilkie, 1883, p. 80)

3.1 Introduction

Over the last decade, several initiatives have been conceived to improve the information communication infrastructure through ICT in Africa. One hope of such work is to increase opportunities for African scholars to participate in the global knowledge exchange. However technological advances also tend to challenge traditional forms of knowledge dissemination in Africa. The aim of this study is to examine how the unfolding IT and globalization can be influenced through the adoption and utilization of online technologies (publishing systems) to reverse the marginalization of African participation in global scholarly discourse while exploring ways of improving access and circulation of African scholarship and research. This study is guided by three principal perspectives or assumptions about the value of a study intended to contribute to strengthening African scholarly publishing: (1) Willinsky’s Access Principle, a work that has roots in Rawls’ moral theory of justice;
(2) Altbach’s center-periphery perspective, rooted in postcolonial/dependency theory and as applied to the production of scientific knowledge in institutions of higher learning; (3) historical research on technological impact on knowledge manipulation with particular reference to McLuhan, Ong, Ballantyne and Eisenstein’s magisterial treatment of the second major communications shift from manuscript culture to printed communication.

In *The Access Principle: The Case for Open Access to Research and Scholarship* (2006), John Willinsky contends that technology, specifically the Internet and digital publishing, provides creative options and tools to advance access to research: “That it is well within the capacity of the information technology provided by this infrastructure to provide greater public access to this public good known as research and scholarship, without diminishing its quality and quantity” (p. 10). Willinsky then put forward the access principle, which states, “A commitment to the value and quality of research carries with it a responsibility to extend the circulation of such work as far as possible and ideally to all who are interested in it and all who might profit by it” (p. 5). The access principle points to the fact that, while technological innovation creates avenues for greater access to scientific research and information, there is a moral obligation that places responsibility on the equal sharing of knowledge. Society has the duty to facilitate the creation of knowledge and the obligation to circulate the knowledge so created as widely as possible. This is a universal human right grounded in moral reasoning and moral theory (Britz and Lor, 2003).
Contrary to such a principle, academic dependency theory shows the unlevel playing field of international division of scientific labor, where the world is seen as consisting of systems and subsystems, dominant and dependent, core and periphery, metropolitan and satellite, where the subsystem and the periphery are characterized by smallness and communication barriers; where the center is the cynosure of knowledge production and circulation; and where knowledge from the periphery is subjugated to epistemological and cultural characteristics of scholars in the core. This academic dependency brings to question a strong ethical argument based on what Britz (2003, p. 168) termed distributive and contributive justice as well as the right of access to the intellectual efforts of “others.” That is to say, to what degree do actors within the two basic spatial systems (core and periphery) “acknowledge and declare information and its means of production, management and circulation as common goods towards which each social actor has rights and responsibilities, in order to ensure the minimal equitable conditions for the overall development of intellectual creativity?” (Human Rights in the Information Society, 2003).

The following assumptions, which guide this research, will assist in addressing the above question.

1. That technological innovation in the publishing medium provides, or imposes on society, new methods of knowledge manipulation (i.e., knowledge generation, preservation, transmission and retrieval) and provides incremental opportunity for faster and wider dissemination and accessibility of information, an absolutely indispensable condition, *sine qua non*, for the progress of science as whole.
2. While it is true that new technologies have greatly increased the speed at which communication of cultural products and information is propagated throughout the globe, leading to world integration and interdependence, technology has also served as a tool for a continuing marginalization of developing economies in the production and circulation of knowledge; to that degree circulation of science and knowledge have not grown evenly from a historical perspective but circulation has been marginalized within the scope of imperial legacy.

3. The adoption and utilization of online technologies (e.g., publishing systems) have the potential to circumvent the unfair scholarly disparities at the global level as well as provide opportunities for Africans’ participation in global scholarly discourse.

3.2 A Brief History of Communication

As this study argues for the importance of this latest technological innovation of the Internet for communication, it might be helpful to present a brief overview of previous developments. Walter Ong (2002, p. 11), who draws on the pioneering work of Milman Parry and Marshall McLuhan to address the characteristics of oral culture and scribal culture, observed that oral culture which was not touched by any knowledge of writing or print relied on thought and its verbal expression within cultures to manipulate knowledge. Ong noted that physical and behavioral artifacts were used to store, manage and transmit knowledge. Oral culture developed mnemonic schemes/patterns to help in memory retention of thought (Ong, 2002, p. 11). Ong, who saw “writing” as technological invention, posited that scribal/writing
technology transformed the way information was manipulated and thereby shaped and powered the intellectual activity of modern man (Ong, 2002, p. 83). This position is corroborated by Jason Mittel (2009), who states, "Writing enables modes of thinking such as historical and scientific reasoning, which arguably could not thrive in an oral culture" (p. 403). With a writing material (clay tablet, wood or parchment), ink, a hand-sharpened feather quill and a scribe, knowledge or thoughts that resided in people were transferred onto a writing surface. A copy of a clay tablet or parchment ensured the generation, preservation, dissemination and retrieval of knowledge as required across time in a highly efficient and accurate manner only in comparison to oral culture. A processed clay tablet was almost indestructible and served as a temple archive, but it was not very convenient as a means of dissemination. Imagine expending hours scoring a message into a heavy clay tablet and then having to transport it. Yet this technology and succeeding ones – papyrus, wax tablet, parchment and scroll – provided new approaches to how information is generated, stored, transmitted and retrieved as well as offering avenues for greater circulation and access to knowledge. The written word broke the power of the few who possessed knowledge in oral traditions and propelled human beings into a new era of knowledge and change (Gurumurthy, 2004, p. 6).

Then came the technological innovation that led to the production/invention of paper. Eisenstein (1983), who has an intimate familiarity with the great narrative of modern history since the fifteenth century, shows how unwittingly the invention of paper created new opportunities and facilitated the manipulation of knowledge in a new way. "Paper production," she says, "serves the need of … literati; it quickened the
pace of correspondence and enabled more men of letters to act as their own
scribes" (p. 47). The gradual transition from scrolls to codices, and the widespread
use of paper as a new writing medium, improved the quality and portability of text
preservation, the quality of access to information and even the cost of production
(Eisenstein, 1983, p. 598; McLuhan, 1962, p. 134). The availability of paper as the
new medium of communication meant that great thoughts could be written,
circulated with speed and be widely read. Paper provided the mass means for
disseminating and storing knowledge. Goldschmidt (1943, p. 102, cited in McLuhan,
1962), illustrates the extent of the invention of paper on access to information when
he says, "soon after 1300 the expensive vellum could be dispensed with and the
cheaper paper made the accumulation of many books a matter of industry rather
than of wealth" (p. 134). The extreme monopoly on knowledge by the wealthy with
their empires over many lives could not hold longer, as paper enabled access to
knowledge by ordinary men of letters. But this was still a scribal culture, and the one
major constraint at this point is that the only way to reproduce written work was by
hand, a painstaking task. Spreading information to the larger society and over long
distance was a difficult task and did not allow for effective dissemination of
information.

Then five and a half centuries ago, the son of a noble family of Mainz in Germany,
named Johannes Gutenberg, invented the movable type printing press. The advent
of the press led to a veritable explosion of knowledge, allowing the general public to
have access to information that had not been available to them before. Print
technology "standardized and preserved knowledge which had been much more
fluid in the age of oral manuscript circulation” (Briggs and Burke, 2002). Eisenstein’s magisterial treatment of this second major communications shift – from manuscript culture to printed communication – shows how, unlike the high cost of scribal works and the laborious time of copying that often led to slow spread of ideas, the printing press allowed rapid dissemination of information, which subsequently created a knowledge and cultural movement that were far harder to exterminate. To that degree, Eisenstein argues that the advent of the printing press was a revolutionary historical event of great significance, especially in Europe. Here again we see how a new publishing technology created new opportunities and opened new channels of dissemination and access to knowledge.

The new publishing medium allowed direct access to the source of information that was contained in the Scriptures, which ultimately disintermediated the leaders of the Catholic Church and the wealthy (Jukes and McCain, 2001). Politically and socially, the printing press broke limiting boundaries – the knowledge monopoly of the Church and the wealthy – creating an environment for balance flow of information, open participation in the communication process, and in the spirit of access principle free “circulation of ideas as far as possible and ideally to all who are interested in it and all who might profit by it” (Willinsky, 2009, p. xii). Print gave wings to the Ninety-Five Theses of Martin Luther and was “circulated as far as possible and ideally to all who were interested in it” – to both clergy and lay, rich nobles and poor farmers, regardless of class, worth or status at an era when such notions were important to the social order. Opening access was the spirit behind Gutenberg’s invention,
opening access was the primary catalyst for the reformation, opening access was the principal prod that sparked off the scientific revolution.

The emergence of the scientific journal in the seventeenth century offered a serial publication in which the established community of scientists could communicate their discoveries under a society's authority and according to its scholarly judgment. Henry Oldenburg, the creator of the journal *Philosophical Transactions of the Royal Society of London*, engaged the service of print technology to attract some of the finest European scientific authors to register their discoveries in the journal. His use of this new medium of publishing eventually served as defining moment in the European scientific movement (Guédon, 2001). And of this Eisenstein indicated that, because of the technology of printing press, scientific knowledge spread more rapidly at that time than at any other time in previous history. Handwritten letters had limitations in the degree to which they convey scientific result, but the journals extended the circulation of scientific discovering and enabled scattered scientists to keep abreast of each other (Eisenstein, 1979, p. 460; Chodorow, 2000, p. 88).

These accounts by mostly Western historians are grounded in the belief that printing was a fundamental agent in the creation of Western civilization; as a result, the narratives they present are fundamentally European in orientation (Ballantyne, 2007, p. 342) Situating the print technology within the framework of eighteenth-century colonial and European empire-building history, however, shows regional divergence and differential cultural significance. That is to say, the impact of the Gutenberg’s press appears starkly different if viewed from the perspective of the developing world. In the book *Agent of Change: Print Culture Studies after Elizabeth*,
Eisenstein, Baron, Lindquist and Shevlin (2007, p. 158) lay out their thoughts on the differential cultural significance of print technology with the following statement: “Just as print broke down the one set of ancient, enduring, limiting boundaries, so too it helped create and erect new limits that would continually need to be broken down in successive ages, across cultures as well as around the globe.” In their opinion, while the medium of communication throughout history defined a new architecture for knowledge generation, preservation, transmission and retrieval, thereby fostering “self-conscious, cosmopolitan western European intellectual community,” it serves as an agent that helped solidify narrower national parameters in other parts of the world.

3.3 Postcolonialism

This leads to the second assumption of this study: that while it is true that new technologies have greatly increased the speed at which communication of cultural and information is propagated throughout the globe, leading to world integration and interdependence, technology has also served a tool of fostering the tradition of marginalization in the production and circulation of knowledge in developing worlds; to that degree, circulation of science and knowledge have not grown evenly from a historical perspective but have been marginalized within the scope of imperial legacy. It is important to note that it is beyond the purview of this dissertation to provide a systematic summation of the interrelationship between print and colonialism; however, it is very necessary to observe how print culture fostered and
continues to foster the tradition of marginalization in the circulation and the production of knowledge in developing worlds which are the legacy of imperialism.

First, Ballantyne (2007, p. 345) in *What Difference Does Colonialism Make?* pointed out that, while printing was integral in the developing process of the colonies, its goal in general was to promote the agenda of an imperial system. He argues that the printing press was an agent for empire building and a tool in the hands of colonial administrators, missionaries, ethnographers etc. to pursue cultural projects of colonialism in the vast part of Africa etc. To the degree that “the ‘textualization’ of indigenous cultures in Africa, South Asia and the Pacific, was a crucial foundation of colonial rule in many, if not all, colonial contexts” (Ballantyne, 2007, p. 345). Sounding a similar note, Goh (2007, pp. 109–111) thinks that the ethnographers responsible for textualizing the native cultures were devotees of the “metropolitan ideologies that guided the imperial hands” and “were part of the colonial officials directly involved in the imposition of dominance over the society being studied (Goh, 2007, pp. 109, 111); they therefore privileged text as a way for colonial administrations to ensure continuous domination over the colonies (Mani, 1986 as cited in Burton 1994). The textualization of native society was to produce ethnographic knowledge that could be applied to inscriptive colonial administration and hybridizing – the grafting of Western modalities of cultural life onto conquered worlds – education of native elites (Goh, 2007, p. 110). Thus Ballantyne argues that, while printing text was the “very basis of the day-to-day function of imperialists, the process by which they were created profoundly altered the knowledge they recorded, disembodying these traditions, wrenching them free of the traditional
social contexts of knowledge transmission to revalue them as an aid to the operation of imperial authority.” As far as the colonial administration was concerned, the printing press was a crucial means to systemize and disseminate colonial knowledge. The colonies were flooded with moral tracts, textbooks, and “enlightenment texts” and “improving literature”—“designed, as it were, to inculcate the value of domesticity, work, Western learning and science” (Ballantyne, p. 453) while gradually and purposefully instilling in them a sense of inferiority complexes and the notion of congenital incapacity.

Ballantyne further reveals how the missionaries and protagonists of “useful knowledge” considered print as vital bridge of intellectual engagement between European and non-European, but the colonial administration feared indigenous printing because indigenous people were considered agents of obscenity, resistance and rebellion. And therefore it was a matter of utmost importance, for the colonial administration, for instance, to guide, guard, police and create a regime of surveillance, as it were, to carefully control the knowledge of the colonies that found their way into printed text (Gupta, 2000, pp. 89–118; Darnton, 2001, p. 138; Buckingam, 2007, p. 218; Ballantyne, 2007, pp. 345–346).

When Baghdelleh and Makange of Tanganyika, now Tanzania, found their voices in print by publishing in the Tanganyika Standard in 1958, three years before independence from British rule, they were clear about the need for a postcolonial sensibility:

All of us know that the Britisher is here in our country for the purpose of sucking our blood and to obtain for himself raw materials and let him not
deceive us that he is here because he is sorry for us or for the purpose of teaching us civilization or to bring progress to the country ... That sort of talk is just meant to pull the wool over our eyes and the longer he stays here the more minerals and money will be taken out of this country and sent to his country in which without us they cannot continue to exist comfortably. (Tanganyika Standard, 5 July 1958, p. 3 cited in Scotton 1978, p. 14)

Baghdelleh and Makange were charged with sedition and served six months in prison with, I imagine, hard labor. And when Julius Nyerere, a teacher and leader of the Tanganyika African National Union (TANU), printed the following under colonial rule in 1958,

At once time trouble was reported in Mahenge, and on inquiry I learnt that the DC [...] has already closed down a TANU branch before being posted to Mahenge.... This evening I am interviewing an elderly gentleman from the same area [Songea]. ...this DC is now instigating people to make false accusations against TANU. He has already dismissed a subchief who refused to give false evidence in court against TANU. These same officials would have people committing perjury in court if only to villify TANU. These same people who intimidate and punish innocence, cajole and reward crookery, have the temerity to invoke law and order. (Tanganyika Standard, 12 August 1958, p. 1, cited in Scotton 1978, p. 14)

He was charged with criminal libel, found guilty and given a choice of six months in jail or a $375 fine. He paid the fine, saying he did not want to become a martyr.

Similarly, Buckingham (2007, pp. 218–220) describes how, in Mexico and Peru, viceroyes were at the mercy of the Crown, and printed materials came only from approved printers back in Europe.
As a part of this colonial mentality, Europe had established itself as the epicenter of knowledge production from which flows this knowledge to the outliers. Knowledge spun from the centers of righteousness in the West reflected an ideologized orientation to the barbarian and unrighteous in the margins (colonized countries) who needed cleansing. Indigenous cultures and knowledge were treated as “others,” through their exclusion and marginalization, while English identity was preserved as cultured, mannered, *compos mentis* and rational. Knowledge gleaned from the subjugated colonial world countries was only useful as long as it served the imperialists to tighten their rule over the colonies’ knowledge for ruling others (Hans-Jürgen Lüsebrink, 2006). The press was controlled by the colonial powers, and the voice of the “common man” in print was carefully mediated and compromised by the colonial texts that host them (Newell, 2009, p. 3). Even more pernicious is the fact that the colonial powers have become the sole actors in the knowledge production and dissemination field, who identify and control the direction and quality in the knowledge spheres, and most importantly find ways to use the technology to layer new inequalities upon the old. This had a perfect fit to “media imperialism” as defined years later by British scholar J. Oliver Boyd-Barrett: “The process whereby the ownership, structure, distribution, or content of the media in any country are singly or together subject to substantial external pressures from the media interests of any other country or countries, without proportionate reciprocation of influence by the country so affected” (1997, p. 117).

At the heart of the problem is the imbalance and asymmetric access to the printing technology that (drove) propelled various forms of domination. The center-periphery
structure epitomized in the world-system theory to explain dependency theory and how it is enforced by the role of technology (Wallerstein, 1974; Vernengo, 2006; Dairity and Davis, 2005; Maswana, 2009). Maswana argues that technology is "just one more area through which the Centre consolidates its economic, [intellectual] and cultural domination over the periphery. Thus, the control of technology or its exclusive mastery by one class or country can also justify uneven development" (2009, p.72). This dependent/center-periphery relationship extends the economic and cultural period of colonialism so that printing technology becomes one device for intellectual domination and marginalization.

In comparison, it is obvious at this point that Eisenstein and McLuhan’s compelling list of social change brought about in Europe by printing technology was very much different, according to the literature, from what happened in Africa and other parts of the world. Instead of breaking new boundaries, print help create and erect new limiting boundaries. Instead of opening access to knowledge and divergent views, print helped create an extreme monopoly of knowledge by colonial powers and selectively disseminated information to whom they so chose in order to foster the biases, whims and caprices of the metropolitan ideologies. Printing technology served as a tool of instilling in the native a sense of inferiority complexes and the notion of congenital incapacity. The technology was so controlled that the voice of the ordinary citizen in print was carefully mediated and compromised. The printing press, which afforded inclusivity in Western Europe, became a tool that strengthened the imperial centralized control and marginalization of unorthodox
voices, to the degree that peripheral countries were left out of the intellectual discourse that is at the very foundation of print culture.

After more than 50 years of independence throughout Africa, the practice of subjugation through threat and force is nearing an end. Racist assumptions about the black African’s inability to rule may be over. The period of concerted effort designed to maintain the exploitative colonial relationship between colonial masters and black Africans may also be over. But Africa is still fighting a new form of colonialism termed knowledge neo-imperialism or “academic neo-imperialism” or “academic neo-colonialism.” This is so because, though independence has been attained, the West continues to have monopolistic control and influence over the nature and flows of scientific knowledge (Alatas, 2003, p. 602).

Wallerstein (1974), in his famous book *The Modern World System*, views the world as a system that has the characteristics of an organism. The world is made up of core states, semi-peripheral areas, and peripheral areas. These are necessary structural elements in the world-economy based “on a series of dimensions, such as the complexity of economic activities, strength of the state machinery, cultural integrity” (349). Wallerstein employed the phrase world-economy to delineate the widespread cultural and economic link that European colonialism had promoted in the late fifteenth to nineteenth centuries. Years later, Galtung and Vincent (1992), Traweek (1992, p. 103) and Hwang (2005) employed the metaphor of center-periphery encapsulated in the world-system theory to describe the phenomenon of global communication and in the daily production of scientists and scientific knowledge. Alatas applied the center-periphery structure to explain academic
dependency where scientific endeavors in certain countries (periphery/dependent) are conditioned by the development and growth of the scientific endeavors of other countries (centre), to which the former is subjected. Alatas speaks to the postcolonial aspect of dependency theory: “According to academic dependency theory, the social sciences in intellectually dependent societies are dependent on institutions and ideas of western social science such that research agendas, the definition of problems areas, methods of research and standards of excellence are determined by or borrowed from the West” (2003, p. 603).

Evidently, these frameworks, though borrowed as they may be from a variety of disciplines and ideologies, have relevance to this study, particularly as applied by Altbach. This is because this study examined the systems of knowledge production and circulation in Africa, but more specifically, knowledge production systems in African institutions of higher learning in view of the fact that the bulk of scientific knowledge produced in Africa comes from the universities and research institutions. However, it is important to note that, although the emphasis is on African universities and institutions of higher learning, the knowledge production system of any nation is not only influenced by endogenous factors but by external factors, particularly the functionalism of the global knowledge production system.

Altbach (1981) tends to see the center-periphery not only as relating to the profound inequalities in the global knowledge production system but more specifically as it relates to knowledge production within universities in the industrialized nations (centers) and their counterparts in the less developed countries (periphery). Altbach (1981, p. 602) makes a stark distinction between how universities in the center and
those in the periphery engage in knowledge production: According to Altbach, core institutions/countries in knowledge production:

- Are research-oriented, prestigious, and part of an international knowledge system. Their libraries are large and their laboratories well equipped. The central institutions have access to the bulk of research funds, produce a high proportion of the doctoral-level research degrees, and are recognized as leaders. …The apparatus of knowledge access and distribution is concentrated at the center. Major publishers of scientific materials, the prestigious academic journals, and the like are predominantly located at the centers. Scholars tend to gravitate to the centers for advanced research and “refresher” training. Central universities are, almost without exception, located in the central nations—those countries with high per capita incomes, a high level of technological development, substantial academic traditions, and possess all the infrastructures of intellectual life. (1981, p. 602)

The opposite is true of the universities in the peripheral whose structure for scientific endeavors are small, have less qualified scientists, lack a critical research mass to undertake research in many fields; they suffer a “variety of disabilities” and tend to be located in poorer nations.

The challenges or what Altbach termed “disabilities” facing institutions in the periphery are discussed elsewhere in this chapter. However, it is important to examine some important factors that have made this center-periphery theory relevant today. One of these factors is that the means of knowledge production, access and distribution is concentrated at the centre and has oftentimes been used to the disadvantage of those in the periphery.
The core countries with strong economies are host to some of the most outstanding laboratories, the majority of world scientists, highly rated libraries and knowledge production technologies. Because of these and furthermore the weight of their resources which cannot be matched by those in the periphery, the core tends to dominate and have a stronghold on knowledge production. The lack of access to similar resources in the periphery puts knowledge production at a very high cost. For example, in a country like Ghana, with five state universities, two major university presses were established in the early 1960s to produce literature, both textbooks and works of scholarship (Ampen, 2004, p. 101). For printing equipment, one of the presses has a 1980 Nuarc 26-1K Mercury Exposure System (Darkroom Camera). This equipment has been out of production for many years and could be counted as museum pieces or antiques in the developed world. Replacement parts have been improvised over and over again because manufacturers stopped producing those machines several years ago. The latest print technology available on the market, which is used by those in the developed world, is many light years ahead of what is found in most parts of Africa, for the simple reason that the technology does not come cheaply and often is out of reach of many institutions of learning.

Unpropitiously, every consumable material—paper, ink, fountain solution, films, plates, contact screens, dampening solution, including masking tape—that goes into the production of a journal or a book has to be imported from the center with foreign currency at an exchange rate that is often determined by the advanced nations. Nothing in print production is locally produced, not even the duct tape used by layout artists. Soon after independence in Nigeria, all that was needed to buy a $1.00 piece
of “masking tape” from the US was NGN1.00. The value of the US dollar was the same as the Nigeria naira. But today, for the same masking tape, you need NGN150.125. In sum, the cost of print production is so high that many institutions of higher learning in Africa are unable to afford it. Although print technology has opened new opportunities for wider circulation of knowledge, the lack of access to these technologies reinforces the inequalities existing in knowledge production and has created more barriers. Again, the lack of access to technologies, the high production and distribution costs and the other "disabilities" of publishing scientific research within the periphery universities make institutions in the periphery produce what Hwang (2010, p. 392) termed “subsidiary knowledge,” or rather they are unable to produce what Altbach (1998, p. 3) termed “advanced scholarship.” More challenging is the fact that, when researchers have surmounted all the endogenous "disabilities" within the research environment in the periphery, their ability to produce and make available their findings to the wider scholarly community is conditional on certain externalities constructed by the scientific community in the core, which often disadvantages the periphery.

Traweek (1992, p. 103) has pointed out how “scientists are more likely to be [judged] meritorious if they are from Europe or North America [the core] (and male).” Woe betide you if you are from the periphery because you “have the disadvantage of [your] knowledge claims requiring approval from an international scientific community through [a] self-referential system in science and technology” (Hwang, 2005, p. 393). Subsidiary knowledge is subject to analyses that are biased to the core and the core is often suspicious of the quality of scientific work done in the
periphery. Your best chance in the global scholarly arena is to make friends in “high places” or relocate to the centre. Abdus Salam (as cited in Gibbs, 1995, p. 2), a Nobel Prize-winning physicist from Pakistan, observes that when a scientist whose paper has been rejected "goes abroad for postdoctoral study, the change of address makes all the difference"; and Ana Maria Cetto (as cited in Gibbs 1995, p. 2), a Mexican physicist at the National Autonomous University of Mexico, similarly observed that even in her field, "numerous colleagues have mentioned that their articles co-authored with collaborators in the US are much more easily and promptly published than those of similar quality and content that they write alone." That is making friendship in “higher places.” The reverse holds true. Calvin Morrill (as cited in Traweek 1992, p. 104) of Harvard candidly observed how American scientists routinely call into question research observations made by their counterparts in Brazil, even if those scientists were trained in the United States and now live in Brazil. To that degree, “many researchers in the developing world feel trapped in a vicious circle of neglect and … prejudice by publishing barriers they claim doom good science to oblivion” (Gibbs 1995, p. 92). It is now very difficult and almost impossible for a peripheral university to attain central status in the international context or become a major actor within the global scholarly community, because the price of entry is so high.

This evinced a supposition that the periphery has nothing to contribute—a supposition which has no validity (Globalization and University, p. 65) and is at variance with the access principle which advocates for South-North cooperation that will lead to “equitable world information order, one that is moved beyond the colonial
legacies of center and periphery in the geopolitics of knowledge,” an equitable information order that goes beyond the Westernization of “others,” by opening access to other scholarly traditions and diverging voices (Willinsky, 2006). In the same line of thinking, Britz (p. 162) arguing on the principle of human rights, a principle which is at the core of the access principle, suggested strongly that “the equal sharing of knowledge (North-South and South-North) is a moral obligation that we cannot escape. It must therefore not fail to accommodate the information poor in the South.” In fact, if we can step back from the distortion created by the center-periphery dichotomy and begin to see the research community as one universal system functioning together in search of answers to the problems common to humanity, and therefore the need to depend on each other’s research result to succeed, society can establish that equitable information order. Scientific research can only be maximized when it is shared on an equal basis, when isolated thoughts are acknowledged in global scholarly discourse, and when there are no impediments to the circulation of ideas even from the periphery. Borgam (2007, p. 15) once said that “scholarship is a cumulative process, and its success depends on wide and rapid dissemination of new knowledge … Society overall benefits from the open exchange of ideas within the scholarly community.”

Another way that Altbach articulates the concept of center and periphery is that the inequalities between the core and periphery, in knowledge production capacity, have turned scientists from the periphery into basic consumers of science produced from the core. They have become dependent on the core for basic research principles,
formulas, concepts and interpretation of scientific advances which often are

Unfortunately, the consumption of science from the centre by the periphery comes at
a high cost to the periphery. To keep pace with information needs, libraries in
developing countries have to spend their entire university budget on serials from the
core. Sadly, development within the academic community within the last few
decades—the transformation of knowledge into capital commodity, a commercial
system that supports a business model that has become unsustainable, escalating
high costs of serials above the cost of living, rate of inflation, currency fluctuation
and budget cuts—have drastically reduced serial holdings in libraries in Africa and
have deprived the periphery access to what is produced in the centre. The impact of
the serial crisis was so acute that even leading research libraries in developed
nations could not keep pace with escalating journal costs. Association Research
Libraries in North America (ARL) is quoted as saying, “The current system of
scholarly publishing has become too costly [in the core] for the academic
community.” This point was re-echoed by the finding of a study by the Wellcome
Trust UK, which indicated that “[t]he current market structure does not operate in the
long-term interest of the research community” (The Wellcome Trust, 2003, p. iv). If
universities within the core could not sustain the information requirement, then one
can imagine the devastating impact on the universities from the periphery.

How can knowledge-producing institutions anywhere in the world (center or
periphery) make any meaningful contribution to global scholarly discourse if students
from those institutions have no access to current textbooks, nor access to scientific
journals, but rather rely on outdated notes dictated to them by professors whose only
source of information is a notebook they inherited from their professor when they
were students? How can scientists contribute to global scholarly discourse when
they are at the point of no access and are totally disengaged from their peers within
and outside? One reason that the periphery has been at the margin of knowledge
production and often excluded from global scholarly discourse is that “small scientific
communities in developing countries are almost always found to be in a situation of
no access or insufficient access to the flow of scientific communication” (Estaban,
1994, p. 5).

The high production and distribution cost of journals, the transformation of
knowledge into capital commodity with its inherit prohibitive cost of serials, the
decreasing access to research in a knowledge society, the current inequalities in
production and distribution of science, the publisher’s goal of increasing profit margin
instead of circulation, are factors that have drawn attention to an “access principle”
in scholarly work. The access principle is about transferring knowledge “from the
close cloister of privileged well-endowed university campuses” (Willinsky, 2006, p.
33) mostly found in the developed nations (center) to poorer institutions in
developing countries (periphery). The access principle is about expanding shared
knowledge across scientific fields. It is about broadening the circulation and
exchange of knowledge and more importantly expanding the presence of research
globally. The access principle is crucial in helping narrow the knowledge-producing
gap between the center and periphery because “when a scientist has access to
scientific communication and information, he or she can be a potential or actual user
of systems for communication among scientists and a potential producer of scientific knowledge. This explains the nourishing effect of communication among scientists on the production of new knowledge” (Estaban, 1994, p. 5). Thus a system of scientific innovation is a byproduct of knowledge and knowledge has always been a major input for the process of new scientific knowledge: knowledge begets knowledge. And knowledge only qualifies as knowledge if it is circulated as widely as possible, if it stands the test of appraisal and reviews and is able to further other scientific inquiries (Willinsky, 2006, p. 6). A wider and efficient accelerating circulation of research empowers those in the periphery to actively participate in a global scholarly discourse at a more equitable rate than they have done under the constraints of traditional publishing.

The two important factors that have given impetus to the access principle are first, the inherent limitation in the traditional publishing process, along with escalating journal prices, which over the years have worked to impede the accelerating circulation of knowledge globally. The second is the advent of the Internet, a new publishing medium already integral to the publishing process, with the potential to advance circulation and exchange of knowledge and to reverse the current state of declining access to research within an otherwise expanding global scholarly community. It is upon this second factor that the third assumption of this research is premised that: the adoption and utilization of online technologies (publishing systems) have the potential to circumvent the unfair scholarly disparities at the global level as well as provide greater opportunities for Africans to participate in global scholarly discourse.
Centuries after the industrial revolution, we are witnessing the throes of another astonishing shift in human civilization – the information and communication technology revolution. The new information and communication technologies, especially the Internet, have been seen as ushering in an unprecedented possibility of knowledge manipulated. The Internet phenomenon of the last two decades has matured very quickly into an online revolution that has fundamentally changed knowledge production, dissemination, preservation and retrieval. Before this, over the last 300 years, the printing press contributed significantly to the scholarly community, for example, the establishment of a community of scientists who could easily communicate their discoveries that helped bring about the scientific revolution; the press helped scientists bring knowledge closer to the people. One cannot doubt its impact on the preservation and dissemination of scholarship.

However, over the years and with passage of time, information generation and distribution mediated entirely by the printed word has widened the gap between the core and the periphery, which is further exacerbated by the relentless focus on knowledge capitalization and stakeholders’ value which has rocketed journal prices above the means of most academic libraries particularly for developing economies. There is now well-documented evidence of the devastating effect of the current traditional publishing systems on the scientific community in Africa (Levy, 1993; Rosenberg, 1997; Willinsky et al., 2005, p. 93; Hoppenbrouwer and Kanyengo, 2007; Sawyer, 2004; Olukoju, 2002; Onari-Okemwa, 2007; Wirsiy, 2007). Africa’s huge journal collections built during the 1960s and 1970s were drastically reduced in strength, showing how the buying of new scholarly monographs and journals ground
to a halt and so also the intellectual activities of the research community, because both students and faculty lack the one most essential resource (the scientific journal) that will assist them in staying current in their field and facilitates their participation in the global circulation of knowledge (Willinsky, 2006, p. 93)

More disturbing is the fact that, after carefully navigating all the eco-socio-political challenges, the little science that is produced in Africa falls short of reaching the global knowledge sphere because it is too expensive to publish or what is published lacks visibility. Rosenberg (as cited in Willinsky, 2006, p. 103) illustrates how several scholarly monographs had been prepared to camera-ready stage for printing at the University of Cape Coast but could not be published because of the high cost of print production. Zeleza (1998, p. 23), in an article published in 1998, showed how nine out of the nineteen journals that were started in Nigeria met their demise not many years after they had started possibly because of a lack of funds to meet print production costs. The high cost of print production as discussed earlier in this section was one major factor that limited African research dissemination capacity. Also print journals in Africa have limited print runs, limited reach and therefore limited visibility. The reason is that print journals demand physical dissemination, but most countries in Africa lack that efficient distribution network to disseminate as widely as possible the little research that is published. The journals published suffer from the slow and unreliable African mail systems, resulting in limited distribution that seldom goes beyond the borders of the countries in which the journals are published (CODESRIA, 2006, p. 2)
The lack of visibility of African research journals has manifold consequences: journals cannot be abstracted for indexing; the journals will lack articles from scholars because they do not know the existence of the journal or are discouraged from writing for lack of support; lack of articles means journals cannot be produced in a timely manner. They lack a reputation, which forces authorities to set evaluation systems that tend to privilege publication in foreign journals instead of local journals. The lack of reputation also means the journals cannot attract reputable reviewers and editors globally and soon, for these and other reasons, journals cease to exist. So, even though print journals have served the academic community well since the creation of scientific journals in the seventeenth century, the traditional publishing system is failing, because of the inherent limitation of print production, coupled with the monopolistic-elitist nature of the journal publishing industry.

### 3.4 The Internet Opportunity

Today, time and technology are changing to the degree that we can say that they have changed irrevocably with the advent of the ICT and, more specifically, the Internet. And there is strong empirical evidence that new online publishing systems have the potential to circumvent most of the current constraints to traditional scholarly publishing in Africa. The new online publishing systems provide alternative publishing platforms for information; we are thus compelled to explore how this new medium can contribute to an increase in access and circulation over print in Africa.

As a facilitator of global knowledge exchange, the Internet provides a system of interaction that is quicker and more efficient than traditional scholarly publishing that
involved scientists exchanging materials by post. African scholars have the opportunity to share their intellectual output in a timely and efficient function with the rest of the world. As rightly observed by Ng’etich (2003), the Internet creates a single community linked by telecommunications networks where scientists “look beyond their usual environment (may it be national or disciplinary) and acknowledge the value of publications produced elsewhere. Thus, the Internet as a research tool liberates scholars and researchers constrained by social, legal, political, economic, and geographical constraints associated with traditional print media” (p. 5).

Ng’etich’s observation parallels the access principle which is concerned with using the emerging Internet technology to promote greater “global circulation and exchange of knowledge, while expanding research presence in the world” (Willinsky, 2006, pp. 33, 206; Nwague, 2005). The Internet is providing a different sort of global system in which the intellectual resources from the periphery (Africa) are far more globally present. In his spirit, Nwague (as cited in Ahmed 2007, p. 17) argues that “the beauty of a truly globalized world would lie in the diversity of contributions by all country members of the world. A less than multi-colored global community would have omitted variety and diversity; such a community could not be considered truly global.”

Stating the obvious, online publishing systems provide a host of changes: faster and instant extraction of journal articles for indexing, therefore increasing visibility and citation impact (Lawrence, 2001, Kurtz 2004; Willinsky, 2006, p. 23); trimmed-down publishing process, ensuring efficient online management of journals (Kinne, 1999, p. 2); reduction of throughput time and for that reason timely publication schedules;
globally instant marketing, promotion and distribution, and accessibility in cyberspace; useful value-added features like hyper-linking to large scientific bibliographic databases and datasets (videos, audios) (Bevan, 2001; Youngen, 2001; Garfield, 2004; Shine, 2004, p. 222) and most importantly reduction of production cost (Kinne, 1999, p. 2; Houghten et. al., 2009).

As Hamel observed, the Internet is the best thing ever to have happened to African nations (cited in Ahmed 2007, p. 23) in that it provides great opportunity for knowledge sharing and reduces the isolation of those scholars in the periphery. Online publishing systems have the potential to remove access and disseminating barriers and with time narrowing the knowledge gap between the core and periphery. This study was therefore conceived with the belief that Internet technology has the potential to remove access and disseminating barriers between the core and periphery and with time, bring African scholars closer to the center of global knowledge exchanges. There is therefore the need to strengthen the research capacities of the continent through the adoption and application of online publishing systems.

That power wielded by commercial publishers, who decided who, when, how to have access for the journals which they control, is now being shared in the case of a good number of journals with consumers of scientific information – faculty, students, libraries and even the citizenry – because of the incredible technical advances in information technology. When the first online journal was published in 1989, reaction from the publishing industry was such that no one hoped for a future for online academic journals. But as Willinsky (2006, p. 14) reported, in 2005 there were
20,000 journals that had moved to online editions. Today, according to a Scholarly Publishing Practice Survey (2008), it is estimated that 86.5% of titles in the arts, humanities and social sciences and 96.1% of journal titles in science, technology and medicine are now available online. Further, empirical studies are showing an increasing preference for electronic journals within the academic community. The rate at which UK university libraries are switching from print to electronic subscriptions is illustrated in the Figure 3.1.

Figure 3.1 The Use of Print Vs. Online Journals in UK Universities

These data show a strong inverse relationship between the demand for electronic journals and print journals in which an increase in the volume of e-journals results in a decrease in the volume of print journals, strong evidence that the primary means of gaining access to knowledge in scholarly articles is fast shifting to e-journals.
The *Journal of Scientific Research* (JSR) was the first international interdisciplinary journal to operate from Bangladesh.\(^{14}\) The journal, which was launched online in 2008 using the Open Journal System, had within the first and second months of launching, seen a dramatic increase in submission rate from five continents. By the third quarter of the first year of JSR, it had received a total submission of 145 articles. Because of the high volume of submissions, the journal, which was originally planned to publish one issue a year, quickly increased the number of issues to three, plus one print volume a year. This experience is never possible with traditional print journals. Hardly will a print journal, including those from developed nations, within its first year of operation receive 145 submissions from five continents of the world. To quote the editor of the journal, Dr. Azharul Islam,

> The advantage of the online editorial system is that the multidisciplinary reviewers from far and wide are now available relatively easily, which is considered a major constraint with the conventional editing system. At the beginning of June we had 209 reviewers registered with the system (in a little over 9 months). Only 20% (roughly) of these enlisted reviewers are personal contacts or were recruited by me. In terms of visibility, online publication is a great benefit as readers need only visit the website rather than have a publisher send the print journal to their library or directly. (Islam, 2009, p. 1)

After many years of frustration because of its inability to meet the needs of its scholarly community, the Pakistan Higher Education Commission (HEC) introduced the Pakistan National Digital Programme (NDLP) in 2003, with the mission of

\(^{14}\) During a science faculty meeting at Rajshahi University in 2008, the idea to launch a journal that would publish high-quality scientific work was hatched. At this time, according to Dr. Azharul Islam, “no international journal (online or print) with an interdisciplinary character, specifically catering to the academic needs of the international community, operated from Bangladesh.”
building and strengthening the research capacity of the academic community. In 2008, the project coordinator, Hassan Zaidi (cited in INASP, 2009), indicated that “a typical university in Pakistan now has greater access to electronic journals than most universities in both Europe and the United States.” About research output, Hassan indicated that “there has been a 161% increase in physics research papers alone produced between 2004 and 2007. This continues to increase with all having been produced in peer-reviewed international journals. More generally, between 1997 and 2001 (pre-HEC) 3,260 articles were published whereas in the 6 years post-HEC 8,224 articles have been published—this represents an amazing 152% increase.”

This relationship between online access and rate of scientific output is confirmed by a study in the UK which shows a “clear correlation between levels of use of e-journals and research outcomes, with more usage linked to the number of papers published, number of Ph.D. awards and income from research grants and contracts.” The study indicated that these correlations are independent of institutional size.

Finally, in Latin America, various online publishing initiatives – Latindex, Scientific Electronic Library Online (SciELO) and Red de Revistas Científicas de América Latina y el Caribe (RedALyC) – were implemented to compensate for the weak traditional scholarly publishing system. The resultant impact of those initiatives is a reported 13% increase in Latin American journals offering open access compared to 3% in Canada/US and 2% in Western Europe (Haider, 2005).

These examples are illustrations of the potential value of the new online publishing systems and the enormous opportunity they offer the scholarly community, especially those in the periphery. The growth in online journals, the high rate at
which the scientific community is shifting to online journals and the relative impact of online access to research productivity is a clear indication that online publishing is the way forward for the scholarly community. Willinsky’s discourse on the access principle has particular relevance for public access to information, and it has taken the particular form of open access to research and scholarship through author self-archiving of articles from subscription journals and the publication of open access journals. As Willinsky elaborates, “The open access idea is not simply a child of these new publishing technologies. Efforts to improve access to knowledge have a long and venerable history” (Willinsky, 2006, p. 30). This new approach to publishing scholarly journals ensures that the “concepts of openness and publicness became prominent in the self-description of modern society, pointing to the relevance of access to information and inclusion” (Schiltz, Verschraegen and Magnolo, 2007, p. 162).

This is not to ignore the many eco-socio-political and institutional factors that weigh heavily against scientific research activities in Africa. We also acknowledge the continent’s ICT infrastructural challenges that have the potential to negate any gain that online publishing systems may proffer. But recent developmental initiatives by the international and regional community provide a strong indication that Africa is gradually making significant progress in the ICT capacity development and therefore a timely opportunity to, at least, explore the potential benefits of online publishing systems.

In 2005, the World Bank devoted $800 million to increasing the Internet connectivity of developing countries (Willinsky, p. 96); the US government has been supporting a
five-year, $15 million Leland initiative to support Internet infrastructure in twenty-one African countries (Adeya and Oyelaran-Oyeyinka 2002, p. 31; Willinsky, 2006, p. 96). In addition to other initiatives, that space does not allow to be listed here, in 2009, a new high-speed undersea fiber optic cable (Seacom) connecting East Africa to the rest of the world was completed (Blenford, 2009). A year before, a single fiber optic cable called the South Atlantic 3/West Africa Submarine Cable (SAT-3/Safe), that runs up West Africa, was also completed. Marine fiber cables now circle the African continent and bring high-speed Internet to Africa. The East Africa fiber optic cable with a 1.28 Terabyte per second connectivity will allow East Africans to access the net cheaply and in greater numbers. Meta-analyses of recent studies show that, while the digital divide is still at its most extreme in Africa, networked readiness is beginning to increase rapidly. Internet access is now possible in every state in Africa, from 14 countries in 1995 to reasonable connectivity in the entire continent by the turn of the century (Jegede, 1995). Studies further show that, by 2007, Internet users in sub-Saharan Africa had grown fivefold to 33 million, nearly 4% of the population (Juma and Mayor, 2008). Currently, Internet growth rate is some 30% per year (Internet World Stats 2009 and AHE 2009). The change is recent and steep.

It is an accepted fact that this rapid growth of Internet access has not been even in countries across Africa but mostly confined to the major cities, very few small towns and cities being networked. Even the level of penetration at universities has been described as “too little, too expensive and poorly managed” (Gakio, 2006) in relative terms. Yet experts like Mike Jensen (2000) indicate that universities are the vanguard of Internet development in Africa. The highest number of Internet users
surveyed belongs to universities in Africa and NGOs, while more and more universities in Africa are establishing Campus Area Networks (Gyapong, 2002; Lwehabura and Matovelo, 1999). ICT infrastructure on university campuses continues to grow, albeit at a very low pace. Internet connectivity continues to shift from dial-up connections to wire, fiber or radio link and satellite connections; average bandwidth increased in 2006 by 31% uplink, 63% downlink in African higher institutions from what was reported in 2004; there is a continual marginal fall in bandwidth cost; campus networks are present in 97% of the academic institutions (Gakio, 2006); and there are IT units at almost every university in Africa (Lwehabura and Matovelo, 1999, p. 224).

With these levels of ICT infrastructural development, what is there to stop Africa’s research community from exploring the potential benefits of online publishing systems to their scholarly activities? In the words of Willinsky (2005, p. 118), “were the spirit willing, the technology is ready.” There are those who argue, and factually they may be right, that the technology has the potential to exacerbate inequality between the center and the periphery. They are quick to dismiss the modest gains made in ICT infrastructural development on the continent as they compare it to what is available in the center. Is that to suggest that Africans should wait until every household and village has access to computers, and are fully networked and have full access to high speed broadband Internet before we actively engage the technology in our professional activities? In fact our refusal to engage these technologies in our institutions, governments, professions and social lives is to move the continent backwards in time to some moment before the Industrial Revolution. In
fact, history teaches us that developing countries were slower, during the Industrial Revolution, to adopt industrial technologies, and consequently fell behind in economic development. History should not be seen as repeating itself. The truth is that even in advanced countries, which have become the standard of comparison and measure, there are many households that still do not have access to computers and the Internet. In July 2008, it was reported that 17 million people in the UK did not have access to broadband Internet. Another report by the Royal Geographical Society, UK, says a third of households in the UK do not have access to the Internet. In 2009, nearly 5 million residents of North Carolina alone did not have access to high-speed Internet. But this has not stopped the US, the UK and other developed countries with similar demography from fully exploiting the benefits of network technologies.

Though the provision of ICT infrastructure remains one of the key challenges facing Africa as it builds an information society, Africa cannot sit back any longer. Africa cannot wait to attain 100% ICT infrastructures before exploring the potential of online publishing systems in fostering the dissemination of science. As Abdus Salam (1988), the Nobel Laureate in physics observes, “in the final analysis it is basically mastery and utilization of modern science and technology that distinguishes the South from the North.” They can emancipate the individual scientists in developing countries with technical resources, for the first time, to close the gap between the center and periphery (Arunachalam, 2004). As the Access Principle explains, the Internet, as a new publishing medium, provides better capabilities that provide a significant increase in access and circulation over print, and we are thus compelled
to explore how this medium can contribute to strengthening scholarly publishing in Africa.

These three assumptions provided the framework for this dissertation. This study was designed to examine first how the current system of traditional publishing has provided, or imposed on, Africans incremental opportunity for faster and wider dissemination and accessibility of scientific knowledge, an absolutely indispensable condition for the progress of science as whole. Technical and economic issues of traditional scientific journal publishing – authorship, readership, editorial and peer-review issues, as well as the level of science resources in African academic libraries – were studied with the goal of knowing if the traditional scientific journal publishing process has also contributed to the marginalization of African intellectual discourse within the global scholarly sphere.

Second, this study assumed that the new online publishing systems have the potential and can enhance capabilities to remove access and disseminating barriers and with time bring African scholars closer to the center of global knowledge exchanges. On the basis of that assumption, this study also examined the current state of information communication infrastructure within academic institutions of higher learning and the degree to which they have been engaged in the production process – editorial, peer review, publishing – of scientific journals, including level of technology resources available in library, current technology expertise/experience in library and interests in, and sense of value of, library publishing scholarly journals.
This study was designed with imbedded elements of reciprocity, as discussed in the next chapter. Stakeholders – journal editors, faculty, scientists, authors, postgraduate students, librarians, and IT administrators – were provided with training in online publishing systems in exchange for information. Within a workshop environment, stakeholders were exposed to recent development in the online publishing environment and how free open software could help ensure efficiency within the online management and publishing process of journals, and how new online publishing systems could ensure journals’ economic sustainability and opportunity to increase access and dissemination to knowledge. The workshops provided a hands-on opportunity to see how these new online publishing systems work. Participants provided relevant answers to questions relating to needs in infrastructure, faculty working conditions, current technology expertise, technology resources, technical requirements, and publishing budgets for print versus online.

The information provided by participants, which became the basis/unit of analysis for this study, gave the investigator the opportunity to access and to gauge the opinions, interest and sense of value of librarians, journal editors and scientists utilizing online publishing technologies to support and strengthen local research cultures and capacities.
CHAPTER 4

METHODOLOGY

4.1 Introduction

The present study sought to investigate the state of scholarly publishing in sub-Saharan Africa with particular reference to editorial practices, cost structures, technical aspects, and distribution patterns among a sample of African journals. In trying to identify the major challenges and opportunities that lie ahead for these journals, this study examined the scholarly communication infrastructure with special reference to the level of online/print resources available to the research community, as well as the likely impact on scholarly publishing of current levels of ICT resources in research and academic libraries. Further, this study sought to determine if there was a sufficient basis for introducing new online communication technologies and publishing systems into this context as a means to strengthen scientific communication in SSA.

The research questions that define the parameters of this study have been presented above (p. 4). In order to address the research question, the methodologies described below were adopted. The remainder of this chapter includes descriptions of this study area, research design, population, sampling techniques, and further details regarding specific methodologies used in data collection and analysis.
4.2 Research Design

Existing literature on the state of scholarly publishing in Africa is based largely on anecdotal information. Other sources have presented hard data which, while verifiable, do not offer a broad enough picture of the current situation. In any event, there remains an erroneous perception of scholarly publishing in Africa, and in response, certain lexicons and rhetoric have been mobilized to inaccurately characterize the situation. When investigating a field in which little or no previous research has been conducted, it is necessary to employ an appropriate empirical research method capable of eliciting useful and accurate information from the target population. In this case, this study established breadth of a research population by surveying and holding discussions with authors, editors, publishers, graduate students, faculty, scientists, librarians, IT staff, and university administrators, all of whom are active within the scholarly community in SSA. This study’s mixed-mode approach to the research questions utilized a combination of surveys and workshop discussion, requiring both quantitative and qualitative analyses of the data.

4.2.1 Research Method (Mixed-Mode Surveys and Workshop Discussion)

Babbie (1995) has stated that “survey research is probably the best method available to the social scientist interested in collecting original data for describing a population too large to observe directly” (p. 270). It ensures that we make factual as opposed to conjectural statements about the world, that is, statements based on evidence as opposed to statements based on suppositions or hunch (Guppy and
Gray, 2008). Survey research is well defined, and follows precise procedures which, when followed closely, yield valid and easily interpretable data.

With respect to the present study, survey research can provide comprehensive insight into a) the current diversity of scientific/scholarly communication practices within the research community, b) the various organizational and technical forces shaping scientific communication, and c) the disposition of respondents towards the adoption of emerging electronic infrastructure for scholarly communication. As Mertler states (2009 p. 83), the “ultimate goal of survey research is to learn more about the current status of a reasonably large population either by surveying a subset (known as a sample) from the population”; by this we can measure attitude, orientation, attributes or opinions, and information that is not available from secondary sources (Babbie, 1995, p. 257; Salant and Dillman, 1994, p. 9).

However, the fact that this research is being conducted in developing nations poses its own challenges with respect to survey research. Bulmer and Warwick (1983) observed that survey design in developing countries presents a paradox so far as sample design is concerned. They noted that, although some of the most advanced applications of survey methods have been conducted in developing countries, standard surveying principles could pose formidable problems in developing countries. They argue further that survey research, which originates in the West, is foreign to many developing countries, and that standard sampling textbooks were not written with developing countries in mind. Therefore, the application of standard principles of sampling in developing countries without recourse to associated social, cultural and linguistic boundaries will fail to achieve the desired results.
Although not directly related to this research, Chikwanha (2005), Coordinator with the Afrobarometer Network, provides an excellent example, when she cautions that the land resettlement exercise in Zimbabwe has altered the demarcation of enumeration areas, and until a post-census count is completed, researchers must refrain from using outdated population lists. As Chikwanha (2005, p. n.a.) further states, “whereas reliable samples can be drawn, [survey] work is often affected by the sometimes-poor quality of maps that do not keep up to date with changes in land use patterns.” She illustrates how, in 1999, Zimbabwe had maps that dated to the pre-independence era (1980), and that these did not indicate post-independence infrastructure development or any contemporary settlement patterns. Bulmer and Warwick (1993) also illustrate the practical difficulty researchers can encounter, in their analysis of two contrasting cases of sample designs in Syria and Somalia. In addition, Mitchell (1993, pp. 219–240) documents the poor quality of sampling frames used in a variety of Asian surveys.

If selecting a sample seems problematic, gaining access to respondents and establishing rapport with them can be even more daunting. Describing the frustration of accessing respondents, Chikwanha (2005) points out that poor road networks mean that researchers often spend considerable time getting to where respondents are, and even then, they may have additional difficulty in locating respondents. Long-term and seasonal migrations are other factors that can impede access to respondents and lead to low response rates (Mitchell, 1993). Although it is not customary to seek permission to contact respondents in established democracies, Chikwanha reports that in Africa, refusal to seek permission from relevant
authors—village headsman, or the cabinet minister—can hinder sample area penetration. In this sense, respect for traditional authorities and local customs are two vital elements that can significantly impact response rates. For example, selected respondents are more likely to cooperate with the researcher if they are informed by the community leaders (regarded as “gatekeepers”) about the purpose of the study and the reason for their particular selection (van der Reis and Lombard, 2003; Hershfield, 1993). Stycos (1993, pp. 53–63) noted the advantage of doing so, reporting that “after the relevant leaders had been contacted and had given their approval for the survey, there were usually comparatively lower refusal rates in developing countries.”

SSA’s characteristic tense political environment, where almost a quarter of the sub-continental region is in political turmoil, is another major challenge for researchers. For example, in 2002 (Chikwanha, 2005), when president Bakili Muzuli of Malawi attempted to change the constitution in order to serve a third term in office, the political tension was so high that researchers were labeled either anti-Muzuli or pro-Muzuli, and were thus prevented from entering certain areas of the country. In another case, research respondents in the Kunene region in Namibia refused to give interviews because they feared that interviewers were recruiting for political parties (Chikwanha, 2005).

Generally, we can see that local community values and behavioral norms can seriously impact the potential success of survey research in developing economies. In the book, Survey Research in Africa, Drake (1973, pp. 58–59) states, “the failure to spend time socializing [in developing countries] dooms many a project to failure
and destroys any chance of [representativeness].” Van der Reis and Lombard (2003) advise that researchers can gain valuable advice on the structure of a given village and its people as input into a valid sampling frame if researchers spend some time with the village headsman. Recognition of local customs and practices can thus help cushion the perceived intrusiveness of non-indigenous approaches to research and information gathering: “The Western researcher’s concern for efficiency and getting on with the job [is] simply not the African way of doing things” (pp. 8–9).

Consequently, the social-cultural and political environments in many of these economies cannot be ignored if one expects to successfully conduct research projects. Of course, none of these challenges is particularly unique to Africa, or even developing countries generally, but as noted by Bulmer and Warwick (1993, p. 146) and referring to Africa in particular, such difficulties are “more frequent, more severe and more intractable” than in developed countries.

Because the researcher has lived in Africa for over 38 years, worked as a lecturer in a leading university for 12 years, and participated in many research projects in socio-cultural environments similar to those described above, the inherent challenges of conducting survey research in Africa have directly informed the present study’s methodology. As a result, and in an effort to steer clear of the inherent pitfalls of conducting research in Africa, a strategic decision was made, based on expert opinion, to adopt a mixed-mode methodology whereby multiple modes (survey questionnaires, workshop discussions, and semi-structured interviews) were combined to create various data collection strategies. This approach allowed the researcher to compensate for the inherent limitations of each
individual mode. As Bulmer and Warwick (1993) maintain, “the case for multiple data sources is especially strong in the developing countries for the simple reason that the data collected by any one method is often subject to substantial errors” (p. 288). In the case of Africa, van der Reis and Lombard (2003) also advocate the use of multiple methods. By using mixed modes, we are able to compensate for the shortcomings of individual modes. Using mixed modes has the potential of generating responses from a greater range of individuals, thereby minimizing non-responses, increasing the speed of data collection, and reducing costs (Groves et al., 2004). Here there is an explicit trade-off between cost and errors, particularly regarding such non-sampling errors as those related to frame or coverage, non-response, and measurement (cf. Biemer and Lyberg, 2003; Groves, 1989). In contrast, mixed-mode methods offer new possibilities for surveyors, but they also introduce new challenges for measurement error. One overarching principle is to not to allow non-response concerns to outweigh concerns regarding the possible introduction of mode effects.

### 4.2.2 Study Area, Population and Sample

The present study was carried out in SSA. Briefly, SSA is a geographical term used to describe the area of the African continent located south of the Sahara (desert), and which comprises those countries located fully or partially south of the Sahara. In contrast, North Africa, or Arab Africa, is considered more a part of the Arab world, for geopolitical reasons.
The population from which the sample was drawn for this study included African universities and research institutions. With a few exceptions, journal publishing in Africa is a postcolonial phenomenon rooted in the modern-era expansion of regional universities. While journal publishing dates to the late 1600s, it was not until the establishment of universities in Africa (following the withdrawal of colonial powers in the 1950s) that it saw significant growth (APEX, 1997; Adebowale, 2001; Zeleza, 1998, 2003). Universities and research institutions have been the dominant force responsible for the local production of scholarly journals. Consequently, in order to accurately characterize the current state of scholarly publishing, these institutions represented the main target of this study. To ensure regional representation in this study, institutions were selected from West Africa, Southern Africa and Eastern Africa. Central Africa was excluded because of the political instability in the region.

The sampling method employed in this study was purposive sampling, a technique which involves selecting certain units or cases “based on a specific purpose rather than randomly” (Tashakkori and Teddlie, 2003a, p. 713). Many other authors (e.g., Miles and Huberman, 1994; Kuzel, 1992; Patton, 2002) have also presented typologies of purposive sampling methods. However, the case for purposive sampling was perhaps made most powerfully by Maxwell (1997), when he stated that in “particular settings, persons or events are deliberately selected for the important information they can provide that cannot be gotten as well from other choices” (p. 87). Accordingly, the goal of this study was to elicit information from people with acknowledged experience and insight into journal publishing, as well as others whose profession directly or indirectly influences the publishing process.
These included journal editors and reviewers, librarians, faculty and students, and IT administrators in universities and research institutions across SSA either directly or indirectly involved in scholarly journal publishing. Using purposive sampling led to a sample of 380 participants in this study. The sample was organized into groups representing the viewpoints of all participants.

**Journal Editors**

Journal editors are responsible for all policies and practices related to journal publication. From determining the scientific merit of submitted manuscripts, to maintaining general publishing standards, editors are assigned the authority to oversee all aspects of their journal’s publication. With this authority and responsibility comes a considerable sense of obligation and commitment which is recognized as a major contribution to the journal’s academic discipline. Overall, editors are in a position to develop a comprehensive understanding of the challenges and dynamics of journal publishing, because the success of every journal is largely dependent on their efforts.

**University and Research Libraries**

Traditionally, facilitating access to scientific information has been the core function of university libraries; however, new models in scholarly publishing and communication are emerging in which the libraries themselves are playing a central role. For example, many academic libraries the world over have taken initiatives to acquire servers to archive and digitize scientific knowledge produced in their institutions. As a result, there is an opportunity to develop these into effective and efficient systems of publishing more in tune with the needs of the scholarly community. As observed
by Savenije and Grygierczyk (2002, p. 317), the university library is best positioned within the university to “organize the support process and the back office functions that facilitate” the transition from traditional to electronic publishing if the academic community desires to take control of the scholarly publishing process.

**Faculty and Students**

These two groups represent authors and readers, key actors whose contributions to the scholarly communication process are vital. Authors (creators and originators of scientific knowledge) initiate the life cycle of the scholarly process, and readers represent the end users, or consumers, of that knowledge. Thus, successful journal publishing, be it print or online, hinges mainly on the availability of authors willing to write, and readers willing to read (Tenopir, 1995). In this regard, any study looking to evaluate the state of scientific journal publishing must take into consideration their expectations, and the strength or intensity of their interest.

**IT Administrators**

In view of rapid developments in the area of IT, coupled with the advent of networked information services, a great number of universities have established ICT units (IT administration) in order to increase efficiency within the system, based on emerging global information and industry requirements. The goals of these units are to advise parent institutions on the development and implementation of IT infrastructure. IT administrators in universities are committed to systems (hardware and software) installation, maintenance, configuration, and upgrading. They provide Internet and Intranet support, helpdesk services and end-user computing support, and minor repairs to PCs and common peripheral devices. Clearly, then, the
The implementation of any innovative online publishing systems requires the maximum participation of IT units within these institutions.

The central purpose of this study, therefore, was to target active participants within the scholarly community who could lend an authoritative voice to discussions regarding issues affecting scholarly publishing, hence the decision to select a more structured (purposive) sample, an approach which focused the attention of the research on journal editors, university and research libraries, faculty and students, and IT administrators within the scholarly community. These are stakeholders who are not only able to talk authoritatively about issues affecting scholarly publishing but who also have the ability to significantly influence the process, direction and outcome of any new initiative within the publishing environment. As a result, to successfully investigate the state of scientific communication, and to understand the possible ways in which online technologies can be used to strengthen and support scholarly publishing, the interests, opinions, expectations, and experiences of these stakeholders should be evaluated in relation to the socio-cultural and institutional environments in which scholarly publishing occurs. Finally, understanding the interests and views of these sample sub-groups could enhance the quality of the overall publishing environment through a legitimation of recognition provided by a formal study of their work, as well as a sharing of standards and best practices, which in turn improves the chances of their adopting new modes of scholarly publishing.
4.3 Mode of Data Collection

The application of standard research principles in developing countries, without recourse to their associated social, cultural and linguistic boundaries, risks failing to achieve the desired results. As noted above, getting African participants to complete survey questionnaires has never been an easy task. In many documented instances, questionnaires were returned unanswered, partially answered after months of delay, or simply reported lost. To compensate for these inadequacies while at the same time responding faithfully to the research questions, a strategic decision was made to incorporate both a survey and workshop discussion within a mixed-mode approach (see Figure 4.1).

When planning a mixed-methods approach to research, there are several forms of data collection strategy and procedural components to consider (Creswell, 1994; Morgan, 1998; Morse, 1991; Patton, 1990; Tashakkori and Teddlie, 1998). In the present study, the researcher adopted the data collection typology suggested by Dillman (2000) and Balden (2004), which is based on “timing of interaction” with respondents as organizing principles. This mixed-mode approach consists of three phases: the contact phase, the response phase, and the follow-up phase. When expanded, these phases involve “data collection mixtures” and “mixtures of means of communication.” The following section outlines this study’s data collection design based on the typology suggested by Dillman and Balden.
**Figure 4.1 Data Collecting Instruments**

4.3.1 **Stage One: Contact Phase**

*Establishing Contact with Heads of Universities*

Using electronic mail, pre-recruitment letters were sent to the vice-chancellors of the SSA universities selected to host the workshops. Letters to the vice-chancellors explained the goals, objectives, and the significance of the research, and how this study was likely to impact the research publications of Africa’s academic institutions. The letters further explained the researcher’s expectations of institutions agreeing to host the workshops. A few days later, persuasive calls (Groves and Couper, 1998)
were made to the vice-chancellors in order to communicate the legitimacy and importance of this study. Once a given vice-chancellor’s office approved the research plan and agreed to host a workshop, a person or unit (a head of research and development, or the library) was officially written to by the vice-chancellor and authorized to liaise with the researcher in planning and organizing the workshop.

This first contact with the vice-chancellors was crucial to the success of the entire research program. We needed institutional buy-ins, and because of the traditional respect and high regard for authority in Africa, it was important to first seek support and approval from the heads of institutions. Once a vice-chancellor approved of the research and workshop, it was easy to get the cooperation of others. Secondly, establishing contact with institutional heads ensured that we complied with ethical standards associated with conducting research in the selected institutions; in other words, these contacts helped us get past gatekeepers and helped establish a sense of trust and legitimacy towards the research (de Leeuw, 2005).

Deciding on Workshop Dates and Participants

The second step in the initial workshop preparations involved discussions and negotiations with host institutions to establish suitable workshop content and organization. Specific instructions on the purpose of the workshops and who was to be invited were then issued to host institutions.

Formal Invitations to Workshops

Once workshop dates were agreed upon, formal letters of invitation were prepared by host institutions, as well as a covering letter from the researcher detailing the
aims and objectives of the research and the workshops; these were then sent to
journal editors, librarians, faculty, postgraduate students, and IT administrators at all
universities and research institutions located within travelling distance of host
institutions. Those who attended the workshops constituted the main sample of this
study. Recruitment of respondents in this “contact phase” was done entirely through
electronic mail and telephone communication.

4.3.2 Stage Two: Response Phase

This is the actual data collection phase, which occurred in conjunction with
workshops. Multi-mode data collection involved survey questionnaires, workshop
discussions, and interviews.

4.3.3 Questionnaires

To address this study’s research questions, four sets of questionnaires were
developed. The first questionnaire was designed to elicit information from journal
editors who attended the workshops. The questionnaires were designed to help
establish the current state of journal publishing from an editorial, economic,
technical, and institutional perspective, and provide a baseline from which to assess
anticipated changes in the coming years. Issues addressed in the survey ranged
from the particular research culture on journal publishing, to the more technical
aspects of journal production.

The second questionnaire was designed to have journal authors, readers, faculty,
and postgraduate students supply information on authors’/readers’ experiences with
journal publishing. The questionnaire also sought information on frequency of journal consultation, the various uses of journal literature, sources of scholarly articles/journals, choice of medium in which to publish, usefulness/relevance of scholarly journals to the university community, access to regional and international journals, and the role of technology in journal publishing.

The third questionnaire was designed to provide information on the state of academic libraries in SSA. Questions covered library subscriptions to scholarly journals, challenges in stocking African journals, library journal subscription budgets, level of library automation and information, available library communication infrastructure, interests in, and sense of value of, library-based publishing of scholarly journals, principal challenges perceived in library-based journal publishing, and level of skill in managing electronic information services.

The fourth questionnaire, addressed to IT administrators, sought to gather information on institutional IT goals, technology priorities for universities and research institutions, current bandwidth access, IT funding sources, perceived future challenges for IT development, and level of available technology resources in the universities and research libraries (including Web server access, level of available technical support to the library, examples of current technology expertise/experience in libraries, and prospects of supporting online scholarly publishing in cooperation with other campus units).

In general, these questionnaires employed primarily open- and closed-format questions with categorical response options. Essentially, semi-structured interviews
conducted during this study were based on the content items found in the questionnaires (Appendices B–E).

4.3.4 Workshop Discussions

Another strategic consideration was to use workshop discussions as an adjunct to this study’s mixed-mode survey method. Publishing is often considered a cultural industry because it deals in meaning and ideas which help define the distinctiveness of a particular society. To understand the complex, overlapping features of a given community’s scholarly publishing practices, and to challenge them, requires involving members of the society itself to participate in a (re)evaluation of its environment and practices. It was thus necessary to position the research within the norms, values, and experiences of the population under study. In this sense, it has become increasingly important that stakeholders and institutions of higher learning be involved in an ongoing dialogue regarding their capabilities and expectations in the face of emerging forms of electronic publishing. To achieve this, data collection methods predisposed towards participant perceptions, beliefs, traditions and values were required. Consequently, workshop discussions were particularly well suited to providing qualitative data on participants’ feelings, values, opinions, and attitudes (Courtois and Turtle, 2008).

Workshop discussions provided the opportunity to explore participants’ knowledge and experience regarding scholarly publishing. They were encouraged to explore issues about online publishing in their own phraseology, based on their own ideas, perspectives and priorities regarding the potential for online technologies to support
journal publishing. This study also examined how institutional, economic and social factors could impact research participants participating in online scholarly publishing. Here, the goal was to understand what participants thought about online publishing, and why they thought the way they did. Kitzinger (1995) explains that gaining access to such a variety of perspectives is useful because knowledge and attitudes are not always entirely encapsulated within reasoned responses to direct questions. Indeed, everyday forms of communication may reveal as much, if not more, about what people know or experience. In this sense workshop discussions potentially provide insights that other methods cannot, revealing dimensions of understanding that often remain untapped by more conventional data collection techniques.

*Workshop Discussions and Content*

Workshop discussions were conducted as part of two-day workshop programs at the institutions. The workshop had three primary objectives: 1) to introduce participants to new developments in online publishing support, 2) to facilitate the administration of survey questionnaires to workshops participants, and 3) to allow the researcher to follow up on initial survey responses with qualitative workshop discussions in order to further triangulate the data.

The first workshop objective was to introduce participants to recent developments in online publishing support such as the Open Journal Systems (OJS). The Public Knowledge Project (PKP) developed OJS, which is open source journal management and publishing software which, like other open source journal publishing software, was designed to increase the accessibility and quality of scholarly publishing. In 2004, INASP’s African Journal OnLine (AJOL) program
employed an earlier version of OJS to provide online access to the tables of contents and abstracts of 230 journals (Smart, 2004). In the AJOL program, however, OJS is not being employed to manage or support the publishing of journal content online; rather, it is currently only being used to facilitate document delivery service for articles (about 3,000 articles are distributed by photocopy annually).

The workshop provided a potential platform from which to take the work of AJOL to the next level, based on assessing the needs and interests of participants, and assisting those journals that wished to move to online content management and publishing using subscriptions and/or open access models in print and/or online editions.

The workshops were designed to accommodate the background and situation of participants: besides providing an overview of recent developments in the field, workshops provided a hands-on opportunity to see how these systems work. As part of this work, the research team developed training materials for technical and editorial staff which were used both during and after the workshops. The team also set up online management and publishing sites where interested editors could introduce themselves to OJS, the online management and publishing software. In the course of conducting workshops, the researcher demonstrated (a) how the software could be implemented on local Web servers, (b) how management and publishing systems could be configured to meet the needs of a wide variety of journals and disciplines, (c) how the journal’s submission, review, editorial and publishing processes could be handled both online and by traditional means, and (d) how the software could be integrated with existing institutional repositories and
metadata harvesting systems, and how it could build on librarians’ growing technical command of online resources.

The researcher reviewed various editorial and economic models (including combined subscription and open access models), which could be utilized with such systems. It was made clear to participants that they were under no obligation to utilize OJS, and that other systems, such as Hyperjournal and the forthcoming DPubs, were also available.

Because the research was conducted within the context of online publishing workshops and system demonstrations, all related individual and group activities were intended to offer real and lasting value for participants. For example, practical demonstrations showed how free software, such as OJS or Hyperjournal, could help ensure a journal’s economic sustainability while increasing access to knowledge; an experimental electronic journal was set up to simulate the online publishing process, and participants assumed the role of authors, editors, peer reviewers, copyeditors, and layout artist.

In addition to the topic of online publishing, workshop discussions provided participants from research and academic institutions the chance to critically consider current challenges facing scholarly publishing, such as publishing budgets, technical requirements, the editorial and peer-review process, authorship and readership benefits, and scholarly impact. Participants took up journal questions relating to print and online editions, subscription, and new publishing models. This gave us the opportunity to meet with individuals and to gauge their opinions on new
developments in scholarly publishing, and what they perceive to be the best way to strengthen local research cultures and capacities.

The second goal of the workshop was to administer survey questionnaires to workshop participants and ensure their completion within the two-day event. As noted, getting locals to complete questionnaires has never been an easy task in Africa, and so the goal here was to increase the survey response rate without unduly imposing on participants.

Thirdly, the workshop was designed to provide qualitative data in the form of workshop discussions which could then be compared and contrasted with participants’ initial survey responses. In other words, workshop discussion data provided a complementary basis from which to evaluate the survey data. This triangulation provided a “richer, fuller and a powerful way of ensuring concurrent validity” (Mason, 2002; Manion and Morrison, 2000)

On November 23 and 24, 2006, the first in a series of eight workshops was held at the Kwame Nkrumah University of Science and Technology, in Ghana. This was followed by six workshops in Nigeria (Kaduna State University and University of Ibadan), Kenya (University of Nairobi), Uganda (Makerere University), and South Africa (University of Witwatersrand and University of Western Cape). The eighth and final workshop took place at the University of Ghana, Legon, on December 12–13, 2007. Each workshop comprised four groups of participants:

- Journal editors and staff
- Potential journal editors, faculty, and postgraduate students
Librarians and library IT personnel

University IT administrators and researchers

Although workshops were coordinated among eight universities, they were organized in such a way that all universities and research institutions within traveling distance of host universities were able to participate. By the end, a total of over 32 universities and 25 research institutions had participated in the workshops, and a 394 participants had attended eight workshops, each workshop averaging 49 participants (Table 4.1).

<table>
<thead>
<tr>
<th>No</th>
<th>Date</th>
<th>Location</th>
<th>Participating institutions</th>
<th>Editors</th>
<th>Faculty/ students</th>
<th>Libraries</th>
<th>IT adm.</th>
<th>Sub-total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nov. 23–24, 2006</td>
<td>Kumasi, Ghana</td>
<td>KNUST</td>
<td>18</td>
<td>26</td>
<td>16</td>
<td>6</td>
<td>66</td>
</tr>
<tr>
<td>2</td>
<td>Apr. 3–4 2007</td>
<td>Kaduna, Nigeria</td>
<td>Kaduna State University</td>
<td>15</td>
<td>12</td>
<td>14</td>
<td>8</td>
<td>49</td>
</tr>
<tr>
<td>3</td>
<td>Apr 10–11 2007</td>
<td>Ibadan, Nigeria</td>
<td>University of Ibadan</td>
<td>17</td>
<td>13</td>
<td>11</td>
<td>5</td>
<td>46</td>
</tr>
<tr>
<td>4</td>
<td>Jun 24–25 2007</td>
<td>Johan’ burg S. Africa</td>
<td>University of Witwatersrand</td>
<td>11</td>
<td>13</td>
<td>8</td>
<td>4</td>
<td>36</td>
</tr>
<tr>
<td>5</td>
<td>June 9–10 2007</td>
<td>Nairobi, Kenya</td>
<td>University of Nairobi</td>
<td>15</td>
<td>18</td>
<td>13</td>
<td>5</td>
<td>51</td>
</tr>
<tr>
<td>6</td>
<td>June 14–15 2007</td>
<td>Kampala, Uganda</td>
<td>University of Makerere</td>
<td>14</td>
<td>21</td>
<td>18</td>
<td>8</td>
<td>61</td>
</tr>
<tr>
<td>7</td>
<td>June 27–28 2007</td>
<td>Cape Town S. Africa</td>
<td>University of Western Cape</td>
<td>7</td>
<td>10</td>
<td>13</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>8</td>
<td>Dec. 12–13 2007</td>
<td>Accra, Ghana</td>
<td>University of Legon</td>
<td>12</td>
<td>15</td>
<td>12</td>
<td>10</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td>109</td>
<td>128</td>
<td>105</td>
<td>52</td>
<td>394</td>
</tr>
</tbody>
</table>

4.3.5 Stage Three: Follow-Up Phase

After the two-day workshop, the researcher spent five days conducting semi-structured interviews with university administrators, department deans or heads,
publishers, and university presses to elicit additional information. As a reminder to respondents who could not complete the questionnaires during the workshops, persuasive follow-up emails were sent, stressing the importance for the research of completed surveys. In cases of questionnaires generating high non-responses, full electronic versions were sent to respondents in order to complete unanswered questions. This follow-up proved an efficient way to increase the response rate (de Leeuw, 2005).

4.4 Validity and Reliability

No survey data are completely free from error, but in order for a survey to provide sufficiently sound, consistent, and relevant data, the information it provides must be both reliable and valid. Reliability requires the use of standardized information collection instruments and survey procedures designed to provide consistency in the data. Research design requires careful planning to ensure that the data being sought directly support the research study’s objectives, and to ensure that it is collected from those respondents capable of providing such information. Below are some of the procedures which were adopted to establish the validity and reliability of this study.

To strengthen claims of content or face validity, outside experts were asked to judge whether items in the questionnaires accurately represented the concept being measured. Prior to the field trip, a peer-review expert meeting was held in Accra, Ghana. This meeting was attended by experienced individuals and institutions
familiar with scholarly communication practices in Africa. The following members constituted the panel of experts:


2. John Willinsky: Khosla Family Professor of Education, Stanford University; Sometime Professor of Education, the University of British Columbia; Director, the Public Knowledge Project (PKP). Among his many publications, Dr. Willinsky's book, *The Access Principle: The Case for Open Access to Research and Scholarship* (MIT Press, 2006), has received two outstanding book awards.

3. Mumuni Dakubu: Editor and former Dean, Faculty of Science, the University of Ghana; currently Director, ICT Centre, University of Ghana; member, Advisory Committee, Ghana Academic and Research Network (GARNET).

4. Pippa Smart: (INASP) Head of the publishing initiative, International Network for the Availability of Scientific Publications, Ms. Smart has over 20 years’ experience in academic publishing, editing, production, business and project management. She also has extensive experience working on improving scholarly communication within the developing world (particularly within the Open Access movement). Ms. Smart now helps provide a variety of services related to general journal development, and to developing communication between researchers, publishers, and editors throughout the world.
5. Patrick Y. Kuti  
(Legon) Programmer and Developer, ICT Center, University of Ghana, Legon.

6. AJOL  
African Journals OnLine (AJOL) is the world’s largest and most pre-eminent collection of peer-reviewed, African-published scholarly journals. In partnership with hundreds of journals from all over the continent, AJOL is working to make more African-based research output available to Africans and to the rest of the world. Representatives: Sarah Hanton and Christo Crampton.

7. AVOIR  
An international alliance of 16 African universities and other partners in North America, Europe, Kabul, and Afghanistan, African Virtual Open Initiatives and Resources (AVOIR) builds capacity in software engineering in Africa using free open source software. Representative: Megan Watson.

8. Isaac K. Appiah  
Head, Publishing Studies program, KNUST; Advisory Committee member, Ghana Publishers Association.

9. Albert Puplmapu  
Professor, Publishing Studies program, KNUST.

10. Helena A. Hassan  
(KNUST, IFLA, eIFL.net) Helena Asamoah-Hassan has been in the library profession for 28 years, including 5 years at the top management level. She is the Ghana Country Coordinator for two programs: the Electronic Information for Libraries Network (eIFL.net) and the Programme for the Enhancement of Research Information (PERii) of INASP. She is Chairperson of the IFLA Africa Section Standing Committee, and President of the Ghana Library Association. In addition, she is Chairperson of the Management Committee/Consortium
of Academic and Research Libraries in Ghana (CARLIGH), and Commissioner with the National Media Commission of Ghana.

11. Alec Smecher: (Simon Fraser University Library) Technical Architect, Public Knowledge Project (PKP), and Lead Developer of Open Journal Systems (OJS), Open Conference Systems (OCS), PKP Harvester, and the PKP Web Application Library (WAL). When not actively developing PKP software, Mr. Smecher runs workshops around the world, runs marathons internationally, and plays drums in a band.

The researcher brought the above experts together in October 2006 at the University of Ghana, with the sole intention of providing expert review of this study. They were provided with all relevant information about the research, with which they were then able to determine the appropriateness of this study’s methodology and the content relevance of survey questions. Items that did not meet with the approval of the experts were eliminated or further revised. In addition, areas considered essential but omitted from this study were identified. As noted by Creswell and Miller (2000), this expert guidance proved invaluable in providing support, challenging researcher assumptions, and asking probing questions about study methods and interpretation.

Following the peer-review process, the data collection instruments were pilot-tested. The researcher selected the College of Art and Social Science of the Kwame Nkrumah University of Science and Technology (KNUST) in Ghana, whose characteristics were similar to those of the pilot test’s target sample. Five participants from each of the respondent groups were recruited for the pilot. Guided
by the typology suggested by Russ-Eft (1980), respondents were first asked to read and explain the questions; they were then asked to explain their reasons for providing certain answers and not others. This approach revealed incorrect assumptions and rationales that the researcher had not anticipated. The researcher was able to check for bias in the wording of questions based on participants’ understanding of them. Following this exercise, some questions and terminologies were subsequently revised.

In data collection strategies, Creswell and Miller (2000) argue for the triangulation of methods, in which researchers seek a convergence among multiple data sources. Patton (2002) also advocates the use of triangulation, stating that by combining several kinds of (qualitative and quantitative) data, “triangulation strengthens a study” (p. 247). Accordingly, triangulation research methods represents a key feature of the present study; initial quantitative survey questionnaires were augmented by qualitative workshop discussions, thus providing the researcher with an additional source of data against which to evaluate the validity of survey responses. Furthermore, outside of the workshop discussion format, additional interviews were conducted with key stakeholders within the scholarly community in order to gain a general overview of the publishing industry. Deans, heads of institutions, and heads of departments were also interviewed to gauge their perceptions and receptivity to new online publishing technologies. Although interviews were not structured, questions were based on items extracted from the survey questionnaires.
Overall, the triangulation of so many different data sources provided the researcher with a relatively high level of confidence in this study’s analysis and subsequent findings. In particular, information obtained from post-workshop interview discussions provided a wealth of additional information with which to validate, interpret, clarify and better illustrate this study’s quantitative and qualitative data. As Yach (1992) puts it when methodologies are complimentary, a triangulate approach provides a powerful means for analysis and interpretation of data.

One of the challenges associated with large-scale surveys is that a small proportion of participants may not respond reliably to survey questions. To improve survey validity and reliability, Russ-Eft (1980) suggested that, during analysis, it may be preferable to eliminate unreliable respondents from the sample. To this end, a screening scale used during the data analysis stage ensured the identification and subsequent elimination of respondents whose data were considered spurious. For example, some of the questionnaires designed for journals editors were completed by editors who worked in the university presses but who had never served as journal editors, and some of the questionnaires for university libraries were also completed by public libraries. Ultimately, these questionnaires were eliminated from the data set.

4.5 Study Limitations

Although offering promising avenues for future research, a number of limitations of the current study should be noted. Firstly, this study as such represents a variation
from standard survey designs in that it combines survey research with professional workshops.

The purpose of the workshop, once again, was to provide participants with an overview of developments in the field of electronic journal publishing software. More specifically, the letter of invitation to the workshop explained, among other things, how the implementation of free open source software (such as OJS) could help journal editors, libraries, and IT staff sustain online management and publishing of existing and new scholarly journals. However, given the likely motivations of prospective workshop attendees, the researcher later recognized that not only had respondents been somewhat predisposed to improving the state of scholarly publishing, but they likely also had interests in online publishing. Survey responses may thus reflect these biases, and because the sample may not be reflective of the scholarly community in SSA as a whole, results must be interpreted with caution. Similarly, the use of a specialized non-probability sample, made up of core members of the scholarly community, may also have influenced the quality of responses. Therefore, given that non-probability sampling limits the generalizability of results to other populations, the researcher cannot claim to have surveyed African journals' interests in online publishing in any representative way.

Another important consideration is that the investigator is part of a team that developed Open Journal Systems and thus could be said to have an interest in seeing it used. This might lead the investigator to overemphasize its capabilities as well as influence participants in trying to please the investigator and to pay the investigator back for putting on the workshop. Although the investigator tried hard to
avoid such undue effects, the reader should be aware that this is a necessary limit on this study and one justified by this study and the PKP project of improving scholarly publishing, a topic on which we are not neutral, although we try to be objective and realistic about it.

### 4.6 Data Analysis

Data collected through survey questionnaires were coded and entered into a statistical spreadsheet program. The majority of survey questions were closed-ended, and the responses clearly coded on the original form. Responses were then screened to ensure that a) all important questions had been answered, b) responses had been legibly completed, and c) all contextual information had been included.

Given the large amount of information collected, two data entry personnel were engaged to input data into personal computers, a procedure allowed data entry by one person to be checked against the other for accuracy. By this method, discrepancies were detected and correct entries were made, a process which significantly reduced entry errors. The data were subsequently entered into a spreadsheet and transformed into variables used in different analyses.

Each set of questionnaires included several open, nondirective questions to which respondents were asked to supply information. Responses were first analyzed, sorted and coded by the primary researcher; to ensure reliability, responses were then coded independently by two experts following identical coding procedures. Accuracy was ensured when the coding choices of the independent experts
matched those of the primary researcher. When there was variation, negotiation between coders determined the final coding (Groves et al., 2004; Botan, Friedman and Kreps, 1991). Coded data were then entered into a statistical spreadsheet program and statistical analysis was performed. The primary type of statistical analysis used in this study was basic descriptive statistics, because most of the survey questionnaires were essentially categorical in nature. Analyses of quantitative data involved the generation frequencies, simple averages, tables, and graphs. When relevant, cross tabulations were also performed on some categories of data.

4.6.1 Analysis of Workshop Discussion and Semi-structured Interviews

Interview and workshop discussion tapes were transcribed, and field notes reorganized. Although the transcribed text contained valuable information, it also contained a considerable amount of less essential detail. To simplify the analysis, it was necessary to order, reduce and clean up the data. This was done bearing in mind the objectives of the discussion topics. Informed by Patton’s (2002) methodological treatment of the evaluation process, a cross-case analysis method was used, which allows for grouping together responses by topic in working across cases. Responses from journal editors/reviewers were grouped together, and then answers from librarians were grouped together, and so on and so forth.

All of these category-specific answers were then compared across the various workshops and geographic regions in order to see how different respondents answered the same question. A thorough, in-depth review of all transcripts and field
notes then followed in an effort to uncover emerging themes, sequences or patterns. Recurrent issues and themes were then coded, allowing for commonality and differences of opinion, regarding various scholarly publishing practices. This systematic process ensured the identification of convergent and divergent points of discussion, motivations, relationships, and practices between and within groups. Finally, issues and themes were prioritized according to their frequency of occurrence. As with most qualitative reports, the data consisted of representative quotes from respondents which illustrated typical or main points in the findings.

The primary purpose in linking survey responses with workshop discussions was to try and establish complementarity of the data via methodological triangulation. This process allowed the researcher to reinforce the survey data with the complimentary qualitative insights of workshop discussions. In reporting on this study, participant comments from both workshop and interviews were included when it was thought they could shed more light on a particular issue.

### 4.7 Summary of Sample and Survey Response Rates

A total of 394 members of the scholarly community from the selected region participated in the workshops, but not all participants agreed to answer survey questionnaires. Although participants willingly accepted the questionnaires with the promise to answer them, some could not be reached for the return of questionnaires. Others refused to participate in the survey for reasons best known to them. In the end, the total number of survey respondents was 286, giving a survey response rate
of 72.6%. A summary of sample procedures and responses from various sub-groups which make up the overall sample is presented in Figure 4.1.
Figure 4.2 Workshop and Survey Coverage

<table>
<thead>
<tr>
<th>Location</th>
<th>Sampled</th>
<th>Respondents</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>109</td>
<td>80</td>
<td>73.4%</td>
</tr>
<tr>
<td>Kaduna</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ibadan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UoN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>128</td>
<td>101</td>
<td>78.9%</td>
</tr>
<tr>
<td>Ghana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KNUST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Makerer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Africa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UoWC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University librarians</td>
<td>105</td>
<td>76</td>
<td>72.4%</td>
</tr>
<tr>
<td>IT administrators and staff</td>
<td>52</td>
<td>29</td>
<td>55.8%</td>
</tr>
</tbody>
</table>

Respondents (n = 286)
CHAPTER 5

THE CURRENT STATE OF JOURNAL PUBLISHING

5.1 Introduction

Scholarly publishing plays a substantive role in the dissemination of knowledge among academics, and it is aimed specifically to reflect the results of teaching and research of universities. It is an important vehicle to develop academic exchange within the international scholarly community. The purpose of this study is to examine the state of journal publishing and the scholarly communication infrastructure of journal publishing in Africa and an effort to explore the potential value of utilizing new communication technologies and publishing systems that could increase both African research and global access to African research.

Existing literature on the state of scholarly publishing in Africa has been created by the accumulation of anecdotal information; other sources are given credence by hard data that, while verifiable, do not offer a broad enough picture of the current situation. In any event, there is an erroneous perception of scholarly publishing in Africa, and in response, certain lexicons and rhetoric have been mobilized to describe the situation. This study therefore aimed at providing a more accurate and factual description of the current state of scholarly publishing in Africa through an empirical study designed to elicit information from active participants within the scholarly community: authors, editors, publishers, graduate students, faculty, scientists, librarians, IT staff and university administrators. The data therefore
presented here is a new picture, one that is not impressionistic but founded upon carefully analyzed evidence.

This chapter specifically analyses data from the survey that addresses research questions on the current state and trends in scholarly publishing with regards to editorial, technical, readership and authorship and distribution patterns among African journals. The analysis is gleaned from the four sets of questionnaires administered during the data collection stage targeting four categories of respondents. The survey data are complemented with results from interviews with participants within the scholarly community as well as feedback and responses obtained from the eight workshops organized across SSA.

As far as possible, data were tabulated and displayed through tables, charts and figures, organized by survey themes. The tables and charts etc. are followed by a discussion of the results, complemented with existing literature and finally drawing a brief conclusion.

### 5.2 Journal Basics

#### 5.2.1 Demographic Characteristics of Journals in the Study

There were in all 80 journals that constituted the sample of this study. The geographical location of these journals spread across five countries in the sub-Saharan region of Africa (see Figure 5.1).
5.2.2 Mode of Publication

The journals in the sample were found to be published in a variety of formats. Of the total number of journals in this study, 55 (69%) were published in print format only, and 25 (31%) were published online or had some form of online presence. Of these 25 (31%) journals, 2 (8%) were published in electronic format only, 8 (32%) had their full text online in addition to the print version and 15 (60%) were abstracted and listed with their table of contents in the AJOL database.

Table 5.1a Mode of Publication (N=80)

<table>
<thead>
<tr>
<th>Mode of Publication</th>
<th>No of Journals</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal with print edition only</td>
<td>55</td>
<td>69</td>
</tr>
<tr>
<td>Journals online or online presence</td>
<td>25</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 5.1b Mode of Publication (N=25)

<table>
<thead>
<tr>
<th>Journal Online or Online Presence</th>
<th>No of journal</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online journals only</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Print journals + full text online</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>Print Journals + TOC only in AJOL database</td>
<td>15</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

In essence, only 10 journals were published online. It is clear that current developments in information technologies have yet to result in significant changes in the mode of scholarly journal publishing in Africa. While acknowledging the need to increase online presence of African journals, participants pointed out that university authorities and part of the academic community in Africa have yet to accept the authenticity of online journals. It is only when university authority accepts electronic journal for tenure/promotion will editors then make that leap. The following are statements made by two journal editors:

When it comes to policy for scholarly publishing towards tenure, online journals are sidelined in favor of the traditional print articles published in international journals as the single measure of successful performance.

Another editor with 10 years’ editorial experience stated:

The idea of considering or legitimating new forms of journal formats has been the challenge for university authorities. Anything that does not look like the traditional print journal does not count towards scholarly work

5.2.3 Journal Ownership and Publishing Type

The purpose of this question was to establish the pattern of journal ownership and publication types among African scholarly journals in the sample and how these
impact the editorial and financial dynamics of journal publishing in Africa. Responses provided by editors in the survey show that scholarly journals are largely owned by universities and research institutions with no presence of commercial publishers, at least in the sample of journals in this study. Of the total number of journals surveyed, the data indicated that about 73% were owned by universities, 26% by research institutions and one percent (1%) independently owned (Figure 5.2).

Figure 5.2 Journal Ownership (N=80)

While it is evidently clear that journals are owned by universities and research institutions, what was not clear is who the publishers of these journals are. On a follow-up question to establish this fact, a total of 71 of respondent indicated that the journals they publish have publishers. Investigating these responses further, this study showed that, of the 71 respondents who indicated that the journals have publishers, only four (6%) of these journals were published by organizations with
commercial interests or commercial publishers (Table 5.3). Sixty-three percent (63%) were published by academic institutions, and (21%) were published by research institutions. This study further found that the “others” as indicated in Figure 5.3 were commercial printers, NGOs and donor agencies. Whereas NGOs provided financial support towards research and publication, commercial printers were found to work closely with research and academic institutions to provide services such as copyediting, proofreading, page design and layout and physical production – printing – of these journals.

**Figure 5.3 Publishers of the Journals (n=71)**

The dominance of universities and learned societies in journal publishing in Africa has a historical and economic frame of reference. Journal publishing in Africa is a postcolonial phenomenon and the burgeoning of regional universities. Although the production of journal in Africa dates to the late 1800s, it was not until the establishing of universities in Africa, after the overthrow of colonial powers in the 1950s, that
journal publishing saw a sturdy growth (APEX 1997; Adebowale 2001; Zeleza, 1998; Zeleza, 2003). Many African leaders saw journals as a medium to reverse the negative image created about the continent by the West. In words of Zeleza (1998, p. 14) “the establishment of journals is a post-independent phenomena, spawned and sustained by the expanding possibilities of university education, itself tethered to the dreams and demand of nationalism and developmentalism.” Journals therefore were mostly the preserve of institutions of higher learning in Africa. As the survey shows, journals are still owned and controlled by academic institutions.

It also became evident, during the workshop discussions, that commercial publishers were not keen on entering the journal market in Africa because the market for journals was so small, heterogeneous in nature, fragmented and unable to sustain their economic returns; moreover, their terms of operation, for example, assuming complete ownership of the journal’s intellectual property, were unpopular with many journal editors in Africa. An editor of a journal in Kenya has this to say:

The idea of turning over the ownership of your intellectual property to the publisher, and the complete control over how it is distributed and used, and reproduced did not encourage editors to deal with commercial publishers. After they have published the journal, they then turn around and sell it to the university at an exorbitant price, so expensive the individual cannot afford it.

Another participant observed:

Many commercial publishers are here lobbying government for the right to publish textbooks for schools because it is more profitable and the market is huge. Scholarly journals are so specialized with limited market and they [commercial publishers] do not like to go there.
The university as the largest publisher of journals is what distinguishes journal publishing in Africa from the North, where three commercial publishers control and publish about 50% of scientific journals (Stanley 2002). Commercial publishers are seen in the North as being responsible for escalating exorbitant serial prices. To deal with the overbearing exploitation of commercial publishers, there is a new alliance of research institutions fighting to re-establish control over scientific publishing by radically transforming academic publishing through the adoption of digital online technologies as a medium for transmission. However, there is strong resistant to this move.

The scholarly community in Africa does not have to engage in this struggle to take over the control of journal publishing because they already own and control the publication of scholarly journals. And therefore, while conscious of other challenges, transforming the current weak system of print publishing through the adoption of online publishing technologies to strengthen academic publishing should not be difficult.

5.2.4 Academic Disciplines of Journals

Journals completing this survey indicate that the disciplinary landscape of journal publishing is changing gradually from being dominated in the humanities and social sciences to being dominated in the core sciences. To ascertain the academic disciplines of journals in the survey, responses were categorized into four disciplines: humanities, social sciences, sciences and institution-wide or campus-
wide (Figure 5.4). A total of 36% of journals were published in the sciences, 23% were published in the humanities, and 21% in the social sciences.

Figure 5.4 Academic Disciplines of Journals (N=80)

One possible reason for increase in science journal production may be due to recent international collaborative efforts and international donor support mostly directed towards research capacity building in the sciences at the expense of the humanities and social sciences (Jones, Bailey and Lyytikainen, 2007). As recently as 2006, CODESRIA, the largest Council for the Development of Social Science Research in Africa, put forward a statement bemoaning the falling level of social sciences and humanities research in Africa.¹⁵

¹⁵ At the 2006 Annual Conference Of Deans Of Faculties Of Social Sciences And Humanities, CODESRIA stated: Arguably, the social sciences and humanities have never been under greater pressure than today. In the worst cases, several departments/fields have simply been rationalized out of existence because they have been decreed to be irrelevant; others have atrophied for want of students and/ or qualified teachers institutions in the creation and dissemination of research in Africa.
This survey examined all the journals in the sample vis-à-vis the organizations that are partly or fully associated with the journals and providing financial support. The result shows that, of the 29 journals published in the sciences, almost half (41%) are funded by different international donors—DANIDA, Royal Museum for Central Africa in Belgium, Bioline, US National Institutes of Health through the National Library of Medicine and the Fogarty International Center—or are collaborating with organizations outside Africa. In contrast, not a single journal in the social sciences and humanities had any donor support. It is therefore not surprising that, of the total number of journals fully published online, 60% are science-based journals, and of the total number of journals found in AJOL database, 70% are from the sciences.

“Campus-wide” or “university-wide journals” (24%) as indicated by the respondents (Figure 5.4) in the survey are published in institutions that have different departments and colleges specializing in different branches of knowledge, but for various reasons these institutions are unable to fund several journals in all branches of knowledge, so departmental journals and college journals have folded into only one institutional/university-wide journal serving the interests of all. The university-wide journal is bound to be interdisciplinary (but not all interdisciplinary journals represent a single university). One needs to see a university-wide journal as a special creature, born out of hard fiscal challenges. This kind of journal should be considered as speaking to a shortage of publishing opportunities and to the current isolation from the global journal system, as the journal is not intended to be circulated widely. These all-in-one journals publish articles from many disciplines.
The following quotes from interviews with journal editors may throw some light on the reasons for this practice. A professor and editor-in-chief of an institutional/university-wide journal explains why a university with a student population of 25,000 and a teaching staff of a little over 1,250 publishes only one legitimized journal covering the field of science, humanities and social sciences.

The university has given serious consideration to other faculties and departments that want to publish specialized journals. But this has not been possible because allowing that will create many more challenges to the university. First, there must be a system in place to guarantee the quality and trustworthiness of these journals. The second issue is availability of articles and most importantly money. Even sustaining one journal in terms of articles has been very difficult. We have delayed publications many times because we do not have journal articles to publish; we have combined issues because of a lack of articles. Other challenges like availability of reviewers and funds will not allow for specialization in the journals we publish.

A senior administrator, who doubles as editor of one of the university journals, explains why his university has one journal.

I occupy a position which makes me uncomfortable addressing this question. As an editor I wish we had different journals for each field of study especially in this Internet age when the publishing process has been enhanced. Many of my colleagues have made strong case for faculty journals, but being in administration it is a bit different. Allowing multiple journals will be a strain on the limited resources of the university. The university can’t afford to support each faculty journal. The university press is out of shape financially and we keep pumping money to keep it going in order to get books and journals published. Adding faculty journals will be too much.
These quotes capture three important issues that have given birth to campus-wide journals: the financial constraints facing many of these journals, the effect of low level of research output for these journals, and lack of institutional legitimization of new journals. Later the data will show how much these three elements have affected the quality, standard and frequency of journals published in Africa.

5.2.5 Circulation, Price and Size of Journals

Respondents further provided an overview of the current state of journal publishing with emphasis on trends in number, size, price and the circulation of scholarly journals in Africa.

Figure 5.5 Size of Circulations Among the Journals (N=80)

Irrespective of whether the journal is published by society or a university, approximately 23% of journals have circulations between 1 and 100, and the majority (63%) have total circulations between 101 and 500 (Figure 5.5). Only four journals (8%) in this study had a circulation above 1,000. The range of circulation
numbers for journals in the sample from 1 to over 1,000 demonstrate a highly skewed distribution pattern.

The mean annual subscription rate for individual purchased journals was $31.63 and $51.38 for libraries (see Table 5.2). The estimated average annual circulation per journal stood at 284.57 for individual and 99.66 for institutional. A more detailed examination of price, number of articles, and circulation of journals across disciplines and publisher types are presented in Tables 5.3 and 5.4.

**Table 5.2 Subscription Rates (in USD) and Circulation Rates (N=80)**

<table>
<thead>
<tr>
<th>Annual Subscription Rate</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>$32</td>
</tr>
<tr>
<td>Institutions</td>
<td>$51</td>
</tr>
<tr>
<td>Annual Circulation Rate</td>
<td>Mean</td>
</tr>
<tr>
<td>Individual</td>
<td>284.57</td>
</tr>
<tr>
<td>Institutions</td>
<td>99.66</td>
</tr>
</tbody>
</table>

### 5.2.6 Average Price Number of Articles and Circulation per Journal by Type of Publisher

Listed by type of publisher (see Table 5.3) the estimated average circulation in the sample for scholarly journals was 425, society averaging 583 subscriptions, universities averaging 302 subscriptions and commercial publishers averaging 215 subscriptions. The responses further indicate that the annual average number of articles published by a journal was 24 per year. Although this figure compares favorably to an average of 26 articles found among journals not listed in the ISI (2009), the figure falls far below the 126 articles published per year by US publishers.
as reported by Tenopir and King (2000) and the average number of 111.7 articles per year of journals indexed in Web of Science (Bjork, Roos and Lauri, 2008). The low rate of publication is a reflection of an institutional environment that emphasizes teaching over research, where research was neither a criterion of appointment nor prioritized as part of the contract of employment, where poor working conditions lead faculty to moonlight and seek outside sources of income and others absorbed into leadership and administrative positions and consulting for NGOs often at the expense of their research duties. This kind of environment does not support a vibrant research culture.

<table>
<thead>
<tr>
<th>Publisher Type</th>
<th>Average Personal Price</th>
<th>Average Institutional Price</th>
<th>Average Articles per Year</th>
<th>Average Circulation per Journal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Society</td>
<td>$30.75</td>
<td>$31.00</td>
<td>27.8</td>
<td>583</td>
</tr>
<tr>
<td>University</td>
<td>$25.52</td>
<td>$57.03</td>
<td>20.0</td>
<td>302</td>
</tr>
<tr>
<td>Commercial</td>
<td>$290.00</td>
<td>$395.00</td>
<td>28.6</td>
<td>215</td>
</tr>
<tr>
<td>All publishers (average)</td>
<td>$31.63</td>
<td>$51.38</td>
<td>24.10</td>
<td>425</td>
</tr>
</tbody>
</table>

The relatively higher subscription prices for journals published by publishers with commercial interests is only a confirmation of other studies which show prices of commercially owned journals “averaging four times those of society and university sponsored journals” Bergstrom (2001) and Tenopir and Donald (2000).
5.2.7 Average Price Number of Articles and Circulation of Journal by Discipline

When price and circulation figures were examined more closely in different disciplines, the average prices (individual and institutional) per journal range from a low in the campus-wide journals ($14.25, $25.75) to a high in the sciences ($43.57, $59.59). (See Table 5.4.)

Table 5.4 Circulation, Submission, Price, and Frequency of Journals by Discipline (N=80)

<table>
<thead>
<tr>
<th>Disciplines</th>
<th>Subscription Individual</th>
<th>Subscription Institutional</th>
<th>Circulation Individual</th>
<th>Circulation Institutional</th>
<th>Submission/pe r year</th>
<th>Articles per Year</th>
<th>Issues per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities</td>
<td>$26.36</td>
<td>$50.00</td>
<td>169.11</td>
<td>90.33</td>
<td>47.92</td>
<td>15.25</td>
<td>1.5</td>
</tr>
<tr>
<td>S. Sciences</td>
<td>$23.90</td>
<td>$55.20</td>
<td>173.82</td>
<td>89.16</td>
<td>48.33</td>
<td>14.54</td>
<td>2</td>
</tr>
<tr>
<td>Sciences</td>
<td>$43.57</td>
<td>$59.59</td>
<td>231.58</td>
<td>162.20</td>
<td>145.22</td>
<td>35.43</td>
<td>3</td>
</tr>
<tr>
<td>Campus-Wide</td>
<td>$14.25</td>
<td>$25.75</td>
<td>798.88</td>
<td>150.00</td>
<td>71.42</td>
<td>19.58</td>
<td>2</td>
</tr>
<tr>
<td>All Disciplines</td>
<td>31.63</td>
<td>51.38</td>
<td>284.57</td>
<td>99.66</td>
<td>312.89</td>
<td>24.10</td>
<td>2.1</td>
</tr>
</tbody>
</table>

An intriguing pattern observed is the fact that the average circulation of journals to individuals was two to three times higher than that of institutional circulation, and this was consistent across all disciplines, although various studies report the reverse.

Two possible explanations could be given. The first is based on a simple economic principle of price and demand relationship. That principle demonstrates that there is an inverse relationship between price and demand, and that all things being equal (ceteris paribus), the higher the price of a product, in this case the journal, the lower the quantity that will be bought and vice versa. This means the higher number of subscriptions of journals by individuals across all disciplines was the lower unit cost
of those journals compared to the price at which they were sold to institutions. This explanation, though plausible, only presents evidence in support of a conclusion that is less likely to be accepted among those who understand the dynamics of the journal-publishing environment in Africa.

The second explanation, which is based on outcome of the workshop discussions, examines the difference in prices by looking at the forces – ownership, management and funding of journals – that stimulate the production and publishing of scholarly journals in Africa. As indicated in an earlier section, state-owned universities and research establishments own over 60% of these journals published in Africa. The responsibility for and control of the journals rest with the ownership. Secondly, the lack of financial support for these journals and the small size of their operation give them no market leverage necessary to compete effectively in a rapidly changing, highly competitive subscription-driven market. To survive, therefore, most of these journals have evolved and developed alternative funding models of having to tax-deduct at source income of its members – faculty, scientists, students, researchers and concerned individuals – to keep the journals running. Once the journals are published, every member of the community is automatically entitled to a copy without having to subscribe to it. In other words, the journals are distributed at no further cost to faculty, scientists and individuals belonging to these institutions. It also means you own a copy of the journal whether the content is relevant to you or not.
A faculty member made the following comments:

When I joined [name of university withheld] in 1991, I began to receive about two or three journals from the university every year. I was surprised because I never subscribed to those journals. I also did not read most of them because not everyone contained articles in my field. Later I found out that I indirectly pay for those journals because my salary is taxed every month towards journal publication.

In contrast, institutions like libraries, which are not part of these forced markets, have a choice based on the relevancy of the content of these journals, whether to subscribe to them or not. And as supported by the data in Chapter 6, most institutions do not subscribe to these journals because, among other reasons, they lack knowledge about their existence. As indicated by the data, a greater percentage of these journals are print based and have little or no online presence. These journals are therefore not visible to libraries across the continent, and attempts by libraries to subscribe to these journals have long been undermined by the lack of access and visibility. Therefore, although some of these journals are subscription based, because they are subsidized by donations and are tax-deductible from individuals, the thrust to match revenue to production costs is not as urgent as is the case for other journals.

5.2.8 Publication Frequency

In response to the question of how many issues of the journal are published annually, the respondents indicated that the estimated average of issues per year was approximately two. Examined closely, the majority of journals in this study, 44 (58), were published biannually, and 17 (22%) appeared once a year. Eight (11%)
other journals appeared quarterly, and five (6%) appeared triannually (Figure 5.6). The “other” category included two journals that operated as Open Access journals that published articles as and when they were available.

*Figure 5.6 Publication Frequency (N=73)*

Examined across disciplines, the survey found that journals published in the sciences had a high average of three issues per year compared to those of the social sciences, humanities and campus-wide publications that had an average of two issues per year (Figure 5.7). This low publication frequency, as stated, is an indication of a low level of research activities in Africa due to unproductive research environment influenced by poor working conditions and lack of resources. The relatively higher publication frequency of journals in the sciences may be due to the changing dynamics of publishing among disciplines in Africa, facilitated by international donor support for the sciences and much international inter-institutional collaborations on projects in the sciences. This has the potential to increase
research output in the sciences. The following sections will establish whether the infrequent publication is due to an insufficient number of articles, lack of editorial time, financial constraints or a combination of these factors.

*Figure 5.7 Publication Frequency Across Disciplines (N=73)*

<table>
<thead>
<tr>
<th></th>
<th>Number of Issues/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>1.5</td>
</tr>
<tr>
<td>S. Science</td>
<td>2</td>
</tr>
<tr>
<td>Science</td>
<td>3</td>
</tr>
<tr>
<td>Campus Wide</td>
<td>2</td>
</tr>
</tbody>
</table>

### 5.2.9 Regularity of Journal Publication

What is equally important is the regularity of journal publication – a crucial and must-achieve standard – if a journal is to retain the confidence of various stakeholders in the academic community. Of the respondents, 66% indicated that journal production schedules have been interrupted at one point (see Table 5.5). Just a few journals (23%) had seen no interruption in publication schedules.
Table 5.5 Journal Publication Schedules (N=80)

<table>
<thead>
<tr>
<th>Publication Schedules</th>
<th>Responses</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>No break in publication</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>Break in publication</td>
<td>53</td>
<td>66</td>
</tr>
<tr>
<td>No data</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100%</td>
</tr>
</tbody>
</table>

As possible explanations for this high rate of publication break, a follow-up workshop question yielded a number of causes (see Table 6). The reasons as stated by respondents are categorized in the order of high occurrences as follows: “lack of resources and funding for publication and editorial management,” “editorial and reviewer constraints,” “lack of articles,” “administrative and organizational challenges,” “human resources deficit.” Table 5.6 presents a clearer picture.

Table 5.6 Reasons for Break in Publishing Schedules (n=53)

<table>
<thead>
<tr>
<th>Reasons for Break in Publishing Schedules</th>
<th>Responses</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial constraints</td>
<td>37</td>
<td>77.35</td>
</tr>
<tr>
<td>Articles not returned by deadline (authors and reviewers)</td>
<td>20</td>
<td>37.73</td>
</tr>
<tr>
<td>Lack of articles</td>
<td>16</td>
<td>28.30</td>
</tr>
<tr>
<td>Human resources deficit</td>
<td>7</td>
<td>15.09</td>
</tr>
<tr>
<td>Administrative/editorial issues</td>
<td>6</td>
<td>7.50</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>3.77</td>
</tr>
</tbody>
</table>

Respondents were allowed to state several reasons.

The data are complemented with the following excerpts from interviews, which capture some of the reasons for the irregularity of the journals. A dean of one of the
universities present at the workshop explained the impact of financial constraints on the regularity of journal publications:

The crumbling financial support for their presses by parent institutions and the total neglect of research initiatives in our universities have in my opinion contributed significantly to the current state of scholarly publishing in our universities. For example, we have two issues of our journals unpublished because the university press lacks the financial resources to buy paper, ink, plates and photosensitive chemicals to print these issues. We can’t afford the commercial printers because they will require payment upfront before the work is executed and the universities don’t pay upfront.

In another case, a senior editor of one of the journals similarly described the unsustainability of journal production due to limited financial resources:

Many journals are launched in Africa without any long-term vision of adequate financial resources. We are given one-time seed money to launch journals with the task that the journal should be self-sustaining. Unfortunately, the distribution and circulation levels of the journals we publish are so small that we cannot break even economically. Unable to meet production costs, we have to wind down publication until money is provided.

These statements attest to the low availability of funds for journal production in Africa, a situation made worse by the high cost of print production. Almost all print production materials and equipment required for printing have to be imported and paid for in foreign currency.

Regarding the effect of the editorial and peer-review process on production schedule, respondents revealed that authors, reviewers and sometimes editors were
slow in completing their tasks on articles sent to them, due more pressing commitments and responsibilities. Similarly, “the high rate of turnover among editorial staff” and journals reviewers also accounted for the erratic production schedules of some journals as captured in the words of one editor-in-chief of a Ghanaian journal:

They [editors and reviewers] don’t feel they have legitimacy to work for the journals at the expense of their academic workload. It takes forever to get an article copyedited or peer-reviewed. Sometimes articles sent for review are misplaced, and authors are required to resend manuscripts. The lack of commitment to edit and review has accounted for the delay of journals published in many parts of Africa.

The data are also replete with stories of how limited regional authorships have contributed significantly to the irregularity in journal publications. The following quote from an interview with a mid-career social science editor is a representative of the majority of the study’s participants:

It is becoming the biggest challenge to the journal. Perhaps it is lack of knowledge regarding the existence of such an indigenous African journal, or a bias that the journal is lacking in quality because it is an indigenous African journal, or simply people don’t research and therefore have nothing to show for it. I feel it is not worth the effort and cost to publish only four articles in a year. The workshop has enlightened us to know that with OJS it is possible to publish one or two articles once they are ready.

In these circumstances, the need for journal publishers in the sample to find a more sustainable model for vibrant publishing operations is overall paramount. Electronic platforms undoubtedly can achieve time efficiency in the journal production process
because of the speed and ease with which manuscripts are exchanged for reviewing, editing and publishing.

5.2.10 Funding of Scholarly Journals

Funding of scholarly journals has recently received attention in the scholarly literature because of the egregious and rising prices of journals. Experts and scholars have proposed a variety of alternative modes of funding. The focus of this study was thus to investigate current methods of funding journals among the developing economies of SSA. Table 5.7 provides a summary of responses to the question of how journal publishing is financed.

Table 5.7 Sources of Funding Journals (n=75)

<table>
<thead>
<tr>
<th>Sources of Funding</th>
<th>Responses</th>
<th>No. in Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author fees</td>
<td>26</td>
<td>35</td>
</tr>
<tr>
<td>Subscription</td>
<td>25</td>
<td>33</td>
</tr>
<tr>
<td>Sponsorship/foundation support</td>
<td>31</td>
<td>41</td>
</tr>
<tr>
<td>University support</td>
<td>49</td>
<td>65</td>
</tr>
<tr>
<td>Volunteer</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>No data</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Responses show that journals sourced their income from a mix of revenue streams, from university/ institutional funding (65%), to sponsorship/donor support (41%), author fees (35%), subscriptions (33%), volunteer (19%) and other sources (3%). Workshop discussions revealed this pervasive sense among participants that the absence of funding continues to inhibit the development of successful journal
publishing enterprises in Africa and that the only way journals have survived is through support systems. Some of the views expressed are as follows:

Journals are usually funded by the universities and research institutions.

The universities and research institutions are dependent on government subvention to run these institutions.

Government subvention is woefully inadequate and is spent on operational cost and salaries of university staff. Nothing is left for research and development.

The first area the administration looks at to trim down its budget when the university is in financial crisis is the university library, research and publication.

The production cost of print journals is so high to the degree that there are issues that have not been published for years.

Journals have to depend on internal support systems: volunteers, membership contributions, author fees, external support systems and donor agencies subscriptions.

These quotes highlight the relatively high importance that is attached to other institutional priorities compared to research publications. As funding is progressively cut and becomes erratic, it is inevitable that research suffers, thus relegating innovation to the margins of the system.

Clearly, the sources of publishing revenue as shown in Table 5.7 are an indication of a system that is not geared towards revenue raising or profit making but rather on securing and maintaining a stable support structure through government, parent institutions, donor agencies and volunteerism. The survival of these journals has therefore never been dependent on the revenue they generate either through
individual or institutional subscriptions. Unlike commercial publishers who are under pressure to match revenue with production cost, the primary purpose of these journals is to reflect the academic ambitions and potential of the institutions that publish them, and to advance the careers of individual researchers whose collective efforts give voice to African scholarship within the global scholarly community.

For parent institutions and of course authors, the more a given article is referred to, cited, applied and built upon, the better for research and for the researcher's career (Harnad, 2005). For universities, and their donors, the greatest value is in ensuring that the research they variously fund and support has the greatest possible research impact. As a result, providing journals with the widest visibility and accessibility represents their ultimate goal.

Evidently these goals are in line with the ideals of electronic publication and the spirit of Open Access. In the absence of commercial publishers, who for fear that Open Access threatens their business viability have become barriers to Open Access, African journal publishers, in contrast, are uniquely positioned to experiment with new online publishing systems, ones that have the potential to not only reduce publishing costs while improving the scholarly quality of journals but also to provide them with the widest visibility and accessibility, thereby maximizing return on investment.
5.3 Authorship and Readership of Scholarly Journals

5.3.1 Introduction

Authors and readers are key actors in the scholarly publishing process. Whereas authors (creators and originators of scientific knowledge) initiate the life cycle of the scholarly process, readers are the end users or consumers of that knowledge. Thus the success of any journal publishing enterprise, be it print or online, hinges on the availability of authors willing to write and readers willing to read (Tenopir, 1995, p. 575). In this regard, the principal focus of this study at this point was to determine trends in authorship and readership of scholarly journals produced in Africa; specifically, the goal was to establish the information source used by African readers (scientists, researchers) and to identify the respective motivation and goals of African authors to publish in scholarly journals.

5.3.2 Trends in Authorship and Readership of Scholarly Journals

In their assessment of the state of authorship of scholarly journals, a significant majority (81%) of editors in the sample reported a trend towards an increased level of authorship in their journals (see Figure 5.8). Ten percent (10%), on the other hand, described the trend as decreasing, while five percent (5%) were not sure what to make of the current trend of journal authorship.
A further analysis was conducted to illustrate the geographic distribution of authors who had submitted to these journals (see Table 5.8). Of the 65 respondents who reported that authorship to their journals was increasing, 57% said submitting authors were mainly from Africa, and 23% indicated that the authors were international (from outside the African continent).

Table 5.8 Regional Trends in Authorship (n=65)

<table>
<thead>
<tr>
<th>Regional Trends</th>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing African authorship</td>
<td>37</td>
<td>57</td>
</tr>
<tr>
<td>Increasing International authorship</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td>Others (international and Africa)</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>100.0</td>
</tr>
</tbody>
</table>
5.3.3 Trends in Readership

On the question of journal readership of African published journals, respondents were of the view that readership was on the ascendance. A significant percentage (88%) of journal editors indicated that the readership of their journal was increasing (see Table 5.9), 7% of respondents said readership of their journals was decreasing, and a smaller percentage were not sure of the trends in readership.

Table 5.9 Trends in Readership (n=77)

<table>
<thead>
<tr>
<th>Trend in Readership</th>
<th>No of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing</td>
<td>68</td>
<td>88</td>
</tr>
<tr>
<td>Decreasing</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Not Sure</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td>100</td>
</tr>
</tbody>
</table>

No Data = 3

Breaking down the data further, of the 68 editors who claim readership of journals was increasing, 56% described the readership to be international, and another 37% described the readership as limited to Africa (see Table 5.10).

Table 5.10 Trends in Readership (n=68)

<table>
<thead>
<tr>
<th>Regional Readership</th>
<th>No of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing (International)</td>
<td>38</td>
<td>56</td>
</tr>
<tr>
<td>Increasing (Africa)</td>
<td>25</td>
<td>37</td>
</tr>
<tr>
<td>Others (International and Africa)</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>100</td>
</tr>
</tbody>
</table>
In order to verify the readership claims of respondents, we compared the study’s survey response to INASP’s report on African journals in the AJOL database. The results confirmed that, to a higher degree, that international readership of African journals was on the rise. The report, *A Study of Second Internal Evaluation, 2003–2005 of Africa Journal OnLine (AJOL)*, the world’s largest online database of African-published, peer-reviewed scholarly journals, gives the following findings:

The number of journals available on the service has increased from the initial 14 to 230 by January 2006. Quarterly page requests increased from 72,600 from the first quarter of 2004 to 4,586,957 of the third quarter of 2005. Registration to the site increased from 3,883 in 2003 to a cumulative number of 12,206 as at 2005. Registrations to the site are voluntary, and one does not need to register at AJOL in order to access the content, and therefore registrations do represent those users with interest in AJOL that want to take time to register. The registration also provides important information on the number and origin of users.

Although this quote gives credence to the possibility that readership of Africa research may in fact be on the rise, more useful in that report are the Document Delivery Statistics (DDS), whose related document delivery service allows users to order copies of single articles either at no cost or for a small fee, depending on which region of the world the request is coming from. The DDS provides an important indicator of the actual use of published research from Africa. Here too, the AJOL database study shows that document delivery requests fulfilled by AJOL increased from 6 in 2001 to 2,995 in 2005, another indicator of increased readership of journals published in Africa.
The AJOL’s evaluation report also provided the geographical distribution of readership for African journals, and in comparison with findings from the present survey, the findings suggest that more people outside the continent are experiencing improved access to its journals (see Table 5.11).

**Table 5.11 Geographical Distributions of Document Deliveries on AJOL**

<table>
<thead>
<tr>
<th>Region</th>
<th>2003</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>44</td>
<td>635</td>
</tr>
<tr>
<td>USA/Canada</td>
<td>60</td>
<td>152</td>
</tr>
<tr>
<td>UK</td>
<td>42</td>
<td>54</td>
</tr>
<tr>
<td>Central and South America</td>
<td>4</td>
<td>53</td>
</tr>
<tr>
<td>Europe (excluding UK)</td>
<td>15</td>
<td>76</td>
</tr>
<tr>
<td>Australasia</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Africa</td>
<td>1174</td>
<td>3900</td>
</tr>
<tr>
<td>Nigeria and South Africa</td>
<td>1372</td>
<td>3269</td>
</tr>
</tbody>
</table>


Referring to Table 5.11 it is clear that between 2003 and 2005 there was a huge increase in document deliveries to different parts of the world. The largest part of the increase was to countries outside Africa. These figures not only confirm the present study’s findings, but they also show that overall access to African scholarship is on the rise.

Similarly, while it was considered necessary to verify respondents’ claims that authorship of African journals had also been increasing, there were no empirical studies available with which to do so. Alternatively, the researcher mined authorship data on the study’s five participating countries from the Web of Science (WoS)
database and compared it to our own survey findings.\textsuperscript{16} WoS is considered the most comprehensive multidisciplinary database for periodicals, and provides a variety of specific tools which allow researchers to search for published articles based on such categories as country of origin and authorship. Working within a specific time frame, WoS can help locate articles which originate in Africa and which are authored by Africans.

\textit{Table 5.12 Number of Authors from Sub-Saharan African Countries, 1997 and 2007}

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Authorship</th>
<th>% of Total</th>
<th>Country</th>
<th>Authorship</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>South Africa</td>
<td>262</td>
<td>52.4</td>
<td>South Africa</td>
<td>272</td>
<td>54.4</td>
</tr>
<tr>
<td>2</td>
<td>Nigeria</td>
<td>65</td>
<td>13.0</td>
<td>Nigeria</td>
<td>48</td>
<td>9.6</td>
</tr>
<tr>
<td>3</td>
<td>Kenya</td>
<td>22</td>
<td>4.4</td>
<td>Kenya</td>
<td>40</td>
<td>8.0</td>
</tr>
<tr>
<td>4</td>
<td>Ghana</td>
<td>11</td>
<td>2.2</td>
<td>Ghana</td>
<td>18</td>
<td>3.6</td>
</tr>
<tr>
<td>5</td>
<td>Uganda</td>
<td>10</td>
<td>2.0</td>
<td>Uganda</td>
<td>13</td>
<td>2.6</td>
</tr>
</tbody>
</table>

\textit{From a paper presented by Smith Esseh and Prof Amy Metcalfe at the 2009 Conference of the Association for the Study of Higher Education (ASHE) Florida, USA.}

For purposes of analysis, 6,144 articles published in 1997 were compared to 9,730 articles published in 2007 using the ISI Web of Knowledge’s analytical functions such as the Science Citation Index Expanded (SCI-EXPANDED), the Social Sciences Citation Index, and the Arts & Humanities Citation Index.\textsuperscript{17} The goal was

\textsuperscript{16} This comparison was made with the proviso that records of scholarly publications from sub-Saharan Africa found in Web of Science may not be absolute in the sense that many publications from sub-Saharan Africa are not indexed in ISI. However, data from ISI can serve as an indication of the level of scholarly productivity in the region.

\textsuperscript{17} The basic goal in doing this bibliometric analysis was to examine articles authored by Africans. The limitation of this analysis is that it did not take into consideration co-authorship, where the articles appeared, or the institutions that employed them.
simply to compare the data by country of origin, the results of which are discussed below (see Table 5.12).

In both 1997 and 2007, the South Africans published more articles (52.4% and 54.4%) indexed by the ISI Web of Science than researchers in any other sub-Saharan country. Next to South Africa, the African country with the most publications was Nigeria, representing 13% of the total authors in 1997 and nearly 10% in 2007 (see Table 5.12). However, comparing the authorship counts from 1997 to 2007 shows little change in the country output although there is some variation in the number of articles authored in these years. Comparing these data with responses from the present survey suggests that African authorship within scientific journals has been increasing but only marginally.

Below are summaries of the views of three editors following workshop discussions, at which participants were asked what they made of the current trends in authorship and readership of African journals. The views quoted here are representative of the general opinion of the majority of the editors at the workshops.

Participant A

We keep receiving reviews and comments from all over the world and this didn’t used to be the case some few years ago. In fact, we managed to post a few copies of our journals abroad but those were just a handful. However, since we went online, the readership of the journal has greatly improved because we keep receiving international subscriptions to our articles. Our journal website has also increased with hits.
Participant B

A few years ago we approached AJOL to have our journal online. After overcoming various hurdles we finally had our journals posted online. Our journal has been online for just four years but we have had more reviews in the last four years than the 15 years the journal was started before it went online.

Participant C

I will attribute the increase in readership to recent development in information technologies. I have been publishing for the past 15 years as a professor and have attended many international conferences and workshops, but the only time I was invited to international conferences [was] because of my recent publication in our journal that went online. I was invited to present a paper on ... And as the senior editor of our journal, since we went online, we have received many reviews from outside. We have also been approached for collaborative research in the field in which we publish.

These quotes, which represent the general view of participants, reaffirm the fact that the Internet has provided additional visibility to African scholarly work in the international academic research community and is responsible for the growing increase in readership.

5.3.4 Knowledge about Regional (Online and Print) Journals

Exploring study participants’ knowledge and awareness of regional journals, responses suggests that the scholarly community, as represented in this sample, had little knowledge about journals (both in print and electronic format) published within the continent. Regarding online journals, only a small percentage of respondents (25%) were aware of regional journals in their field, a strong majority
(75%) of these claiming they did not know of any regional journals in their field or of work that is published online. For regional print journals, a higher percentage of respondents (62%) were able to identify several print journals they termed “regional journals.” However, a further analysis of the responses revealed that the greater majority of them was published by the respondents’ own institutions, suggesting that little was known of print journals beyond the confines of respondents’ institutions or countries. Workshop discussions further explored the reasons for the poor patronage and lack of knowledge of Africa journals, the findings clearly suggesting that the absence of most of these journals in electronic format combined with poor regional communication networks had contributed greatly to their obscurity.

Indicative comments included the following:

Participant A

We don’t even have an idea of the journals that are published by our neighbors [referring to nearby universities]. As far I am concerned it is easier to have access to foreign journals than local journals.

Participant B

We don’t read much of the journals published in Africa because most of them are not published online. If they are somewhere out there, we hardly see them; access is just too difficult.

Participant C

I do have access to some of these journals but often I get them when I travel to neighboring countries for editors’ conferences or workshops. We have a very bad distribution networks for our journals.
Participant D

I subscribe to one of these journals, but when the journal gets published, it takes over three to six months before the posted copy gets to me. It is far easier to access journals published 9,000 kilometers away than one published 100 kilometers near you.

Inherent in these responses is the belief that online publishing could provide answers to some of the challenges posed by print journals in accessibility and visibility. It is therefore important to provide some form of support to journals seeking to provide online access to their content. Electronic publishing, considered free of such constraints, can of course help disseminate research findings more quickly and in much larger quantities.

5.3.5 Sources of Article Read

The respondents indicated that the library is the major source of accessing scientific publications (79%), and relatively few participants access research publications through personal subscriptions (4%) (see Table 13a). Staff and faculties also occasionally purchased journals from the bookstores or publishers 10%, and “Other” (7%), as indicated in the discussions, includes such things as donation of back issues to institutions, borrowing from friends or colleagues, and photocopying.
Table 5.13a By What Means Do You Get Access to Scholarly Articles/Journals? (N=101)

<table>
<thead>
<tr>
<th>Sources</th>
<th>Response</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library and institutional subscriptions</td>
<td>80</td>
<td>79</td>
</tr>
<tr>
<td>Subscription (personal)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Individual (one time) Purchase</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>100</td>
</tr>
</tbody>
</table>

Further analysis of responses established that a majority of survey respondents (64%) reported accessing scholarly articles entirely online, a little more than a third relying largely on print. Thus, the notion that “print-based journals continue to be the most important and relatively effective means of scientific communication in African institutions” as stated by Teferra (2003, p. 65) would no longer seem to hold true, at least according to present survey findings.

Table 5.13b By What Means Do You Get Access to Scholarly Articles/Journals? (N=101)

<table>
<thead>
<tr>
<th>Sources</th>
<th>Response</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Online</td>
<td>65</td>
<td>64</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>100</td>
</tr>
</tbody>
</table>

In spite of limited access to information communication technologies, access to research information in traditional print format is gradually being eclipsed by the more accessible electronic format, a phenomenon which is supported by recent
readership trends among the global academic community (Tenopir et al., 2003; Vaughan, 2003).\textsuperscript{18}

In the open workshop discussion session, faculty and students spoke on the current state of access to information and how the capabilities of online technology are strengthening the research environment. The following are some of the comments, and the data are replete with stories such as these:

The Internet has become the biggest source of information for teaching and research. It makes life easier for the every seeking teacher.

We have more access now than I can ever think of in my 15 years as a professor of science. Years ago, we had to rely on friends and donors who brought us dated journals often not useful. Technology is changing that.

Some of us couldn’t build strong literature for our research because access was non-existent. Digital technology is enriching the research environment.

I am a final year graduate student. I never read one journal article for my undergraduate degree. To my colleague and I, journals were “endangered species.” It is only the Internet technology that can reverse that. The story is gradually changing with the Internet available. Student life is much easier because access is becoming easier, faster and richer.

\textsuperscript{18} A study on pattern of journal use by scientists through three evolutionary phases by Tenopir et al. (2003) shows that the proportion of reading by scientists from electronic sources has increased substantially. Between 1990 and 1993, a period designated by the study as “Early evolutionary phase,” the proportion of reading (%) made from personal subscriptions for electronic journals was just 3.0%; the rest of all of the reading observed was from print journals (97.0%) By the third phase—between 2001 and 2002—called “advance evolutionary phase,” reading by scientists from print journals had dropped to 20.5%, and readings from electronic format saw a sizeable increase to 79.5%.
Access to so many e-databases is a saviour of the research community in Africa. There is nothing better than having access to latest scientific discovering in the world.

Of course, the impact of the Internet in increased access to e-journals may not be as dramatic in Africa as in more developed nations. This is due to the relatively limited spread of information technologies on the continent. However, recent initiatives by international donor communities and development agencies to increase the access of developing nations to research information to through such programs as AGORA, HINARI, OARE, and PERii have greatly contributed to an increase in the use of electronic journals over print. Because of the minimal costs of providing online delivery for publishers, these initiatives have put well over 4,000 key scientific journals and bibliographic databases at the disposal of students, researchers and lecturers (Ochs, Aronson and Wu, 2004). Interestingly, all of these programs that extend access to research information are not in print format but electronic format, privileging electronic journal access over print journals.

Furthermore, the access points for AGORA and HINARI among others are located within university and institutional libraries. The libraries and the universities are believed to be better equipped with information communication technologies (high-speed Internet connectivity and good bandwidth), thus allowing for easier access to such resources compared to the private offices and homes of faculty members, scientists or students. However, unlike many advanced countries, where members of the academic community can access electronic library resources from off-campus through proxy servers, most libraries in Africa have yet to develop their own Websites, let alone remote access (Virtual Private Network) to servers. As a result,
because scientists, researchers and students must be physically present at libraries in order to access its electronic resources, libraries have become a key point of access to such resources in Africa.

5.3.6 Information Usage by Research Community

Overall, the research community in the sample read more scientific journal articles than any other document, reading an average of 5.5 print journal articles and 11.16 online journal articles per month, for a total average of 15.62 journal articles per month (see Table 14). Respondents also relied on other scholarly sources, reading an average of 1.10 monographs and 5.65 textbooks per month.

Table 5.14 Average Scholarly Documents Read Per Scientist (n=96)

<table>
<thead>
<tr>
<th></th>
<th>Print journal Articles</th>
<th>Online journals articles</th>
<th>Scholarly Monographs</th>
<th>Textbooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average amount of reading per scientist per month</td>
<td>5.50</td>
<td>11.16</td>
<td>1.10</td>
<td>5.65</td>
</tr>
<tr>
<td>Average amount of reading per scientist per year</td>
<td>66.00</td>
<td>133.88</td>
<td>13.25</td>
<td>67.50</td>
</tr>
</tbody>
</table>

No Response=5

These figures compare well with what has been observed in developed countries (King et al., 2003; Meadow, 1974, cited in Tenopir, p. 160). Interestingly, respondents in the sample indicated reading more textbooks than print journals, possibly because prior to recent advancements in ICT, which suddenly opened up a world of online resources to the scholarly community in Africa, print journals were almost nonexistent. For example, in Ehikhamenor’s (1990) study, conducted long before the spread ICT on African university campuses, it was found that to contend
with the absence of print journals, 36% of Nigerian scientists had travelled overseas to access them, and another 35% had sourced them externally through photocopies.

Today, even with limited access to ICT infrastructure, access to global online resources is on the rise, transforming the nature of scholarly research across Africa. Encouragingly, African scholars have reported reading journal articles at similar rates to those of their counterparts in the northern hemisphere, the latter averaging 188 articles per year (Tenopir 2003). What this means is that improving research resources and scholarly communication through the application of innovative online technologies can only strengthen the research community in Africa.

5.3.7 The Usefulness of Information Read from Scholarly Journals to the Research Community in Africa

On a seven-point Likert scale, various respondents—faculty, research staff, scholars, and graduate students—were asked to rate the relevance of scholarly journals for research purposes, career advancement, and professional development (see Table 5.15).
Table 5.15 The Use and Purpose of Scholarly Journals to the Research Community in Africa (N=80)

<table>
<thead>
<tr>
<th>Weight values</th>
<th>Absolutely essential</th>
<th>Moderately essential</th>
<th>Slightly essential</th>
<th>Neutral</th>
<th>Slightly inessential</th>
<th>Moderately inessential</th>
<th>Absolutely inessential</th>
<th>(%)</th>
<th>Rating Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching</td>
<td>50%</td>
<td>21%</td>
<td>12%</td>
<td>16%</td>
<td>1%</td>
<td>0.0%</td>
<td>1.00%</td>
<td>100%</td>
<td>2.0</td>
</tr>
<tr>
<td>Professional development</td>
<td>68%</td>
<td>21%</td>
<td>7%</td>
<td>4%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100%</td>
<td>1.5</td>
</tr>
<tr>
<td>Research objectives</td>
<td>80%</td>
<td>14%</td>
<td>4%</td>
<td>2%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100%</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Although journals are of course read for a variety of purposes, survey responses suggest they are read mainly to meet “research objective.” With a rating average of 1.3, respondents rated the importance of reading in achieving research objectives as “absolutely essential.” Using the rating average computations, reading for professional development was rated at RA1.5 and reading for “teaching” was rated at RA2.0. Both ratings are below “absolutely essential” but closer to “moderately essential.” Stated differently, whereas 80% of the respondents said reading journals for research purposes was “absolutely essential,” only 50% and 68% thought it was “absolutely essential” for career advancement and professional development respectively.

5.3.8 Incentive for Publishing in Scholarly Journals

In answer to why authors to chose to publish in a particular journal, “career advancement” (75%) and “contribution to knowledge” (74%) were reported as the two primary motivations (see Table 5.16). Both variables have a rating average of 1.41 for career advancement and 1.34 for contribution to knowledge, indicating that
both are “absolutely essential” motivating factors. Publishing for “public good” (52%), publishing for “posterity” (48%) and publishing for the “protection of intellectual property” (38%) were other factors that drove respondents to publish in Africa. While related modal values show the above to be “absolutely essential” factors, they all reveal rating averages leaning more towards “moderately essential” motivators. Publishing for financial reward with an associated rating average of RA3.70 represents neither an incentive nor a disincentive for publishing in scholarly journals.

Table 5.16 Motivations to Publish in Scholarly Journals (n=80)

<table>
<thead>
<tr>
<th>Weighted Values</th>
<th>Absolutely essential</th>
<th>Moderately essential</th>
<th>Slightly essential</th>
<th>Neutral</th>
<th>Slightly inessential</th>
<th>Moderately inessential</th>
<th>Absolutely inessential</th>
<th>%</th>
<th>Rating Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Advancement</td>
<td>74.7%</td>
<td>18.2%</td>
<td>5.1%</td>
<td>2.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100</td>
<td>1.3</td>
</tr>
<tr>
<td>Contribution to knowledge</td>
<td>73.7%</td>
<td>15.2%</td>
<td>9.1%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>100</td>
<td>1.4</td>
</tr>
<tr>
<td>Public Good</td>
<td>51.5%</td>
<td>30.3%</td>
<td>8.1%</td>
<td>7.1%</td>
<td>1.0%</td>
<td>1.0%</td>
<td>1.0%</td>
<td>100</td>
<td>1.8</td>
</tr>
<tr>
<td>Posterity</td>
<td>47.5%</td>
<td>19.2%</td>
<td>23.2%</td>
<td>7.1%</td>
<td>1.0%</td>
<td>2.0%</td>
<td>0.0%</td>
<td>100</td>
<td>2.0</td>
</tr>
<tr>
<td>Protecting Intellectual Property</td>
<td>37.60%</td>
<td>31.70%</td>
<td>11.90%</td>
<td>12.90%</td>
<td>3.0%</td>
<td>2.0%</td>
<td>1.0%</td>
<td>100</td>
<td>2.2</td>
</tr>
<tr>
<td>Financial Reward</td>
<td>10.1%</td>
<td>14.1%</td>
<td>22.2%</td>
<td>25.3%</td>
<td>14.1%</td>
<td>5.1%</td>
<td>9.1%</td>
<td>100</td>
<td>3.7</td>
</tr>
</tbody>
</table>

The responses in this sample are confirmed by other survey and research studies, which show repeatedly that, in the field of motivational theories, factors other than money have the power to stimulate someone’s interest in or enthusiasm for doing something. Douglas McGregor’s Theory X and Theory Y and Abraham Maslow’s hierarchy of needs have established strongly that recognition, respect, praise, opportunity for advancement and a sense of belonging are far more powerful motivators than money. McGregor ranks money in his Theory X category and feels it is a poorer motivator. Recognition and opportunity for advancement are ranked in
the Theory Y category and are considered stronger motivators than money.

Similarly, Maslow places money at the lowest level of the hierarchy of needs and evinces other needs are superior motivators to workers.

In similar fashion, workers within the scholarly community in Africa, just like their counterparts in the West (Swan and Brown, 2002; Tenopir et. al., 2003),¹⁹ have indicated that most essentially, recognition for career advancement and the desire to contribute to scholarly knowledge rather than direct financial reward, impelled them to publish. Further, this compares to a similar study carried out by Emerald in which authors considered other factors than financial merit as a motivation to publish (Broug, Foster, Heppenstall and Lazarz, 2008 p. 17)

From technical, economic, social, and intellectual perspectives, the system of print production has failed to increase African’s contribution to national, continental and global knowledge. The system has failed to advance human inquiries beyond the walls of universities and limited fluid collaboration with peers outside their countries. Given the failure of print journals, but a strong motivation to contribute to knowledge and public good, it would seem authors and scholars in this sample may well embrace online publishing. New online innovative publishing technologies have the power to circumvent the limitation of print journals and provide a means of improving Africans’ research capacity by contributing to indigenous knowledge development, as well as a larger global exchange of knowledge.

¹⁹ Tenopir and King (p. 146) report similar findings in their book Towards Electronic Journal: Realities for Scientists, Librarians and Publishers, and The ALPSP report, Authors and Electronic Publishing found that fewer than 1% of academics considered direct financial reward to be their primary publishing motivation.
5.3.9 Factors Affecting Author’s Choice of which Journal to Publish In

Respondents were asked what relative weight they attached to a number of factors when choosing where to submit a manuscript (see Table 5.17).

Table 5.17 Factors Affecting Author’s Choice of which Journal to Publish In (n=101)

<table>
<thead>
<tr>
<th></th>
<th>Absolutely essential</th>
<th>Moderately essential</th>
<th>Slightly essential</th>
<th>Neutral</th>
<th>Slightly inessential</th>
<th>Moderately inessential</th>
<th>Absolutely inessential</th>
<th>%</th>
<th>Rating Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate Subject Scope</td>
<td>84.2%</td>
<td>13.9%</td>
<td>1.0%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100</td>
<td>1.2</td>
</tr>
<tr>
<td>Institutional Legitimization</td>
<td>78.2%</td>
<td>9.9%</td>
<td>5.9%</td>
<td>5.0%</td>
<td>0.0%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>100</td>
<td>1.4</td>
</tr>
<tr>
<td>International Journal</td>
<td>73.3%</td>
<td>15.8%</td>
<td>5.9%</td>
<td>4.0%</td>
<td>0.0%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>100</td>
<td>1.4</td>
</tr>
<tr>
<td>Prestige of Journal</td>
<td>45.5%</td>
<td>22.8%</td>
<td>11.9%</td>
<td>12.9%</td>
<td>2.0%</td>
<td>1.0%</td>
<td>4.0%</td>
<td>100</td>
<td>2.2</td>
</tr>
<tr>
<td>Short Publication Lag (speed of Pub.)</td>
<td>39.6%</td>
<td>25.7%</td>
<td>13.9%</td>
<td>11.9%</td>
<td>5.9%</td>
<td>1.0%</td>
<td>2.0%</td>
<td>100</td>
<td>2.3</td>
</tr>
<tr>
<td>High Acceptance Rate</td>
<td>35.6%</td>
<td>32.7%</td>
<td>6.9%</td>
<td>15.8%</td>
<td>2.0%</td>
<td>3.0%</td>
<td>4.0%</td>
<td>100</td>
<td>2.4</td>
</tr>
<tr>
<td>Large Circulation</td>
<td>30.7%</td>
<td>28.7%</td>
<td>10.9%</td>
<td>15.8%</td>
<td>5.9%</td>
<td>4.0%</td>
<td>4.0%</td>
<td>100</td>
<td>2.7</td>
</tr>
<tr>
<td>Journal has Online Edition</td>
<td>31.7%</td>
<td>18.8%</td>
<td>10.9%</td>
<td>18.8%</td>
<td>5.9%</td>
<td>8.9%</td>
<td>5.0%</td>
<td>100</td>
<td>3.0</td>
</tr>
<tr>
<td>Local/National Journal</td>
<td>22.8%</td>
<td>31.7%</td>
<td>22.8%</td>
<td>8.9%</td>
<td>5.9%</td>
<td>3.0%</td>
<td>5.0%</td>
<td>100</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Appropriate subject scope (RA 1.2), and institution legitimization (RA1.4) that is, journals that are formally recognized by tenure committees and give accreditation by governing bodies of universities, were considered by respondents as the most important factors that influence their decision when considering which journal to publish in. The self-diminishing perception that Africans have of (their own journals) journals emanating from the continent (Zeleza, 1998, p. 30) became obvious in this sample, as publishing in international journals was rated “absolutely essential” by respondents, whereas rating journals published within the continent “slightly essential.” Arranged in order of importance, publishing in international journals ranks third, and publishing in national/regional journals lies at the bottom of the table.
5.3.10 The Challenges Faced by Authors Who Submit to the Journals

Respondents in the sample identified three major problems faced by authors who submit to the journals. These were delays in processing manuscripts (28.2%), document delivery and system of communication (26.9%), and writing skills/quality of articles (23.1%). Other reoccurring problems were technical limitations (6.4%) and reacting to queries (5.1%). A small proportion of editors (10.3%) claimed that authors have had no challenges submitting to the journals (see Table 5.18).

Table 5.18 Challenges Faced by Authors who Submit to the Journals (n=78)

<table>
<thead>
<tr>
<th>Challenges faced by Authors</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing skills/quality article = Rejection</td>
<td>18</td>
<td>23.1</td>
</tr>
<tr>
<td>Delays in processing ms (Reviewers, editors and authors) Time demand</td>
<td>26</td>
<td>33.3</td>
</tr>
<tr>
<td>Technical limitations (low levels of computer literacy, inadequate hardware/software)</td>
<td>5</td>
<td>6.4</td>
</tr>
<tr>
<td>Document delivery and systems of communication</td>
<td>21</td>
<td>26.9</td>
</tr>
<tr>
<td>No challenges</td>
<td>8</td>
<td>10.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>78</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

No Responses = 2

The workshop discussion, which focused on clarifying any ambiguities in the survey questions, highlighted in greater detail the problems faced by authors. Indicative comments and opinions are summarized in the following paragraphs.

Participants’ comments re-emphasized the point that the major problem confronting authors working with journals in Africa was delays in the processing of manuscripts. These delays were caused by authors who failed in their responsibility to return manuscripts on time once they have been revised in response to reviewers’
suggestions. Authors have the discretion when to attend to revision and when to return revised articles to the journal, but authors, often operating under the guise of academic pressure and limited available time, take forever to return revisions. In the words of another participant:

"Reviewers have failed to follow strict timelines in their response to manuscript reviews and have “held hostage the publishing process for many months (some six months)...”"

Another participant observed:

“Authors submit their work and eventually realized many months later that the reviewer has not even acknowledged receipt of the manuscript. This can be discouraging.”

The problems with delayed action on manuscripts have been exacerbated by the channel of communication usually employed throughout the editorial and peer-review process up to the production stage of the journals. As indicated later in this chapter, the postal system (64.1%) remains one of the most popular and often used communication methods between editors and reviewers and by extension with all participants in the scholarly publishing process. As indicated below by editors in the workshops, the postal system in many countries in Africa continue to prove expensive, unreliable with widespread delays, and deliveries in some cases take four to six weeks. An editor from South Africa indicated that as recently as 2008, Amazon, the US online retailing giant, announced that it will no longer ship to South Africa using standard shipping through the postal system, citing theft of parcels as its primary reason. It will only send items to South Africa using courier services, which are more expensive than conventional postage. It came therefore as no surprise that
26.9% (see Table 5.16) of editors in this study indicated that document delivery and communication systems was the third highest challenge faced by authors working with the journals. The data are well supplied with stories like these:

It takes 4 to 6 weeks and sometimes more to receive manuscripts posted by authors.

Manuscripts get lost in the mail.

Reviewers sometimes claim they never got manuscripts posted to them.

It is too expensive to post. Anytime you send 25 manuscripts for review, you should multiply the cost of postage by 3 (three reviewers for each manuscript), multiply by 3 again (i.e., 3 self addressed envelopes for reviewers to return) multiply again by 2 if you have to send manuscripts to the author for revision and galleys for proofreading before print.

Some of the local contributors cannot be reached through the Internet. We have no problem with contributors from Europe, the US. Some editors in their assessments were honest to say that sometimes, their inaction also affected the quick processing of manuscripts.

On the subject of writing skills and quality of submission, 23.1% of editors in the sample indicated that sometimes authors are less careful in preparing their manuscript to conform to the journals guidelines found in standard publication manuals like *Publication Manual of the American Psychological Association* (APA) or *Chicago Manual of Style* (CMOS). Some other manuscripts failed to attain brevity consistent with clarity of expression; others lacked relevant, sufficient, and authoritative literature support. Such manuscripts were immediately returned to authors for correction, often through the snail-mail postal system, which subsequently affected the throughput times of journal articles.
These stories are no exaggeration, because existing literature confirms most of them. Janet and Smart (2000), Zeleza (1999, p. 36), and Lai Bello (2008) have all discussed how the inefficient postal system in Africa and the delays in processing manuscripts have affected the image of journal publishing in Africa. The Internet, however, provides a distinctive opportunity to overcome some of the problems mentioned above by facilitating effective and efficient communication among editors, authors and reviewers. Editors can save time, greatly increase speed of delivery of information during production process, and allow African information products to reach a global audience.

At the workshop session, faculty and editors were asked whether there was the possibility that they would like to adopt locally maintained online publishing system like OJS to manage and publish their journals, and whether such online publishing systems could help them overcome some of their challenges. Below are some of the varied views expressed by participants particularly editors, faculties and students:

- It is an exciting idea to have OJS for our journals considering the capabilities of OJS.

- It is likely to help us overcome issues of postage, timeliness, high production cost associated with printing.

- Having OJS is a good idea as long as we can have support. Lack of support for free software is common in the network environment. Training for editors is also essential.

- Digital technologies can strengthen our dissemination efforts, provide greater visibility, increase chances of citation and indexing.

- We will definitely get OJS installed soon after this workshop because it
has become apparent that we can do much more with our editorial and peer-review practice and management of journals than we are currently doing with print. But we will need training.

It is one way to make African indigenous knowledge widely available to the rest of the world.

More opportunities can be available through online management as opposed to the print production: increased citation, submissions, impact and quality, because of increased visibility and accessibility

Throughout the workshop discussions at all the institutions visited, the overwhelming majority of participants showed a high level of interest in OJS and other technologies that will enhance their publishing and scholarly activities.

5.4 Summary of Findings

This chapter presents the findings related to the current state of scholarly publishing including emerging trends, related editorial and technical challenges, as well as aspects of journal authorship readership and journal distribution patterns. To enable triangulation, and the acquisition of a richer source of data, narrative responses from the workshop discussions and semi-structured interviews were also incorporated.

Reporting on the essential characteristics of journals in the sample, this study shows that journals published are mostly owned and published by university, research institutions and learned society in Africa, and there is little presence of commercial publishers. An important factor that distinguishes journal publishing in Africa from developed nations is that, journals in the latter are mostly owned and published by commercial publishers. These journals are produced in two formats, print and
electronic. Almost 70% of the journals in the sample were published in print format, and only 10% were fully published online. The tables of contents of a few of the journals are abstracted and published in the Africa Journal Online Database.

While journals were found to be published across disciplines—humanities, social science, and sciences—the sample revealed a unique breed of journal called “institution-wide” journals. These are hybrid journals borne out of hard fiscal challenges and yet serving the needs of the research community in Africa. Across disciplines, the sample shows that journal production in the sciences is higher than in other disciplines. Workshop responses indicated that recent international collaborative efforts and donor support directed towards building research capacity in the sciences at the expense of the humanities have given rise to science journals.

The rest of the chapter reveals both encouraging trends and principal challenges within the journal publishing system in Africa.

In their assessment of the state of authorship, the majority of journal editors in the sample (81.25%) indicated a trend towards an increasing level of authorship in their journals as well as an increasing level of readership of journals. The presence of a few (10%) of the journals with full text online and (25%) with the table of contents abstracted on African Journal Online Databases has increase the visibility and accessibility and therefore increased international readership of those journals.

Further, the availability of the Internet is transforming the reading environment and culture among researchers in Africa. The research community in the sample is reading more scientific journal articles at a level that compares with what is observed
in developed countries. On average, scientists in Africa are reading (15.62 x 12) 187 journal articles per year, which compares to the average of 188 articles per year reported among three North American universities by Tenopir and King (2000). The modest gain made in ICT infrastructure has also provided the majority of researchers (64.4%) in the sample access to scholarly articles entirely online, little than a third relying largely on print. Thus the notion that print-based journals continue to be the most important and relatively effective means of scientific communication in Africa would no longer seem to hold true.

Today, access to research within the scholarly community is mediated by the online/Internet rather than the print access. Again, recent developmental initiatives by the international and regional community in improving ICT capacity in academic institutions, particularly academic research libraries, have made the libraries the primary point of access to research resources in Africa.

The chapter provides evidence of the objective for which scientific scholarly journals are read and the importance of journals in achieving these goals. Overall, journal articles are read mainly to meet research objectives, professional development and teaching, in that order of importance. The motivation to publish in scholarly journals was also examined in the chapter. Data show that career advancement and making a contribution to knowledge are the two absolutely essential motivating factors of scientists in the sample. Money, in contrast, was neither a motivator nor de-motivator to the research community represented in this sample.
The chapter also examined some challenges within the journal publishing in SSA. One of the most important problems with journals from developing countries is the poor visibility of the published articles. As clearly demonstrated in this chapter, circulation numbers among the 80 journals was low, and this sample demonstrates a highly skewed distribution pattern. Approximately 81.8% of journals had range between 1 and 500, and only 8.2% of journals, had a circulation above 1000. The average circulation for scholarly journals was 367 subscriptions per journal across all disciplines. Submission levels to the journals are very low, to the degree that the number of journal issues published annually average two journals per year. This low print circulation adds to the poor visibility of research published in Africa. The low production level itself is primarily a function of low research productivity in general. Journal subscriptions prices were relatively low among journals published by universities and societies, but about four times higher among the few journals published by commercial publishers, an exposition of the profit orientation of commercial publishers. Related to the subject of poor visibility is the fact that most researchers in Africa represented in the sample lacked knowledge or awareness of journals that are published within the continent, a situation that can lead to the use of scant resources on duplicating and repeating research activities among scholars.

Although the journals sourced income from a mix of revenue streams—author fees, subscriptions sponsorship, university support and volunteer—most are severely under resourced from the perspective of infrastructure. The inadequate funding, coupled with poor and inefficient postage systems, unavailability of articles and
editorial and administrative challenges have lead to severe irregularity in production schedules of most (66.25%) found in the sample.

The self-diminishing perception that Africans have of (their own) journals emanating from the continent (Zeleza, 1998, p. 30) became obvious in this sample, as a significant number of academics prefer to publish in American or European journals with international readership rather than in local journals. Respondents rated publishing in international journals as “absolutely essential” and journals published within the continent as “slightly essential.”

Although such accounts of the ongoing challenges of journal article submission and publishing in Africa may seem surprising, they are largely confirmed by the literature; Janet and Smart (2000), Zeleza, (1999), and Lai Bello (2008) have all discussed how the inefficient postal system and delays in processing manuscripts have affected journal publishing in Africa. Against this backdrop, the Internet provides a unique opportunity to overcome some of these challenges by facilitating much more effective and efficient communication among editors, authors and reviewers, thus allowing African scholarship to reach a more global audience.
CHAPTER 6

EDITORIAL AND PEER-REVIEW PROCESS

6.1 Journal Staffing

The majority of the 80 editors (65%) in the sample were doctoral-level academics, who, according to the sample, were either involved in research and/or held faculty positions. Another significant proportion (28%) held master’s degrees (see Table 6.1a-c). Males dominated (86%) the editorships, pointing to a significant underrepresentation of women in the profession. This is not surprising, because editors are usually drawn from a pool of senior academics, a position which few women in Africa currently occupy.

The sample further shows that journal editors have varying degrees of work experience in journal editing, ranging between 1 and 20 years, but most responses were clustered around an average of six years. Each journal averaged five editors, each of whom worked an average of 10 hours a week. Considering the institutional environment involved, where working conditions drive faculty to seek outside sources of income, where research is neither a criterion of appointment nor a condition for advancement, and where journal editing is often unpaid and hardly counts towards career advancement, working 10 hours a week suggests a rather high level of commitment and dedication to knowledge production in Africa.
Table 6.1a Editors’ Qualifications

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD / DPhil</td>
<td>52</td>
<td>65</td>
</tr>
<tr>
<td>MA / MSc / MPhil</td>
<td>22</td>
<td>28</td>
</tr>
<tr>
<td>BA / BSc</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other (graduate certificate/diploma)</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Total number of respondents</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6.1b Gender of Editors

<table>
<thead>
<tr>
<th>Gender</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>69</td>
<td>86</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Total number of respondents</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6.1c Editorial Experience

<table>
<thead>
<tr>
<th>Editorial Experience</th>
<th>Total hours</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of hours per week (n = 46)</td>
<td>461</td>
<td>10.0</td>
</tr>
<tr>
<td>Average number of years served (n = 46)</td>
<td>231</td>
<td>5.0</td>
</tr>
<tr>
<td>Average number of editors/journal (n = 61)</td>
<td>323</td>
<td>5.3</td>
</tr>
</tbody>
</table>

6.2 Motivations behind Editorial Work

Editors in the sample provided a number of reasons why they continue performing a job which is financially unrewarding, which rarely counts towards career advancement, and which requires a considerable commitment of time and effort. Some of these reasons include personal predilection, intellectual stimulation, and a desire to advance one’s field of knowledge; other factors include the desire to
establish connections with colleagues in the field, and the betterment of one’s career (Table 6.2).

\[
\begin{array}{l|c|c|c}
\text{Motivating Factors} & \text{Respondents} & \text{Percentage (\%)} \\
\hline
\text{Personal predilection} & 31 & 39 \\
\text{Professional recognition/career advancement} & 9 & 11 \\
\text{Collegial fraternity (building academic commons)} & 8 & 10 \\
\text{Intellectual stimulation} & 21 & 26 \\
\text{Contribution to the advancement of knowledge} & 35 & 44 \\
\text{Other} & 7 & 9 \\
\hline
\end{array}
\]

*Respondents allowed to provide more than one answer*

6.2.1 Personal Predilection

Those editors who cited “personal predilection” (38%) as the main motivation indicated that they derived considerable personal intrinsic satisfaction from their job. The following response from a senior journal editor provides such an example:

How do I answer your question? I have loved reading and I love editing and therefore doing this work is just in line with what gives me fulfillment. I was in the debate team as a student and I love to judge the merits of literary artistic work. So when I was approached for the job I felt honored. … I see fellow editors burnt out, and some resign because financially it is not rewarding. I like the challenge … to get a journal published is a great source of motivation.

Another editor of a sociology journal underscored personal job fulfillment as the main reason for his being an editor:
Seriously, I don’t know why I do this, and I have been doing it for the last 16 years. The reason may be at the personal level. I just love it. Nothing comes close to the joy of mentoring a budding community of authors to blossom creatively by strengthening their sense of confidence. That is gratifying!

Such is the kind of personal and professional satisfaction that motivates over a third of our sample’s editors to sacrifice personal time and comfort for the betterment of their colleagues and their field.

6.2.2 Contribution to the Advancement of Knowledge

For 45% of editors, their motivation stems from the belief that they are contributing to the advancement of knowledge in a small but significant way. They see themselves in a privileged position to make modest contributions to the literature in their field. One of the most respected and long-serving social science journal editors in South Africa described his motivation as follows:

My little effort is to contribute to scholarly work and dissemination of knowledge. To provide a thought-provoking collection of papers that cuts across discipline boundaries to advance professionals in linguistics research, bilingual education and public policy. Helping to improve the clarity of their writing and the quality of their research in the field of social science is important to me.

Another senior science journal editor with over 15 years’ experience underscored a similar theme, emphasizing his pleasure in serving in this way:

For me there is [an] unwritten code of ethics for editors, which demands the moral commitment to uphold the goals, values, and distinct ethical obligations of the editing profession. Second, the code places a certain
responsibility on us to ensure that the field is shaping and advancing in the right direction. And I have always enjoyed doing just that ever since I got appointed to the editorial board. It is a challenging job, my brother, especially dealing with authors and scant reviewers, but I am happy to do it.

To these respondents, who make up nearly half the sample, their motivation for work would clearly seem to revolve around the contributions to the development of their profession, the literature, and the quality of scholarly journals.

### 6.2.3 Intellectual Stimulation

For 26.3% of editors, the motivation to edit stemmed from the satisfaction of being exposed to interesting and stimulating professional experiences. Indeed, intellectual stimulation was the key reason that spurred the following editor and professor of anthropology to work as an editor:

Speaking as a senior editor of [X] journal who has been fortunate enough to get involved in this intellectual discourse, I think that one excellent way of ensuring intellectual stimulation is to be an active member of a scholarly community, like serving on the editorial board of a scholarly journal and any other work in the academic milieu that excites the mind. You receive articles with so many exciting discoveries and you’re happy to be the first to read it and you are intellectually challenged to complement these efforts of authors through sound judgments in the area of editing and peer reviewing.

Another experienced editor considers journal publishing a particularly stimulating intellectual enterprise:
One of those moments in your life where I felt so important was when I was offered the job as Editor-in-Chief of our journal. I do it because one perfect way of ensuring intellectual stimulation is to get different types of experiences beyond what I do. This is one extracurricular work that has nourished my critical reflection far more than my full-time job. It is also a difficult time to be an editor, especially in Africa where you work with a limited budget, increasing classroom responsibilities and workloads, and the huge pressure associated with the conflict between intellectual excellence and research production.

To the editor of a journal in the humanities, the ideological and socio-economic challenges do not compare to the intellectual stimulation of his job, something clearly loved and appreciated:

The current ideological and socio-economic climate is difficult on [the] scholarly community in Africa: lack of funds, inadequate research capacity, lack of adequate research articles being produced, and above all, inhumane working conditions. You need something that will make you want to stay, and for me it is learning new things all the time. Being able to read/access different articles of different disciplines and from different scholars, and being able to make a difference between them in terms of quality... Working with this journal means you do everything. I am the editor in chief, I am the proofreader, I am the production coordinator, the marketing person and the publicist. You need certain mental alertness to be able to juggle all these multiple jobs. My experience in this job teaches me that an editor should make intellectual judgments motivated by a love of thinking and discovery.

6.2.4 Collegial Fraternity (Building Academic Commons)

Another reoccurring theme of the survey was the level of satisfaction editors derived through establishing connections with colleagues within a common profession. This
particular motivation was further explained by the desire among editors to be part of a community of intellectuals—editors, authors, reviewers, and scientists—thus allowing for more collaborative learning and interaction among likeminded members of the academic community. The following experiences of editors are representative of many in the sample:

When I wasn’t the editor of this journal, my circle of colleagues didn’t extend further than those who have offices near mine. I accepted this job about 12 years ago and have travelled to many conferences/workshops within and outside of Africa. I was at the inauguration of the Society of African Journal Editors (SAJE) Kenya, and now an active member. These associations and conferences bring together African journal editors so we can work together to improve the quality and visibility of our journals. This exposure is important for me as well as the journal. Editing also provides a way for me to keep in touch with new scientific work and maintain professional contact with colleagues who serve on the editorial board.

Clearly, for these editors, such interaction among members of a common community may even be considered its own reward, with an emphasis on the role of the conference and workshop in providing that sense of community:

Collaborative work, especially with colleagues at other journals, has been especially important for our journal in the natural sciences. Personally, I have gained information, experience and expertise from other journal editors elsewhere in the world. You learn how the field is going and what is new. I never had any editorial training before my appointment. I was a novice on the job, but as a Senior Editor, I have attended several conferences and workshops, and through interaction I have learnt a lot. Through these workshops, we have built a network among colleague editors in different parts of the globe who are serving
as reviewers and editors to this journal. I have gained skills and knowledge in this profession, and that is satisfying.

Briefly, the professional experience and intellectual stimulation derived from membership in this collegial community accounts for the motivation of about 10% of editors in the sample.

### 6.2.5 Professional Recognition and/or Career Advancement

The sample also indicated that professional recognition and career advancement explained the desire and willingness of some respondents (11%) to work as editors. The following accounts of two editors reflect the views of many in the sample who claimed professional recognition and/or career advancement represented their chief motivation:

First of all, I am a teacher, and then, an editor of a journal. Engaging in scholarly activities is central to my career path. As an editor, I get to know the newest discoveries before they are even published. These perspectives have direct bearings on what I teach in the classroom as well as my research and publications. I guess by doing this editing job, I have found a way to establish my career.

In this university virtually all standards for promotion and tenure include service to [one’s] scholarly community, and it is an important element in determining whether or not a candidate shall advance up the academic hierarchy. Being named on [an] editorial board is a benchmark for peer recognition and therefore a window of opportunity for one’s career advancement. … It was a training ground for boosting my career but don’t forget, I know I am providing invaluable service to this university.
6.2.6 Other Factors

A small percentage of respondents (9%) stated other reasons than the above for taking up their editorial responsibilities. These individuals work because they are obligated to. In the words of one young editor, “It is part of my job description and I just have to deliver”; as another one stated, “I needed a job and I was offered one.”

The views expressed in the sample provide significant insight into the reasons journal editors in Africa continue to serve their profession despite a challenging academic environment and poor working conditions. Their enduring commitment and dedication thus require equal support from the scholarly community.

6.3 Editorial and Peer-Review Methodology

A fully implemented peer-review practice ensures that articles sent to the journal are submitted to experts in the field for critical scrutiny, under conditions of anonymity, and with the aim of ensuring quality and reliability of findings. The standard and methods of the editorial and peer-review processes of scholarly journals in SSA is guided by statements of several editors in the sample. Below are some direct quotes from respondents who were asked to outline the steps involved in their journal’s editorial and review process:

Well, a paper comes in and often lands on my desk. After preliminary review we try to look for reviewers. We try to find two people who will agree to review, and if eventually we do, we send the paper out to them. That can take greatly varying amounts of time. After the paper is returned, I look at the referee’s comments and decide whether we publish or not. If the decision is to publish we ask the author to make the
necessary corrections and revisions, and then we send the article to our copyeditor. A final copy is sent to the printer.

When it [the manuscript] is received by the journal, it is checked for conformity to the author guidelines. It is then subjected to preliminary review, sent to the reviewers involved. When the manuscripts are received back, the editors look through [them] and face a decision whether to publish, reject or subject [them] to another revision and submission.

Appointment of reviewers; sending articles for vetting; reviewing vetting/review report; decision on how to proceed (i.e., accept or reject); accepted manuscript goes for micro editing, page layout and printing.

Receipt of article acknowledged; copies sent to two reviewers (blind review); editors also review if there is no unanimity; article sent back to authors for corrections; final acceptance if satisfactorily corrected; acceptance letter sent to author; article ready for production.

Manuscript is sent by email to two reviewers after editor confirms that the article meets the basic editorial criteria of the journal. If the reviewers do not respond in time, article is sent out again to two other reviewers. It is sent to author for corrections, if any, and [when] the author returns the revised paper, it is sent to the reviewers again for verification when necessary.

Editor reads manuscript to satisfy himself that the manuscript is publishable in theory; then possible reviewers/assessors are found and approached; the paper is reproduced without authors name and sent to reviewers. Reviewers comment and corrections are sent to the author for reaction. Editorial board makes final decision based on reviewers’ decision whether article should be published or not.

Articles submitted to the chief editor or editorial office; chief editor finds three reviewers to review the manuscript; the chief editor and the
assistant editor meet to discuss the comments; if the paper is recommended for publishing it is then sent through editorial process.

Manuscript received and acknowledged. Chief editor determines the suitability of paper for the journal. Articles assigned to an editor who sends it to a reviewer, reviewer’s comment is subject to editorial board decision—reject, accept after revision, or accept, [then] article goes back to author for final correction. After copyediting is done, proofreading is done, layout carried out, and layout sent out for printing.

Editor decides whether it is worth publishing; editorial team decides on reviewers; reviewed articles returned to authors and returned; editorial board decides on satisfactory correction of manuscript; all articles undergo peer review. The editorial board decides if it is worth going to reviewers. The manuscript is then sent to two reviewers; reviewers’ comments are communicated to the author(s); author(s) make the necessary corrections and it is ready for copyediting; layout proofreading and production.

These quotes and statements from different journal editors highlight common themes in the sample and were convergent to an encouraging degree and therefore reliable for certain generalizations to be made about the editorial practices and procedures of scholarly journals. From the above quotes and other similar statements from this study’s 80 respondents, the following conclusions about the editorial practices of journal publishing in SSA Africa are drawn and summarized in Table 6.3.
What is important from the above analysis is the fact that the editorial workflow, practices and procedures of scholarly journals in Africa as outlined in Table 6.3 compares to those observed in the developed world. Although not all journals adhere to these guidelines, those that do demonstrate strong editorial commitment and standard to the research community.
6.4 Reasons behind the Rejection of Manuscripts

The data presented above were derived in response to the question, “What are the most common reasons for rejecting submissions?” The most often-cited reason for rejecting submissions was “presentation style” (64%) (see Table 6.4). Specifically, editors most often reject manuscripts based on technical structural weaknesses—misspellings and poor grammar—or based on poorly organized, unfocused ideas. The papers also demonstrate a “failure to meet editorial criteria” (42.9%) that is, the topic is inappropriate for the journal, represents the second most important reason editors reject submissions. In addition, when a particular study’s design, methodology, and procedures are not clearly detailed, or inadequately stated to verify, or allow replication of, results, the submission is rejected based on the category of “methodological shortcomings” (39%). Other reasons for rejection include “insufficient contribution to knowledge” (35%), “theoretical shortcomings” (13%), and “other” (7%).

Table 6.4 Reasons for Rejecting Manuscripts

<table>
<thead>
<tr>
<th>Reason</th>
<th>Responses</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insignificant contribution</td>
<td>27</td>
<td>35</td>
</tr>
<tr>
<td>Methodological shortcomings</td>
<td>31</td>
<td>39</td>
</tr>
<tr>
<td>Theoretical problems</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Presentation style</td>
<td>49</td>
<td>64</td>
</tr>
<tr>
<td>Failure to meet editorial criteria</td>
<td>33</td>
<td>43</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

Non-responses = 3
6.5 The Throughput Time for the Peer-Review Process

According to the editors in the survey, submitted manuscripts are sent to an average of two reviewers, and reviews are completed within an average of 8.5 weeks (see Table 6.5). The average timeline from article acceptance to publication is 24.5 weeks. Thus, the total average time for an article to be submitted, accepted and finally printed (published) is 33 weeks. In comparison, the *British Medical Journal* has an acceptance-to-publication lead time of 8 to 10 weeks; the *Journal of the American Medical Association* 18 weeks, and the *Journal of Pharmacology and Experimental Therapeutics* two days.\(^{20}\)

Considering the fierce competition within the journal publishing industry, publication throughput time has become one of the key factors in evaluating the quality of journals, as well as the academic value of articles. Authors may choose journals with a shorter publication lag, and this can affect a journal's ability to attract high-quality submissions. Circulation of the journal may be reduced because readers may lose interest in journals with dated information.

If one factors in the delays caused by the postal system in the whole editorial and peer-review process [as stated above it takes some times 4–6 weeks for a letter to be delivered by post], then one can appreciate the significant impact that online publishing systems can have on the peer-review process.

\(^{20}\) See average days from acceptance to publication online for *Journal of Pharmacology and Experimental Therapeutics* [http://www.aspetjournals.org/site/misc/Accept_Rates_Impact_Factors.xhtml](http://www.aspetjournals.org/site/misc/Accept_Rates_Impact_Factors.xhtml)
Table 6.5 Journal Review Processing Time

<table>
<thead>
<tr>
<th>Acceptance to publication (wks)</th>
<th>n</th>
<th>1–8</th>
<th>8–16</th>
<th>17–24</th>
<th>25–32</th>
<th>33–40</th>
<th>&gt;41</th>
<th>Mean</th>
<th>Non-responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journals (% )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71 (100)</td>
<td>7</td>
<td>(9.9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>24.5</td>
</tr>
<tr>
<td>12 (16.9)</td>
<td>15</td>
<td>(21.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19 (26.8)</td>
<td>16 (22.5)</td>
</tr>
<tr>
<td>19 (26.8)</td>
<td>16 (22.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 (2.8)</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>74 (100)</td>
<td>27 (36.5)</td>
<td>16 (21.6)</td>
<td>20 (27.0)</td>
<td>5 (6.7)</td>
<td>4 (5.4)</td>
<td>2 (2.7)</td>
<td>8.5</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Note. Means include journals that reported one or more articles published.

While the average lead-time from manuscript receipt to publication for journals in the sample make for interesting statistics, it says little about a given journal’s efficiency in publication. According to respondents, the main source of manuscript processing delays is overreliance on communication systems (postal system) bedeviled with so much inefficiency. To build the entire editorial and peer-review process on postal systems that are slow, unreliable and extremely expensive can only affect the lead-time of the editorial process. Another source of delay that tends to affect the lead-time of processing articles is reliance on the print production process. Although such consequential aspects of the editorial process do not fall within the normal range of duties or responsibilities of a journal editor or his staff, they reflect on editorial competence.

Given these ongoing obstacles to the review process, there is considerable promise in the adoption of online publishing technologies such as OJS. By facilitating online submission, review, and publishing, digital technologies can eliminate the communication bottlenecks associated with long mail delivery times, thus
considerably reducing the time required to generate proofs ahead of print, not to mention overall print production times.

6.6 Editors’ Perceptions of Reviewers

The purpose of this part of this study was to allow the editors to characterize and evaluate the performance of journal reviewers as a whole in Africa. Of course, successful peer review is contingent on the skill, dedication, and the ability to make objective judgments on the merits of journal submissions. The reputation of reviewers thus determines the quality, legitimacy, and authority of a given journal (Figure 6.1).

*Figure 6.1 Editors’ Perceptions of Reviewers*

The vast majority of editors (77%) in the sample claimed to hold a very favorable opinion of reviewers. They described reviewers using such descriptors as excellent,
competent, knowledgeable, hardworking, methodical, critical, professional, experienced, and skillful. In contrast, 19% of editors held an unfavorable opinion of reviewers, describing them as below average in performance, lacking in expertise, unreliable, inconsistent, biased, uncritical, and lacking in breadth of field-related knowledge. Others believed the African pool of reviewers was too small, and not international enough in either orientation or composition.

Opinions sampled from workshop discussions amplified some of these editors’ unfavorable opinions, as participants repeatedly expressed the frustration of trying to overcome the challenges of working from such a small pool of reviewers:

We keep some articles longer than we should because we do not have qualified people to review them.

It is a challenge to get the experts on board. The few we have are overburdened with so many articles that it is better to keep those new articles than give it to them.

The fact is that some of the journals are so obscure that the experts are not attracted to serve as reviewers.

The findings from the workshop discussion also underscore the extent to which the absence of qualified staff and some organizational bottlenecks affect the editor’s ability to adhere strictly to the editorial practices. Below are some excerpts from the workshop discussions:

Pools of peer experts at many journals are too small, leading to inappropriate selection of experts to review articles. Often a single reviewer is used instead of two or three.
Young reviewers have aversions to criticize senior researchers. It’s a culture that discourages the criticism of senior citizens.

Poor or inadequate communication between the journals and reviewers. Sometimes reviewers are unmasked and the review process itself is not blind and this can affect the credibility of the process.

The lack of recognition for input of editors and reviewers make editing seem highly undervalued, so reviewers don’t like to invest quality time into [it].

A fundamental tenet of scientific and scholarly publishing is that the peer-review process be subjected to critical appraisal in its entirety, and only those practices which can withstand such appraisal can be considered credible. Such observations by the editors, though not peculiar to African, tend to undercut the quality and trustworthiness of the editorial and peer-review process of journal publishing in Africa.

Finally, a minority of editors in the sample, “others” (4%), did not reflect on the abilities of reviewers as such but rather on their professional backgrounds. For example, some indicated reviewers were mostly “academics, ”researchers” and “professors” from the research institutions and universities.

6.7 Recruitment Process for Journal Reviewers

Nearly all the editors (96%) in the sample indicated that that scouting journal editorial boards was the principle method of finding and recruiting qualified editors for their journals, a much lesser proportion (4%) indicating that authors were allowed (“author recommendation”) to recommend reviewers who are subsequently recruited.
by the journals (see Figure 6.2). Further analysis of the responses showed that
decisions by editor/editorial boards to either recruit directly or through author
recommendation were largely influenced by what was already known about a
potential reviewer’s expertise in, and knowledge of, the journal’s area of
specialization. Additional sources of reviewer recruitment included literature and
database searches, personal contacts and network, and even bibliographies within
manuscript submissions themselves.

*Figure 6.2 Summary of the Peer-Review Recruitment Process*

Furthermore, respondents indicated that, after identifying potential reviewers with
submissions, editors might use two methods of inviting the reviewers to review. The
first approach involved simply sending manuscripts to reviewers with a covering
letter asking them to review; the other approach involved editors contacting potential
reviewers in advance to see if they were available to review, and then sending
manuscripts to those willing to do so.
6.7.1 Just Send and Ask First

The advantages and disadvantages of Ask First (solicited requests) versus Just Send ("direct requests") and the differential impact of authors’ versus editors’ suggested reviewers on the overall review process have received little attention in the literature; those studies that do exist do not show significant differences. For example, Pitkin and Burmeister (2002) found that Ask First generated a higher refusal rate than Just Send; however, among successfully solicited review requests, when potential reviewers were first asked and then agreed to review, reviews were completed faster: “The overall time for the review process did not differ between the two.”

6.8 The Challenge of Attracting Reviewers

Regarding the challenges faced by journal editors in marshaling reviewers, this is an area considered to directly impact the quality of the journals. Responses of editors in the sample and in subsequent workshop discussions indicated that securing reliable reviewers represented the most daunting task in the editorial process (see Table 6.6). These challenges were further supported with statements derived from interviews with journal editors, samples of which appear below.
Table 6.6 Challenges of Attracting Reviewers

<table>
<thead>
<tr>
<th>Type of challenge</th>
<th>Responses</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburdened academe/research community</td>
<td>41</td>
<td>53.2</td>
</tr>
<tr>
<td>Lack of subject area expertise</td>
<td>40</td>
<td>52.0</td>
</tr>
<tr>
<td>Lack of interest/willingness to review</td>
<td>26</td>
<td>33.8</td>
</tr>
<tr>
<td>Insufficient rewards/remuneration</td>
<td>24</td>
<td>31.2</td>
</tr>
<tr>
<td>Contact/communication difficulties</td>
<td>15</td>
<td>19.5</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>9.1</td>
</tr>
</tbody>
</table>

Non-responses = 3

6.8.1 Overburdened Academe and Lack of Subject Area Expertise

The following excerpts from some editors of are worth noting because they illustrate two important points. First, “overburdened academe” (53.2%) was the most often cited reason for the inability to commit to reviewing. The second reason suggested that most journals do not have the field-specific, in-house expertise required:

I have been editor for over 16 years and there is nothing more exacting and challenging in this job than finding a reviewer for a manuscript. We operate in a community where everyone, I mean lecturers, professor, are over-tasked with teaching load and marking. These people have less time available to engage in research activity, let alone reviewing. Some of them will accept only to tell you later than they are so busy [and] therefore can’t review the manuscript.

In addition, the views of the following young editor underscore the concerns of many, that an overburdened research community (53.2%) and the lack of subject-area expertise (52.0%) represent the two most significant barriers to recruiting reviewers for most journals in Africa:
I have four manuscripts sitting on my table as I speak to you, and why are they sitting there? Because I am looking for someone qualified and ready to review. I have sent letters to three people, who in my opinion, are qualified to review these papers. This is over six weeks and they have not even acknowledged my mail. I asked Prof XXX who is part of this workshop if he could referee one of the manuscripts, but his excuse is that he has three other manuscripts he hasn't worked on. We have a long way to go if this is how we want to do research in this country.

6.8.2 Insufficient Remuneration and Lack of Interest and Willingness to Review

The sample interview data underscore two additional barriers to finding reviewers for journal articles: “insufficient rewards/remuneration” (31.2%) and “lack of interest/willingness to review” (33.8%). One mid-career social science editor described his challenges as follows:

It may surprise you to hear this but it is the fact. Unlike the developed countries where reviewers are not paid, some of them [African reviewers] demand payment, which we can't afford to pay them because we have so little for publishing; therefore, many of them turn down the request to review. Some of the young lecturers do not have interest or motivation to work as reviewers. There is little respect for the job of reviewing.

6.8.3 Contact and Communication Difficulties

Regarding communication challenges, one department head and senior editor of an engineering journal described how “distance and communication bottlenecks” (19.5%) hamper efforts to attract qualified journal reviewers:

Authors post the manuscript, and we intend post accepted manuscripts to reviewers. The difficulty is that the postage is unreliable and often, articles posted never get to the recipient. Establishing contact with
reviewers for the first time, until recently, has always been by post, including those outside Africa. This approach has not been effective. Reviewers often complain that they did not get manuscripts posted to them, and on many occasions, manuscripts sent to us by reviewers and authors never got to us. With the Internet around, we are hopeful that when we move our journal to online, we can have much easier interaction with reviewers and authors.

Editors expressed a variety of “other” reasons (8.64%) which impede their ability to attract reviewers, including “cultural traditions/reluctance to criticize senior researchers,” “ethical issues/ conflict of interest,” “low research output,” “low authorship,” “high rate of editorial staff turnover,” and “frequent delays in the returning of submissions.”

6.9 Editing and Technology

Considering the fact that journal publishing involves considerable communication and correspondence between editors, authors, editorial boards, reviewers, layout artists, and printers, the survey examined the extent to which editors in the sample have begun to exploit the potential of the Internet, offering them a much more efficient and dependable communication medium. Given those communication challenges faced by editors (see above), surprisingly, an overwhelming majority (51.3%) of them indicated that currently the Internet did not play a significant role in the journal publishing process (see Table 6.7).
Table 6.7 Role of the Internet in Journal Production

<table>
<thead>
<tr>
<th>Role</th>
<th>Responses</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article submissions</td>
<td>14</td>
<td>17.5</td>
</tr>
<tr>
<td>Journal online availability (full texts/abstracts)</td>
<td>13</td>
<td>16.2</td>
</tr>
<tr>
<td>Communication/correspondence</td>
<td>7</td>
<td>8.8</td>
</tr>
<tr>
<td>Full production</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>None</td>
<td>41</td>
<td>51.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>80</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

In those cases (17.5%) when the Internet was being used, its use was limited to the article submission stage of the review process, while 8.8% of editors used the Internet for administrative purposes or email communication or authors or reviewers. In contrast, interestingly, three particular journals (3.8%), published exclusively online using OJS, indicated that the Internet was basically used at every stage of the production process.

The findings from the workshop discussion provided some answers to the low level of Internet usage in the journal publishing (editorial and peer-review) process.

Many of us [editors] are very new to these online technologies and we do not have sufficient knowledge and understanding of how they work and how to integrate them into the editorial and peer-review process.

This is the first time most of us have heard about the Open Journal System and other online publishing systems and their capabilities. There is the need for public awareness, training and education of editorial staff on how these new technologies impact the editorial process and how they can be employed.
People are not interested in changing the status quo. Some of the senior editors have little knowledge about current technological advancement. They will prefer traditional editorial process rather than introduce new technologies into the process.

Lack of expertise and trained editors in the usage of online publishing system, lack of knowledge about the existence of online publishing software, resistance to adoption and utilization of new technologies, and poor online infrastructures were some of the reasons that prevent the adoption and use of the Internet.

6.10 Planned ICT Changes for Journals

However, regarding ICT changes planned for the journals, the overwhelming majority (96.2%) of respondents indicated that plans are underway to fully integrate ICT into the publishing process (Table 6.8). Almost half (48%) of the editors in the sample stated that they planned to launch a Website for their journals, and another 46% said they were planning to fully manage the journal publishing process online. Only 3% of respondents indicated that they had not planned to use ICT in the future.

Table 6.8 Planned ICT Changes for Journals

<table>
<thead>
<tr>
<th>Response</th>
<th>Responses</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launch Website for journal</td>
<td>38</td>
<td>48</td>
</tr>
<tr>
<td>Manage publishing process online</td>
<td>37</td>
<td>46</td>
</tr>
<tr>
<td>None at this time</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other (marketing/promotion)</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>
When asked what changes in ICT they would likely make for journal production, a total of 75% (34% plus 41%) of the editors indicated a willingness to acquire online journal management software for the management, publishing and indexing of their journals online (see Table 6.9).

**Table 6.9 Anticipated Future ICT Changes**

<table>
<thead>
<tr>
<th></th>
<th>Responses</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Acquisition of online publishing software</td>
<td>26</td>
<td>34</td>
</tr>
<tr>
<td>Acquisition of full online PDN</td>
<td>31</td>
<td>41</td>
</tr>
<tr>
<td>Other (EJNL and print)</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>76</td>
<td>100</td>
</tr>
</tbody>
</table>

Non-responses = 4

Close to half the editors (41%) were very specific in indicating that they would use the OJS in the near future to fully publish their journals online. At the same time, editors affirmed that acquisition of higher bandwidth (11.8%) was an important necessity in the streamlining of the journal production process online.

Most of the participants were in agreement that IT is profoundly transforming the ways in which the research community disseminate their research outputs, the types of content that are created and shared, and the ways scholars consume research. Participants were very optimistic that IT is key to strengthening scholarly publishing.

In response to the question “In what ways can online technologies be used to strengthen and support scholarly publishing?” workshop participants made very useful observations that demonstrated that editors and the scholarly community in
Africa are prepared to rely on integrated electronic publishing environments. A number of these observations have been catalogued below:

We have been doing this for the past 20 years and print production is full of limitations, including territorial limitations. ICT expands academic work to electronic format and makes it easier for global exchanges.

We can’t afford to be marginalized anymore. Adopting and using digital technologies is the only chance to be part of the global research community.

I want my colleagues here to see us introducing efficiency into the publishing process: Speed, timeliness, cost-saving, richer content and greater visibility.

I agree with what people are saying but I still think we have a long way to go because of infrastructural limitation. Our Internet is so slow and expensive, there are frequent power outages and access point is limited.

In our recent editorial board meeting we made the decision to manage and publish our journal online in the coming year. What is required now from the authorities is a policy decision that legitimizes journals that are published online. This approval is important in order to encourage greater participation in online publishing.

There is the need to work together all units including the library, IT departments and university administration to make this new environment work.

Besides improving on the quality of journals we publish, digital technologies and online software can help editors establish database on expert manuscript reviewers. This will widen the pool of reviewers, editors and authors.

We need institutional backing. Administration must recognize the legitimacy of publishing online. This will encourage authors to publish online.
Some librarians observed:

Libraries can engage digital technologies to improve and increase resources to their patrons. With software like DSpace we can develop institutional repositories, populate them for faculties and students.

Using online technologies that allow publications to be extracted and indexed means information published in Africa is included in these local and international databases. This gives equal exposure for the work of scientists within these countries [Africa] and also strengthens indigenous knowledge.

My candid opinion is that while creating and disseminating content online in Africa will impose new costs on the like software[s], servers, bandwidth other cost like printing, postage, distribution will be reduced significantly.

The tipping point has tipped to digital. The new direction is online. This is irresistible and irreversible. Everything needs to be online and that is the direction we need to go. The researchers in Africa have the opportunity to assert themselves within the global knowledge sphere.

Other participants were of the view that online publishing technologies can help them maximize communication with authors and reviewers, manage editorial and peer review online, digitize back issues of journals, increase the visibility of their journals as a complete transition from print to online publishing.

Whereas this perspective is more strongly held by IT enthusiasts, it comes across as a fair representation of the direction in which journal editors and the research community, especially the younger generation, want to go.
6.11 Summary

This section presents the findings on editorial and peer-review practices, as well as related editorial and technical challenges, in scholarly journal publishing. The sample has shown the important role editors in Africa are playing to maintain and sustain the integrity in research, and science literature. First, the journals in this sample are committed to meeting international standard by engaging the services of committed and qualified editors and peer reviewers much as journals everywhere do. Second, the editorial and peer-review process outlined means editors ensure high quality selection of manuscripts are accepted for publication in order to maintain the objectivity and confidentiality of the process. By this the editorial practices and procedures of scholarly journals in Africa compares to those observed in the developed world.

Although the editorial and peer-review process in Africa has been described by many as unpleasant, discouraging and uninviting, this study has shone light on the reasons people are still attracted and committed to it. Editors the sample are attracted to their job and continue to perform their gatekeepers function because of the meaning and value they place on their work and the impact that the work have on their intellectual lives. These editors were motivated and challenged by the intellectual stimulation of the job, the desire to be part of a community of intellectuals, the desire to contribute to the advancement of knowledge, the value of high scholarship, collegial relationship and personal job fulfillment. These factors have spared these editors on and they have shown a sense of obligation to keep the integrity of the scholarly communication process.
It is also evident from the sample that the standard peer-review process, as a quality assurance mechanism, is the most common “weak link” in the research publication process among the sample journals, particularly in recruitment and duration. The greatest challenge for peer-review process begins with finding and recruiting qualified reviewers for a particular subject area. The few qualified reviewers are overburdened and fatigue to the degree that their reviews are delayed or less detail. The lack of adherence to certain professional standards like blind review, masking of reviewers and using only one reviewer has the potential of casting some doubt on the process. While majority of editors have favorable opinion of the professionalism of reviewers, the lack of recognition of their input makes reviewing seem highly undervalued that reviewers are not motivated to invest quality time into the process.

Of course, journal peer review is a system of certification and affirmation by expert academics called to evaluate whether a given submission contributes to human knowledge (Shatz, 2004). For a continent that is struggling to overcome the stigmatization of its scholarship as lacking in international quality and standards (Zeleza, 1998, p. 29), peer review is critical to the quality and utility of published information and should thus be considered a vital extension of basic science and scholarship.

Additionally, technological developments and the growth of new forms of scholarly publishing are presenting new challenges and opportunities for the development of Journal publishing. Online publishing systems enable management of all aspects of the editorial process for journals: from submission, reviewer identification and tracking, correspondence management and reminders, revisions and resubmits,
publication layouts to publishing. The OJS is an example of one of that software with the capability of electronic management of the peer-review process for electronic scholarly journals. This system facilitates efficient and centralized control of the submission, assignment, tracking and publication of articles online, as well as enabling a central archive of various tasks performed. Managing the review process with online tools will provide an unbiased platform because the online tool provides a global platform that allows reviewers from both developing and developed countries to participate in the process. These journals can therefore draw on an international pool of reviewers, leading to a system comparable to those found among journals in developed countries. (With the international pool of reviewers available, the problem associated with lack of expertise could be solved.)

While there is strong indication and willingness from journal editors in the sample to adopt internet technologies in publishing their journals in the future, currently the journals in the sample, have made little use of the internet and therefore failed to take advantage of the numerous benefit that the internet proffers for journals publishing. Most editors still rely on the sluggish snail postal systems to process manuscripts and communicate with authors, reviewers and printing houses. This has lead to undue delays in sending and receiving of letters, and therefore difficult for editors to quickly resolve problems with unresponsive authors and referees. As a result publication schedule have witness long delays. For many other reasons like lack of expertise and training, lack of knowledge on online publishing systems, aversion for the adoption of new technologies, the poor online infrastructure and the
frustration of using unreliable Internet and electricity have deterred many journals editors from the use of Internet technologies.

While article rejection is a common practice to all journals world over, the reasons provided by journal editors in the sample shows that much research is done without the benefit of anyone with adequate training in qualitative and quantitative methods. Many editors in the sample felt that research/authors lacked adequate research skills and identified the need for research training in general and for particular tasks. This study presented here, then, suggest that relatively little infrastructure exists to support the careers of junior faculty and postgraduate to develop skills in research designs, write proposals, identify research problems, collect data, and write papers for publication. Little infrastructure is devoted to support junior faculty and graduate students in rising to the rank of associate professor. As a result, faculties embarking on research aim at high reputable journals face formidable barriers and limitation. A program of study aimed at providing support for faculty and postgraduate students in developing skills in publication strategies, grant writing skills, proposal strategies and preparing articles for scientific journals is recommended. Mentorship that provide experienced research faculty to young faculties or access to experienced faculty in the topical areas and research methodologies in which graduates and young faculties are working could provide solution to some of these challenges.

Again, in today's technological world, the editorial and peer-review process have changed significantly where technology is evolving to make the process more cost effective and time efficient. It is therefore required of editorial personnel to have firm grasp of these new publishing systems capabilities, how to use and integrate them
into the editorial process and how to use them to greatest advantage. This however is only possible if journal editors are trained on online publishing systems and put in a position to make informed decisions. This training program should be viewed as part of a broader capacity building effort for the scholarly community in Africa.

Expeditious high-standard reviewing is the vital feature of the scientific review process. Unnecessary delays in reviewing and decision-making, affected by the means of communication, affects the journal's aggregate reputation. Authors and readers whose journal selection criteria is the speed with which submitted papers are rejected and accepted for final publication are turned off from submitting to the journal.

While the editorial and peer-review process of electronic journals are not far different from print journals, electronic journals have added advantage of a dramatically shorter publication lag between submission and publication. Instead of measuring publication throughput time in terms of years as demonstrated by some of the journals in this study, the electronic journals measure production lag time in days and weeks as noted above. Shorter publication time foster faster priority claim to knowledge, create opportunity for quick feedback and knowledge is able to infiltrate faster into the scholarly community where scholarly discourse occurs.
CHAPTER 7

ACADEMIC LIBRARY AND THE SCHOLARLY COMMUNITY

7.1 Introduction

Digital technologies and an ever-expanding communication network infrastructure have transformed in an unprecedented way the practice of academic research, creation, and distribution of information within the global scholarly community and beyond. They have radically changed not only how we store and transmit recorded knowledge, historical records, and a host of other types of information/communication, but also how we seek and gain access to these materials. Digital technologies of the 21st C. are therefore posing a challenge for many institutions such as universities and academic libraries in terms of establishing new roles, responsibilities, and protocols for scholarly communication and publishing. This is because digital technologies have unleashed a deluge of new kinds of content – metadata generation, multimedia work, images, and digital records – generated by the wide range of activities in which research institutions increasingly engage.

To meet these new challenges and to reposition themselves at the “heart” of universities serving the academic and research community, academic libraries, especially those in developed economies are undergoing major transformation, restructuring and re-conceptualization of their roles and responsibilities. To the extent that research libraries have become more responsive to the new academic
agenda by providing creative and useful services (e.g., creating metadata, providing virtual reference service, choosing resources and managing resource licenses, collecting and digitizing archival materials, maintaining digital repositories, and providing basic journal hosting services through Open sources software such as the Open Journal System and DPubs, etc. (Campbell, 2006; Okoye and Anunobi, 2008).

Whilst libraries in developed nations have responded positively to the digital challenges and repositioned themselves to be more responsive to the changing needs of the research community, a carefully examination of the literature shows that amidst these current developments, university and research librarians in Africa have yet to strategically position themselves to take advantage of the most currently available technologies. For example, Britz, Lor, and Bothma (2007, p. 104) describe how African libraries continually grapple with demoralized library managers: “Their libraries are severely underfunded, their acquisitions budgets are woefully inadequate, they lack trained staff, their technologies, in many cases, are out of date, and their Internet connectivity is poor. They are, therefore, unable to perform according to what is expected of them, and recognition of their efforts is lacking.” In addition, Rosenberg (2004, pp. 292-293) reported that “progress towards digital library has been very patchy,” and that “most libraries have a long way to go in developing e-services so as to facilitate access to the information available and promote its use.”

However, within the past decade, there has been significant concentration of international donor activities running into the millions of dollars in support of education, research libraries, and the research community. Donor contributions have
been directed towards the support of bandwidth subsidies, national and regional research networks, connectivity, and skills development. The overall goal has been to resource academic libraries so they can transform themselves from staid, disreputable, sleepy institutions into vibrant information exchange hubs, while making use of increasingly ubiquitous digital technologies to provide the scholarly community in Africa with access to trustworthy and authoritative information. After all that has gone into improving research library access to online publications in Africa, and now that librarian technical skills, internet bandwidth, and access to research are improving, the next logical step in this strategy is to direct these developments toward supporting local scholarly publishing initiatives that will both increase access to African research and advance local research capacities (Esseh and Willinsky, 2006). This chapter examines the current state of university and research libraries in Africa, and considers their potential role in supporting scholarly publishing within the sub-Saharan African context. In all, 76 research and university libraries responded to questionnaires covering most aspects of digital librarianship, including ICT facilities, electronic resources, library automation, local versus foreign content, financing, and the potential role of libraries in supporting online publishing in Africa. Data collected from the questionnaires were augmented with recorded workshop discussions and semi-structured interviews. The workshop discussion took place at eight different workshops organized in five countries across SSA, and included IT administrators, librarians, editors, faculty and students. One-on-one interviews were conducted with head librarians where necessary to elicit additional information on relevant subjects.
7.2 Basic Demographics and Library Information

To provide a descriptive background profile for this study, basic demographic information was collected on respondents, as well as information on the respective university or research libraries where they are employed. Where data were analyzed by library type, 14 (18%) were identified as research libraries, and 62 (82%) were found to be university libraries and their branch libraries. The geographical locations of these libraries were spread across five countries in sub-Saharan Africa. As indicated in Table 7.1, 23 (30%) of the libraries were located in Nigeria, 22 (29%) in Ghana, 14 (18%) in South Africa, 12 (16%) in Uganda, and 5 (7%) in Kenya.

Among the 76 respondents, the majority 44 (58%) were males and 32 (42%) were females, a distribution which reinforces existing gender inequity in African higher academic institutions. The reasons for this inequality are beyond the scope of this paper; however, the one that is most cited is the cultural practice that places the education of the males above that of the females. With respect to the academic qualifications of respondents, the data showed that 4 (5%) had obtained doctorate degrees, a majority 47 (62%) held masters degrees in various branches of the library profession, 18 (24%) held undergraduate degrees, and another 7 (9%) held undergraduate diplomas or certificates (Table 7.2).
Table 7.1 Responding Institutions by Country

<table>
<thead>
<tr>
<th>Country</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>23</td>
<td>30</td>
</tr>
<tr>
<td>Ghana</td>
<td>22</td>
<td>29</td>
</tr>
<tr>
<td>Kenya</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Uganda</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>South Africa</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 7.2 Responding Institutions by Region (N=76)

<table>
<thead>
<tr>
<th>Region</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Africa</td>
<td>45</td>
<td>59</td>
</tr>
<tr>
<td>East Africa</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>Southern Africa</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>76</strong></td>
<td><strong>99</strong></td>
</tr>
</tbody>
</table>

Table 7.3 Highest Tertiary Degree Obtained (N76)

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA / BSc</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>MA / MSc /Mphil / PG Dip.</td>
<td>47</td>
<td>62</td>
</tr>
<tr>
<td>PhD / Dphil</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Other (diploma)</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

### 7.3 Staff Composition

A university library should have a sufficiently sized and trained staff to meet the program and service needs of its primary users. The caliber of the staff determines, in large part, the quality of the library’s resources and services. This study therefore sought to understand the pattern and level of staffing of the libraries surveyed. The
numbers, percentages and ratios in Tables 3 and 4 below are select indicators that describe the condition of staffing in African university and research libraries.

**Table 7.4 Professional Staff and Non-Professional (N = 76)**

<table>
<thead>
<tr>
<th></th>
<th>Non-pro staff</th>
<th>Pro. staff</th>
<th>Total library staff</th>
<th>Ratio of pro:non-pro staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library staff</td>
<td>3053</td>
<td>652</td>
<td>3705</td>
<td>1:4.6</td>
</tr>
<tr>
<td>Pro staff as a % of total staff</td>
<td>82.40%</td>
<td>17.60%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

**Table 7.5 Mean Library Staff: Student/Faculty Ratios**

<table>
<thead>
<tr>
<th></th>
<th>Total library staff</th>
<th>Total student population</th>
<th>Library staff: student ratio</th>
<th>Total faculty population</th>
<th>Library staff: faculty ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library staff</td>
<td>3,705</td>
<td>462,873</td>
<td>1:125</td>
<td>29,727</td>
<td>1:8</td>
</tr>
</tbody>
</table>

A total of 3705 library employees were reported on in this study (Table 4), of which 17.60% were professionals and the vast majority (82.40%) were non-professional support staff. The ratio of professional to non-professional staff, according to the sample, was 1:4.8.

**7.4 Technological Expertise in Libraries**

With the current technological developments in information communications, and the gradual progression towards digitization, library staff at all levels will require an understanding of the current and future impact of networked information provision, as well as the skills to apply this understanding. This study indicated that a sizeable number (46%) of library staff possesses only basic computer literacy skills, or what might reasonably be called "lower order skills" (LOS). These respondents indicated that they had basic knowledge of computer operations such as keyboarding, file
copying, documents printing, etc.; software applications (word processing, spreadsheets, etc.); use of the Internet/World Wide Web for browsing and as a search engine; email functions (sending and receiving messages, attaching files, etc). While such LOS skills may have their place in library work, they are insufficient to the new and emerging professional demands, and neither do they provide any competitive advantage within the changing digital information environment. In contrast, those respondents who possessed "higher order skills" (HOS) were those who indicated competence in database and content management (14%) and IT expertise (11%). Respondents possessing HOS describe their adeptness at designing and developing enterprise-wide repositories using SQL-based database products, including DB2, SQL Server, Oracle, and other database systems. These are skills directly relevant to modern digital library and network information provision. On the other hand, the data showed that 29% of responding librarians did not have any computer skills or expertise in ICT.

Table 7.6 Level of Library Technological Expertise (N = 76)

<table>
<thead>
<tr>
<th>Technology Expertise level</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>22</td>
<td>29</td>
</tr>
<tr>
<td><strong>Lower Order skills</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic computer literacy skills</td>
<td>35</td>
<td>46</td>
</tr>
<tr>
<td><strong>Higher Order skills</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database management</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>IT expertise</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td>76</td>
<td>100.00</td>
</tr>
</tbody>
</table>

When LOS figures (46%) and HOS figures (25%) are combined, we obtain a total of 71% of respondents who are ICT literate. Compared to previous studies, our sample
reveals a higher level of ICT literacy amongst university and research libraries in sub-Saharan Africa. For example, Adeyoyin (2002) investigated ICT literacy among the staff of West African university libraries and found that of the 370 professional librarians, only 48.38% were ICT literate; of the 526 paraprofessionals, only 16% were ICT literate; and of the 1471 non-professionals, only 13% were ICT literate. In a related study, Adeyoyin (2005) noted that only 33% of Nigeria’s 358 university library professionals were considered ICT literate. In another study of Ghana’s three publicly funded universities – UoG, UCC, and KNUST, Amekuedee (2005) reported that 53%, 48%, and 46% of library staff, respectively, agreed that they had been adequately trained to use computers.

While it is obvious from the above that ICT skill levels have significantly improved, the studies referenced contain serious limitations in that they investigated staff expertise in terms of two dichotomous knowledge constructs – literacy and illiteracy – without allowing for gradations between them. It is therefore difficult to assess individual differences in terms of a range of cognitive skills/expertise. In the present study, however, respondents were allowed to be more specific regarding their reported levels of ICT expertise, based on an expanded range of skills levels, namely “lower order skills,” “higher order skills” and “none.” This is indicative of the fact that ICT literacy capacities are best represented in terms of gradations, rather than a dichotomous continuum of literacy versus illiteracy (Warschauer, 2002). Consequently, not only do the data in this study provide us with a better picture of current ICT skill levels in Africa’s research libraries, but also they suggest an urgent
need to further support the scholarly endeavors of the research community in the
digital environment.

Twenty-five percent of librarians possessing HOS in this sample are more than
adequately equipped, skills wise, to play an active role in the modern digital library
environment. These are respondents with the skills to be able to manage an
increasing amount of data in MySQL applications and display, to decipher and edit
server configuration variables to improve the performance of applications, and to
evaluate techniques for loading data into the database and effects on performance;
they are technically able to install and upgrade online database and publishing
systems like OJS, and they are able to work with editors using online publishing
systems to manage and publish local journals. The challenge, however, is the
28.95% of staff who have no ICT literacy skills, and the other 48.05% with LOS. The
LOS respondents we judge as possessing low computer literacy skills and while
such skills may have its place in the library system, are not critical to the new and
emerging professional demand and it does not give them competitive advantage in
the changing digital information environment. In fact, if we accept that information
technology has permanently altered traditional librarianship, and that university
libraries no longer restrict themselves to print collection development, cataloguing
and classification, referencing and other bibliographic service, but have extended
their services to include computer software/ hardware and telecommunication
engineering and technology, we must accept that those with LOW or non-existent
ICT skills are of little relevance to modern-day libraries. The skills needed to work
with databases, institutional repositories, metadata and other e-resources are much
more technically oriented than those currently possessed by most librarians in Africa’s academic libraries. Consequently, training or re-skilling of these staff has become imperative in order for libraries to participate in knowledge-base development.

Writing on re-engineering manpower in computerized university libraries, Reddy and Uma (2009, p. 338) explain that for librarians to be effective and efficient in the new computerized environment,

[S]taff should have the knowledge of the system set-up, configuration, operating systems, detailed workflow in the library management software, peripheral storage devices so that in the event of damage to the system, recovery and backup is quick. [Knowledge about] library application software such as KOHA, SOUL, New Genlib, LIBSYS, VTLS, etc., knowledge to access and organize e-resources both online and CDs, [and] knowledge mapping skills over internet, …web designing creating and maintaining library homepage is very much essential.

By implication, the role of libraries has clearly changed in response to the new digital environment. New applications have been developed and new services have evolved; hence, new skills and knowledge are urgently required for librarians to be effective in the digital work place.

In another vain, the above data on library staff skills and composition point to serious implications for academic libraries in Africa in terms of their efforts to develop digital libraries. A brief explanation will suffice. The ratio of professional to support staff in every library may vary significantly based on factors such as funding levels, type and size of library, extent of use of modern technology, and range of operations and services provided (Lynch, 1987, p. 123). The American Library Association College
and University Classification and Pay Plans specified a 1:1 ratio of non-professional to professional staff (Davison 1962); while McNeal (1954) and M.J. Voigt (as cited in Davison, 1962, p. 366), in different articles published in *College and Research Libraries*, seem to agree that the recommended ratio for academic libraries is two non-professional staff members for each professional librarian. Beverly Lynch (1987), on the other hand, assigned no particular ratio but stated that the “ratio of librarians to clerical and other staff [should] vary depending upon the range of operations and services provided by the library and upon its total workload requirements” (p. 123).

In light of the above variances, it is obvious that there is no one standard ratio, and it is therefore almost impossible to establish a desirable ratio of non-professional to professional staff in academic libraries. However, in light of recent advancements in information technologies, it is crucial for institutions to put together staffs who possess the necessary training, experience, and/or degrees, and who are able to appropriate the kinds of information, communication technologies, and skills that enhance library services. What we have instead, as the survey data show, are university and research libraries over-staffed with non-professionals at proportions, which are significantly out of the range of recommended ratios.

In comparison with other previous studies, however, our sample did reveal a moderate increase in professional library staff levels. For example, in a study conducted in 1994, Rosenberg put professional staff as a percentage of non-professionals at 15%, for a ratio of one professional for every 5.4 non-
professionals.\textsuperscript{21} In another study, Ajidahun (2007) looked at the training, development and education of library manpower in information technology in 20 university libraries in Nigeria. The data presented in this study put the ratio of professional to non-professional staff at 1:5.3.\textsuperscript{22} Compared to the data in our sample, one can conclude that the ten years following Rosenberg’s study have seen a moderate improvement in the level of professional staffing in African libraries. But again, this improvement pales in comparison with the current staff composition of academic and research libraries in many developed countries. For example, according to Association of Research Libraries (ARL) statistics, the number of professional staff as a percentage of total staff in ARL universities stood at 31\% for the period 2004/2005, and 32\% for 2005/2006, translating into a 1:2 ratio of professional staff to non-professional staff from 2004 - 2006. Clearly, the argument contained in the Carnegie Report (2005) that “there is no lack of professional trained librarians in academic libraries in Africa” is at considerable variance with the present study. What is obvious from the data relative to prevailing situations in other part of the world is that academic libraries in Africa are inordinately overstaffed with non-professionals. While it is acknowledged that both professional and non-professional staff are critical to providing library services, a library that is overstaffed with non-professional, in the words of Rosenberg (1994, p. 34), “can never be said to enhance services”. Rosenberg decried the unfortunate trend where some institutions had replaced professional staff with non-professional staff to such an extent that

\textsuperscript{21} Rosenberg in a study of University libraries in Africa found a similar pattern in the staff composition, where university libraries were over-staffed with non-professionals. These figures are a derivative of the data presented by Rosenberg in the survey report titled \textit{Rosenberg “University libraries in Africa, A review of their current state and future potential} (1994)

\textsuperscript{22} This study was carried out between 2002 and 2004 but published in 2007.
“there were too many junior staff who could not answer queries and who did not seem to value the library or understand its purpose. The following views, expressed during the workshop discussions, confirm Rosenberg’s findings and speak to the impact of understaffing on professional librarians themselves:

… [W]e have large support staff who are left with virtually no prospect of career advancement or professional training opportunity that will enhance the quality of service they handle. As result some have poor a clientele relationship. It is very difficult to recruit and maintain professionals in various sections of the library so that many of the libraries are filled with people whose technical skills and competencies can hardly support the requirements of a modern digital library.

We don’t have the resources to engage qualified professionals. The alternative is to get workers; I mean cheap labor who will not put much strain on our limited budget. Unfortunately most of them lack what it takes to enhance the quality of the profession.

Some of them are OK; they have different level [sic] of skills. If only they have [sic] opportunity for training, they will be much more useful.

These quotes highlight concerns that deserve to be looked into in more detail; overall, they underscore the need for meaningful training/support programs which can contribute to those skills and competencies capable of supporting the use of digital and communication technology in university libraries in Africa. The challenge here is to continually redefine and upgrade the skills of information managers to accommodate new technologies, because skill requirements will increasingly be driven by the need for advanced research/information in combination with evolving communication technologies.
7.5 **Information Communication Technology Infrastructure in Library**

The survey incorporated a series of questions about library infrastructure, including Web servers, institutional repositories, number of networked or Internet-ready computers, and other electronic services. The data presented below show different levels of infrastructural development in University and research libraries in Africa.

### 7.5.1 Number of Web Servers Operated by the Surveyed Libraries

On the question of Web servers, the data show that most university and research libraries in Africa (53%) have made significant progress in the acquisition of library servers. A total of 47% of the institutions in the sample indicated that they have between 1-5 servers, while 3% reported a range of 6-10 Servers. The IT department of the parent institutions provided server services to 27% of libraries and research institutions who did not have servers of their own. About 20% stated that they did not have servers at all. See Table 6 for details.

<table>
<thead>
<tr>
<th></th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>One - five</td>
<td>33</td>
<td>47</td>
</tr>
<tr>
<td>Six - ten</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Above 10</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>IT Department (University) Servers</td>
<td>19</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>100</td>
</tr>
</tbody>
</table>

*Note. Mean = 2.12, SD = 2.85*
7.5.2 Number of Computers Connected to the Internet

There were significant differences in the distribution of networked, or Internet-ready, computers among the African university and research libraries surveyed (see Table 7.8). The highest proportion (56%) of the institutions surveyed had a total of between (1 and 25) computers connected to the Internet. This is following by just a few of other libraries (17%) with networked computers above the 100 range. While the mean for the sample surveyed was 55.29, with a standard deviation of 97.91, a total of 9.22 respondents indicated they had no computers connected to the Internet. The standard deviation of 97.91, however, is an indication of some outliers in the data reported by the libraries. As was evident in the data, South African university and research libraries reported the largest proportion of networked computers.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>7</td>
</tr>
<tr>
<td>1 - 25</td>
<td>42</td>
</tr>
<tr>
<td>26 - 50</td>
<td>10</td>
</tr>
<tr>
<td>51 - 75</td>
<td>2</td>
</tr>
<tr>
<td>76 - 100</td>
<td>2</td>
</tr>
<tr>
<td>100 - Above</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
</tr>
</tbody>
</table>

| Note. N = 76, Mean = 55.29, SD = 97.91 |

7.5.3 Development of Institutional Repositories

Generally, libraries indicated a strong interest in the development of their institutional repositories (IR) in order to promote activities within the scholarly community. In response to the question, “Does the library have, or plan to have, an institutional
repository?” there is clear evidence from the survey that a large percentage (77%) of African university libraries are interested in developing an institutional repository for electronic theses, dissertations, and other scholarly output. Already, as this study indicates, 18% of university libraries (mostly from South Africa) have repositories in place and are experimenting with new publishing modes (Open Access). In contrast, 6% of responding libraries had no plans to develop their IR, while 4% respondent reported that IR development work was already in progress. Overall, a majority of libraries had as part of their institutional goals to develop IR to support research endeavors in their institutions. While these figures are representative of libraries in the survey, a closer examination of the data reveal that greater proportion of libraries with a well developed, networked IR are not uniformly spread across the continent but mostly from South Africa.

Table 7.9 Status of IR Development among Institutions (N=71)

<table>
<thead>
<tr>
<th>Status</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently in place</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>No plans in place:</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Future development plans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underway</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Institutional goal</td>
<td>51</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>71</td>
<td>100</td>
</tr>
</tbody>
</table>

7.5.4 Automated Library Functions

In terms of automation, the data show that, with the exception of 10 responding institutions that have not initiated the process of automation 86% of libraries in Africa have made significant progress in this regard, albeit at different stages (Table 7.10).
Table 7.10 Level of Automation of Library Functions (N= 72)

<table>
<thead>
<tr>
<th>Level of Automation</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 service</td>
<td>21</td>
<td>29</td>
</tr>
<tr>
<td>2 services</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>3 services</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>4 services</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>5 services</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>All services</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>None</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td><strong>72</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

To be specific, 18% of libraries in this study have fully automated their services while a majority of libraries (68%) reported having succeeded in automating between one and five library functions: circulation, cataloguing, acquisition, serial control, or the Online Public Access Catalogue (OPAC).

7.5.5 Availability of Additional E-Resources in Libraries

In terms of the availability of additional electronic resources, the data indicate that the use of CD-ROM technology to access databases is quite widespread in university and research libraries. Almost 90% of institutions in this study indicated availability of CD-ROM-based resources, including encyclopedias, Microsoft Encarta, TEEAL indexes, UNESCO CD-ROMs, EBSCO journal databases, and other educational CD-ROM resources. Internet availability was also reported among 82.43% of libraries as an important resource. In addition to existing print materials, various e-resources such as E-books (53%), E-Granary (23%), and ETDs (22%) were also available that allowed for multiple access (Table 7.11).
Table 7.11 Other Electronic Resources in Library (N=72)

<table>
<thead>
<tr>
<th></th>
<th>Respondents</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-ROMS (databases)</td>
<td>61</td>
<td>89%</td>
</tr>
<tr>
<td>Audio/visual materials</td>
<td>17</td>
<td>23%</td>
</tr>
<tr>
<td>E-books</td>
<td>39</td>
<td>53%</td>
</tr>
<tr>
<td>E-granary</td>
<td>17</td>
<td>23%</td>
</tr>
<tr>
<td>Electronic thesis/dissertation access</td>
<td>12</td>
<td>20%</td>
</tr>
<tr>
<td>Internet</td>
<td>61</td>
<td>82%</td>
</tr>
<tr>
<td>None</td>
<td>4</td>
<td>4%</td>
</tr>
</tbody>
</table>

7.6 Journal Publishing Support

Journal collections are considered very important to scientists both within and outside the scholarly community. Of course, the extent to which the research community – professors and students – are able to effectively conduct and advance research is dependent on the comprehensiveness of a library’s journal collection. To this extent this study was interested in surveying the availability of journal collections in sub-Saharan university and research libraries in addition to other e-resources. The data are summarized in Tables 7.12 and 7.13.

7.6.1 Subscription Level to African Journals

Subscription rates to journals published in African countries by African university and research libraries are remarkably poor, as reflected in the data (see Table 7.12).
Table 7.12. Number of African Journals in Library (N=72)

<table>
<thead>
<tr>
<th></th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>1 - 25</td>
<td>43</td>
<td>60</td>
</tr>
<tr>
<td>26 - 50</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>51 - 75</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>76 - 100</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>&gt;101</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>72</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

The largest group of responding libraries (60%) reported subscriptions to published African journals in the range of 1 - 25 per year, with another 12% subscribing to between 26 and 50, and fewer that 6% subscribing to more than 100. Of greater concern is the fact that 14% of respondents indicated they do not subscribe to journals published on the continent.

7.6.2 Subscriptions Rates to Non-African Journals (Print vs. Online)

Beyond the availability in libraries of journals published in Africa, a further analysis was conducted to establish subscription rate to non-African print and online journals. Response data (Table 7.13) show a remarkable difference in distribution between print journal subscription rates and online journals rates. The largest number of responding libraries (72%) reported annual print journal subscriptions in the range of 1 – 250, 62% of whom subscribed to fewer than 100 journals a year. The total number of libraries with the capacity and resources to subscribe to more than 250 print journals a year was about 25%.
The mean annual subscription rate for print journal by responding libraries was 355.61. In comparison to the median, it should be noted that the mean, representing an “average” value, was affected by a few libraries (outliers) with relatively large print subscriptions. The mean is therefore positively skewed to indicate a subscription rate of 355.61. The median, which is not affected by outliers, is far more representative of the middle-range quantity of annual subscriptions, in this case, 114.5.

Table 7.13 Annual Subscriptions of Print Journals and Online Journals (N=72)

<table>
<thead>
<tr>
<th>Print journals</th>
<th>Respondents</th>
<th>Percentage</th>
<th>Online journals</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>2</td>
<td>3</td>
<td>None</td>
<td>14</td>
<td>19.</td>
</tr>
<tr>
<td>1-250</td>
<td>52</td>
<td>72</td>
<td>1-5000</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>251-500</td>
<td>7</td>
<td>10</td>
<td>5001-10000</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>501-750</td>
<td>1</td>
<td>1</td>
<td>10001-15000</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>751-1000</td>
<td>2</td>
<td>3</td>
<td>15001-20000</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>1001-1250</td>
<td>1</td>
<td>1</td>
<td>20001-25000</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>1251-1500</td>
<td>3</td>
<td>4</td>
<td>25001-30000</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>1501-&lt;</td>
<td>4</td>
<td>6</td>
<td>30001-&lt;</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>72</td>
<td>100.</td>
<td></td>
<td>72</td>
<td>100.</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 72, Mean = 355.61, Median = 114.5

In contrast, however, the mean number of online journals available to most libraries in this study was 11,629, with a similar median value of 11,000. This is likely an indication that most of these libraries, through various initiatives and international collaborations, have obtained access to common electronic databases providing a similar quantity and selection of electronic journals. Examining access patterns, the data further indicate a higher proportion (21%) of responding libraries have access.
to electronic journals in the 15001 – 20000 range. In all, a total of 62% of responding libraries have access to over 10,000 online journals annually.

What is striking, however, is the fact that almost 20% of responding libraries in this study did not have online access. These were branch libraries who had no connection to the Internet, or who have poor connectivity to outside databases. Some facilities have no access to online journals because a) they are simply unaware of the existence of free databases through which to access electronic journals, or b) they have not registered to use such databases because they do not have the capacity to manage them. Overall, it is abundantly clear from the table that most libraries in Africa continue to face the difficult challenge of stocking their libraries with adequate and up-to-date print journals.

7.6.3 The Challenge of Access

The survey data bring to light the critical issue of access to scholarly literature in developing economies, on the one hand, and the potential impact of the Internet on access, on the other. Indeed, Africa has been described as a book-famine society, a journal-less and illiterate society, because of its inadequate access to monographs and printed journals. This lack of access has been exacerbated by the high production cost of journals, lack of financing, a shortage of printing and binding equipment, over-reliance on imported print production material, and a lack of sufficient knowledge about editing, production, and distribution techniques. The impact has been so considerable that many institutions of higher learning have to make the unthinkable decision of cancelling subscriptions to print journals. Levy
(1993), Sawyer (2004), Olukoju, (2004), Willinsky (2006, p. 99), Onari-Okemwa (2007), Wirsy (2007), all describe how reductions in funding and unrelenting increases in serial costs, combined with currency fluctuations, have forced the cutting of journal titles in higher institutions of learning in Africa. Kanyengo (2007) bemoaned the inability of Zambia’s libraries to subscribe to a single journal title since the 1980s. In a 2000 survey, researchers and academics in developing countries ranked lack of access to subscription-based print journals as one of their most pressing problems (Ware cited in Tabachnikoff and Miller, 2008).

With the transition to new publishing technologies over the last 15 years, and an unparalleled number of journals and other information resources already available to the research community, there is sufficient evidence of the potential impact of Internet technologies on scientific endeavors in Africa. The convergence of the Internet on institutions of higher learning in Africa means strengthening research capacity, improving the quality of research, reducing Africa’s isolation from the global scholarly community, and ultimately narrowing the information divide.

7.7 Current Journal Subscription Budgets

The ability of every library to adequately stock its library with current and up-to-date resources to support the academic community hinges on the availability of adequate funds. In most research and university libraries in Africa, the data show a serious gap in terms of inadequate funding for journal subscriptions. While a total of 26% of libraries indicated with certainty that they had not budgeted for journal subscriptions, another 11% libraries were not sure if any budget had been set aside. Those who
did report available funds (less than 8%) had a budget of between $250,001 and $500,000 for journal subscriptions. The majority (32, or 49%) had a yearly budget of between $1 and $250,000. When this range is further broken down and carefully examined, what is evident is that a total of 78% of librarians (within the $1-$250,000 budget range) reported a subscription budget of less than $100,000 per year. The lowest budget reported was $100, and the highest budget reported was $3,000,000.

Table 7.14 Current Library Journal

<table>
<thead>
<tr>
<th>Subscription Budgets</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>17</td>
<td>26</td>
</tr>
<tr>
<td>$1- $250,000</td>
<td>32</td>
<td>49</td>
</tr>
<tr>
<td>$250,001 - $500,000</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>&gt; $500,001</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Not sure</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>100</td>
</tr>
</tbody>
</table>

Note. N = 65, Mean = $252,045, SD = $624,154, Non-responses = 11

Around the same time that this data were being gathered, the Association of Research Libraries (ARL, 2008) released its 2007 report on member subscription budgets. In that report, the highest amount of money spent by a member institution on serial journals was $13,564,480 (i.e., Columbia University, New York) and the minimum amount spent by a member university library was $3,123,358 (i.e., Kent State University). In comparison, it is evident that university and research libraries in Africa are in a serious budget crisis to the degree that their ability to build journal collections that reflect the vibrant intellectual curiosity and engagement of faculty, students and researchers is seriously hampered. What is more, bedeviled with unfavorable exchange rates, and faced with chronic subscription cost increases,
many academic libraries in Africa have cancelled journal subscriptions, or have been unable to subscribe to single print journals in many years.

7.8 Funding

Meta analysis of funding of libraries in Africa shows that they are woefully underfunded. The question therefore is how are these ICT infrastructures and the acquisition of other resources funded in research libraries in Africa. The data summarized in Table 7.14 indicate that majority Academic Libraries in Africa – legally or de facto departments of state governments – rely on State or Central or Federal government (92%) for funds to run the libraries. Donor Support (72%) which comes in various forms – staff training and development, collection development, infrastructural development, multi-purpose projects and donations in kind – is the second largest sources of funding many library projects. Internal generated funds (47%), in the form of fines for overdue books, photocopying, user fees, endowment funds, etc. Donations (24%) and “Others” (8%) are the other sources of funding to these libraries.

Table 7.15 Sources of Funding (N=76)

<table>
<thead>
<tr>
<th>Sources of Funding</th>
<th>Responses*</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government subvention/ Parent Institution</td>
<td>70</td>
<td>92</td>
</tr>
<tr>
<td>Donor agency</td>
<td>55</td>
<td>72</td>
</tr>
<tr>
<td>Internal revenue (user fees, fines)</td>
<td>37</td>
<td>47</td>
</tr>
<tr>
<td>General donations</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

*Respondent could choose more than one answer
With the exceptions of a few libraries in South Africa, all participants at the workshops in this study expressed dissatisfaction with the level of financial support available to them. The senior librarian from Kenya described the library's situation as follows:

Over the last five years, amount per student has consistently decreased in real terms, because of the poor exchange rate and high growth in student intake. We spent more but have received less monographs, journals and e-resources. The government allocation dwindles in real value every year and so we have to look elsewhere like international agencies, for support.

Another Deputy Librarian from Nigeria describe

The amount of funding from the government to the university library is a reflection of the lack of support for libraries and the failure to recognize the libraries’ important role in national development. After paying for staff salaries and cost, you have almost nothing to spend on books. There is the need for a change in national priority otherwise there is no future for university libraries in this country.

A renowned librarian serving on many international boards limned the situation as follows:

I hate to say this but I have to! Our libraries are what it is today because of external donor support. Funds from government pay for staff salaries. Almost every development, especially in the area of ICT, has been funded by external funding bodies. Though you don’t have the leverage of how and what to use the money for because they always tell you what to do, their support has to be acknowledged.

These quotes speak volume about the financial challenges faced by libraries in Africa especially the financial marginalization and over-dependence on external funding, to the degree that these libraries are struggling for relevance within the
academic community. If funds from central or state government can only pay for staff salaries, it wouldn’t be out of place to agree with participants that most of the progress made in the development of ICT infrastructure, IR, internet connectivity have largely been funded by donors.

7.9 Local Content and Publishing

It is increasingly clear that new institutions and intellectual strategies are emerging in response to the power of digital technologies to support scientific communication through the creation, distribution and preservation of scientific knowledge. The library, one of those institutions, have provided much of the recent leadership on the issue of digital technologies by investing in building and acquiring ICT resources in support of knowledge creation and preservation. To explore a deeper understanding of the emerging library role as publishing service provider, this study delved more deeply into gathering data on the publishing services that university and research libraries in Africa were currently providing. The mechanisms for supporting institutional publishing program are diverse and usually diversified and these are summarized in the tables below.

7.10 Library Production of Local Content Databases

This study showed that mechanisms for supporting institutional publishing program are diverse and usually diversified. Digitization of local content and creation of databases for indigenous knowledge is one of the ways that libraries are supporting local publishing initiatives in Africa. While admitting that digitizing of local content and creation of databases for local contents have been slow, a total of 87% of
libraries indicated that they have digitized or computerized some aspect of locally produced contents. When examined closely, 47% of libraries have bibliographies, catalogues or abstract of locally produced scholarly works computerized or digitized. Another 36% submitted that they have databases for theses/dissertations, newspapers, and technical reports. Included in this category were libraries with institutional repositories (see Table 7.16).

Table 7.16 Library Production of Local Content Databases (N=69)

<table>
<thead>
<tr>
<th></th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bibliographies/Abstracts/catalogues</td>
<td>33</td>
<td>47</td>
</tr>
<tr>
<td>Internally generated content (theses, dissertations, faculty/staff reports and publications, newspapers)</td>
<td>25</td>
<td>36</td>
</tr>
<tr>
<td>None</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100</td>
</tr>
</tbody>
</table>

7.11 Library Support of Local Journals

In direct response to the question “What has been the libraries role in support of local journal up to this point?” the data indicate (see Table 7.17) that libraries in Africa are making large contributions of institutional resources to support publishing service programs. These supports, which were reported in many forms, have been categorized under four main areas: First, is “support service” (59%). This includes activities such as converting existing local scholarly work including older printed publication, into digital contents. The most important considerations here are to store, preserve and providing access to the university’s scientific publications. Second, “facilitating role” (38%). This form of support for local journals includes organizing the processes and creating an environment needed for online publishing.
That means placing at the disposal of the university research community existing infrastructure – Web servers, hosting, IR as well as expertise for faculty publishing. Some of these structures provide wider access and dissemination of scholarly works produced in the library's institution. Third, “outreach program on new publishing models” (34%). Here responding libraries stated among other things that they run workshops, seminars for the research community on new mode of disseminating scholarly works including training journals editors on how to use Open Source software to manage their content online so they can inject some efficiencies into the publishing processes. Fourth, “subscribing to locally published journals” (28%). Here the data indicated that university and research libraries in Africa have been supporting local journals is through the building of a critical mass of content through the provision of strong online collections of research information. The priority is to create research environments for academic and research community to produce the further research. Other activities were grouped under “Others” (6%). This involves the provision of basic traditional library services – indexing, ISSN registry, cataloguing services and helping people to find or learn how to find relevant information – to the research community.

Table 7.17 Library Support of Local Journals (N=68)

<table>
<thead>
<tr>
<th>Support Service</th>
<th>Respondent</th>
<th>Frequency in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitating Role</td>
<td>26</td>
<td>38</td>
</tr>
<tr>
<td>Outreach on New Publishing methods</td>
<td>23</td>
<td>34</td>
</tr>
<tr>
<td>Subscribing to Local Journals</td>
<td>19</td>
<td>28</td>
</tr>
<tr>
<td>Others (Traditional library service)</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>None</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

No Response = 8
7.12 Benefits Derived From Library Support of Local Journals

Closely related to the above data are the principal benefits and value of African libraries involved in supporting local journal publishing. The focus here was to examine if, with the new environment of digital publishing, the libraries envisage any potential benefit of supporting local journal publishing initiatives. The results, as presented in Table 7.18, have far-reaching implication for scientific publishing environment in Africa. The majority of responding libraries in this study (56%) have a strong belief that employing new mode of digital publishing, they can increase the visibility and access of local journals, while 46% indicated that the library as well as parent institution would maximize and extend their reputation within the global scholarly community. Another principal value of the library involved in local journal publishing is the belief that, through the use of online tools like OJS, they could improve the quality of local journals and strengthen the production of indigenous knowledge (29%); reduce the lead time and the production cost of journals because of efficiency of online content management tools. More revealing is the understanding of responding libraries (21%) that they have to some extend develop ICT tools, skills and infrastructure that can easily be put at the disposal of the scholarly community for faculty publishing. This data show that the libraries in Africa are prepared to play a greater role in the scholarly publishing process in Africa.
Table 7.18 Benefits Derived From Library Support of Local Journals (N=70)

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Respondents</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhance library/institution reputation</td>
<td>32</td>
<td>46</td>
</tr>
<tr>
<td>Increase in visibility and Access</td>
<td>39</td>
<td>56</td>
</tr>
<tr>
<td>Improve quality of local journals and Strengthen indigenous knowledge</td>
<td>20</td>
<td>29</td>
</tr>
<tr>
<td>Facilitate the Ultimate mission of University of teaching research and publishing</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Advantage Using existing infrastructure in library</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>Faster and at lower cost</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>Others</td>
<td>12</td>
<td>17</td>
</tr>
</tbody>
</table>

No Response = 6

7.13 Technical Support Available for the Library

Another key element in terms of the future of these libraries, and their interest in the potential of online access and journal management, was the state of technical support available to them. In the era where digital technologies are gradually taken a foothold in academic libraries in Africa, it is equally important to ascertain the technical support available to these libraries who are expected to support and help patrons with technical problems. The data presented in Table 7.19 show that majority (79%) of responding libraries in the survey depended on the IT units of the parent institutions for technical support, while a sizeable number (33%) of University and research libraries in the sample have establish a permanent IT units within the libraries that provide technical support for the academic community. Another source of technical support for libraries are the Outside Agencies (10%) who are responsible for supplying Internet access to the libraries. Staff Development (16%), which assumed the forms of workshops and seminars, provided the libraries with the
tools, support and knowledge required to meet the needs of the research community.

Table 7.19 Technical Support Available for the Library (N=70)

<table>
<thead>
<tr>
<th>Support Type</th>
<th>Respondents</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University IT Support</td>
<td>55</td>
<td>79</td>
</tr>
<tr>
<td>Library’s IT Support</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>Staff professional development</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>(conferences/seminars, workshops)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outside Agencies (IP provider support)</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>No Response = 6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Some of the respondents described their responsibility in the following quotes:

It’s my duty to monitor the computer systems and networks of the library as well as providing maintenance service. We do installation and configuration computer systems, diagnose faults and solve technical problems, sometimes by phone or in person.

Finding and fixing a major fault on the operating system; replacing parts as required; providing support, including procedural, documentation; manage an increasing amount of data in, display, decipher and edit server configuration variables to improve performance of applications, evaluate techniques for loading data into the database

This unit handles all Hardware purchases. Also the unit controls integrated library management software acquisition, implementation and support.
7.14 Principal Challenges of Supporting Local Journals

Are there challenges in the libraries doing more to support local publishing? This question was investigated and this study revealed a myriad of challenges that are likely to work against any efforts by libraries in African to support local journal publishing initiatives. In Table 7.20 where the results are summarized, one can see that limited funding (67%) to develop scholarly publishing infrastructures in the libraries and human resource related issues (43%): that is, the lack of professional staff with appropriate combination of training, experience, skill and degrees; as well as adequate level of support staff were considered the most serious challenges to surmount if the library is to play active role in journal publishing. These are followed by problem of unsustained connectivity and frequent power outages (28%); the lack of adequate tools and ICT infrastructure (26%) for disseminating new forms of scholarship; and the difficulty of winning institutional support (22%) from university authorities for new mode of publishing, research community and editors of print journals of the libraries. Finally, constraints such as limited readership of Africa journals, inadequate research output, departmental hegemony and accreditations were put in the “other” (17%) category.

The highlight of these data is the fact libraries do not consider Internet connectivity the most important constraints to libraries supporting local journal publishing as the literature attempt to portray (Juma and Mayor, 2008 p. 2)
Table 7.20 Principal Challenges in Supporting Local Journals (N=76)

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Respondents</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td>51</td>
<td>67</td>
</tr>
<tr>
<td>Connectivity issues (internet and power supply)</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>Institutional support (researchers and administration)</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>Skills deficit and other HR issues</td>
<td>33</td>
<td>43</td>
</tr>
<tr>
<td>Infrastructure development and maintenance</td>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>17</td>
</tr>
</tbody>
</table>

7.15 Challenges of Stocking African Journals

This brings us to the challenges of stocking African published journals, which obviously affect efforts in promoting regional journals. Respondents identified various challenges, which have been categorized into eight broad areas (see Table 7.21). The perennial problem of funding was the strongest challenges identified by almost a third (66%) of the respondents. The irregularity of most published African journals (45%), and the lack of knowledge of the existence of African journals (2%) were also reported as affecting the ability of the libraries to subscribe to African journals. Again the frustration of having to wait forever to have the journals delivered to the library, after you have ordered for them, because of inefficient postal system within the continent, was identified by respondents (32%) as another problem. Other respondents (11%) claimed they could not subscribe to African published journals because the cost was too high. Then there is the “other challenges” for which 10% of respondents stated affected their ability to subscribe to African journals. The following quotes are some of the issues categorized under “other challenges:
Table 7.21 Challenges of Stocking African Journals (N=71)

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Responses</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td>47</td>
<td>66</td>
</tr>
<tr>
<td>Irregular publication</td>
<td>32</td>
<td>45</td>
</tr>
<tr>
<td>Knowledge of journals availability visibility/awareness</td>
<td>30</td>
<td>42</td>
</tr>
<tr>
<td>High cost</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Delivery/having Access</td>
<td>23</td>
<td>32</td>
</tr>
<tr>
<td>Other challenges (not available electronic,</td>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>

No response = 5

Journal subscriptions are according to the requests of researchers and sometime content are not relevant to needs of researchers

Payment required in US dollars, meanwhile credit cards are not functional in most countries in Africa

Currently the library places premium on access to online/electronic journals however many of them are not available electronically

7.16 Other Challenges

Two other major challenges that received attention from participating libraries were power outages and network failures. Responding libraries recognized that these are two major issues too big that individual institutions lacks the scale to assert a desirable level of control. For instance, as illustrated in Tables 22 and 23, the libraries are hit with frequent network failures over the proceeding month, which occurred “very often” for a little more than a third of the respondents. Even more frequently and more exasperating, libraries were being hit by power outages with nearly two-thirds reporting that this took place “very often” over the last month.
Table 7.22 Experience of Network Failure of at Least One Hour Over the Last Month (N=76)

<table>
<thead>
<tr>
<th>Network failure</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very often</td>
<td>26</td>
<td>34</td>
</tr>
<tr>
<td>Often</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Occasionally</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Hardly ever</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Never</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 7.23 Experience of Power Outages of at Least One Hour (N=76)

<table>
<thead>
<tr>
<th>Power outages</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very often</td>
<td>45</td>
<td>59</td>
</tr>
<tr>
<td>Often</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Occasionally</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hardly ever</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Never</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

7.17 Summary

This chapter presents the findings related to the current state of university and research libraries in Africa and their potential role in supporting scholarly publishing within the sub-Saharan African context. To enable triangulation, and the acquisition of a richer source of data, narrative responses from the workshops discussion and semi-structured interviews were also incorporated in the data presented in this chapter.

Both the qualitative and quantitative instruments deployed provided some useful demographic data on the respective university and research in this study. In all 18%
research libraries and 82% university libraries constitute the sample for this study.

The geographical locations of these libraries were spread across five countries in Africa – Nigeria, Ghana, Kenya, South Africa and Uganda.

The gender composition of respondents in the sample – male (58%) and female (42%) reinforces existing poor representation of women in senior academic and management posts and therefore the existing gender inequity in African higher academic institutions. With respect to the academic qualifications of respondents, librarians in this study have obtained different educational qualification, from ordinary certificates to doctoral degree - with majority of the them possessing masters degrees in various fields of the library profession.

The data point to the fact that libraries in Africa are woefully underfunded. While libraries in Africa rely on different streams of funding, majority of libraries from sub-Saharan Africa in this study largely depend on grants from national governments for most of their recurrent and capital budgets and are consequently hard hit during times of budgets cuts. University and research libraries remain neglected and parent institutions have witnessed a lot of changes from the changing economic climate and changing government policies. Over a quarter of reporting libraries in this study had no budget for scientific journal subscriptions. The decreasing level of funding to libraries has had the effect of low development of digital library and information services. Because the ability of these libraries to adequately stock its libraries’ with current and up-to-date resources to support the academic community hinges on the availability of adequate funds. To fill this financial gap, this study showed that the international donor community has become one of the largest and most dependable
supporters of academic libraries in Africa. Many ICT infrastructural development, library automation and library computerization have largely become donor driven.

In spite of the financial limitations, this study presented here suggests that most of these libraries over the years have registered modest progress in library infrastructures. Significant progress has been made in the acquisition of operational Web servers for majority of libraries in this study. While significant differences exist in the distribution of networked computers among the libraries in this study, it is evidence that over 90% of libraries have computers that are networked and therefore could provided students and faculties access to the internet, including Web servers, institutional repositories, networked or internet-ready computers, and other electronic resources. Again while a few, mostly from South Africa, had institutional repositories in place and therefore had information to report on, overwhelming majority of participants in the survey have as part of their institutional goals to develop institutional repositories to support research endeavors in their institutions.

In terms of automation, this study shows that libraries are currently at very different levels of development; yet the survey showed a marked improvement in the level of automation among Africa university libraries. When Rosenberg investigated similar questions in 2005, she found that only 15% of African libraries had reported being fully automated, and 21% had not begun the automation process (Rosenberg, 2005, p. 6). In comparison, our survey data show that 18% of libraries have fully automated and another 68.06% had succeeded in automating between one to five library functions. Yet what remains to be seen is the need for these libraries to move beyond current methods of automation into more integrated, networked systems and
operations in order to better make use of various electronic and online resources. One major area of significant improvement is access to electronic databases and electronic journals. Through various initiatives by the international donor community and various international collaborations, over 70% of libraries in this study have access to electronic databases containing an average of 11,629 journals. While this is a significant progress it is important to note that a segment of responding libraries (19%) still do not have the infrastructural resources to access electronic databases or electronic journals. Other available e-resources found in most of these libraries included CD-ROMS (databases), audio/visual materials, E-books, E-granary, electronic thesis/dissertation and the Internet.

As elsewhere in the world, universities libraries are the main consumers of academic journals. Although subscriptions are important to some journals, the large bulk of the journals market by revenue to most journal publishers is made up of sales to libraries (Ware 2009, p. 14). Libraries subscription levels to African published journals were low. Close to three-quarters of the libraries (72%) subscribed to fewer than 50 African journals.

As suggested by this study, the lack of knowledge about the existence of African journals, the poor visibility and irregularity of these journals are some of the major reasons for their low patronage. It is within reason to therefore suggest that if these journals could make a transition from print environment to online environment, they will gain greater visibility and thereby increasing the subscription base of these journals.
It is increasingly clear that new institutions and intellectual strategies are emerging in response to the power of digital technologies to support scientific communication through the creation, distribution and preservation of scientific knowledge. The library, one of those institutions, has provided much of the recent leadership on the issue of digital technologies by investing in building and acquiring ICT resources in support of knowledge creation and preservation. To explore a deeper understanding of the emerging library role as publishing service provider, this study delved more deeply into gathering data on the publishing services that university and research libraries in Africa were currently providing. The mechanisms for supporting institutional publishing programs are diverse and usually diversified.

This study presented here suggests that libraries are already employing diverse strategies to support institutional publishing programs. Chief among them is the digitization service. This involves the conversion of existing local scholarly works including older printed publication into digital content. They are providing facilitating role by supporting local journals through the organization and creation of an enabling environment needed for online publishing. This includes placing at the disposal of the university research community existing infrastructure and network technologies – Web servers for hosting local journals and institutional repositories – as well as placing library’s ICT expertise at the disposal of the research community for faculty publishing. Other established process of support includes providing outreach program, workshops and symposiums on new publishing models for faculty and students; and subscribing to local journals and building critical mass of content through the provision of strong online collection of research information.
There was a consensus among participating libraries in this study the libraries participation in employing new digital technologies for basic publishing services should become a function of the university libraries for the following reasons. Libraries could help increase the visibility and access of local journals, maximize and extend the reputation of parents institutions within the global scholarly community; improve and strengthened the production of indigenous knowledge; reduced the lead time and the production cost of journals by using online content management tools. Finally that research and university libraries are well position in terms of skills, infrastructure and technical support that can easily be extended to the scholarly community for faculty publishing.

This study concluded with a catalogue of challenges facing university and research libraries with potential consequences of derailing any effort by libraries in Africa to support local online journal publishing initiative. The one most serious problem with far reaching consequences is the low level of information communication technology expertise among library staff. With the current technological developments in information communications, and the gradual progression towards digitization, library staff at all levels will require an understanding of the current and future impact of networked information provision, as well as the skills to apply this understanding. However, this study suggests that only a few librarians have skills directly relevant to modern digital and network environment. A sizeable number of librarians have no information communication technology skills or have lower order skills (LOS) in computer skills. While such LOS skills may have their place in library work, they are not critical to the new and emerging professional demands, and neither do they
provide any competitive advantage within the changing digital information environment. In this digital age of librarianship, ICT plays a significant role in information acquisition, processing, retrieval and provision of service. And there is no doubt urgency of the now to develop continuing professional development programs in the career advancement of library professionals if they want to remain relevant. As rightly observed by Alemna (2004, p. 2), There are so many innovations in the profession these days that one can easily fall behind the technology spectrum in a matter of a couple of years. Continuing professional development should however be a shared responsibility of the library schools and the various professional associations in Africa.

Other challenges identified by this study included the perennial issue of funding, poor Internet connectivity and low bandwidth, frequent Internet interruption and power outages, lack of institutional support (researchers and administration), and the low pace of Infrastructure development and maintenance.

The irregularity of most published African journals and the lack of knowledge of the existence of African journals were also reported as affecting the ability of the libraries to subscribe to African journals. Again the frustration of having to wait forever to have the journals delivered to the library, after you have ordered for them, because of inefficient postal system within the continent, was another major hindrance to subscribing to African published print journals.
CHAPTER 8

THE STATE OF IT ADMINISTRATION IN AFRICAN UNIVERSITIES

8.1 Introduction

In view of rapid developments in the area of information technology (IT), coupled with the advent of networked information services, a great number of universities in SSA have established ICT units with the aim of increasing the efficiency of administration/management, learning, and research, in line with changing global requirements. The role of these units include advising parent institutions on IT implementation, operation and maintenance of information communication infrastructure, Internet and Intranet, helpdesk services, and end-user computing support, and computer and common peripheral repairs. IT units also support systems installation (i.e., hardware and software, maintenance, configuration and upgrading). Given their indispensability, implementation of any innovative online publishing system thus requires the maximum participation of institutional IT units.

As a result of the critical role that IT units play in any online system, the survey sampled IT administrators from both institutions hosting the workshops and other attending institutions. The aim was to gather information on the current level of ICT resources available in academic centers at African universities, related ICT infrastructure needs, available current bandwidth, and institutional ICT goals. The
survey also sought to understand the extent to which the current level of available ICT resources in academic institutions was likely to impact online publishing.

The sample was drawn from a group of IT administrators from 59 universities and research institutions across sub-Saharan Africa that participated in the workshops. From an initial sample size of 52, 29 returned completed questionnaires, yielding a 55.8% response rate.

8.2 Qualification Levels of IT Administrators

The highest completed degree reported by respondents was a doctorate (3%) in computer science, and the lowest was a certificate program (7%) in microcomputer technology (Table 8.1); among other qualifications, 41% held a master's degree in computer science, 28% held a bachelor's degree in computer science, and 14% had completed a Higher National Diploma in management information systems (MIS). Respondents holding a postgraduate diploma represented 7% of the sample. Of note, 93% of respondents were male, and 7% female, yet another indication of the disproportionate representation of African women in African higher academic institutions.

Table 8.1 Level of Staff Qualification (N=29)

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Responses</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters: MSc</td>
<td>12</td>
<td>41</td>
</tr>
<tr>
<td>Bachelors, BSc</td>
<td>8</td>
<td>28</td>
</tr>
<tr>
<td>Diploma (HND)</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Post-graduate diploma</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Certificate program</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Doctorate: PhD</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100</td>
</tr>
</tbody>
</table>
8.3 Technological Expertise

A wide range of expertise was noted among respondents operating the IT units of sampled institutions. Reporting on a range of higher order technical skills, 38% of respondents worked as network and system administrators, and 21% worked as hardware/software engineers, which included a wide range of related responsibilities: installing and configuring servers; installing, configuring, and upgrading application software, software and data backups; supporting and maintaining servers or other computer systems; creating and maintaining user accounts; planning for and responding to server-related and other problems at university campuses. Other areas of expertise included database management (10%), where responsibilities included managing, organizing, storing, and retrieving data, as well as ensuring the optimum performance of databases, systems and system analysts (17%) (see Table 8.2).

<table>
<thead>
<tr>
<th>Expertise</th>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database management/administration</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Networking, (IT), systems administration</td>
<td>11</td>
<td>38</td>
</tr>
<tr>
<td>Hardware/software engineering</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>System (administrator) analysis</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 8.2 Technology Expertise (N=29)
8.4 Types of Institutional ISP Connections

All institutions represented in the sample were fully connected to the Internet, with a large percentage (48%) using a leased line as a means of delivering broadband Internet access to their institutions (see Table 8.3). Very Small Aperture Terminal (VSAT), which either provides a direct satellite link to a hub in Europe/America, or a link to local satellite hub, represents the second major mode (45%) of Internet connection among sampled institutions. Two institutions (7%) also reported that they had a direct satellite link via international marine fiber cable.

<table>
<thead>
<tr>
<th></th>
<th>Responses</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSAT</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td>Leased line</td>
<td>14</td>
<td>48</td>
</tr>
<tr>
<td>Fiber optic cable</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>29</td>
<td>100</td>
</tr>
</tbody>
</table>

8.5 Current Level of Internet Access

One major responsibility of the IT units is to manage, conserve and distribute Internet access to the academic community as effectively as possible. Responding to the current level of Internet distribution within the user community, a little under half of respondents (48%) indicated that students in their institutions had limited access; 28% thought student Internet availability was moderate, and a smaller proportion (24%) indicated students had adequate access (see Table 8.4). According to calculations, greater proportions of respondents (67%) and (63%) in
the sample were of the opinion that their libraries and faculties were adequately supplied with Internet access.

Table 8.4 Level and Distribution of Internet Access Within the Academic Community

<table>
<thead>
<tr>
<th></th>
<th>Adequate (%)</th>
<th>Somewhat adequate (%)</th>
<th>Limited access (%)</th>
<th>No access (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students (N=26)</td>
<td>24</td>
<td>28</td>
<td>48</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Libraries (N=27)</td>
<td>67</td>
<td>22</td>
<td>11</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Faculty (N=27)</td>
<td>63</td>
<td>22</td>
<td>11</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Administration (N=28)</td>
<td>46</td>
<td>29</td>
<td>25</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Departments (N=29)</td>
<td>48</td>
<td>28</td>
<td>24</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

8.6 Bandwidth Availability

While the bandwidth levels in the sample are small relative to those of developed nations, most institutions reported a significant level of growth in average bandwidth in recent years (see Table 8.5). Reporting on current levels of available bandwidth in sampled institutions, this study revealed that downloads averaged 118.9 Mbps, and uploads averaged 56.7 Mbps. However, three years earlier, the same responding institutions reported significantly lower bandwidth levels, as downloads averaged 57.6 Mbps, and uploads averaged 26.7 Mbps. This change in available bandwidth represents a remarkable 109% increase in downloading capacity, and a 115% increase in uploading capacity. Indeed, compared to a similar study commissioned by the World Bank (2004), which reported an average downloading capacity of 769Kbps and an average uploading capacity of 537Kbps, it is clear that bandwidth capacity in Africa has continued to improve.
Table 8.5 Bandwidth available for Internet access

<table>
<thead>
<tr>
<th></th>
<th>Current bandwidth (Mbps) (N=27)</th>
<th>Bandwidth available three years ago (Mbps) (N=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Downloads</td>
<td>Uploads</td>
</tr>
<tr>
<td>Total bandwidth</td>
<td>3209</td>
<td>1531</td>
</tr>
<tr>
<td>Average bandwidth</td>
<td>118.9</td>
<td>56.7</td>
</tr>
</tbody>
</table>

8.7 Changes in IT Participation and Use Over the Past 5 Years

On balance, the picture that emerged from sampled university IT administrators is a relatively positive one (see Table 8.6). Across the sample, an overwhelming majority of respondents (79%) reported a fast-growing dependence on IT within the academic community, especially among students. A smaller proportion (14%) thought the growth in level of use had been gradual, and 7% reported a slow increase participation level over the past five years.

Table 8.6 Changes in IT Participation and Use Over Past 5 Years (N=29)

<table>
<thead>
<tr>
<th></th>
<th>Respondents</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dramatic increase</td>
<td>23</td>
<td>79</td>
</tr>
<tr>
<td>Gradual increase</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Slow increase</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100</td>
</tr>
</tbody>
</table>

The following comments from respondents are indicative of the trends in IT use over the past few years:

The usage level has been outstanding, especially among the students over the past few years. This is evidenced from the daily log ons done by
the students. The labs are even full every day.

The use level has improved greatly among students and faculty. Faculty are integrating IT into their every day work [teaching research and publications]. Students are on the net every minute of the day.

There has been a tremendous improvement/increase in the number of users who have access to IT services, and there are many users who have acquired IT skills and are active in the use of our services. This is because of the expansion of IT infrastructure on all university campuses!

Every member of this institution is seriously embracing IT knowledge with an unrelenting inquisitiveness. There is support from [the] Education Trust Fund (ETF), aimed at making students and staff IT compliant.

Of course, this great deal of interest and motivation to appropriate IT is only increasing, a situation which suggests a promising direction for the future of IT in SSA.

8.8 Institutional ICT Goals

With respect to future plans and developments, there is ample evidence (see Table 8.7) from those IT administrators sampled that, in the next three years, institutions of higher learning in Africa have made it a top priority to a) improve and expand upon available bandwidth to meet demand within the academic community (86.2%); b) improve Internet access by equipping campus buildings and outdoor spaces with high-speed wireless Internet access (72%); c) fully integrate ICT into teaching, learning, research, knowledge production and dissemination (52%); and d) improve ICT literacy across the academic community, especially among faculty members (45%).
Table 8.7 Institutional ICT Priorities (N=29)

<table>
<thead>
<tr>
<th>Priorities</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve access</td>
<td>21</td>
<td>72</td>
</tr>
<tr>
<td>Integration</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>Improve and upgrade ICT infrastructure</td>
<td>25</td>
<td>86</td>
</tr>
<tr>
<td>Capacity building in ICT</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>67</td>
</tr>
</tbody>
</table>

Note. Respondents were allowed to give multiple answers.

8.9 The Role of IT Units in Supporting Online Scholarly Publishing

Respondents in the sample were very clear on the nature of their role in supporting online scholarly publishing. An overwhelming majority (93%) indicated they had the required infrastructure to provide hosting services to journals interested in publishing online. IT administrators also indicated they could provide advice and technical support (software installation/upgrading) (86%) to journal editors, and training (75%) to editors/faculty on how to use online publishing tools (see Table 8.8).

Table 8.8 The Role of IT units in Supporting Online Scholarly Publishing (N=28)

<table>
<thead>
<tr>
<th>Role</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>User education/training</td>
<td>21</td>
<td>75</td>
</tr>
<tr>
<td>Host journal infrastructure</td>
<td>26</td>
<td>93</td>
</tr>
<tr>
<td>Technical support/advice</td>
<td>24</td>
<td>86</td>
</tr>
<tr>
<td>Others: (system installations) database mgt., production assistance such as markup language tagging and copyediting</td>
<td>3</td>
<td>11</td>
</tr>
</tbody>
</table>

Note. Respondents were allowed to give multiple answers.
Some IT Administrators in the sample express their views:

We have begun to direct our resources to support faculty-publishing efforts. For example my unit [IT] current host the university’s IR and in addition provides technical support for the university’s IR. We can as soon as possible install OJS that hold vast potential in stimulating the production of research findings.

Our core function here in the Office of Information Technology Services is to make sure that use of technology is a routine part of life for the university community. We assist faculty to integrate technology into teaching and research.

The reason for IT department is because of faculty and student. We exist because of them. The unit is not an end in itself but a means to an end, thus we have a singular responsibility to integrate all our service into pedagogic innovation, research and publishing endeavors of academic community and that is what do.

Our goal is to make the university globally relevant and competitive in terms of knowledge production and teaching. one of the most important benefits of the IT unit is ability to empower faculty and students to take control of content and information flow. To disseminate and communicate their ideas and concepts more easily than in the past.

8.10 Principal Sources of IT Development Funding

Of course, how ICT development projects are funded in institutions of higher learning in Africa is a crucial question (see Table 8.9). According to sampled institutions, the international donor community (79%) and institutional budgets (79%) represented the most frequently cited sources of IT development funding. Meanwhile, state governments (52%) continue to play a vital role in building IT infrastructure; in some cases, institutions have found ways of transferring some of
the IT infrastructure cost onto students through what are termed “user fees” (37%).

Support from commercial organizations, and donations of computers from individuals and the private sector made up other sources (28%).

**Table 8.9 Principal Sources of IT Development Funding (N=29)**

<table>
<thead>
<tr>
<th>Source</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donor agencies</td>
<td>23</td>
<td>79</td>
</tr>
<tr>
<td>Institutional budgets</td>
<td>23</td>
<td>79</td>
</tr>
<tr>
<td>Government</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>User fees</td>
<td>11</td>
<td>38</td>
</tr>
<tr>
<td>University</td>
<td>20</td>
<td>69</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>28</td>
</tr>
</tbody>
</table>

*Note. Respondents were allowed to give multiple answers*

8.11 The Principal Challenges of Providing IT

This study identified some challenges affecting the provision of IT service to the university community (see Table 8.10). The lack of funding (83%), unreliable power supply (75.9%) and the high cost associated with providing information communication infrastructure were the top three most rated threats identified by respondents. In additions respondents viewed inadequate bandwidth and poor connectivity (52%), shortage of skill personnel (28%), lack of intuitional policy (28%) and low computer literacy skills among faculties and students as other sets of challenges affecting adequate provision of IT service to the research community. Poor vendor support, administrative bottlenecks, fewer staff strength to meet the
needs of the university community and red-tapism were challenges group under “others.”

*Table 8.10 Principle Challenges in Providing Campus IT Services (N=29)*

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Respondents</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td>24</td>
<td>83</td>
</tr>
<tr>
<td>Inadequate bandwidth and connectivity</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>High cost of ICT infrastructure/hardware</td>
<td>18</td>
<td>62</td>
</tr>
<tr>
<td>Low computer literacy</td>
<td>3</td>
<td>10</td>
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<td>Shortage of skilled personnel</td>
<td>8</td>
<td>28</td>
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<tr>
<td>Inadequate policy</td>
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<td>28</td>
</tr>
<tr>
<td>Unreliable power supply</td>
<td>22</td>
<td>76</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>24</td>
</tr>
</tbody>
</table>

*Note. Respondents were allowed to give multiple answers.*

### 8.12 Summary

This chapter catalogues and organizes the current level of ICT resources available in academic institutions under various headings as well as examined the extent to which the current level of ICT was likely to impact on online scholarly publishing. The chapter also unearthed some challenges that impact negatively on the efficient delivery of IT service.

The chapter presents basic demographic, educational, and professional indicators for respondents. In this sample most (a little over half of) IT personnel have a postgraduate degrees, equivalent to doctoral, master’s and postgraduate diplomas. While a little more than quarter IT personnel have bachelors degrees in Computer
science related fields. Only 14% of IT staff hold Higher National Diploma degrees in management Information Systems. Yet in another indication of the disproportionate representation of African women in African higher educational institutions, the sample had only 7% of IT personnel as female.

The most remarkable aspect of the growing demand for Internet connections in sub-Saharan Africa is that there is steady growth despite the extremely high connection costs compare to their counterparts in the developed worlds. While the bandwidth capacities of those represented in this study are small relative to those of developed nations, it is evidently clear from this study that bandwidth capacity in African institutions of higher learning has continued to improve. Most institutions reported a significant level of growth in bandwidth averaging 109% increase in download and 115% increase in upload over previous years. This is an important and encouraging findings of this study as it speaks to the central and indispensable point that is at the heart of online publishing.

This study further showed that all Institutions represented were to a certain degree fully connected to global World Wide Web. Using VSAT, leased lines and fiber optic cables, broadband Internet is delivered to these institutions of higher earning.

To that degree, the study showed there has been positive change in the participation and use of IT over the past 5 years among the academic community, as an overwhelming majority of respondents (79%) reported a fast-growing dependence on IT within the academic community, especially among students.
Again the study as presented here suggests that Internet distribution and access to the university community appears to be growing. While students population in most of these universities have limited access to Internet, there was a consensus among greater proportion of respondents that units like the libraries, administrations, academic departments as well as faculty offices are adequately supplied with Internet access. Another important key towards …

One indication from the study is that participants were not content with the level of ICT infrastructural development and therefore have outline institutional goals to improve and expand upon the available bandwidth to meet the demand of the academic community. These institutional goals included equipping campus buildings and outdoor spaces with high-speed wireless internet access and to fully integrating ICT into teaching, learning research, knowledge production and dissemination.

In addition to these infrastructural developments the chapter shows a range of high order ICT skills among personnel manning IT units of these universities. These are experts in hard/software engineering, installing and configuring Web servers, configuring upgrading application software etc. These are skills critical to the new and emerging professional demand and are more than adequately equipped, to play an active role in the modern digital environment.

These developments – increase bandwidth, adequate access to Internet, campus wide connectivity – and what have been planned for the future, are necessary requirements for any successful implementation of any online scholarly publishing program.
While the concept of IT units is relatively new to many African academic institutions, it is become natural and integral part of universities’ teaching and research environment. The development of ICT infrastructures supervised and implemented by IT units provides a great opportunity to expand universities’ capacity of creation and communication of research. The growth of ICT facilities on university campus should bring about changes in diffusion and dissemination of scientific data and information. They should channel these developments into transforming ways to obtaining, storing, producing, publishing and disseminating scientific knowledge. As noted by a participant these developments should not be considered as an end in themselves but a means to an end – a means to achieving university’s overall objective of teaching, research and publication.

In response to a direct question as to how the IT unit can support online scholarly publishing, the study showed that IT unit are ready to promotes the development of shared university ICT infrastructure and provide an extensive sharing of online resources and research-based services for the scholarly community. Overwhelming majority of participants indicated they have the require infrastructure o provide hosting services to journals interesting in publishing online, installing Open Journal system to assist the launching of new institutional of journals, and to help existing journals that elect to make the transition to online; facilitating user education and training on the use of online technologies and providing technical support for journal editors.

It obvious that IT Administrators are interested and understand how scholarly communication and future electronic means of communication are affected by their
function and their preparedness to employ Information communication technologies to support institutional efforts in publishing online. As is evidence from the study some IT units already are intensely involve in hosting institutional repositories (IR), online journals and other electronic databases. It is now a matter of course for IT units to integrate into their existing functions the new opportunities created by online publishing technologies to ensure the provision of high-quality scholarly content that is cost efficient and allows for global accessibility, and rapid dissemination of African scholarship.

It is important to note here, that despite the modest gain made in ICT infrastructure, the chapter unearthed some challenges that impact negatively on the efficient delivery of IT service. As observed here and in many other sections of this survey, the lack of adequate funding continues to represent the number one impediment to the development of an adequate information communication infrastructure; closely related to this, and an equally important challenge, according to sample respondents was the high cost associated with information communication infrastructure. A greater challenge still, however, was the inadequate supply of reliable power, a problem which received the most frequent mention among participants, even higher than the challenges of inadequate bandwidth and poor connectivity. The absence of ICT policy or non-adherence to ICT policy represented another important challenge (see Table 8.10), and excessive regulation or rigid conformity to formal rules that is considered redundant or bureaucratic and hinders efficient decision making –red tapism), administrative bottlenecks and poor vendor support have threaten the provision of IT services.
Another set of challenges was vendor (internet service providers), software product and vendor support-related issues. The IT department is an infrastructural and software demanded unit, the very technical implementation and upkeep are a high priority issue. Local vendors have often demonstrated inefficiencies in handling some technical issues (Nelson, 2002).

Compare to the rest of the world, Africa is the least developed in terms of ICT infrastructure. However, it is the position of the researcher, based on the result of this study, that information communication technologies now exist and are in operation, even if in precarious manners. As far back as 1996, Brakel and Rossouw (1996) wrote, “although a number of infrastructure problems still exist, current Africa networking activities indicate that the advantages of electronic interaction across borders and continents are being realized” (p. 168). And the current levels of development are nonetheless providing opportunities for institutions of higher learning to “engage with global cultures as participants and not marginalized observers” (Slater, 2000, p. 20; Adebawale, 8.2, p. 5) and to ensure equitable world information order, one that moves beyond the colonial legacies of center and periphery (Willinsky, 2006). The current incremental growth in digital technology present an opportunity for scholarly community in Africa to restructure the scholarly communications system in ways that better reflect and project to global scholarly community the continent’s values and knowledge vista than the current system.
CHAPTER 9

CONCLUSION AND RECOMMENDATIONS

9.1 Introduction

This dissertation sought to analyze the state of scholarly journal publishing and scholarly communication infrastructure, in general, in order to assess the potential value and contribution, if any, of online journal publishing systems. This chapter summarizes the main research findings of the study, as well the opportunities and challenges of electronic publishing, and proposes a series of recommendations.

9.2 The State of Scholarly Journal Publishing

What has become apparent from this research is that the current developments in information communication technologies have only begun to impact scholarly journal publishing in Africa. Almost all of existing journals are still published in the traditional print formats. Only a small number of journals engage in what we might call electronic publishing. Some journals have their tables of contents and abstracts in electronic databases through AJOL.

Changes in editorial, technical, and distribution patterns in relation to online publishing have been slow and most journals still maintain traditional print production procedures and most libraries maintain bound volumes of printed journals whenever they are available. The application of ICT in most cases has been limited to desktop
preparation of articles for print, e-mail correspondence and occasional manuscript submission to journal. Consequently, these journals still lack online presence and visibility, to the degree that distribution among institutions and individuals remains relatively limited compared to what could be achieved through Internet access. The estimated mean annual circulation per journal was 285 for individual subscribers and 100 for institutions. Of concern as well, is the sporadic frequency and regularity of these publications. Only few journals (17%) could manage quarterly or tri-annually publication of their journals on a regular basis. The majority of journals in the study (80%) that appear once or twice in a year, experience frequent production interruptions due to high print-production costs, editorial and technological constraints and other social and institutional factors. These are factors that might be alleviated by a greater reliance on online production and publication.

The turn-around time of articles is another factor that might be improved through new technologies. The average throughput time for an article is 33 weeks to publication, which is respectable, even though there were journals that reported a turn-around time of more than a year. The throughput time described as the period between submission of article and publication is generally affected by a number of factors, one of which is the current reliance on the postal system for peer-review, revision and final distribution of journals issues, which is slow, unreliable and expensive. A second is the reliance on inefficient, unaffordable time-consuming print-production processes. Both of these elements could be addressed by a move to digital publishing processes. While the editorial and peer-review processes of electronic journals are not far different from print journals, electronic journals have
added advantage of a dramatically shorter publication lag between submission and publication. Shorter publication time fosters faster priority claim to knowledge, creates opportunity for quick feedback and knowledge is able to infiltrate faster into the scholarly community where scholarly discourse occurs. These examples may be extreme, but electronic platforms undoubtedly can achieve time efficiency in the journal production process because of the speed and ease with which manuscripts are exchanged for reviewing, editing, publishing and distribution.

For those journals (25%) that have fully or partly engaged the systems of online publishing in this study, the impact has been enormous. Journals have seen greater visibility; consequently the authorship and readership of these journals have been trending upwards. Evaluation of AJOL database and simple citation analysis of Web of Science provided documentary evidence that global readership and authorship of African scholarly journals have been trending upwards. The AJOL database study shows that document delivery requests for journal articles that were listed in AJOL increased from 6 in 2001 to 2,995 in 2005, with the increase particularly among regions outside the continent. Of the total number of journals that published online or have some form of online presence, 60% are science-based journals and of the total number of journals in this study found in AJOL electronic database, 70% are also from the sciences. These journals enjoy higher publication frequency, uninterrupted production schedules, and higher submission and circulation rates compare to those journals in humanities, social science and “campus-wide publication” that have not gone online (See Table 5.4 in Chapter 5).
9.3 Scholarly Communication Resources

Analysis of the data collected for this study indicates that digital technologies and an ever-expanding communication network infrastructure have changed African university libraries. As access to new communications technology improves and gradually becomes more widely accessible within academic institutions in Africa, digital access to research resources have undeniably improved significantly over the years. Access to global online resources and databases have improved dramatically.

While the electronic shift has helped improve the current pattern of access to global online and print resources within the scholarly community in Africa, access to locally published journals, both electronic and print, has been very limited. As elsewhere in the world, universities libraries are the main consumers of academic journals, subscribing and making them available to their patrons. The study presented here suggests however that library subscriptions to African published journals were woefully inadequate or non-existent. The majority of libraries subscribe to fewer than 50 African print journals. Of greater concern is the fact that 14% do not subscribe to any journals published on the continent.

In addition to the perennial problem of limited subscription budgets for journals, the lack of knowledge of the existence of African scholarly journals, and a production process riddled with large scale irregularities that fails to deliver journals timely and regularly are, perhaps, the most consequential factors for the low patronage of African print journals. Furthermore, with a small percentage of journals taking
tentative steps towards going electronic, African journals are still suffering from lack of visibility and distribution within the continent as they were in print.

In contrast, however, the mean number of global online journals available to most libraries in the study was 11,629, with a similar median value of 11,000. A higher proportion (21%) of responding libraries have access to electronic journals in the 15,001 – 20,000 range. In all, a total of 62% of responding libraries have access to over 10,000 online journals annually mostly from the North.

This study points to how the scholarly community, represented in this sample (beyond the libraries), had little knowledge about journals (both in print and electronic formats) published within the continent. It has been clearly demonstrated from this survey that until the recent advancement in information communication technologies that opened a vista of global online information resources to the scholarly community in Africa, faculty and students read more textbooks than print journals because print journals were difficult to find. Journals from the North having taken advantage of the digital technologies and have gone electronic are much more present now in academic institutions in Africa through programs like HINARI, AGORA, OARE, PERii and INASP, whereas locally published journals are confined to institutional boundaries because they are limited by print production.

Access to information through these initiatives is an essential element in strengthening local research capacity and enabling research professionals in Africa to improve the quality of their research as well as reducing the sense of isolation among the scientific community in Africa. As long as this access program is
sustained, researchers, scientists and policy makers will have access to more accurate and up-to-date information that “helps create an information culture that uses an evidence base rather than inherited knowledge” (Katikireddi, 2004, p. 1192). The quality of teaching and training should improve and the challenge of teaching a whole program of study at the university using only one textbook because of lack of print journals and other related information could be a thing of the past. Ultimately, the critical information gap created as a result of lack of access to the latest scientific information resources, could be narrowed because of access to the highest quality peer-reviewed research free of charge or at low cost to the countries with the least financial resources (Tabachnikoff and Miller, 2008).

However, besides the question regarding content relevance, the reality is that these initiatives are leaving in their trail critical and fundamental questions regarding sustainability, local capacity building and indigenous knowledge production that need to be addressed. In this way a single fundamental challenge is the question of sustainability. The idea of sustainability concerns every recipient of donor-funded programs and so was the concern express by participant in this study. The question is how long can a donor-funded program be sustained, especially for developing countries? In a recent publication Research4life, an umbrella organization made of donors, and publishers responsible for HINARI, AGORA and OARE, pledged committed to continuing the access programs until the year 2015.23

History provides opportunity to appraise the past and the capacity to judge the future. Appraising the past, there is a certain degree of apprehensiveness among

23 http://www.elsevier.com/wps/find/editorsinfo.editors/editors_update/issue26e

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recipient countries that these donor funded access program may not be sustainable over the long term. As one respondent put it: “Long-term commitment to donor-funded projects has never been a feasible proposition in developing economies, so one does not need a prophet to predict that the end is at hand.”

The second fundamental question about these donor-funded access programs engages the second assumption underlining this study: While it is true that new technologies have greatly increased the speed at which information is propagated around the globe leading to world integration and interdependence, technology has not eliminated marginalization in the production and circulation of knowledge in developing worlds. As noted, libraries have substantial access to foreign databases and content, while African journal circulation to the North pales in comparison, and is not strong in Africa. Faculties, scientists and students in this study reported having more access to foreign electronic journals than local journals. At the heart of the problem is the imbalance and asymmetric directional flow of information. New digital technology have occasioned great improvement in the flow of information from the North (center) to the South (periphery) with less than proportionate (often none at all) information flow from the South to the North.

The countries in the North with strong economies are host to some of the most outstanding laboratories, majority of world scientists, highly rated libraries, advanced knowledge production technologies, high infrastructures of intellectual life, and home to some of the world’s most acclaimed publishers. By reason of the weight of these resources which cannot be matched by countries on the periphery, the core tend to dominate and have a stronghold on knowledge production. The flagrant quantitative
imbalance between the North and South reflects an assumption that the South has little to contribute. To employ the center-periphery metaphor encapsulated in the world-system theory, the scholarly community in Africa is so dependent on the center to the degree that scientific endeavors in the periphery are conditioned and subject by development and growth of the scientific endeavors the center. There is little doubt that there is a subliminal effect of information influx from the North onto Africa and especially on the setting of research agendas, methods of research, concepts and interpretation of scientific advances and direction of domestic policy agenda.

While the provision of access to Northern journals is well-intentioned and necessary, and may be a life-line for isolated and underresourced African scientists and scholars, the idea that the most effective and achievable strategy for solving the digital divide is one directional flow of information from the North to Africa should be dismissed as bunkum and balderdash. What the South needs is a South-North cooperation that will lead to an equitable information order that goes beyond the Westernization of "others," by opening access to other scholarly traditions and diverging voices (Willinsky, 2006). Africa needs to be equal partners in this knowledge exchange; not users of imported knowledge, or mere absorbers of knowledge generated somewhere else. Africa needs avenues for active participation in scholarly works and active contributions to global scientific knowledge production. That means "assisting developing nations by facilitating the flow of information resources from the developed countries to the developing countries" (Lor and Britz, 2005). This calls for a strengthening of scholarly communication systems and
improving the public quality of academic research so that African scholars will become active participants in the global scholarly community. Printing technology served as a tool for intellectual domination and marginalization; digital technology should and can foster global collaboration that will lead to equitable information order. Through the development of stronger ICT infrastructure and used of online communication tools the South will have greater opportunities to share their knowledge with the North

9.4 Current Levels of ICT-related Resources and their Likely Impact on Online Publishing

In spite of the many challenges facing research libraries in Africa, this dissertation suggests that most of these libraries over the years have registered modest progress in library and information communication technology infrastructures. Significant progress has been made in the acquisition of operational Web servers for majority of libraries in this study. While significant differences exist in the distribution of networked computers among the libraries in the study, it is evident that over 90% of libraries have computers that are networked and provide students and faculty access to the internet, including Web servers, institutional repositories, networked or internet-ready computers, and other electronic resources. Again while a few, mostly from South Africa, had institutional repositories in place and therefore had information to report on, overwhelming majority of participants in the survey have as part of their institutional goals to develop institutional repositories to support research endeavors in their institutions.
In terms of automation, this study shows that libraries are currently at very different levels of development; yet the survey showed a marked improvement in the level of automation among African university libraries. When Rosenberg investigated similar questions in 2005, she found that only 15% of African libraries had reported being fully automated, and 21% had not begun the automation process (Rosenberg, 2005, p. 6). In comparison, the survey data show that 18% of libraries have fully automated and another 68.06% had succeeded in automating between one to five library functions. Other available e-resources found in most of these libraries included CD-ROMS (databases), audio/visual materials, E-books, E-granary, electronic thesis/dissertation and the Internet.

The IT units responsible for managing the distribution of internet access to the university community, reported a significant level of growth in bandwidth availability, averaging 109% increase in download and 115% increase in upload over previous years. With exception to student population, the libraries, faculties offices academic departments are reported to be adequately supplied with Internet access. The Internet has become so popular in African universities that its growth and related infrastructure in the last five years has been tremendous.

This is an important and encouraging finding of this study as it speaks to the central and indispensable issue that is at the heart of this study, which is the third assumption underlining this study: The adoption and utilization of online technologies (publishing systems) have the potential to circumvent the unfair scholarly disparities at the global level as well as provide greater opportunities for Africans to participate in global scholarly discourse.
As digital technologies have become ubiquitous and as they transforms the landscape of scholarly publishing, African institutions of higher learning have the singular opportunity to take advantage of the full range of their resources – information technology capacity, IT expertise, faculty research activity, library digital infrastructure and editorial and publishing expertise – to enable the research community to more fully realize the potential global impact of their research outputs.

New online publishing systems provide alternative publishing platforms for information. Given its mission, experience and current level of ICT infrastructure, the university community in Africa has the opportunity to establish platforms for providing support for academic research activities, maintaining a strong voice in determining what scholarship is judged as important and which scholarship merits recognition/validation.

For example, in the North where a great number of journals are in the hands of few powerful commercial publishers, journals are controlled, owned and published largely by the academic community in Africa with little presence of commercial publishers. They have the means to define the terms and condition of publication, and distribution of public funded research. Furthermore, the presence of new online publishing systems provides an opportunity for the research community in Africa to re-organize the scholarly communications system, exploiting alternative mode of content dissemination in ways that better reflect the scholarly community’s interest and values than the current system. This means imbuing with new life the university’s publishing role and capabilities in this digital age in a way that the
university has more influence over what gets published and how it is accessed and priced.

This dissertation demonstrates that academic libraries and universities across Africa have already begun to engage ICT to support the research community. Libraries and IT units are currently providing hosting services for academic journals, facilitating innovation in scholarly communication through alternative methods like institutional repositories, pre-print servers, open access publishing and digitization of previously published or unpublished works. Other established supports includes providing technological expertise for scientists publishing projects, outreach program, workshops and symposia on new publishing models for faculty and students; and subscribing to local journals and building critical mass of content through the provision of strong online collection of research information.

What remains to be seen is how these libraries and IT units can move beyond current methods of support into more integrated, networked systems and operations in way that will provide solutions to barriers that are consequences of the old print-limited publishing environment. Yet based on this study, the future looks hopeful for the scholarly community in Africa. There is a high level of energy and excitement among journals editors, librarians, and IT administrators about the compelling new possibilities offered by new digital technologies and thus leaving a gap that is motivating them to reinvent their mission to explore the full potential of these technologies.
Highly motivated journal editors and faculties are increasingly aware that somehow a foray to electronic publishing must occur to ensure a future for their journal. Looking to the future, journal editors will increasingly seek to operate in digital research and publishing environments. To them these environments will provide them with the tools and resources to subvert the barriers to print production, which include territorial limitation, undue throughput time, high production cost, poor global visibility and academic marginalization. As observed by many of these editors, online publishing provides easier global exchanges, foster integration into global scholarly community:

We have been doing this for the past 20 years and print production is full of limitation, including territorial limitation. ICT expand academic work to electronic format and makes it easier for global exchanges.

We can’t afford to be marginalized anymore. Adopting and using digital technologies is the only chance to be part of the global research community

I want my colleagues here to see us introducing efficiency into the [journal] publishing process. Speed, timeliness, cost saving, richer content and greater visibility.

Libraries on the other hand are energized and restructuring and re-conceptualizing their roles and responsibility to create a research environment that will ensure robust online collection and further helping the scholarly community create and publish scholarship and to strengthen universities reputation. Besides the necessity of metamorphosing into a continuing state of relevance to the academic community, majority of responding libraries in this study have a strong belief that employing new
mode of digital publishing, they can increase the visibility and access of local journals, maximize and extend their reputation of parent institutions within the global scholarly community, improve the quality of local journals, strengthen the production of indigenous knowledge, reduce the lead time and the production cost of journals because of the application of efficient online content management tools.

And for IT administrators, they see themselves as the future of scholarly publishing. As one IT expert stated, “with the current digital technology wind sweeping across campuses, we are the future face of academic publishing and digital content management.” Another IT expert observed, “our goal is to make the university globally relevant and competitive in terms of knowledge production and teaching.”

One of the most important benefits of the IT unit is its ability to empower faculty and students to take control of content and information flow and to design processes and tools that will aid the creation and dissemination of their ideas and more easily than in the past.

This study points to a new generation of digital scholars (authors and scientists) in Africa whose information seeking behavior is increasingly becoming digital. These have sacrificed personal print subscriptions on the altar of personal preference and convenience. Online articles search during writing or research process provide immediate results, convenient link to other resources and additional value added features that enhance the online scholarly research environment. One of the factors that affect their choice of journal in which to publish is whether a journal has online edition and short publication lag.
This study points to how the scholarly community in Africa – journals editors, librarians, IT administrators, scientists, faculty and students – are ready to explore the full potential and the unlimited possibilities offered by new digital technologies. Whereas this perspective is more strongly held by information technology enthusiasts, it comes across as a fair representation of the direction in which journal editors and the research community, especially the younger generation, want to go.

What remains to be seen is how to develop a collaborative partnership and coherent- working structure among stakeholders in a way that will leverage institutional assets and resources to stimulate a system of scholarly communication and research dissemination at more cost effective access and dissemination.

9.5 Online Publishing Systems

As noted earlier there was a high level of energy and excitement among overwhelming majority of journal editors, librarians, and IT administrators about the compelling new possibilities offered by new digital technologies who are challenged and motivated by these possibilities to reinvent their mission in order to explore the full potential of these technologies. Faculty and students were of the strong belief that access to current information is at the heart of every research enterprise. To them the merging capability of digital technologies and information networks will make available to the research community a robust electronic database and thereby creating research environment that will support researchers creating the necessary scholarship of the future.
Access to information resources, enabled by digital technologies, would seem to be a lifeline for isolated and underresourced African scientists and scholars and one essential way of strengthening local research capacity and enabling research professionals in Africa to improve their research quality. Dissemination and communication capabilities of online technologies also ensure that the information poor in the south are accommodated in the global information exchanges.

With infrastructure and facilities steadily improving, and with significant investments already made or committed, nearly all the libraries and ITs studied, were determined to engage digital tools for the creation and organization of digital resources (intellectual output) – institutional repositories, digitization of theses and dissertations, online cataloguing, electronic databases – and to make these resources available to support the research community. University IT staff have a much more positive view on the use of technology in the scholarly community. They believe that online tools are essential to the strengthening the research capacity of the scientific community.

While optimistically cautious, more than a majority of the editors viewed digital technologies, particularly Open Journal Systems, as alternative publishing distribution models with the huge potential to strengthen publishing culture. Editors hope to engage online technology in the editorial and peer review as well as complete online management of the production and dissemination process. Establishing online databases for reviewer, optimizing communication with authors and reviewers, according to the editors, will provide solution to overcoming barriers
that have affected the development of successful journal publishing enterprise on the continent.

This claim is made, while noting that a high level of awareness and interest would have been generated as this research was conducted within the context of online publishing workshop. As part of this study, over 500 participants, representing journal editors, librarians, faculty, students and IT units, saw a practical demonstration of how Open Journal System could ensure a journal’s economic sustainability while increasing access to knowledge. These workshops across sub-Saharan Africa plus other complementing efforts from organizations like INASP and EIFL, have created a high level of awareness among scholarly community in Africa about online publishing issues and therefore garnered interest and willingness engage the technology in editorial and peer-review process, article submission, digitization, online database and collection management. There is therefore a pervasive sense among the scholarly community across Africa that considers online publishing as having a promising future on account of the rapid and continuous dissemination of research, lasting access of information from any where in the world, and thereby overcoming barriers to tradition print journals.

However this will not happen on its own and certain fundamental challenges and barriers, discussed in the next section, have been addressed before the ICT-enabled form of collaboration can really start to move forward within the knowledge production centers in Africa.
9.6 Campus Unit Combinations

The old system of research infrastructure and academic publishing – the scholarly journal, the university, central information communication technology, university press, administration, faculty research and the university library – have all evolved separately and functions as separate and independent units within the university (Houghten, Steele and Henty, 2003, p. x). The relationship among these elements therefore has often been frosty and often characterized by individualism and competing interest. While the application of print technology in this environment of knowledge production and dissemination created siloed structures, advances in network technology and its application, however, calls for the creation of new environment of natural partnership among libraries, IT units, journal editors and faculty; a new environment of scholarly publishing where every stakeholder views the creation, dissemination of scientific knowledge, the management of information right and the system of evaluation as part of a single information communication system.

As this study shows, universities have faculty members and highly motivated editors who provide scientific articles, editorial and peer-review service at no cost. The libraries on the other hand have unique expertise in content management and identification of user needs and the IT personnel with extraordinary skills who are responsible for institution’s technological infrastructure. The question is how these resources are coordinated to create a publication capacity within the universities. Instead of operating in a unilateral function defined by historical development, the key is to develop a collaborative partnership and coherent-working structure among
these stakeholders in a way that will unite the resources of the institutions and to leverage these resources in a way that will stimulate a system of scholarly communication and research dissemination more efficiently and effectively and at cost saving.

It is against this background that this study adopted a methodological approach that brought together all stakeholders within the scholarly community were a stimulation exercise provided each stakeholder the opportunity to work with the others in a way that demonstrated that such partnership would be required in the new publishing environment.

Based on the views expressed by various participants at the workshops as well as information they provided in the questionnaires, the researcher developed a chart (see Figure 9.1) that demonstrates the kind of collaborative partnership and coherent-working structure that must exist among these stakeholders to stimulate a strong online scholarly publishing environment. This somewhat arbitrary division is made to reflect each group’s (e.g. libraries, IT services, journal editors and faculty etc.) major area of interest as were demonstrated in the survey and how a combination of their functions, assets and skills can enable a more efficient and dynamic online content creation and dissemination.

### 9.6.1 Information Technology Unit

IT units are prepared to download and install free open source software systems (e.g., Open Journal Systems) that provide a sophisticated publishing platform. In
order to increase efficiency within the system based on emerging global information requirements and institutional needs, they will download, update, upgrade and customize software. They must work with all other stakeholders to carefully plan and design the structural content of information in order that it has optimal value and functionality for the end user.

Figure 9.1 Recommended Combination of Campus Units for Support for Online Publishing
They should be prepared to explain and demonstrate to the university community the potential contributions of IT innovations to scholarly publishing. IT units advise parent institutions on the development and implementation of IT infrastructure; a commitment to systems (hardware and software) installation, maintenance, configuration, and upgrading; provision of document servers, Internet and Intranet support, helpdesk services and end-user computing support, and minor repairs to PCs and common peripheral devices; production assistance such as markup language tagging for journal editors.

9.6.2 Library

The priorities are to create digital archives and institutional repositories of the scientific output of the university, to preserve this information and make it accessible within the academic community as well as outside the university. Other established process of support includes the provision of Web and hosting service for journals and faculty publications; production assistance such as markup language tagging and copyediting for journal editors; running workshops, seminars for the research community on new mode of disseminating scholarly works including training journals editors on how to use open source software to manage their content online. As observed by Savenije and Grygierczyk (2002, p. 317), the university library is best positioned within the university to organize the support that facilitate the transition from traditional to electronic publishing if the academic community desires to take control of the scholarly publishing process.
9.6.3 Journal Editors

They will have to make editorial decision, as majority in this study have already made, to operate fast, efficient online publishing systems with full peer-review functionality and no barriers to access. And they have to be supported by editorial team entire scholarly community – authors, IT, library, faculty as reviewers and administration. In the digital environment, journal editors must not be seen as an island but collaborators who stand to benefit immensely from the skills and creativity of other units within the academic community.

Journal editors must see IT departments as partners who understand the impact of innovative technologies research and are capable of creating tools and models for effective knowledge production and dissemination. They should view their colleagues in the libraries as partners in the new system of scientific communication who have the expertise to enhance the visibility of their journals through effective navigation tools, organization, and search systems, cataloguing and indexing, preservation and access, and content management.

9.6.4 Faculty/Students

These represent authors and readers, key actors whose contributions to the scholarly communication process are vital. As observed in the survey there are a new generation of digital scholars in Africa universities whose information seeking behavior is heavily tilting towards digital. These are more concerned with publication speed and currency of journal article. They should work closely with editors and IT
administrators in the use of online submission process and closely with libraries for
digitization, self-archiving of their work. Editorial system should be in place to
support authors publishing initiative and the university must provide the
infrastructure. As scientists commit to publishing in the online environment, the rest
of the academic community should develop an equally new vision of their role in
engaging digital tools to present the author’s work.

If the academic community wishes to strengthen scholarly publishing, the
conservatism on the part of authors to publish in traditional print journal of
international reputation and not local journals should be discarded. They should be
more willing to participate in innovative experiment they regard as risky. In this
regards, tenure boards must also safeguard the interest of authors by according
them the recognition for publishing in local online journals.

9.6.5 University

At the heart of every university mission is the priority requirement for research and
scholarship and the core responsibility of dissemination. While universities have
relied on traditional system of dissemination that have kept them as passive
participants in the knowledge production process, digital technologies have opened
new portals for dissemination possibilities and subsequently put university at the
center of the scholarly publishing process and confer on the university a more active
role in dissemination. The university has been a publisher in Africa for some time,
and this role could be increased. The university therefore must create strategic and
enabling environment that will enhance and improve the core function of each
department in the knowledge production economy. These strategies include seeking opportunity for continuous investment in services and infrastructural requirement of every department, to ensure that the scholarly community is able to create and disseminated content effectively and efficiently. University authorities should actively pursue discussion aimed at modifying polices that guarantee wider dissemination of academic work.

As noted in this survey, one setback to rapid transition to electronic publishing is the challenge of editors getting submission from faculty because tenure committees’ failed to recognize the legitimacy of electronic publication. To promote innovative online publishing is for the university authorities to pursue a policy that support efforts to create new system of scholarly publishing; a policy that recognizes and considers as published any scientific peer-reviewed research disseminated through local electronic journals and such publication should held in the same standard that apply to traditional print journals. Finally, functioning as the coordinator of the different elements within the scholarly enterprise on campus, the university must act to bring these elements into a relation that will leverage these resources in a way that allows for a more efficient and dynamic content creation and dissemination.

This research is not advocating for any dramatic change in functional roles of those communities involved in scholarly publishing, whether librarians, editors or IT support. However, it is necessary to understand that the tools available to us for knowledge production and dissemination have changed drastically; tools that allow for rapid dissemination, global accessibility and high quality content. These new tools call for a change in approach in a way that allows us to maintain what is best
about our traditional role, but at the same time find ways we can utilize these new tools in a way that will lead to innovative scholarly publishing.

### 9.7 Major Challenges and Responses

Technological developments and the growth of new forms of scholarly publishing are in themselves, presenting new array of challenges for the development of scientific communication in Africa. The highly anticipated transformation of scientific publishing, foster by online technologies can not happen unless certain barriers and challenges have been addressed before the ICT-enabled form of collaboration can really start to move forward within the knowledge production centers in Africa. These challenges are characterized by high cost associated with information communication infrastructure, inadequate supply of reliable power, inadequate bandwidth and poor connectivity, lack of adequate research skills among authors, and low level of information communication technological skills among librarians and journal editors.

While financial challenges of the academic community have been documented in almost every chapter of this report, three serious problems with far reaching consequences for successful electronic publishing initiative deserve further exploring. These are:

1. **Need to develop research skills and information communication technological skills among authors, journal editors and librarians.**

   It is evident that new publishing systems are invoking new configurations of tasks and responsibilities on campus, and a new constellation of skills will be required to
effectively handle these activities. For instance, with the rapid progression towards digitization, library staff at all levels will require an understanding of the current and future impact of networked information provision, as well as the skills to apply this understanding. However, this study suggests that only a few librarians have skills directly relevant to modern digital and network environment. A sizeable number of librarians lack higher-order skills (HOS) in information communication technology. However these are skills directly relevant to modern digital library and network information provision. Librarians were found to rather have lower-order skills (LOS) in computer skills. While such LOS skills may have their place in library work, they are not critical to the new and emerging professional demands, and neither do they provide any competitive advantage within the changing digital information environment. In this digital age of librarianship, ICT plays a significant role in information acquisition, processing, retrieval and provision of service. To remain competitive and relevant in the 21st century “working in the real world of digital libraries,” librarians needs to be knowledgeable in “digital library design, digital preservation, digitization, and current digital technologies such as: OAI-PMH, metadata standards, XML, EAD, and TEI as well as courses on usability testing, human-computer interaction, Web design and applications, information retrieval, and cataloging (Choi and Rasmussen 2006).

Online publishing has important requirements of skills in page design, layout, graphics, and system administration, however journal editors, especially those born analogue as shown in this survey, lack much of these skills. Many editors lack general skills about online publishing environment and how these operations can be
performed. Similarly, authors and scientists lack adequate training in best practice in writing and publication and basic computer skills to maneuver the online submission environment. As information seekers and users most authors born-analogue lack valuable online research skills for surfing and locating relevant information from online database, online catalogues and search engines. Furthermore, there is relatively little infrastructure available to support the careers of junior faculty and postgraduate students to develop skills in research designs, proposal writing, identifying research problems, collecting data, and writing papers for publication.

The course to navigate is training and developing highly skilled knowledge professionals, within Africa, with technological versatility that are able to employ information and communication technologies to enhance the packaging and circulation of knowledge created in all usable format. The challenge here is to continually raise and reformulate their skills to accommodate new technologies, because the skills requirements will increasingly be driven by the opportunities provided by information and evolving communication technologies for advancing research.

2. **Need to develop ICT infrastructure:**

It is important to note here, that despite the modest gain made in ICT infrastructure, the lack of adequate funding continues to represent the number one impediment to the development of an adequate information communication infrastructure. Infrastructural impediments – example lack of funds for purchase and maintenance of hardware and e-resources, inferior connectivity quality and lower bandwidth, frequent power cuts, limited library space, security of computers, speed and
reliability of Internet connection and high cost of internet connectivity – are to a degree having debilitating effects on Africans effort in keeping pace with the ever-changing communication technologies. The density of networked computers across African universities and research libraries is on the average very low and about 27% research libraries in this study stated that they did not have servers at all. For this reason, development in institutional repositories is still low.

This is where one must temper optimism with caution because the mal-distribution of access to ICT – low density of network computers, high cost associated with information communication infrastructure, low connectivity and bandwidth, absence of ICT policies – are major issues to be negotiated; misjudgment of any one of which could further isolate the developing world and reduce their role in the enterprise of knowledge production, dissemination and utilization. For the scholarly community to explore to the fullest the capabilities of online publishing systems that will lead to innovative scholarly publishing these challenges and constraints must be confronted and concrete solution created in order to forge ahead with any success.

3. Need to develop institutional policies:

There many other factors which require urgent attention. One issue that received so much attention during the workshop sections is the lack of strong institutional policies that support the creation, management, and dissemination of scholarship within the emerging information infrastructure. Even though universities have enormous stake in the new system of publishing there are no policy decision that shows clearly universities’ stand on critical issues like electronic publishing,
institutional repositories, copyright management, funding of ICT infrastructure, training etc. For example while most universities preference for publishing in traditional print journals over electronic journals have not been made clear, many scientists have reported being frustrated by promotion committees because their online publications were not given equal weight as articles published in traditional print journals. Similarly, online journal editors have reported that submissions from authors have been minimal because tenure committees’ have often failed to recognize the legitimacy of electronic publication. These kinds of situations have created serious barriers to freedom of expression leading to a certain degree of attrition among scholars.

9.8 Recommendations

9.8.1 Network and Collaboration

This dissertation has shown that the challenges faced by the scholarly journal publishing community are too huge for any department within the university to go it alone. In all dimensions, even universities lack the resources to assert an appreciable level of control over the dissemination of their scholarly output (Brown, Griffiths, and Rascoff, 2007, p. 33). Due to limited operating budgets and qualified IT specialists, the best approach for universities across Africa will be to develop collaborative partnership and coherent working structure among stakeholders within the same institutions and with national/regional consortiums or networks so that they can exchange and share their specific digital resources. Such collaboration and
consortiums will ensure the leveraging of institutional assets and resources in a way that will stimulate a system of scholarly communication and research dissemination at a more cost effective ways.

One area necessary for regional collaboration is the formation of a bandwidth-buying consortium that allows university to purchase at a cheaper cost. This and other area of infrastructural collaboration can lead to greater access to bandwidth, better access to network computers for academic community. An effort to set up regional network backbones is also necessary condition to improving connectivity. This model has already been successfully implemented by the RedCLARA a collaborative initiative that led to the formation of a continent wide research and education network in 2005. The RedCLARA network, which is composed mainly of optical cable and some copper wire, connects about 600 universities in Latin America (Stanton and Stöver, 2005).

At the moment, there is a lack of adequate ICT skills to fully benefit from the opportunities that the new technologies provide. While necessary intervention have been proposed in this research, it will take years for the measures suggested to impact significantly on the level of ICT skills of the research community. In the meanwhile, international collaboration with community of system developers and online publishing systems could provide basic but highly intuitive step by step instructional material and online videos on system installation usage and application so that those journal editors, librarians, scientists and scholars with little ICT skills could make use of them.
9.8.2 Training and Development

Another priority area for regional collaboration is the nurturing of next generation knowledge management and scholarly publishing professionals. This can be done through the establishment of regional Online Scholarly Publishing Center (OSPC) that will be responsible for training editors, librarian, IT personnel as well as author mentorship for the digital publishing environment in Africa. An OSPC will maintain a high level collaborative network of research expertise dedicated to exploring evolving online technologies and how these technologies can be used to improve the process of information production, diffusion, access and use in and beyond Africa. In addition, an OSPC will be responsible for holding training and scholarly publishing workshops for editors, faculty staff and librarians from various countries in Africa on a regular basis aimed at developing their capacity and enhancing their skills to create, managed, use and communicate scholarly information and knowledge through appropriate digital technologies.

International organizations like INASP, EIFL and other NGOs, have in the past decade, attempted to fill this gap by running 2-3 day-once-in-a-year workshops for information workers in different regions in Africa. Such efforts are praiseworthy, but have been characterized by many limitations: sporadic and inconsistent lack of continuity in skill development, inappropriate timing and often an unscientific approach for selecting participants. The programs lack tools (e.g., skills checklist) and process (e.g., follow-up after training) to monitor and evaluate performance on the job, such as an after-training evaluation approach that will provide further information on whether training resulted in improve job performance.
Developing quality consistent and sustainable training program in an effort to build a critical mass of local skill and capacity among journal editors, authors and librarians is not an aim that can be completely realized within short period or one-time-in-a-year workshop. Rather, it needs to be an ongoing process that requires long term committed and active involvement for both trainee and trainer. Therefore a number of recommendations or proposal, which is seen as key to guaranteeing the long-term success of training needs among scholarly community in Africa, has been attached as appendix A.

Finally, it will be necessary to develop an author mentoring program and editorial mentoring board. This mentoring program will put authors and journal editors in contact with experienced and reliable mentors who are prepared to advise and train their younger colleagues in how to get their papers up to the required standard for publication.

9.8.3 Policy

One thing that became apparent in the process of this study on strengthening scholarly publishing in Africa is the fact that there is lack of a clear understanding of the meaning and scope of research capacity building, and precisely the role that research policy plays in building contemporary research capacity, or how much research policy is implicated in the development of strong research culture. African leaders and institutional leaders have not been proactive advocates for the development of a policy framework to govern Information and Communications Technologies (ICTs). The current policy settings for research and scholarly
dissemination within African universities need re-conceptualization on the part of institutional leaders and management. A re-conceptualization stimulated by informed debate among the scholarly community – librarian, IT administrators, journal editors, faculties and graduate students, university leadership – that will lead to an environment that enhances and improves the core function of the academic community. As noted earlier, these strategies include seeking opportunity for continuous investment in services and infrastructural requirement of every department to ensure that the scholarly community is able to create and disseminated content. University authorities should actively pursue polices that guarantee wider dissemination academic work.

As noted, one setback to rapid transition to electronic publishing is the challenge of editors getting submission from faculty because tenure committees’ failure to recognize the legitimacy of electronic publication. University authorities must reexamine the way intellectual labor is valued and rewarded. It is of utmost importance that university authorities pursue a policy that support efforts to create new system of scholarly publishing; a policy that recognizes and considers as published any scientific peer-reviewed research disseminated through local electronic journals and held in the same standard that apply to international print journals; a policy that does not privilege publication in foreign journals over publication in local journals.

In the area of human resource development, a high level policy and strategy proposal by the vice-chancellors of African universities designed to inform policy discussion at institutional and regional level that will lead to establishing adequate
institutional policy framework that guarantees the building of systematic critical mass of local skill and capacity for the scholarly community is a sine qua non.

9.8.4 Donor Support and Initiatives

In the area of scholarly communication, donor agencies (e.g., IDRC, Carnegie, Rockefeller, Mellon, etc.) are prepared to provide funding to carry out the planning, scoping and exploring various aspects of ICT, scholarly communications, open access and access to knowledge in Africa. It is recommended that IDRC, which funded this study, takes this research further by providing further resources that implement those interventions identified that can lead to real growth in the use of digital media and new publishing models for the open and effective dissemination of African scholarship.

Due to lack of cooperation, a number of donor connectivity projects are operating side by side and many steps are redundantly being duplicated without knowledge of the existent of the other. It is essential to make inter-institutional cooperation a pre-condition for donor funding in order to reduce the dangers of duplication and operational cost. For instance inter-institutional repository and journal hosting can be coordinated between donors, and two or three national universities. This can cut down many administrative, implementation and operational cost and thereby extends the project life.
9.9 Conclusion

From technical, economic, social, and intellectual perspectives, the system of print production can contribute little more to increasing African’s contribution to regional and global knowledge. The system had limited success, at best, in advancing human inquiries beyond the walls of the universities and in helping scholars establish collaboration with peers outside their countries. The relative limits of print journals need to be compared to digital means of scholarly communication, especially in relation to the strong motivation of the scholarly community to contribute to knowledge and public good, to become a more vital part of African society and to reach the larger scholarly community, to have more of a voice in the dissemination of their scientific output; the scholarly community in Africa is ready to explore the full potential and the unlimited possibilities offered by new digital technologies. It is apparent, however, that scholarly publishing in Africa faces a number of challenges, in the face of which digitization and online technologies will not provide a magic or complete solution. Nevertheless, this study points to the high level of energy and excitement among the overwhelming majority of journals editors, librarians, and IT administrators about the compelling new possibilities offered by new digital technologies; ICT Infrastructure and facilities have steadily improved over the years and with significant investments already made or committed, universities across Africa have become the vanguard of Internet development showcasing the basic networks infrastructure and scholarship; familiarity with the digital environment is growing steadily among journal editors, librarians, scientists and students leaving a gap that is motivating them to reinvent their mission to explore the full potential of
these technologies with a promising future on account of the rapid and continuous dissemination of research, lasting access of information from anywhere in the world, and thereby overcoming barriers to traditional print journals.

9.10 Future Direction

Even though this dissertation provides an extensive collection of data on current issues in scholarly publishing, like all research, there are many other issues that fell outside the scope and depth of this study that require further investigations. Besides that the results of this research also point toward further research in the future. A natural offshoot of this study is the need to assemble, among the scholarly community within the African continent, sufficient hard data to make any long-term predictions concerning cost of journal production and the dynamics of journal economic pricing regardless of whether the production is in print or digital form.

While this dissertation has argued that there are considerable benefits in terms of cost and accessibility when publishing electronically, due to time constraints, no formal and rigorous attempt was made to study the potential cost savings that others have found with open source software for journal publishing, although the Edgar and Willinsky (2010) study in this regard was very promising. Yet throughout this study evidence has been presented to show that journal editors are overly anxious of other costs related elements in online publishing: starting up and maintenance cost, hardware and software cost, upgrading costs, connectivity and bandwidth costs, infrastructure cost, and value-added services cost. There is a need for research on costs for African scholars, who wish to assert their financial autonomy over their
publishing systems without depending on donor agencies for survival; a study that establishes a scientific model that factors in the economic, social, political and cultural environment of developing economies.

Digital publication is an extremely dynamic system, changing and evolving as technologies improve and as access to those technologies increases. To that degree many changes have occurred in electronic publishing even when this research was being conducted. This changes made virtually irrelevant some questions by the time they were analyzed and reported. It will be interesting to see what changes have occurred since this research. Of particular interest will be the question of how changes over the last five years in technical infrastructure affected scholarly publishing and communication. This will provide a baseline for comparison and to assess changes in the coming years.

Another interesting future study could be to examine the extent to which ICT has actually impacted the production and dissemination process of scholarly journal in Africa, and in particular how digital technology has increased the chances of survival, indexing and consequently visibility. In consultation with AJOL and INASP it will be in the right direction to study new areas and disciplines in which journals are being created, journals that are being formed and the discipline. In all of this, then, there are opportunities for further studies that are aimed, as this one has been, at advancing scholarly communication in sub-Saharan Africa for the benefit of the region as well as the world as this one has been.
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Appendix A: Proposal for Center for Study of Online Scholarly Publishing Africa

Investing in an
African Center for the Study
of Online Scholarly Publishing

Kwame Nkrumah University of Science and Technology

Samuel Smith Esseh

This proposal seeks support to develop a sustainable Center for Excellence: Center for Online Scholarly Publishing in Africa: (COSPA) at KNUST, that will be responsible for the training and development of highly skilled human capacity with Africa’s academic research community that will facilitate and strengthen the production, circulation, and utilization of knowledge in Africa and beyond through new publishing models.
Center for Online Scholarly Publishing in Africa: (COSPA)

Introduction

The Department of Publishing Studies at the Kwame Nkrumah University of Science and Technology (Ghana), in collaboration with the Public Knowledge Project of the University of British Columbia (Canada), Canadian Centre for Studies in Publishing Studies (Canada) and the International Network for the Availability of Scientific Publication (INASP, UK) have taken the initiative to get directly involved in the education and training of information professionals in Africa who will facilitate and strengthen the production, circulation, and utilization of knowledge in Africa and beyond through new publishing models. Our singular persuasion is that such an education initiative will contribute to the socio-economic development of Africa.

As initiators of this project, we share the conviction of the World Bank, the G8, the United Nations and other influential stakeholders that investing in learning is investing in the future, namely that investing in education is critical to economic and social development in Africa, and to providing Africans with greater opportunities for personal and collective advancement.

We also share the conviction that the institutions of higher learning in Africa must be at the center of any sustainable effort towards economic and social development of the continent through the training and development of citizens of vision and commitment.
A critical element in the development of higher learning is making provisions for the production and circulation of research and related forms of knowledge. For knowledge has been at the heart of economic growth and the gradual rise in levels of social well-being since time immemorial. And today, the World Bank, Organization for Economic Cooperation and Development (OECD) and other global organizations are promoting knowledge as the driver of productivity and economic growth. Africa abounds in natural resources, however, the economic and social disparities between different regions of the world have less to do with that region’s natural resources but the capacity to invent, innovate and integrate the three essential pillars of the knowledge economy:

1. **Production**: Creation and providing new knowledge;
2. **Transmission**: Educating and developing human resources;
3. **Transfer**: Disseminating new knowledge and new ideas that are then embodied in products, processes and organizations.

Notably at the core of the knowledge economy is combined forces of the information technology revolution and the increasing pace of technological change. Digital technologies and communication infrastructure is given strong impetus to knowledge economy.

But while digital technologies have facilitated and intensified the move towards knowledge economy, they have implications for the labor force – that is the increasing importance of acquiring a range of skills and special types of know-how. The knowledge economy is increasingly reliant on the diffusion and use of
knowledge as well as its creation. The universities’ role in this knowledge economy has also been widely recognized, as it is in a position to foster knowledge aimed at addressing local and regional challenges and problems. This knowledge is fostered through efforts at building and sustaining an academic research community within higher education that is made up of researchers, graduate students, librarians, publishers, reviewers, and editors, and editorial staff members. The challenge here is to continually raise and reformulate their skills to accommodate new technologies, because the skills requirements will increasingly be driven by the opportunities provided by information and evolving communication technologies for advancing research.

As a review of literature indicates, a large fraction of Africa’s population does not meet, or even come close to this standard. To transform such a situation, a renewed focus is required on an important pillar that has supported the growth of every successful economy - a strong human resource capacity core and widespread access to education.

Our initiative is therefore aimed at equipping those working as part of this academic research community with high quality information technology skills focused on advancing scholarly communication and the circulation of knowledge. This will enable them to take full advantage of online technologies to create, transmit, circulate and transfer knowledge. To that end, the project will create the human capital for sustainable development, and the knowledge base critical to effective economic development.
We therefore propose to initiate a “Center for Excellence” devoted to online publishing education in Africa that will provide innovation in the development of new systems and excellence in teaching and research. The African Center for Online Scholarly Publishing (ACOSP) aims at the following objectives:

Offer a postgraduate degree in publishing, and become the continent’s premier training ground for professional training in online publishing, with an initial focus on scholarly communication (and a capacity to incorporate other areas of online publishing as this field grows), and the only first centre in Africa to offer a postgraduate degree in publishing.

• Maintain a high level collaborative network of research expertise dedicated to exploring evolving online technologies and how these technologies can be used to improve the process of information production, diffusion, access and use in and beyond Africa.

• Hold training and scholarly publishing workshops for editors, faculty staff and librarians etc from various countries in Africa on a regular basis aimed at developing their capacity and enhancing their skills to create, managed, use and communicate scholarly information and knowledge through appropriate digital technologies.

• Collaborate with, and provide contracted services to international organizations (e.g., INASP) who provide training services to the knowledge management professionals to develop and provide appropriate and value added program based on wider and deeper analysis of capacity needs and broader understanding of the actual capacity deficiencies.

• Maintain strong links with knowledge management organization such as the
African Publishers Network, Society of African Journal Editors and Regional library Association that will provide the basis of constant monitoring and evaluation of (changes in the skill and occupational composition of the workforce facilitated by technological progress) skill requirement of the industry, that will provide the basis of designing and developing relevant training programs that will make them adaptable to the changing conditions

• Offer continuing professional development and support to knowledge management professionals who are specifically engaged in the process of research information production, diffusion access and use

• In association with other university libraries or other institutional centers, KNUST will serve as the center for an Online Scholarly Publishing Sites (OSPS), which will be responsible for supporting vibrant online journal management and publishing. This model has already been successfully implemented by the Brazilian government, through the Instituto Brasileiro de Informação em Ciência e Tecnologia (IBICT) in Brazilia, which has assembled a team who are currently supporting 63 Brazilian journals that are using Open Journal Systems (http://www.ibict.br/). And just as IBICT continues to work with the Public Knowledge Project on the development of the publishing software, so the OSPS support and training unit at Kwame Nkrumah University of Science and Technology would join in this global community that continues to grow up around the development of open source software, as part of its sustainability strategy.

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24 See also the Electronic Journal of Malaya, which hosts multiple journals with a locally developed online system (Ngah, Fong, and Abdullah, 2005).
Background to and rationale

The core principle underlining this initiative is the assumption that education is a fundamental human right and common good that benefits all. As indicated above, the emergence of the knowledge economy, requires a strong system of training and education. Knowledge professionals operating in the knowledge economy requires a new set of human skills without which, countries will inevitably fall behind and experience intellectual and economic marginalization and isolation.

In 2006-2007 Professor John Willinsky, Stanford University and Samuel Smith Esseh, University of British Columbia, undertook an in-depth research project funded by IDRC in Africa. The purpose of the study was to examine the current state of knowledge production systems – the editorial, economic, technical, and distribution patterns of scientific publications, and the viability of utilizing online technologies to support scientific publications. The study, involving 28 Universities and 31 research institutions across Sub-Saharan Africa, established that in spite of the technological, economic and political challenges facing many countries in the region, Africa continuous to abound in knowledge production. However, the capacity to effectively package and distribute knowledge within the continent – to economic and social actors, especially institutions and enterprises, whose role is to exploit such knowledge – and across globally is seriously limited. The human capacity to promote the distribution, utilization and commercialization of scientific knowledge is deficient in many ways. Information management skills are in short supply among information professionals at the management level. This seriously constrained the effective management of libraries and information centers. Institutions established specifically
to promote the diffusion of scientific knowledge are weak, fragile and susceptible to the vagaries of digital technologies (in the face of ubiquitous digital technologies).

This state is reflected in UNESCO Science report published in 2005 describing the world’s total publication output. According to this report, research community in North America accounted for 36.2% of the world’s total publication output; authors from Europe increased their output from 32.8% to 40.3%; Asia accounted for 22.5%. The report further shows, at the end of the spectrum, that Sub-Saharan Africa’s publications was only 1.4% of the world’s total publication.25

Surprisingly, while some emerging economics, such as China and South Korea, have witness dramatic increase in scientific output, which has fed into their economic growth, encouraging more research and development investment, Africa continues to fall in world’s publication output. Now, of course, the publishing capacity and circulation of knowledge associated with that capacity is only one piece in the knowledge production process, but it is a vital one that fosters, for example, peer review, which contribute a great deal to the learning and standards of the researchers involved.

According to OECD report on Knowledge Based-Economy, “One distinguished characteristics of the knowledge-based economy is the recognition that the diffusion of knowledge is just as significant as its creation.”26 It is our firm conviction that it is not the creation of knowledge, which counts, but the flow of such knowledge from

the creators to users. It is the general accessibility of knowledge and the actual
diffusion of knowledge in use that is central to innovation performance and this is the
area where many countries in Africa are failing.

This gap is what the project – African Centre for the Study of Online Publishing –
intends to fill. Training and developing highly skilled knowledge professionals, within
Africa, with technological versatility that are able to employ information and
communication technologies to enhance the packaging and circulation of knowledge
created in all usable format. A center with the goal of providing education that is
more flexible and relevant to the new global environment, focusing on both formal
and informal approach that will be critical for developing knowledgeable and better-
skilled Africans.

International organizations like INASP and NGOs, have in the past decade,
attempted to fill this gap by running 2-3 day-once-in-a-year workshops for
information workers in different regions in Africa. But these efforts have been
characterized by many limitations. The shortfalls of this approach are that such
programs have been sporadic and inconsistent, lacks continuity of skill development,
inappropriate timing and often unscientific approach for selecting participants. They
lack tools (e.g., skills checklist) and a process (e.g., follow-up after training) to
monitor and evaluate performance on the job after training that will provide further
information on whether training resulted in improve job performance.

This limitation has necessitated the need for this initiative, which is further influenced
by the important vision of the African Union and NEPAD:
Human resource development is key to Africa’s socio-economic development. That is why it has been considered as one of the central priorities of the New Partnership for Africa’s Development (NEPAD). As an initiative aiming at promoting a sustainable human centered development, the NEPAD has put a strong emphasis on investing in Africa’s human capital²⁷

In a World Bank study *Higher Education in Developing Countries Peril and Promises*, a consequential question was raised:

And what about developing countries? Will they be able to compete in the knowledge economy or do they face a future of increasing exclusion, unable to develop the skills required for the twenty-first century?

It is our firm belief that Africa is capable of competing in the knowledge economy if a wider and deeper analysis of capacity needs, based on broader understanding of the actual deficiencies and how best they can be addressed by innovative and transformative processes, are performed. Based on a careful analysis of data and review of current situation in Africa, we are proposing this initiative, though not the answer to all the challenges pose by knowledge economy, but important requisite of the knowledge economy with the potential of equipping Africans to effectively compete in the knowledge economy.

This is possible when we have development a robust institutions, and highly skilled human capacity amongst information professionals capable of disseminating effectively African indigenous knowledge.
Proposal Details

Institutional Home of the African Centre for the Study of Online Publishing

This initiative will form part of the program at the Department of Publishing Studies, Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi Ghana. It will operate within a consortium of publishing studies programs in Canada, Switzerland, Australia, and Colombia that are committed to participating in the development of online publishing with a focus on scholarly communication.

In 1980, UNESCO commissioned Abul Hassan to carry out need assessment of the Publishing Industry in Sub-Saharan Africa. At the end of the study, he recommended among other things the establishment of strong institution to be responsible for the training and development of human capacity for both the book and publishing industry in Africa. Based on this recommendation, UNESCO in collaboration with the Government of Ghana commissioned the Book Industry program now known as the Publishing Studies program at the KNUST. The mandate of the program as outline by UNESCO was to train and develop highly skill human capacity amongst knowledge professionals, not for Ghana alone, but the whole of Sub-Saharan Africa.

As this program took off, the World Bank introduced a sweeping reform on the continent that compelled many countries in Africa to adopt and implement Structural Adjustment polices, which deemphasize the relevance of higher education but gave priority to basic education. Resources to higher education were withdrawn. As the donor community withdrew its support for higher education so did UNESCO withdraw its support for the Publishing Studies Program it helped established. So
powerful was this misguided World Bank policy that people with vested interest could only maintained an ambivalent attitude towards tertiary education which subsequently had a dramatic consequences on research capacity development in Africa.

In spite of these challenges, the Publishing Studies program at KNUST has emerged as arguably the best degree-awarding publishing program in Africa. Since its inception, the program has trained over 1,200 graduates who have gone on to function in the roles of publishers, printers, reviewers, editors, copyeditors, book illustrators, layout artist, designers, managers and administrators in the publishing and allied industries.

The department has worked closely with the African Publishers Network (APNET) which is the umbrella organization for national publishers’ associations and publishing communities in Africa, to train and develop its members since its inception in 1992.

The Department has highly skill academic professionals with a range of expertise in terms of the curriculum. These are able to contextualized issues within the African context and with the international exposure of many of these professors, are able to bring international perspective to bear on their delivery. Please see attached CV of Academic professionals.

With these achievements, skill expertise and existing structures already in place, it is very appropriate to choose KNUST as the center for this initiative. Furthermore, it is appropriate to identify the deficiencies and gap in the existing program vis-à-vis the
skill requirement of the knowledge industry in the 21st century and to strengthen the existing department to provide more relevant skills critical to the new global environment. The propose programs to be offered by this initiative is therefore born out of a careful analysis of the KNUST program, a careful needs assessments of the knowledge professionals in African and hence a well crafted program that is capable of fulfilling these needs. Through this initiative, the program at KNUST will be widened and deepened and strengthened into a robust institution ready to fulfill its original mandate of training and development of highly skill human capacity amongst knowledge professionals for the Sub-Saharan Africa.

In addition to strengthening such activities, the initiative is supported by effective North/South collaboration through a partnership of leading international, regional and national organizations and institutions of higher learning that will bring to African international scholars to teach for short periods.

**Collaborating Partnership**

Developing a program of this nature within the current global network environment requires effective global and regional collaboration through a partnership of leading international, regional and national organizations and institutions of higher learning. This program for capacity building in Africa will integrate a broad suite of partnerships with a view to achieving maximum leverage and to get resources 'on the ground' as effectively and efficiently as possible.

Identified partners who have committed to this initiative include representatives from The International Network for the Availability of Scientific Publications (INASP, UK),
University of British Columbia (UBC, Canada), Canadian Centre for Studies in Publishing at Simon Fraser University (CCSP of SFU, Canada), Stanford University (USA), University of St Gallen (Switzerland) and the Public Knowledge Project (PKP, Canada) (See Appendix 1).

There is a consensus among collaborative partners that this project be located in Africa because of the need for relevant and contextual education of information professionals in Africa. This is in accordance with the vision of NEPAD: “of an African-owned and African-led development program.”

Innovation and Change

The African Ministerial Council on Science and Technology (AMCST) a branch of NEPAD and AU responsible for developing policies and setting priorities on science, technology and innovation for African development declared that despite the relatively rich body of knowledge in Africa, knowledge and technologies are inadequately promoted in Africa because there is a weak link between the formal R&D institutions and local community that hold and use the knowledge created. This is a thought-provoking statement and it is our firm belief that to overcome this challenge expressed by (AMCST) and ensure that knowledge produced through R&D flows from the creators to the users (local community, enterprises etc) it is necessary to strengthen the current weak institutions responsible for safeguarding, transmitting and circulating knowledge.

28 The New Partnership For African’s Development framework (http://www.nepad.org/)
Beside its contribution to African knowledge base and investment in higher education that will ensure the creation of new knowledge, the initiative (ACOSP) will strengthen existing information management institutions by developing their capacity and enhancing their skills to create, managed, and communicate scholarly information and knowledge through appropriate digital technologies to users. This expected change is one step closer to fulfilling NEPAD’s vision articulated in paragraph 140 of it framework devoted to the protection of indigenous knowledge: “it is essential to protect and effectively utilize indigenous knowledge ... and share this knowledge for the benefit of humankind...” (AMCST)

Our conviction is that access to information is essential for citizen empowerment. In addition, their contributions to increasing food production, fighting HIV/AIDS and other avoidable diseases, and stemming environmental degradation are significant.

Another significant envisage change is that the initiative will create an environment that will facilitate the dissemination of nationally and regionally produce knowledge and this will enhance the global visibility and access to African indigenous knowledge. Ultimately this will improve African world standing on research productivity, which is an indicator of strength of continent’s research and development activities.

**Methodology for Delivery Training**

To facilitate the best learning composite in a constantly challenging and innovative knowledge environment, a variety of learning methods will be employed. Since there are different learning styles, training goals, participant/student locations, and
budgets there will be a combination of instructor-lead to self-paced learning offered through a menu of distinct delivery options. Consequently, the program will use an integrated instruction model combining classroom training/education with new bundled Web-based training modules, that will deliver the intended impact.

1. Classroom Learning
The approach will allow participants across Africa to be physically present at the centre to engage in learning with other students, expert instructors, hands-on-laboratory experience and use state-of-the-art-equipment. Our faculties of knowledge management experts, who work in all sectors of the book and magazine industries, will bring their professional experiences and knowledge of the latest practices to the classroom

2. On-Site Asynchronous Learning
To promote flexibility and attempt to contain the possible challenge of power outages and disruption in Internet facilities, the asynchronous approach will be adopted where participants can have access to learning material online at anytime from any convenient location. Video/audio recording of lectures would be archived so participants can access online as though it was a live broadcast. This method will save time and money. On-site delivery costs are typically less than classroom

This approach will create an avenue for partner institutions to develop and share course materials with participants through the ACSOP at KNUST without having to be present to deliver lectures and to run workshops. This learning/instructional approach has the potential of connecting learners around the globe with each other,
with instructors and experts worldwide and with an enormous range of resources to support learning that is both highly individualized and highly collaborative.

3. Virtual Classroom E-learning
Virtual Classroom E-learning delivers the same content and labs as the classroom, with a live instructor, in real time, via the Internet. Participants/students gain consistent high-quality instruction for a geographically distributed workforce. They save time and money by training without travel, and interact with peers and expert instructors.

4. Regional Training Workshops
Working closely with INASP, the Center will design all year-round regional and country workshops for knowledge professionals in Africa. The goal is to keep knowledge professionals abreast with evolving online infrastructure and knowledge management strategies that will enable them to create, manage and communicate scholarly information and knowledge through appropriate digital technologies.
PKP provides learning supports and materials in numerous ways, such as:

1. built into OJS (i.e., help menu),
2. well-structured workflows,
3. OJS User Guide (available online),
4. online courseware (ZIP) for operating OJS,
5. a collection of essays on on-access publishing,
6. OJS video tutorials,

The PKP/OJS learning materials fall into three categories:

1. Rationale for open access publishing,
2. Participating in publishing, and
3. Operating OJS.

The majority of the materials fell within the third category. This is a shortfall of PKP/OJS. As the journal publishing curriculum from ALPSP and INASP indicates, participating in the tradition of journal publishing also requires knowledge about law (e.g., copyright), social knowledge (e.g., dealing with authors), production planning, finances, and marketing.
Learning Materials Provided by the International Network for the Availability of Scientific Publications

The International Network for the Availability of Scientific Publications (INASP) hosts publishing workshops that brings together the staff from journals. According to the website: "These workshops are extremely participatory, and involve group work and discussion with the objective of providing delegates with the knowledge to help make informed decisions about their own publications."

The modules are organized around the following twelve topics:

1. Copyediting and Proofreading
2. Copyright
3. Dealing with authors
4. Journal design
5. Journal finance
6. Journal strategy
7. Managing the review process
8. Online publishing strategy
9. Planning online publication
10. Production
11. Production quality control
12. Promotion

INASP also uses a clever solution to distribute learning materials. Journal publishing materials, such as notes for the facilitator, module presentation, exercises and reference documents, are organized into twelve modules. The files are licensed under the Creative Commons Attribution-Noncommercial 2.0 license.
The files for the modules are then archived in a ZIP file and placed online where they can be downloaded. This is an effective way of bundling and sharing materials and is the basis of the design feature for importing/exporting library collections.

**Learning Materials Provided by Other Associations**

In this section, we provide a brief overview of the learning materials and opportunities provided by other journal publishing associations. A full review of learning materials and opportunities by these associations can be found in our previous submission, “A survey and inventory of learning resources for academic journals.”

**Canadian Association of Learned Journals**

CALJ primarily provides professional development through workshops and seminars at their annual conference. CALJ has also published a guidebook entitled, *Best Practices Guide to Scholarly Journal Publishing*, which is a practical guide that may be useful to graduate students starting up a new journal.

**The Association of Learned and Professional Society Publishers (ALPSP)**

ALPSP hosts an annual three-day conference in the United Kingdom.

ALPSP host a series of one-day workshops throughout the year. Each workshop has a clear learning objective, a program, and two tutors. The topics of these workshops seem more conducive to those new to publishing (e.g., *Introduction to Journal Marketing, Fundamentals of Journal Finance*, etc.). These events are in the UK and too costly for the vast majority of new and first time publishers to attend.
ALPSP has also published 22 booklets on topics such as, *What Authors Want, The Costs of Learned Journal and Book Publishing*, and *E-Book Platforms and Aggregators*. While some booklets are available for free online, many cost money.

The Society for Scholarly Publishing (SSP)

SSP hosts an annual three-day conference and seminars hosted in the Washington DC area. SSP publishes a *Professional Profile*\(^\text{29}\). This is a short interview( where is the interview?) with one of its members. SSP also posts notices about internship positions that are available through its member organizations. The SSP, in collaboration with ALPSP, also publishes a serial, *Learned Publishing*.

Appendix B: Survey Schedule A

Survey Schedule A
Journal Editors and Staff

NOTE: While each member of a journal's staff in attendance, including editors, should fill out section 1. (Personal Information), they can work together on sections 2-6 on a single form.

1. Personal Information

Name: __________________________________________
Institution of work. _____________________________________________________________
Institutional position/title ______________________________
Highest degree obtained ______________________________
Specialization __________________________________________
Position/Title __________________________________________
Gender ______________________________________________
E-mail contact __________________________________________
Journal title __________________________________________
Current position with Journal (e.g., editor) ______________________________

2. Journal Basics

• Who, if anyone, owns the journal? __________________________
  Does the journal have a publisher, and if so who? __________________________
  Are there other organizations associated with the journal? ________________

• What academic disciplines does the journal cover? ______________________

• How would you describe scope and focus of the journal?
  __________________________

• What sections does the journal offer (e.g., articles, book reviews)?
  a) ______________________ b) ______________________
  c) ______________________ d) ______________________
  Circle the sections of the journal that are subject to peer review.
• If there have been breaks in publishing the journal, what was the reason
________________________________________________________________________
________________________________________________________________________

• Changes in the publishing schedule history____________________________________
________________________________________________________________________

• How is the publishing of the journal financed: (circle one or more)
Subscription | Sponsorship | Author fees | Volunteer Help | University Support
________________________________________________________________________

• If all the articles are available online, access is by: (circle one or more)
Subscription | Open Access (free) | Delayed Open Access (after .... months)
Others (please specify) ______________________________________________________
________________________________________________________________________

3. Authors and Readers

• How would you describe the trends in authorship (e.g. increasing, decreasing,
African, international, etc.) __________________________________________________
________________________________________________________________________

• Name challenges faced by authors submitting to the journal? ________________
________________________________________________________________________

• How would you describe the trends in readership (e.g. increasing, decreasing,
African, international, etc.)
________________________________________________________________________
________________________________________________________________________

• Name challenges faced by readers and libraries interested in journal
________________________________________________________________________
________________________________________________________________________

4. Technology

• What role does the Internet play in producing your journal?
________________________________________________________________________
________________________________________________________________________

• What are recent changes in ICT involved in producing your journal?
________________________________________________________________________
________________________________________________________________________

• What changes in ICT are planned for your journal?
________________________________________________________________________
________________________________________________________________________
• What changes in ICT would you like to see for your journal?

• Briefly outline the steps involved in reviewing a manuscript submitted to your journal

• What are the most common reasons for rejecting a submission

• Explain briefly the process of recruiting reviewers for your journal

• What motivates you to do this editorial job?

• Do you receive any incentives for this editorial job?

• How would you describe the pool of reviewers you draw on?

• What are the methods of recruiting and contacting reviewers?

• What are some of the challenges you are faced with in securing reviewers?

5. Editorial Processes
### 6. The Roles, Costs and Numbers Associated with the Journal

<table>
<thead>
<tr>
<th>PUBLISHING ELEMENTS</th>
<th>APPROXIMATE ANNUAL COSTS</th>
<th>APPROXIMATE NUMBERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JOURNAL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headquarters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year started</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How is the journal published:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Print edition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) African Journals Online</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Full-text online</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Check one or more)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If full-text online, since .......... (year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff costs</td>
<td></td>
<td>No. of issues/yr...</td>
</tr>
<tr>
<td>Printing costs</td>
<td></td>
<td>No. of copies.......</td>
</tr>
<tr>
<td>Postage costs</td>
<td></td>
<td>No. of pages/yr....</td>
</tr>
<tr>
<td>Total expenses</td>
<td></td>
<td>No. of subscriptions</td>
</tr>
<tr>
<td>Revenues</td>
<td></td>
<td>a) Library..........</td>
</tr>
<tr>
<td>Annual subscription rate</td>
<td></td>
<td>b) Individual.......</td>
</tr>
<tr>
<td>No. of subscriptions</td>
<td></td>
<td>a) African..........</td>
</tr>
<tr>
<td>Percent subscriptions</td>
<td></td>
<td>b) Overseas........</td>
</tr>
<tr>
<td><strong>EDITORS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software the editors use (circle one or more): email, word-processing, Acrobat (PDF), Photoshop, InDesign, Illustrator, PageMaker, Corel Draw QuarkXpress, ...............(other)</td>
<td>Editor stipend, if any...</td>
<td>No. of editors.......</td>
</tr>
<tr>
<td>Editor expenses</td>
<td></td>
<td>No. of years editor(s) served.../.../.../...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. of hours editor(s) put in weekly...</td>
</tr>
<tr>
<td><strong>AUTHORS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rough percentage of authors from 1. a) Universities....</td>
<td>Photocopying and postage costs authors pay...</td>
<td>No. of submissions annually...</td>
</tr>
<tr>
<td>b) Research institutes</td>
<td></td>
<td>Author fees, if any...</td>
</tr>
<tr>
<td>c) Industry or companies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Other...</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>REVIEWERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentives to review</td>
<td></td>
<td>No. of reviewers used per article...</td>
</tr>
<tr>
<td>..........................................................</td>
<td>Payment, if any, to reviewer...</td>
<td>No. of reviewers used per year...</td>
</tr>
<tr>
<td>..........................................................</td>
<td>Other costs of managing review...</td>
<td>Average no. of weeks to conduct review...</td>
</tr>
<tr>
<td>Reasons for declining</td>
<td></td>
<td>No. of weeks from acceptance to publication...</td>
</tr>
<tr>
<td>..........................................................</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COPY EDITING</strong></td>
<td></td>
<td>No. of copyeditors...</td>
</tr>
<tr>
<td>Methods................</td>
<td></td>
<td>No. of copyeditors...</td>
</tr>
<tr>
<td>..........................................................</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LAYOUT AND PREPRESS</strong></td>
<td></td>
<td>No. involved in layout...</td>
</tr>
<tr>
<td>Methods................</td>
<td></td>
<td>No. involved in layout...</td>
</tr>
<tr>
<td>..........................................................</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PROOF READING</strong></td>
<td></td>
<td>No. of proofreaders...</td>
</tr>
<tr>
<td>Methods................</td>
<td></td>
<td>No. of proofreaders...</td>
</tr>
<tr>
<td>..........................................................</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Survey Schedule B

Survey Schedule B

Potential Editors and Interested Faculty/Students

1. Personal Information

Gender: ____________________________________________________________

Institution of work: ________________________________________________

Highest degree obtained: __________________________________________

Specialization: _________________________________________________

Position/Title: ___________________________________________________

2. Current Scholarly Practices with Journals

• Give the titles of some of your favorite journals

_________________________________________________________________

_________________________________________________________________

• By what means do you get access to scholarly articles/journals?

_________________________________________________________________

_________________________________________________________________
• In the past month approximately how many of each of the following types of documents have you read in connection with your work?

a. Professional or scholarly \textit{print} journal articles ______________________

b. Professional or scholarly \textit{online} journal articles_______________________

c. Monographs__________________________________________________________

d. Textbooks___________________________________________________________

e. Others Please specify) ________________________________________________

• Can you name the titles of regional (African) \textit{print} journals in your field?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

• Can you name the titles of regional (African) \textit{online} journals in your field?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

3 On a scale of 1 to 7 please circle the level of importance of information read from scholarly journals for the following objectives.
a. Teaching purposes

b. Professional development

c. Research objective

3. Publishing in Scholarly Journals

On a scale of 1 to 7 please rate the importance of publishing in scholarly journals. Circle the number on the scale that most closely describes your situation.
a. Career advancement

b. Contribution to knowledge

c. Publishing for posterity

d. Financial reward
e. Protection of intellectual property

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolutely Essential</td>
<td>Moderately Essential</td>
<td>Somewhat Essential</td>
<td>Neutral</td>
<td>Somewhat Inessential</td>
<td>Moderately Inessential</td>
<td>Absolutely Inessential</td>
</tr>
</tbody>
</table>

f. Contribution to the public

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolutely Essential</td>
<td>Moderately Essential</td>
<td>Somewhat Essential</td>
<td>Neutral</td>
<td>Somewhat Inessential</td>
<td>Moderately Inessential</td>
<td>Absolutely Inessential</td>
</tr>
</tbody>
</table>

g. Others (please specify) .................................................................

- What factors influence your selection of a journal in which to publish? (circle number)

<table>
<thead>
<tr>
<th>Absolutely Essential</th>
<th>Moderately Essential</th>
<th>Somewhat Essential</th>
<th>Neutral</th>
<th>Somewhat Inessential</th>
<th>Moderately Inessential</th>
<th>Absolutely Inessential</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Appropriate subject scope</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>b. Largest circulation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>c. High acceptance rate</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>d. Prestige of journal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>e. Short publication lag</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>f. Local/national journal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>g. International journal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>h. Institution legitimization</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>i. Journal has online edition</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>j. Others (please specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Computer Skills and the Use of Internet

• What computer software do you typically use? ________________________________
  ________________________________
  ________________________________

• What uses do you typical make of the Internet______________________________
  ________________________________
  ________________________________

• How often do you use the Internet during typical work week?
  Once every day  |  Once every week  |  Once every month (circle one)
  Others (please specify). ________________________________________________

• What do you perceive are the challenges in the use of Internet to manage and
  publish journal? ________________________________
  ________________________________
  ________________________________

5. For the New Journal that You Might Consider Launching:

• In what area of academic disciplines would the journal serve?
  ________________________________
  ________________________________
• Have you had experience to date, if any, with journal publishing, if so what?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

• Do you see the journal having a print edition, online edition or both? (circle one)
  a. Print
  b. Online
  c. Both

• Which of these economic models could possibly be the preferred choice for this journal?
  a. Subscription
  b. Sponsorship
  c. Volunteering
  d. Author fees
  e. Organizational Support
  f. Others (please specify) ____________________________________________

• What do you perceive to be the benefits of starting a journal?_____________
  ___________________________________________________________________
  ___________________________________________________________________
  ___________________________________________________________________
• What do you perceived to be the challenges in starting a new journal?

___________________________________________________________________
___________________________________________________________________

• In what possible areas would you desire training, workshops, and support in order to start an online/electronic journal?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

Appendix D: Survey Schedule C

Survey Schedule C
Librarians and IT Administrators

NOTE: While each member of the library staff in attendance should fill out section 1. (Personal Information), they can work together to complete sections 2-5 on a single form.

1. Personal Information

   Name of library staff:_______________________________________________
   Institution of work: _________________________________
   Name of [Main/Site/Branch] library:____________________________________
   Highest degree obtained:______________________________________________
   Specialization: _____________________________________________________
   Position/Title: _____________________________________________________
   E-mail contact: _____________________________________________________
   Gender: ____________________________________________________________

2. Library Information

   • Number of library staff
     a. Professional____________________________________________________
     b. Non-professional_______________________________________________

   • Number of academic staff (in faculties/department served by the library____

   • Number of academic students (in faculties/department served by the library__

3. Journal publishing and support
• Roughly how many African journals does the library receive? ____________

• What have been the current challenges in stocking journals from Africa in your library? ______________________________________________________
  ______________________________________________________
  ______________________________________________________
  ______________________________________________________
  ______________________________________________________

• What is the library’s current budget for journal subscriptions? ____________

• What are the sources of funding for the library
  a. ______________________________________________________
  b. ______________________________________________________
  c. ______________________________________________________
  d. ______________________________________________________

• What is the approximate number of print journals available in the library?____

• What is the number for online journals available through the library?_______

• What was the approximate number for print journals five years ago?_______

• What was the approximate number for online journals five years ago?_______

• What other electronic resources are available in the library (e.g. e-books, e-book service, CD-ROMS)?
  a. ______________________________________________________
  b. ______________________________________________________
  c. ______________________________________________________
  d. ______________________________________________________
  e. ______________________________________________________

• Does the library now have or have plans for an “institutional repository” or “eprint archive” in which faculty members can place copies of published work?
• Describe library support for academic staff/student use of electronic resources

4. Technology in the library

• Which functions (e.g. cataloguing, loans, acquisitions) have been automated?
  a. ________________________________________________________________
  b. ________________________________________________________________
  c. ________________________________________________________________
  d. ________________________________________________________________
  e. ________________________________________________________________

• How many computers connected to the Internet are in the library?__________

• How many are currently in working order?_____________________________

• How many are reserved for library staff only___________________________

• How is the library connected to the Internet (e.g. dial-up, leased line, VSAT etc)? __________________________________________________________________________

• In the last month, how many power outages of more than 1 hour were there? __________________________________________________________________________

• In the last month, how many times was the Internet down for more than 1 hour __________________________________________________________________________

• Is Internet access free or fee-based for students and for faculty?__________

• How many Web servers, if any, are operated by the library________________

• Can you give examples of your current technology expertise/experience in library? ________________________________________________________________
  __________________________________________________________________________
  __________________________________________________________________________

• What technical support is available for librarians? ___________________________
• What are the technology priorities for your library in the next three years?
  a. ____________________________________________
  b. ____________________________________________
  c. ____________________________________________
  d. ____________________________________________
  e. ____________________________________________

5. Local Content and Publishing

• Has the library produced any databases of local content or digitized the full text of local publications or local collections? Give details____________________
  __________________________________________________
  __________________________________________________
  __________________________________________________
  __________________________________________________

• What has been the library’s role in support of local journals up to this point?
  __________________________________________________
  __________________________________________________
  __________________________________________________
  __________________________________________________

• What would be the principal benefits and value of the library supporting local journal publishing?
  __________________________________________________
  __________________________________________________
  __________________________________________________
  __________________________________________________
• What would be the principal challenges in the library doing more to support local journal publishing? ________________________________
                           ________________________________
                           ________________________________
Appendix E: Survey Schedule D

Survey Schedule D
University IT Administrators and Staff

1. Personal Information

Name: _______________________________________________________
Institution of work: _____________________________________________
Highest degree obtained: _______________________________________
Specialization: _________________________________________________
Position/Title: _________________________________________________
Gender ________________________________
E-mail contact: ________________________________________________

2. Institutional Goals

• What is the current distribution of internet access to the following
  a. Students____________________________________________________
  b. Library_____________________________________________________
  c. Faculty offices_____________________________________________
  d. Administration_____________________________________________
  e. Departments________________________________________________

• What is the method of connectivity
  a. VSAT
  b. Leased line
  c. Wireless/Radio
  d. Dial-up
  e. Others (please specify) _______________________________________

• What are the institutional priorities for IT?
  _____________________________________________________________
  _____________________________________________________________
  _____________________________________________________________

• What are the institutional priorities for IT specifically for Internet access?
  _____________________________________________________________
• What is the current download/upload bandwidth available for Internet access?

• What was approximate bandwidth available three years ago to the institution

• What is the planned projection for campus distribution of Internet access over the next three years?

• How would you describe the current cost and access structures (e.g., times, people/computer ratios)?

• How would you characterize the changes in participation and use levels with IT over the last 5 years?

• What are the principal sources of funding for IT development on campus?
  a. 
  b. 
  c. 
  d. 
  e. 

• What would be the role, if any, for your unit to participate in an Online Scholarly Publishing System based on open source software?

• What are the principal challenges faced in providing IT services on campus?