Editorial

Five of the six articles published in the immediately preceding issue of this journal, i.e., Vol. 21 No. 1, April 2011, reported developments and findings in respect of three interrelated themes – research, open access, and institutional repositories. These themes are important because they concern the creation, management and use of knowledge – a self-perpetuating entity that provides the information source for human actions and also represents the end product of those actions. Specifically, knowledge enables the creation of the information and communication technologies (ICT) that drive our knowledge and digital societies. It is therefore not surprising that themes concerning the production, management and use of knowledge continue to arouse great interest among researchers, with many studies on such themes already completed, in progress or planned.

Accordingly, this issue of this journal provides further opportunities for researchers to disseminate their research findings on various aspects of the production, management and use of knowledge in the African setting.

There are seven articles in this issue. The first five articles report developments and findings in respect of research and innovation, and the production, dissemination and management of knowledge. The first article, by du Toit, van Staden and Steyn explore some of the factors that motivate knowledge workers to creativity and innovation within and outside organisations in the knowledge economy. In the second article, Onyancha analyses the trends in South Africa's research collaborations with African and other countries during and after the apartheid era. The paper also highlights some of the unique research areas in which scholars in Africa could conduct collaborative research.

In the third and fourth articles, Yusuf presents findings on the influence of mentoring on the research and publication output of academic librarians in some Nigerian universities, while Bolarinwa and Utulu explore the perceptions and reactions of academic librarians in Nigeria's private universities to the opportunities and demands of open access publishing. In the fifth article, van Wyk and Mostert report on the implementation of an institutional repository for the University of Zululand in South Africa.

The final two articles of the issue focus on the provision and impact of library and ICT services in Tanzania. The first, by Chilimo and Ngulube, discuss how the provision and use of mobile phone and telecentre services have improved sustainable livelihoods in rural communities in Tanzania. In the second article, Mgina and Lwehabura assess the status and development of secondary schools libraries under Tanzania's Secondary Education Development Plan.

AFRICAN JOURNAL OF LIBRARY, ARCHIVES AND INFORMATION SCIENCE

VOLUME 21 NUMBER 2 OCTOBER 2011

CONTENTS

A. S. A. du Toit, R. J. van Staden and P. D. Steyn
South Africa's Future Knowledge Workers: A Peep into their Goals and Motivations for Innovation…….87

Omwoyo Bosire Onyancha
Research Collaborations between South Africa and Other Countries, 1986-2005: An Informetric Analysis……..101

Felicia Yusuf
Mentoring and its Impact on the Publication Output of Librarians in Selected Academic Libraries in South-West Nigeria……...117

Omolara Bolarinwa and Samuel C. Avemaria Utulu
Open Access: Perceptions and Reactions of Academic Librarians in Nigerian Private Universities……...127

Brenda van Wyk and Janneke Mostert
Toward Enhanced Access to Africa's Research and Local Content: A Case Study of the Institutional Depository Project, University of Zululand, South Africa…….139

Wanyenda Leonard Chilimo and Patrick Ngulube
Role of Information and Communication Technologies in Sustainable Livelihoods in Selected Rural Areas of Tanzania…….153

S. Mgina and M. J. F. Lwehabura
Status of Secondary School Libraries under the Secondary Education Development Plan: A Case Study of Dodoma Municipality, Tanzania…….....167

Professional News and Events……...179

Index…….....181

Afr. J. Lib & Inf. Sc. Vol.21, No. 2 (2011) 101-115

Research Collaborations between South Africa and Other Countries, 1986-2005: An Informetric Analysis

Omwoyo Bosire Onyancha
onyanob@unisa.ac.za or b_onyancha@yahoo.com

University of South Africa, Department of Information Science,
PO Box 392 Unisa 0003
Pretoria, South Africa

Abstract

The paper reports the findings of an informetric study of the countries with which South Africa collaborates in research. The study period spans 20 years (10 years each during and after the apartheid era). Data were extracted from the Thomson Reuters citation indexes, namely: Science Citation Index (SCI), Social Sciences Citation Index (SSCI) and Arts and Humanities Citation Index (AHCI). Among the findings, it was observed that multiple-country-author papers, as well as the number of collaborating countries are on the rise since 1986. The USA topped the list of the countries outside Africa collaborating with South Africa while Zimbabwe topped the list of African countries. However, the strength of research collaboration was low for both categories of countries. Regarding impact, international collaboration yielded higher average citations per paper than continental collaboration. The study concludes that there are many unique research areas in which African countries can collaborate, and recommends that these areas should form themes along which scholars in Africa could conduct collaborative research.

Keywords

Research collaboration, research impact, South Africa

Introduction

South Africa's regional, continental and international relations were severely strained during the apartheid era. Prior to 1994, when the Government of National Unity was formed, the country was alienated from the world's mainstream economic, social and political engagements (Levy, 1999). India is said to be the first country to impose sanctions on South Africa in July 1946 – sanctions that were largely trade related (Wehr, Burgess and Burgess, 1994). Saunders and Southey (2001) note that South Africa's apartheid system came under regular attack from the international community from 1952, culminating in its withdrawal from various international organisations. For instance, South Africa was forced to withdraw from the United Nations Educational Scientific and Cultural Organization (UNESCO) in 1956, the International Labour Organization (ILO) in 1961 and the World Health Organization (WHO) in 1965. Schoeman's (1988) *South African Sanctions Directory* reveals that the majority of the sanctions against the country were imposed in the 1980s. These sanctions touched on almost every sector of the country, for example trade/commerce, sports, health, and education, to mention just a few. The sanctions also affected research collaboration between South African scholars/researchers and institutions and their counterparts in the rest of the world. One particular sanction that might have had a profound impact on research was the academic boycott of South Africa between the 1960s and 1990 by the international academia. Coovadia (1999), for instance, argues that the academic boycott against South African

researchers resulted in many scientists from overseas refusing to visit South Africa, or to invite white or black South Africans, unless "the conditions of selective support were met". In summarising the impact of the academic boycott, the Physicians for Human Rights (United Kingdom) and the Johannes Weir Foundation, as cited in Coovadia (1999), concluded in their report on health care under apartheid thus: "the academic boycott had a negative impact on academic work, research, scholarship, and postgraduate teaching."

The scenario has since changed. For instance, a 2009 spot check on the National Research Foundation's website (NRF, 2009) yielded the following subsisting post-2004 research collaboration initiatives: South Africa – Oman Joint Science and Technology Research; South Africa – Poland Joint Science and Technology Research; NRF/CNRS International Scientific and Technological Cooperation (Joint research venture is between South Africa's National Research Foundation and the French National Centre for Scientific Research); South Africa – Hungary Joint Science and Technology Research; South Africa – Kenya Joint Science and Technology Research Programme; Swedish Research Links Programme; South Africa – Argentina Joint Science and Technology Research; NRF – DFG Joint Science and Technology Research (between South African and German researchers). Also, among the research projects that are conducted by South Africa's Medical Research Centre [MRC] is collaboration with the Centre for Health Informatics Research and Development (CHIRAD) in the UK which began in 2004 (MRC, 2007). For its part, the Human Sciences Research Council [HSRC] (2005) collaborates with institutions in virtually all sub-Saharan African countries in all its 10 programme areas.

The few subject-specific studies that have been conducted on research collaboration in South Africa have indicated that the country's research output in terms of publications is largely co-authored by researchers within the country (Onyancha and Ocholla, 2007; Onyancha, 2009). This implies that, although the sanctions imposed on South Africa retarded the country's potential growth and performance on various fronts, the sanctions were a 'blessing in disguise', so to speak, as far as the strengthening of internal collaborations are concerned. It should be noted however that the above studies (i.e. Onyancha and Ocholla, 2007; Onyancha, 2009) were conducted in order to identify the collaboration patterns, trends in and extent of HIV/AIDS research in Eastern and Southern African countries. In contrast, Jacobs (2008) found out in her analysis of the South African publications in the Science Citation Index from 1995 to 2003 in selected scientific fields that national co-authorship of publications contributed only 26% of the country's total publications output while international collaborations contributed 74%. One of the factors that might explain these contrasting findings are differences in the time periods covered in the three studies. Whereas Onyancha and Ocholla (2007) and Onyancha (2009) analysed HIV/AIDS papers published between 1980 and 2005 (apartheid and post-apartheid eras), Jacobs' study covered the years 1995 and 2003 (post apartheid era only). Seemingly, research in South Africa was to a large extent dominated by internal collaboration during the apartheid regime, and the pattern is probably changing in favour of international collaboration.

On a bigger scale, Tijssen (2007) set out to highlight Africa's contribution to the worldwide research literature and one of the variables he considered was Africa's domestic and international collaboration. He noted that 'single institute' papers from African countries contributed an average of 15% of the total African output each four-year period beginning with the period from 1990 to 1993. Domestic co-publication, according to Tijssen, has declined steadily from 48% to 34% while the worldwide-domestic co-publication has continued to increase. He attributes this pattern of co-publication to African researchers' reliance on foreign partners for publishing their research findings in foreign journals.

One other important issue raised in Tijssen's study, which is worth mentioning, is the effect of research collaboration on research impact. A critical review of Tijssen's study reveals that research collaboration, particularly at an international level, increases research visibility which in turn increases the research impact. This view is also held by Adams, Gurney and Marshall (2007) who observed that "collaborative research is also identified as contributing to some of the highest impact activity." Similarly, Katz and Hicks (1997) noted that "collaborating with an author from the home institution or another domestic institution increases the average impact by approximately 0.75 citations while collaborating

with an author from a foreign institution increases the impact by about 1.6 citations." This and other factors or gains associated with research collaboration (see Onyancha and Ocholla, 2007) have resulted in various governments' and institutions' increased focus on collaboration among international and domestic researchers.

This study investigated the patterns and trends in South Africa's research collaboration, with other countries between 1986 and 2005 (one decade each in apartheid and post-apartheid South Africa). Specifically, the study:

(1) Examined the trend of single-country-author and multiple-country-author papers.
(2) Compared the number of countries collaborating with South Africa.
(3) Identified the countries with which South Africa collaborates.
(4) Determined the subject focus areas of research collaboration.
(5) Measured the strength of association between South Africa and each of the collaborating countries.
(6) Compared South Africa's continental and international research collaboration's citation impact.

Methods and Materials

The Thomson Reuters' (previously known as the Institute of Scientific Information and thereafter Thomson Scientific) citation indexes, namely: Science Citation Index (SCI), Social Sciences Citation Index (SSCI) and Arts and Humanities Citation Index (A&HCI) were the sources of the data. Relevant data were extracted from these databases through the online Web of Science, Thomson Reuters' portal to the citation indexes. As the three databases share a search platform, a single search query, '*AD=South Africa*', was used to extract all documents that contained the words 'South Africa' within the author's address field. The search was then refined by date of publication and document type so as to obtain only *articles* published between 1986 and 2005, that is, one decade each during and after the apartheid era. The author's address field was identified as the most appropriate field within which the search was to be conducted in order to retrieve only the records that contained at least one South African institutional address on the assumption that such a record was authored by individuals affiliated to a South African institution. Limiting the search to only *articles* was done on the basis of the widely acknowledged fact that scientific research is disseminated largely through journal articles as opposed to other document types such as books, book chapters, book reviews, technical reports, working papers, letters to the editors, biographies, bibliographies, news items and reprints.

Data analysis was conducted using several analytic technologies (e.g. Sitkis, UCINET for Windows, and Microsoft Excel and Access software) in line with the stated objectives:

(1) *Examine the trend of single-country-author and multiple-country-author papers*: Normally, the term 'co-authorship' is used to refer to "an instance in which two or more individuals jointly author" (Diodato, 1994:6). Since the term 'author' may refer to individual as well as to corporate authorship, this study introduces two terms – 'single-country-author/authorship' and 'multiple-country-author/authorship' paper(s) – to refer to papers authored by South Africa only (i.e. papers that contained multiple names of South African institutions only) and those authored by South Africa in partnership with at least one other country (i.e. papers that contained two or more authors with at least one author from a foreign country and at least one from a South African institution), respectively. It therefore follows that *co-authorship or multiple authorship* is used in this paper to refer to a paper jointly authored among two or more countries, that is, papers originating from partnership between two or more countries.
(2) *Compare the number of countries collaborating with South Africa*: The number of countries was computed in each five-year period from 1986 to 2005. The growth of and percentage increase in

the number of countries was also computed in order to investigate the trend of research collaboration between South Africa and the rest of the world.

(3) *Identify the countries collaborating with South Africa*: *Continental* (African) and *international* (foreign) countries were identified from the authors' addresses. The research output resulting from collaboration with respective countries was calculated, based on the number of records in which the name of a particular country appeared in the authors' address field. In all cases, the name of the country was counted only once irrespective of the number of times it appeared in a given record.

(4) *Determine the subject focus areas of research collaboration*: The purpose of identifying the subject areas was two-fold, namely to:
   i. explore the shifts of research focus by examining the top 10 subject categories originating from papers co-authored outside South Africa in each five-year period; and
   ii. identify subject areas of collaboration between South Africa and continental (African) countries, on the one hand and foreign countries, on the other. Continental and foreign co-authored papers were isolated and analysed separately to identify the subject categories that yielded high frequencies of occurrence.

(5) *Measure the strength of association between South Africa and each collaborating country*: Each country's raw frequency counts were subjected to further analysis using the UCINET software's normalised function to generate normalised frequency counts which in turn were used as indicators of strengths of association between South Africa and each collaborating country. The normalised frequency count ranged between 0 and 1. The closer the figure was to 1, the stronger the collaboration ties between the respective country and South Africa. The reverse of this meant weaker relationships.

(6) *Compare South Africa's continental and international research collaboration's citation impact*: Two approaches were used to measure the impact of South Africa's research collaboration, namely:
   i. Continental and international citation counts and citations per paper were separately analysed in order to find out whether or not there are differences in research impact between international and continental collaborations.
   ii. Citation and citations-per-paper frequencies of papers that contained at least one South African institution's name and no name of an institution outside South Africa were compared with the citations/citations per paper of all papers containing a South African institution's name in the authors' addresses field to find out whether or not collaboration with an outside country changes South Africa's research impact and if so, by how much?

The number of citations per paper was used as an indicator of impact in both approaches.

Results and Discussion

The results are presented and discussed according to the objectives outlined in the methods and materials section and labelled as (1) to (6) above.

Trends of Single-Country-Author and Multiple-Country-Author Papers

As mentioned in the methodology, single-country-author papers refer to papers about South Africa authored by South African researchers only, represented in Fig. 1 as 'SA only'. This category of papers shows a slight increase from 2605 in 1986 to 2867 papers in 1987, a percentage increase of 10.1%. Apart from occasional increments, the number of single-country-author papers has declined steadily since 1988. For instance, the papers decreased from 2770 in 1988 to 2522 in 1989, and there was a further decline to 2477 in 1990. Generally speaking, the number of single-country-author papers decreased from 2605 in

1986 to 1815 in 2005. It is projected that this trend may continue as long as collaborations continue between South African researchers and their counterparts in other countries.

Multiple-country-author papers, on the other hand, have continued to increase since 1986, the year in which South Africa's papers co-authored with other countries totalled 332. The following year (i.e. 1987) yielded 424, a percentage increase of 27.7. There was a slight decline by 46 papers in 1988, which was followed by a growth rate of 4.2% in 1989, which registered a total of 394 papers. Thereafter, the growth of multiple-country-author papers accelerated, almost at an exponential rate and peaked at 1754 in 2004. In fact, the trend line indicates that the growth rate of multiple-country-author papers has steadily increased at a higher rate than the total number of South African papers, especially after 1994 when South Africa's apartheid regime was replaced by the Government of National Unity. This may imply an opening up of South Africa's collaboration space, both continentally and internationally. The SA-Agg line graph depicts the trend of growth of South Africa's total number of papers between 1986 and 2005.

Number of Collaborating Countries

Fig. 2 provides the number of countries that collaborated with South Africa in the production of research articles between 1986 and 2005. It was noted that the number of countries collaborating with South Africa, just as the number of multiple-country-author papers, has steadily increased from just 43 in 1986 to 115 in 2005. It was however noted that the growth rate has slowed down from 31.15% in 1995 to 3.60% in 2005. This trend is not entirely unique as the number of participating countries would initially grow at a fast rate and stabilise at some stage at which the distinction between core and periphery participants becomes clear. In their study on collaboration in HIV/AIDS research, Onyancha and Ocholla (2007) observed that South Africa collaborated with a total of 75 countries, comprising 51 foreign and 24 continental countries between 1980 and 2005. It would seem that the higher the number of fields included in the investigation, the higher the number of collaborating countries as revealed in this study, which has broadened the scope to include all fields of research.

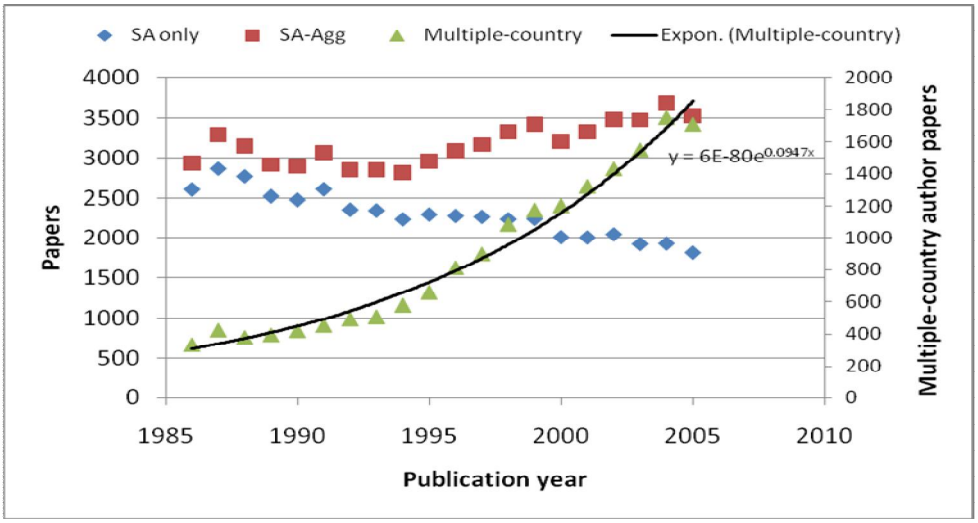


Fig. 1: Trends of single-country (South Africa) and multiple-country authored papers.

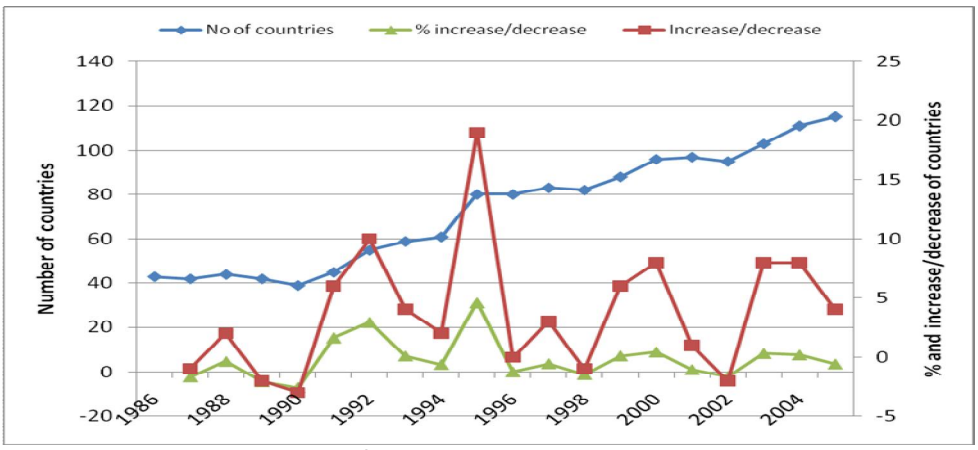


Fig. 2: Growth in the number of collaborating countries

Collaboration with Researchers in African and Non-African Countries

Overall, out of the 53 independent African countries, 46 (86.8%) participated in research collaboration with South Africa between 1986 and 2005. Table 1 shows that Zimbabwe was the leader with 224 articles, followed by Namibia (180), Kenya (168), Nigeria (123), Botswana (102), Ethiopia (77), Zambia (51), Tanzania (45), Mozambique (44) and Uganda (42). An examination of each country's contribution as a percentage of continental country-author papers reveals that the core continental collaborators were Zimbabwe, Namibia, Kenya, Nigeria and Botswana. It is worth noting that besides Kenya and Nigeria, the other three countries are located in the Southern Africa Development Community (SADC) region of which South Africa is also part. Other SADC countries which recorded a reasonably high number of multiple-country-author papers with South Africa are Zambia (51), Tanzania (45), Mozambique (44), Malawi (37), Swaziland (30), Madagascar (17) and Lesotho (15). Explaining this phenomenon, Onyancha and Ocholla (2007:252) observe that countries tend to collaborate more with their neighbouring countries. In their study on HIV/AIDS research collaboration in Kenya and South Africa, Onyancha and Ocholla (2007) found that Kenya collaborated more with countries in the eastern African region while South Africa's continental collaboration largely involved Southern African countries. Similar observations were made by Katz (1994), Liang and Zhu (2002, Moed, Glanzel and Schmoch (2004), and Lariviere, Gingras and Archambault (2006).

Table 1: South Africa's African Country Collaborators

	Papers	%[a]	%[b]	%[c]		Papers	%[a]	%[b]	%[c]
Zimbabwe	224	0.35	17.95	1.23	Cote d'Ivoire	13	0.02	1.04	0.07
Namibia	180	0.28	14.42	0.99	Mali	12	0.02	0.96	0.07
Kenya	168	0.26	13.46	0.93	Algeria	11	0.02	0.88	0.06
Nigeria	123	0.19	9.86	0.68	Zaire	11	0.02	0.88	0.06
Botswana	102	0.16	8.17	0.56	Sudan	8	0.01	0.64	0.04
Ethiopia	77	0.12	6.17	0.42	Gabon	8	0.01	0.64	0.04
Zambia	51	0.08	4.09	0.28	Congo	7	0.01	0.56	0.04
Tanzania	45	0.07	3.61	0.25	Angola	5	0.01	0.40	0.03
Mozambique	44	0.07	3.53	0.24	Eritrea	5	0.01	0.40	0.03
Uganda	42	0.07	3.37	0.23	Mauritius	4	0.01	0.32	0.02
Egypt	37	0.06	2.96	0.20	Rwanda	4	0.01	0.32	0.02

Malawi	37	0.06	2.96	0.20	Cen. Africa Rep.	4	0.01	0.32	0.02
Cameroon	31	0.05	2.48	0.17	Guinea	2	0.00	0.16	0.01
Swaziland	30	0.05	2.40	0.17	Guinea Bissau	2	0.00	0.16	0.01
Ghana	22	0.03	1.76	0.12	Seychelles	2	0.00	0.16	0.01
Senegal	19	0.03	1.52	0.10	Burundi	1	0.00	0.08	0.01
Madagascar	17	0.03	1.36	0.09	Chad	1	0.00	0.08	0.01
Benin	15	0.02	1.20	0.08	Comoros	1	0.00	0.08	0.01
Lesotho	15	0.02	1.20	0.08	Libya	1	0.00	0.08	0.01
Tunisia	15	0.02	1.20	0.08	Mauritania	1	0.00	0.08	0.01
Burkina Faso	14	0.02	1.12	0.08	Niger	1	0.00	0.08	0.01
Morocco	14	0.02	1.12	0.08	Sierra Leone	1	0.00	0.08	0.01
Gambia	13	0.02	1.04	0.07	Togo	1	0.00	0.08	0.01

Key:
%[a]: Country's % contribution to South Africa's total publication output (N=63426)
%[b]: Country's % contribution to continental multiple-country-author papers (N=1248)
%[c]: Country's % contribution to all multiple-country-author papers (N=18147)

Internationally, South Africa's country collaborators numbered 126. The USA was the leader with 5811 papers, followed by England (3274), Germany (2126), Australia (1627), Canada (1214), France (1152), Netherlands (810), Belgium (626) and Italy (625). The bibliometric principles of a few entities (i.e. authors and journals) accounting for the majority of publications also seem to hold in regard to countries which were the focus in this study since the USA, England and Germany accounted for 66.34% of the international multiple-country-author papers. This pattern was also witnessed in the continental research collaboration. A total of 123 countries produced the remaining 33.66% of the publications. Notably, researchers based in institutions in the USA are the majority collaborators with South African researchers (see also Onyancha and Ocholla, 2007; Jacobs, 2008; Sooryamoorthy, 2009a).

Table 2: South Africa's Collaborators outside Africa

	Papers	%[a]	%[b]	%[c]	Country	Papers	%[a]	%[b]	%[c]
USA	5811	9.16	34.39	32.02	Russia	275	0.43	1.63	1.52
England	3274	5.16	19.37	18.04	Denmark	251	0.40	1.49	1.38
Germany	2126	3.35	12.58	11.72	Peoples Rep. China	243	0.38	1.44	1.34
Australia	1627	2.57	9.63	8.97	Norway	182	0.29	1.08	1.00
Canada	1214	1.91	7.18	6.69	Finland	152	0.24	0.90	0.84
France	1152	1.82	6.82	6.35	Argentina	146	0.23	0.86	0.80
Netherlands	810	1.28	4.79	4.46	Hungary	140	0.22	0.83	0.77
Belgium	626	0.99	3.70	3.45	Greece	124	0.20	0.73	0.68
Italy	625	0.99	3.70	3.44	Chile	121	0.19	0.72	0.67
Scotland	550	0.87	3.25	3.03	Ireland	117	0.18	0.69	0.64
Israel	548	0.86	3.24	3.02	Wales	116	0.18	0.69	0.64
Switzerland	544	0.86	3.22	3.00	Mexico	113	0.18	0.67	0.62
Japan	469	0.74	2.78	2.58	Czech Republic	108	0.17	0.64	0.60

Sweden	422	0.67	2.50	2.33	Northern Ireland	100	0.16	0.59	0.55
Spain	401	0.63	2.37	2.21	Portugal	87	0.14	0.51	0.48
New Zealand	336	0.53	1.99	1.85	Taiwan	83	0.13	0.49	0.46
Austria	329	0.52	1.95	1.81	South Korea	81	0.13	0.48	0.45
Poland	320	0.50	1.89	1.76	Saudi Arabia	80	0.13	0.47	0.44
India	269	0.42	1.59	1.48	Turkey	80	0.13	0.47	0.44
Brazil	260	0.41	1.54	1.43	Ukraine	70	0.11	0.41	0.39

Key:
%[a]: Country's % contribution to South Africa's total publication output (N=63426)
%[b]: Country's % contribution to international multiple-country-author papers (N=16899)
%[c]: Country's % contribution to all multiple-country-author papers (N=18147)

A comparison of the research output resulting from the two categories of collaboration (i.e. continental and international) reveals that there is more collaborative activity at the international level than there is on the continental scene. Tijssen (2007:308) explains it thus:

> A fair share of the internationally co-authored publications can be attributed to genuine international cooperation, where researchers share and exchange ideas, resources and facilities. Part of it will result from non-African scientists and scholars with dual appointments, or those researchers on working visits and temporary stays in African countries (e.g. for field work) that list both their home address and temporary address, and vice versa in the case of scientists with a home country in Africa …

This argument is corroborated by Sooryamoorthy (2009a) who observes that international collaboration is preferred to domestic collaboration in the publication of South Africa's scientific papers. Domestic collaboration, in this case, refers to continental collboration, that is collaboration between South Africa and another African country. Similar findings were noted by Onyancha and Ocholla's (2007) study on HIV/AIDS research and Jacobs' (2008) study on natural and applied sciences. While noting that 12 (out of the 15 countries investigated) African countries' research was largely through collaboration, Narvaez-Berthelemot, Russell, Arvanitis, Waast and Gaillard (2002) noted that South Africa's international collboration accounted for less than 30% of the total country's scientific publications. The authors did not, however, compare continental (i.e. African) collaboration and international collboration.

Strengths of Association Between South Africa and its Collaborators

In bibliometrics, the strengths of association between participating entities are computed using different approaches. The use of Krsul's (2002) mathematical function is one such approach. The other approach involves the normalisation of raw frequency counts using UCINET's analytic approaches. The latter was used to examine how strong the partnerships between South Africa and its country collaborators are. According to the compilers of UCINET (Borgatti, Everett and Freeman, 2002), the euclidean technique of normalisation "standardizes the euclidean norm to be one. This is achieved by dividing the rows, columns or matrix by the current Euclidean norm" thereby producing values for each pair of factors in a matrix. The values reflect the strength of association among the participating elements in a matrix. International collaborations produced the following normalised frequency counts for the top country collaborators: USA (0.065), England (0.037), Germany (0.024), Australia (0.018), Canada (0.014), France (0.013), Netherlands (0.009), Belgium (0.007), Italy (0.007), Scotland (0.006), Israel (0.006), Switzerland (0.006), Japan (0.005), Sweden (0.005) and Spain (0.005).

Continentally, South Africa's strength of association with African countries registered the following scores: Zimbabwe (0.003), Namibia (0.003), Kenya (0.003), Nigeria (0.002) and Botswana (0.002). Others include Ethiopia, Zambia, Tanzania, Mozambique, Uganda, Egypt and Malawi which

scored a strength value of 0.001 each. The rest of the countries yielded zero normalised frequency counts, which implies minimal partnership with South Africa. As a score of 1.00 would indicate absolute collaboration, it follows that the strength of association values generated by South Africa's continental and international collaborators indicates very weak relationships. This pattern is also reflected in the percentage contribution of each country in relation to the total number of publications produced by South Africa between 1986 and 2005 (i.e. 63426) shown in Tables 1 and 2 as %[a]. For instance, the leading international collaborator – the USA – participated in the authorship of a mere 9.16% of South Africa's total publications, followed by England (5.16%), Germany (3.35%), and Australia (2.57%) while South Africa's leading continental collaborator – Zimbabwe – contributed even a smaller portion (i.e. 0.35%) of the country's total research output.

Citation Impact of South Africa's Continental and International Collaboration

The figures in table 3 show the number of articles and citations that were respectively produced and received by continental-only and international-only collaborations. The purpose of this analysis was to compare the citation impact of South Africa's continental and international collaboration. The table reveals that, throughout the entire period of study, international collaboration registered higher scores in terms of the number of citations and the h-index while there was a mixed pattern when comparing the citation impact of the two types of collaboration by the number of citations per paper. International collaboration's average citations were higher than those of continental collaboration in 1986-1990 (22.20) and 1996-2000 (20.80) while continental collaboration emerged on top in 1991-1995 (45.66) and 2001-2005 (15.15). This pattern, generally, reveals that, whereas international collaboration yields more citations, its citations per paper is slightly lower than that of continental collaboration. The higher values of the h-index in terms of international collaboration can partly be attributed to a higher number of papers produced through international than through continental collaboration.

Table 3: Impact of South Africa's Research Collaboration

	1986-1990	**1991-1995**	**1996-2000**	**2001-2005**
Papers				
Continental	73	87	334	754
International	1891	2644	4998	7366
Citations				
Continental	945	3972	6525	11424
International	41988	64960	103979	109619
Citations/paper				
Continental	12.95	45.66	19.54	15.15
International	22.20	24.57	20.80	14.88
H-index				
Continental	18	28	38	47
International	84	96	106	99

Table 4: Comparison of Citation Impact of Internally and Externally Authored Papers

	South Africa only				South Africa with the rest of the World			
	Papers	*Citations*	*Cites/paper*	*h-index*	*Papers*	*Citations*	*Cites/paper*	*h-index*
1986	2605	27640	10.6	59	2937	34137	11.6	65
1987	2867	29308	10.2	58	3291	38427	11.7	69
1988	2770	29502	10.7	58	3148	37692	12.0	67
1989	2522	21889	8.7	49	2916	30697	10.5	61
1990	2477	25875	10.5	56	2897	35797	12.4	69
1991	2609	25873	9.9	56	3063	38426	12.6	69
1992	2356	24890	10.6	53	2849	36711	12.9	69
1993	2346	22210	9.5	50	2853	35045	12.3	67
1994	2237	21990	9.8	53	2815	34010	12.1	68
1995	2297	20872	9.1	49	2955	37096	12.6	65
1996	2279	19866	8.7	49	3091	37508	12.1	69
1997	2268	18866	8.3	46	3167	36848	11.6	67
1998	2238	18400	8.2	46	3323	42423	12.8	68
1999	2244	17013	7.6	41	3418	39338	11.5	66
2000	2011	16108	8.0	44	3212	39664	12.4	70
2001	2007	13801	6.9	37	3327	39281	11.8	65
2002	2047	13848	6.8	36	3478	33803	9.7	59
2003	1925	11284	5.9	34	3475	34759	10.0	62
2004	1931	10471	5.4	31	3685	34280	9.3	60
2005	1815	7746	4.3	28	3526	26829	7.6	49

Table 4 compares the citation impact of papers that were authored within South Africa with those co-authored by South African scholars and any other scholar(s) from outside South Africa. Results reveal that, throughout the entire period of study, the average number of citations per paper (as an indicator of citation impact or research impact) was higher for international collaboration than for that generated by papers authored within South Africa. A similar pattern was witnessed in the analysis of the h-index, which is another way of measuring impact.

Subject Focus in South Africa's Continental and International Research Collaboration

A subject content analysis of the literature on any given subject field or discipline is intended to serve different purposes, among which are the following: (a) to monitor the changing level of interest by researchers on a given subject; (b) to track the introduction of new terms that reflect innovations and discoveries in the knowledge base; (c) to mirror what happens to subject access as the knowledge base and environment of a discipline grow and/or change; (d) to describe a concept or topic using the related terms; and (e) to establish core terms upon which a particular subject's curriculum can be developed (see Macias-Chapula, Sotolongo-Aguilar, Magde and Solorio-Lagunas, 1999:565; Bierbaum and Brooks, 1995; Onyancha and Ocholla, 2009).

This study examined the subject categories that were the focus of both continental and international collaboration in order to (a) check for shifts of research interest and (b) identify the subject focus of local and international scholars when conducting research through collaborations. In total, 230 subject categories were identified in international collaborations while 159 subject categories constituted focus areas of research collaboration by continental collaborating scholars. The most targeted subject area in the international collaboration category was *astronomy and astrophysics* which yielded 1071 (6.34%)

records followed by *biochemistry and molecular biology* (728), *plant sciences* (666), *ecology* (657), *zoology* (538), *mathematics* (474), *pharmacology & pharmacy* (465), *immunology* (459), *infectious diseases* (459) and *microbiology* (450). On the local/continental scene, South Africa's collaboration with African countries is largely focused on *veterinary sciences* which yielded 101 (8.09%) records followed, by *ecology* (86), *public, environmental and occupational health* (80), *environmental sciences* (71), *plant sciences* (70), *zoology* (66), *infectious diseases* (59), *tropical medicine* (53), *multidisciplinary sciences* (50) and *biochemistry and molecular biology* (49). A comparison of the aforementioned subject areas of international and continental collaboration revealed that the priorities in both cases are different. Although the majority of the focus areas in international collaboration featured in the continental collaboration category, their ranking differed greatly. For instance, whereas *veterinary sciences* was ranked number 20 in international collaboration, it was ranked number one continentally. Perhaps this explains that local researchers' common interest (or research among African scholars) differs from that held among international scholars. Whereas continental research areas are largely dictated by unique problems which are common to most countries in Africa, subject areas of research in international collaboration are usually determined by the international community which, in most cases, funds the research. It is not unique to find that international scholars who would like to collaborate with continental counterparts steer research in such a way that it focuses on research areas (i.e. niche areas) of the latter's institutional or country of affiliation, especially in situations where their countries or institutions are the main or sole funding institutions or countries. On the other hand, continental collaboration focuses on common problem areas, a situation that may explain the high ranking of such subject categories as *ecology*, *public health*, *environmental sciences*, *plant sciences*, and *tropical medicine* besides *veterinary sciences*.

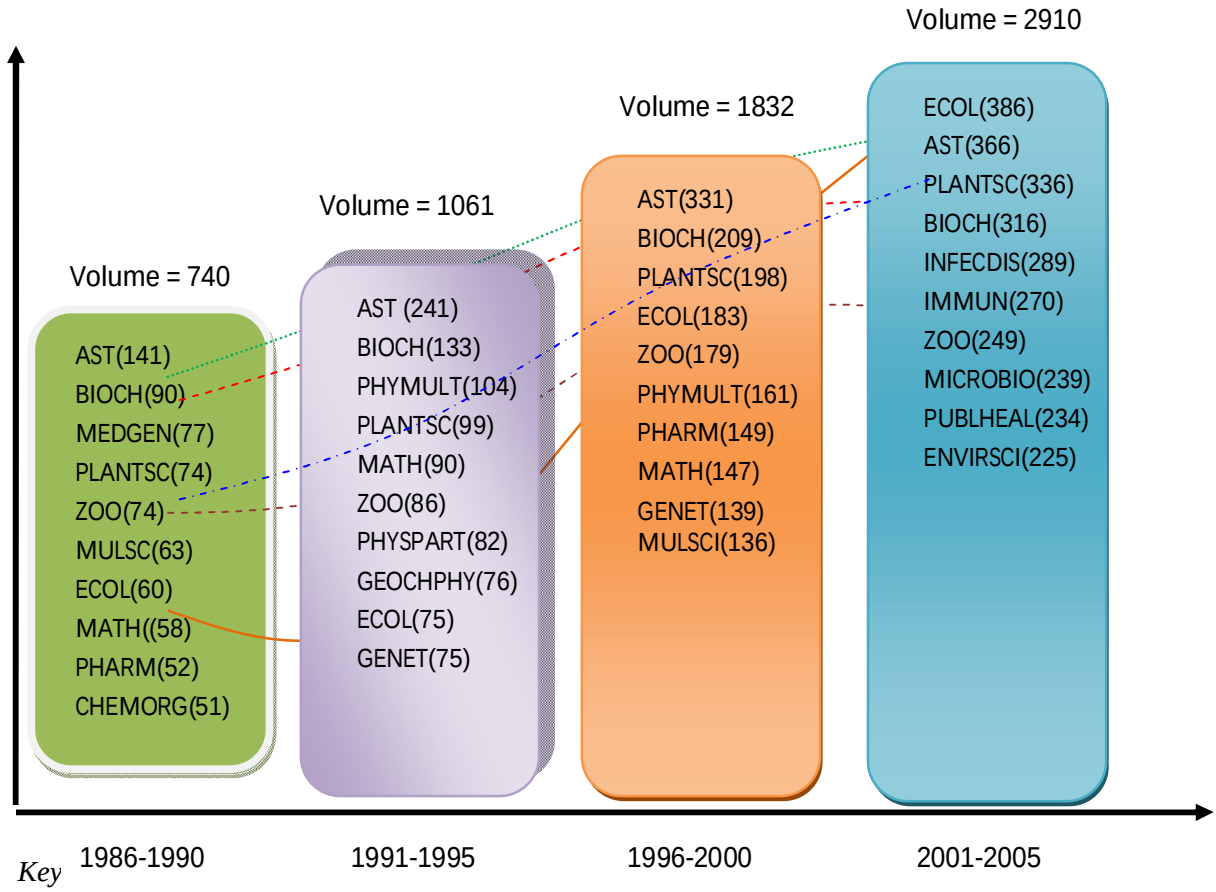


Fig. 3: Shifts in collaboration in selected subject focus areas

Volume: volume of co-published papers in the top 10 subject categories in each year period
Subject categories: *AST* (Astronomy and Astrophysics); *BIOCH* (Biochemistry and Molecular Biology); *MEDGEN* (Medicine, General and Internal); *PLANTSC* (Plant Science); *ZOO* (Zoology); *MULSC* (Multidisciplinary science); *ECOL* (Ecology); *MATH* (Mathematics); *PHARM* (Pharmacology and Pharmacy); *CHEMORG* (Chemistry, Inorganic and Nuclear); *PHYMULT* (Physics, Multidisciplinary); *PHYSPART* (Physics, Particles and Fields); GEOCHPHY (Geochemistry and Geophysics); GENET (Genetics and Heredity); IMMUN (Immunology); MICROBIO (Microbiology); ENVIRSCI (Environmental Science); PUBLHEAL (Public, Environmental and Occupational Health)

None of the patterns above (both continental and outside Africa) reflects South Africa's research output in different subject categories as shown in Sooryamoorthy (2009a). According to Sooryamoorthy's study, the most researched areas in South Africa include: *general and internal medicine*, *plant sciences*, *zoology*, *multidisciplinary sciences*, *ecology*, *biochemistry and molecular biology*, *surgery*, *veterinary sciences*, and *marine and freshwater biology*. It therefore follows that the most productive research area undertaken through collaborative initiatives is not always the most researched subject area in a country. Concerning the shifts of collaboration in the top ranking research areas, Fig. 3 reveals that *astronomy and astrophysics*, which dominated the scene from 1986 to 2000 was ranked in the second position behind *ecology* in the 2001-2005 period. *Ecology* has therefore emerged as the most researched area in South Africa's overall collaborative research. It was ranked in position seven in 1986-1990, 9 in 1991-1995, four in 1996-2000. Other subject areas that have maintained their presence among the 10 top ranking subject categories include: *astronomy and astrophysics*, *biochemistry and molecular biology*, *plant science*, *zoology*, and *ecology*.

Conclusions and Recommendations

Research collaboration between South Africa and other countries has increased since 1986, with most of it being recorded after 1994 when the government of national unity was formed. In fact, the growth pattern of the collaborated publications is exponential. This pattern is likely to persist now that South African scholars are increasingly becoming visible, both continentally and internationally. Onyancha and Ocholla (2007) argue that not only does South Africa continue to attract skilled manpower from other African countries, but the country also boasts a well-developed and quality education system which attracts students, especially at postgraduate level, from neighbouring countries. South African institutions of higher learning continue to dominate various rankings of African research institutions and organisations (cf. the Academic Ranking of World Universities (ARWU) drawn by the Institute of Higher Education of Shanghai Jiao Tong University (http://www.arwu.org/); World University Ranking of the Times Higher drawn in collaboration with a private company QS Quacquarelli Symonds (http://www.topuniversities.com/); World Universities' Ranking on the Web, maintained by Interlab (http://www.webometrics.info/); and of late, SCImago Institutions Ranking (http://www.scimagoir.com/). These rankings may possibly be influencing the decisions by scholars and students from other African states to migrate to South Africa thereby boosting the country's publications output through collaborative research.

The USA continues to top the list of the countries that collaborate with South Africa. Previous studies (e.g. Jacobs, 2008; Molatudi, Molotja and Pouris, 2009; Narvaez-Berthelemot et al., 2002; Onyancha and Ocholla, 2007; Sooryamoorthy, 2009a) indicate that the USA is the leading collaborator with South Africa in various fields. Generally, it was observed that the industrialised nations (or developed countries) contribute the majority of the externally collaborating publications. For instance, the collaborated publications of the leading three countries (i.e. the USA, England and Germany) account for over 60% of the total multiple-country-author papers. This pattern may slightly change as scholars from the rest of Africa are likely to improve South Africa's continental collaboration since some universities in the country are promoting visits by scholars from the continent.

As regards impact, it has been shown that South Africa's external research collaboration yields higher citation impacts than internally collaborated research (Onyancha and Ocholla, 2007; Sooryamoorthy, 2009b). Generally speaking, South Africa's domestic/continental and internal collaboration yields lower citation impact values when compared to internationally collaborated publications. This, in our view, presents a strong case for justifying international collaboration on the part of South African researchers, as in so doing both their international visibility and their citation influence will be improved. Skills and knowledge transfer among the collaborating scientists will also be enhanced.

The similarities and differences in subject focus of continental and international research collaboration were noted in this study. Among the top twenty subject areas that featured in continental collaboration but not in international collaboration are: *tropical medicine*, *agriculture, dairy and animal science*, *food science and technology*, *entomology*, *parasitology*, *meteorology and atmospheric sciences*, and *virology*. These areas may constitute unique but common areas of interest of African researchers. Blignaut (2005) outlines several problems that are characteristically unique to most African countries. The majority of Blignaut's problems fall into the subject categories listed above. It is worth saying therefore that Africa's problems should constitute collaborative research areas of interest among African scholars since research is intended to solve the socio-economic and political problems unique to a particular geographical region. Unfortunately for Africa, most decisions about the subject areas of research collaboration, especially at the international level, are made by foreign countries which fund most research in developing countries. This affects South Africa to an extent. However, South Africa has the potential in terms of the available financial and human resources to dictate the choice of research focus areas for collaboration within and outside Africa. These areas would include those highlighted by Blignaut (2005), such as the following: subsistence agriculture, land productivity, population growth, food production, animal rearing and its effect on limited land, extensive use made of biomass and fuelwood for cooking, heating and lighting purposes, the harvesting of wood for energy purposes leading to the loss in biodiversity, vegetation cover and eventually land degradation and desertification, the consequences of the prevalence and impact of HIV/Aids and the pending land reforms

References

Adams, J., Gurney, K. and Marshall, S. (2007). Patterns of International Collaboration for the UK and Leading Partners: A Report Commissioned By the UK Office of Science and Innovation. Retrieved 29 June 2009, From Http://Www.Berr.Gov.Uk/Files/File40396.Pdf.

Bierbaum, E.G. and Brooks, T.A. (1995). The Literature of Acquired Immunodeficiency Syndrome (AIDS): Continuing Changes in Publication Patterns and Subject Access. *Journal of the American Society for Information Science*, 46(7) 530-536.

Blignaut, J. (2005). Fixing Africa's Problems. [Online]. *Vryeafrikaan*, 2(29). Retrieved 24 October 2009 From Http://Www.Jabenzi.Co.Za/Pdfs/Vryeafrikaan4%20-%20fixing%20the%20problems.Pdf.

Borgatti, S.P., Everett, M.G. and Freeman, L.C. (2002). *Ucinet 6 for Windows*. Harvard: Analytic Technologies.

Coovadia, H.M. (1999). Sanctions and the Struggle for Health in South Africa. *American Journal of Public Health*, 89(10) 1505-1508.

Diodato, V. (1994). *Dictionary of Bibliometrics*. New York: Haworth.

Human Sciences Research Council [HSRC]. (2005). Collaboration in Africa. Retrieved 10 December 2010, from Http://Www.Hsrc.Ac.Za/Document-64.Phtml.

Jacobs, D. (2008). An Informetric Analysis of Publication and Research Collaboration Patterns in Natural and Applied Sciences in South Africa. *South African Journal of Libraries and Information Science*, 74(1) 41-48.

Katz, J.S. (1994). Geographical Proximity and Scientific Collaboration. *Scientometrics*, 31(1) 31-45.

Katz, J.S. and Hicks, D. (1997). How much is a Collaboration Worth? A Calibrated Bibliometrics Model. *Scientometrics*, 40(3) 541-554.

Krsul, I. (2002). *Co-Word Analysis Tool*. Retrieved 02 December 2009, From Http://Www.Krsul.Org/Ivan/Coword/Algorithmdescription.Pdf.

Lariviere, V., Gingras, Y. and Archambault, E. (2006). Canadian Collaboration Networks: A Comparative Analysis of the Natural Sciences, Social Sciences and Humanities. *Scientometrics*, 68(3) 519-533

Levy, P.L. (1999). *Sanctions On South Africa: What Did They Do?* Center Discussion Paper No 796. New Haven, Connecticut: Economic Growth Center, Yale University. Retrieved 26 October 2009 From Http://Www.Econ.Yale.Edu/Growth_Pdf/Cdp796.Pdf.

Liang, L. and Zhu, L. (2002). Major Factors Affecting China's Inter-Regional Research Collaboration: Regional Scientific Productivity and Geographical Proximity. *Scientometrics*, 55(2) 287-316.

Macias-Chapula, C.A., Sotolongo-Aguilar, G.R., Magde, B., and Solorio-Lagunas, J. (1999). Subject Analysis of AIDS Literature, As Produced in Latin America and the Caribbean. *Scientometrics*, 46(3) 563-574.

Medical Research Council (MRC). (2007). Capacity Development & Collaborations. Retrieved 12 June 2009, From Http://Www.Mrc.Ac.Za//Researchdevelopment/Resdev.Htm.

Moed, H.F., Glanzel, W. and Schmoch, U. (Eds). (2004). *Handbook of Quantitative Science and Technology Research: The Use of Publication and Patent Statistics in Studies of S&T Systems*. Dordrecht: Kluwer Academic Publishers.

Molatudi, M., Molotja, N. And Pouris, A. (2009). A Bibliometric Study of Bioinformatics Research in South Africa. *Scientometrics*, 81(1) 47-59.

Narvaez-Berthelemot, N., Russell, J., Arvanitis, R., Waast, R. And Gaillard, J. (2002). Science in Africa: An Overview of Scientific Output. *Scientometrics*, 54(2) 229-241

National Research Foundation. (2009). Latest News. Retrieved May 28, 2009, From Http://Www.Nrf.Ac.Za/.

Onyancha, O.B. (2009). Towards Global Partnerships in Research in Sub-Saharan Africa: An Informetric Study of the National, Regional and International Country Collaboration in HIV/AIDS Literature in Eastern and Southern Africa. *South African Journal of Libraries and Information Science*, 75(1) 84-97.

Onyancha, O.B. and Ocholla, D.N. (2007). Country-Wise Collaborations in HIV/AIDS Research in Kenya and South Africa, 1980-2005. *LIBRI*, 57 239-254.

Saunders, C.C. and Southey, N. (2001). *A Dictionary of South African History*. 2nd Ed. Claremont: David Philip Publishers (Pty) Ltd.

Schoeman, E. (1988). *South African Sanctions Directory, 1946-1988*. Johannesburg: South African Institute of International Affairs.

Sooryamoorthy, R. (2009a). Collaboration and Publication: How Collaborative are Scientists in South Africa? *Scientometrics*, 80(2) 419-439.

Sooryamoorthy, R. (2009b). Do types of Collaboration Change Citation? Collaboration and Citation Patterns of South African Science Publications. *Scientometrics*, 81(1) 177-193.

Tijssen, R.J.W. (2007). Africa's Contribution to the Worldwide Research Literature: New Analytical Perspectives, Trends, and Performance Indicators. *Scientometrics*, 71(2) 303-327.

Wehr, P., Burgess, H. and Burgess, G. (1994). *Justice without Violence*. Boulder, Colorado: Lynne Rienner.

*** Omwoyo Bosire Onyancha** is an Associate Professor at the Department of Information Science, University of South Africa. His areas of research interest include informetrics, information resources management, knowledge management, information searching and retrieval, informatics, and research evaluation.

Afr. J. Lib & Inf. Sc. Vol.21, No. 2 (2011) 117-125

Mentoring and its Impact on the Publication Output of Librarians in Selected Academic Libraries in South-West Nigeria

Felicia Yusuf
yusuffelicia@yahoo.co.uk
Landmark University Library
Omu Aran, Kwara State, Nigeria

Abstract

The paper examined the possible role of mentoring in explaining the publication output of librarians in selected academic libraries. The paper sought to find out the number of papers that the academic librarians published annually, whether they are required to publish the same number of papers for promotion to particular grades as required of mainstream academics in their universities, whether they had mentors, and their perceptions of the impact of mentoring on their publication output. Data were collected from 66 academic librarians in four purposively selected universities in South-West Nigeria. Mentoring was perceived by the librarians to have a positive impact on their publication output, and that the major constraints on their publication efforts were their routine jobs and inability to conceptualise research topics. The study recommends that upcoming academic librarians should have mentors and collaborate with their senior colleagues until they are able to acquire the necessary skills to conceptualize research and publish quality papers. They should also transfer some of their routine duties to para-professionals in their libraries in order to be able to concentrate more on research-related activities such as reading extensively other peoples' works.

Introduction

Research is an important component in the growth and development of academics in general. The decision in the Nigerian university system to accord librarians in academic libraries academic status brought along with it the requirement of them to publish in reputable journals. Ekoja and Oji (1999) averred that the attainment of faculty status by the academic librarians carries with it such responsibilities as teaching, research and publications. As Odusanya and Amusa (2006) also noted, academic librarians are expected to publish extensively in both local and foreign journals and other outlets in order to merit promotion, notwithstanding any remarkable performances on the other criteria for promotion. This is not peculiar to academic librarians in Africa as, for instance, Kuyper-Rushing (2001) had stated that the Louisiana State University has rigorous tenure and promotion guidelines, and that librarians must meet these expectations just as the teaching faculty does.

Accordingly, along with the grant of academic recognition for academic librarians came the albatross of publish or perish. Oduwole and Adediji (2006) observed that all universities and research institutes in Nigeria consider scholarly publication as a prerequisite to promotion and career development of their academics. This has made librarians, especially those young and desirous of progress in their careers, to be running from pillar to post in order to publish high quality articles in reputable journals. One of the possible ways to facilitate this and cushion the associated stress, especially among those new in the academic librarianship field, is through the instrumentality of mentoring. Young academic librarians can seek or be paired either formally or informally with more senior people in the profession in order to learn and master the research terrain.

Research Problem and Objectives

The requirement that academic librarians publish in reputable journals, and simultaneously also meet up with the demands of their routine jobs in order to be promoted, has left many of them in a fix. Academic librarians, especially those young in the profession, find it difficult to write publishable articles which in turn leaves them stagnated and frustrated in particular positions in their libraries. This study therefore sought to investigate the challenges that the librarians face and the potential influence of mentoring in improving their publication output. Accordingly, the study sought to achieve the following objectives:

1. Find out whether academic librarians are required to publish the same number of papers for promotion to particular grades as required of teaching academics.
2. Determine the number of papers that the academic librarians publish annually.
3. Investigate the kind of journals the librarians publish in.
4. Ascertain if the librarians have mentors and the possible impact of mentoring on their publication output.
5. Investigate the constraints on the publication output of the librarians.
6. Recommend strategies for tackling the challenges that the librarians face.

Literature Review

Previous studies in Nigeria have revealed that the publication output of librarians is low. Ogbomo (2010) lamented that despite the benefits of publications to librarians, their publication output is low partly because the requirement to publish is an entirely new one for librarians in Nigeria. She further stated that in the past, librarians had only three requirements for promotion which are two to four years work since the last promotion, availability of vacancies and satisfactory performance. This however is no longer the case as scholarship has been introduced as one of the major criteria for promotion, and this has left many librarians stranded in positions and influenced their career development adversely. Powell, Baker and Mika (2002) and Utulu (2005) adduced the low publication output of librarians to lack of training which hinders the acquisition of adequate research and writing skills and identification of research problems and topics. Oduwole and Adediji (2006) proposed that library and information science (LIS) professionals need to acquire skills in researching and reporting usable research findings, and that honing these skills would help in the production of quality papers, as well as promoting their careers and LIS research.

Engaging in research and publishing the output of same is highly beneficial to librarians. This, according to Gregory and Medford (2006), is because it allows them to maintain their faculty status, obtain promotions and avail them the opportunity of adding to the body of knowledge. Verzosa (2007) also believes that it is very important for librarians to engage in research, as this will add value to librarianship. She however lamented that research in librarianship, particularly in the Philippines, is disappointing, and that although there is abundance of well educated, well trained library professionals, there is an unfortunate shortage of research-oriented librarians. In contrast to Verzosa's findings, Bahr and Zemon (2000) opined that academic librarians in the Western countries publish a lot.

Mentoring, as perceived by Igbokwe (2006), is a supportive one-on-one relationship between an accomplished individual and an aspiring individual to facilitate the aspirant's growth and development. Lary (1998) described mentoring as a professionally supportive relationship between an experienced, successful, mid-career employee and a beginner. She further opined that it is a time honoured method of encouraging new talent, and of sharing expertise and connections towards promoting rapid, upward mobility. Commenting on the role of mentoring and mentors, Carson (1992) avers that no one is truly self-made, but that people give their best so that others could learn to give their best.

Mentoring relationships in academics can either be formally or informally contracted. Odusanya and Amusa (2006) described informal mentoring relationship as one that develops on its own between partners, while the formal mentoring are administratively assigned relationships. Roberts (1986), writing on mentoring in the academic library, described the mentoring relationship as one that allows new people

to observe organisational and unit activities, functions, goals, policies and procedures through consultation with experienced professionals.

Harway (2001), citing Kram (1983), described the process of becoming involved in a mentor-mentee relationship as consisting of four phases. Initiation is the first phase which she described as a scenario where mentor and mentee select each other and begin to learn about the other's style and habits. The second phase is cultivation, which leads to increases in mentoring behaviours and the development of a strong relationship between mentor and mentee. The third phase of redefinition occurs when the mentoring relationship changes into what more closely resembles a peer relationship. The final phase, separation, is when the mentoring relationship ends, often as a result of geographic separation. A mentor's role involves providing support and resources to his/her mentee. He/she is also expected to facilitate a supportive and developmental relationship with the mentee.

Mentoring is beneficial both to the mentor and the mentee. Eby (2007) listed learning, developing personal relationships and enhancing managerial skills as some of the benefits of mentoring to the mentor. Farnes (2003) also highlighted the following as benefits of mentoring to both parties:

Mentee benefits:

- It aids induction into a new job culture.
- It helps in the process of understanding formal and informal structures of the organisation.
- It helps with developing skills in a structured way based on individual needs.
- It improves professional and personal networks.
- It provides an opportunity for a new member of staff to reflect on his/her own progress and resolve his/her own problems.

Mentor benefits:

- It broadens his/her own skills and knowledge.
- It brings new insight into the organisation.
- It enables him/her to demonstrate additional skills in developing other individuals.
- It consolidates and extends his/her professional networks.

Despite these important benefits of mentoring to the mentor and mentee alike, there are however some pitfalls associated with mentoring in academics which Odusanya and Amusa (2006) identified as absence of academic culture, issues bordering on integrity or distrust in the mentoring relationship, paucity of mentors and non-conducive work environments. For an individual to be adjudged to be a good mentor, he/she must possess the following characteristics as outlined by Free Management Library (2010):

- A desire to help.
- Positive experiences to share.
- A good reputation for developing others.
- Time and mental energy to devote to the relationship.
- Up-to-date knowledge.
- Learning attitude.
- Effective mentoring skills.

Methodology

The descriptive survey method was used in the study. Four universities were randomly selected from three states selected purposively out the six states in South-West Nigeria. The universities were: Covenant

University (private university, Ogun State) and Tai-Solarin University of Education (public university, Ogun State); University of Lagos (first generation public university, Lagos State), and Nigeria's oldest university, the University of Ibadan (public university, Oyo State). Two universities were chosen from Ogun State because it has the highest number of universities in the South-West region. A total of 66 librarians in the four academic libraries participated in the study. In each of the four universities, librarians from the status of Assistant Librarian who have worked for three (3) years and above and who were present as at the time of this study were used as respondents. A total of 88 librarians across the four academic libraries were contacted to participate in the study, and 22 (25%) failed and/or declined to return the questionnaire.

A questionnaire was designed and self-administered by the sampled librarians to collect data during May to June 2010. Out of the 88 copies of the questionnaire distributed to the librarians, 66 (75%) were duly completed, retrieved and used for the analysis. Table 1 provides the distribution and returns of copies of the questionnaire by university.

Table 1: Distribution and Returns of Questionnaire by University

University	**(a) Copies distributed**	**(b) % of copies distributed (a)/88**	**(c) Copies retrieved**	**(d) Response rate [(c)/(a) * 100]**
University of Lagos (UNILAG)	25	28	18	72.0
Covenant University (CU)	11	13	11	100.0
University of Ibadan (UI)	30	34	20	66.7
Tai Solarin University of Education (TASUE)	22	25	17	77.2
Total	**88**	**100**	**66**	**75.0**

Almost two-thirds (62%) of the 66 sampled librarians were female. In terms of their qualifications, 18% of them had BLS degrees; 73% had MLS degrees and 9% had doctoral degrees. Table 2 provides their work experience and status characteristics, which indicate that most of them (67%) were in the lower to mid-level positions of Librarian II, Librarian I and Senior Librarian.

Table 2: Work Experience and Status of the Respondents

Work experience	**Frequency**	**%**		**Status**	**Frequency**	**%**
1-3 years	10	15		Assistant Librarian	08	12
4-6 years	15	23		Librarian II	17	26
7-9years	28	42		Librarian I	15	23
10 years or more	13	20		Senior Librarian	12	18
				Principal Librarian	10	15
				Deputy University Librarian	04	06
Total	**66**	**100**		**Total**	**66**	**100**

Data Analyses and Findings

Quantity of Publication Output Expected of Academic Librarians

All the sampled librarians affirmed that they were expected to publish the same number of papers as other academics. This confirms that, compared to academics in university faculties, the librarians were or at least did not perceive themselves as enjoying any favour in terms of the quantities of publication output required for promotion to various grades.

Papers Published

Table 3 shows the publication output reported by the respondents per year and in total in their career. From the table, almost three-quarters (73%) of the respondents were publishing one or two papers per year, and only 12% published more than 3 papers per year. Also, the respondents with total publications of between six and nine were almost two-fifths (38%). This shows that, at least in terms of quantity of publications, the sampled librarians were doing quite well.

Table 3: Number of papers Published in a year and Overall

Papers per year	Frequency	%		Total publications	Frequency	%
1	28	43		0-2	18	27
2	20	30		3-5	15	23
3	10	15		6-9	25	38
> 3	08	12		> 9	08	12
Total	**66**	**100**		**Total**	**66**	**100**

Table 4 shows the types of journals in which the respondents published. Almost all the respondents had published in local journals– all the respondents from University of Lagos and Covenant University had published in local journals while 90% and 88% of the respondents from University of Ibadan and Tai Solarin University of Education had published in such journals, respectively. Also, between 82 and 85 per cent of the respondents from University of Lagos, Covenant University and University of Ibadan had published in international journals while only 53% of those from Tai Solarin University of Education had done so. Slightly more of the respondents had published in academic journals than in professional journals. Only one respondent each from University of Lagos and University of Ibadan claimed to have published in high impact journals.

Table 4: Types of journals where Respondents Publish

Type of Journal	University of Lagos		Covenant University		University of Ibadan		Tai Solarin University of Education	
	N	%	N	%	N	%	N	%
Local	18	100	11	100	18	90	15	88
International	15	83	9	82	17	85	9	53
High Impact	1	6	-	-	1	5	-	-
Professional	15	83	5	45	18	90	7	41
Academic	15	83	7	64	18	90	14	82
Others	-	-	-	-	-	-	-	-

Percentages are proportions of respondents from each university who published in each type of journal.

Barriers to Research and Publication Output

The respondents were asked to specify the barriers that limit their efforts to improve the quantity and quality of their research output. Table 6, which summarises their responses, shows that four barriers were mentioned. The routine nature of their job tasks was the most frequently mentioned barrier, mentioned by all the respondents from Covenant University and Tai Solarin University of Education, as well as 89% and 85% of the respondents from University of Lagos and University of Ibadan, respectively (Table 5). The second most frequently mentioned barrier was inability to conceptualise research topics, mentioned by between 56 and 64 per cent of the respondents from the four universities, and the third barrier was frustration arising from rejection of articles submitted for publication.

Table 5: Barriers to effective Research Output of Respondents

Barriers	University of Lagos		Covenant University		University of Ibadan		Tai Solarin University of Education	
	N	%	N	%	N	%	N	%
Inadequate research skill	06	33	04	36	7	35	07	41
Routine jobs of librarians	16	89	11	100	17	85	17	100
Inability to conceptualize research topics	10	56	07	64	11	55	10	59
Frustration arising from unacceptability of articles for publication	08	44	03	27	07	35	11	65
Others	02	11	-	-	-	-	01	06

Percentages are proportions of respondents from each university who mentioned each barrier.

Impact of Mentor-Mentee Relationships

When respondents were asked if they had mentors, Tai Solarin University of Education (all respondents), University of Ibadan (75%), Covenant University (81%) and University of Lagos (88%) agreed thay had mentors. Table 6 also shows that most of the respondents agreed that their mentor-mentee relationships had helped in different ways to ameliorate the barriers to improved research output, with 83% (University of Lagos), 82% (Covenant University), 80% (University of Ibadan) and 65% (Tai Solarin University of Education) of the respondents affirming.

Table 6: Impact of Mentor-Mentee Relationship on Research Output

Impact of mentoring relationships	University of Lagos		Covenant University		University of Ibadan		Tai Solarin University of Education	
	N	%	N	%	N	%	N	%
It has sharpened myresearch skills	9	50	8	73	6	30	7	41
I can now conceptualize research topics	16	89	9	82	13	65	11	65
It has helped me to publish articles in reputable journals	15	83	9	82	16	80	11	65
There is no improvement in my research abilities	0	0	0	0	7	35	3	18
Undecided	3	17	2	18	4	20	1	6

Percentages are proportions of respondents from each university who mentioned each barrier

Discussion

The routine job tasks that academic librarians often have to perform were identified as biggest barrier to their publication output. Such routine tasks are performed either because the professional librarians do not or cannot delegate the tasks adequately to para-professionals, or that there are insufficient para-professionals to delegate to. Research work usually demands quality time, often in seclusion, to read widely and think deeply about research topics and projects. In the context of the finding on the adverse role of routine tasks, it is clear that academic librarians need to recognise and pay adequate attention to their intellectual roles in the academic environments where they work, delegate effectively to their subordinates and/or push for the adequate staffing of their libraries at the lower levels, and devote more time on their research tasks.

Almost all the 66 sampled librarians published in local journals, and much fewer published in international journals, and only two reported publishing in high impact journals. One reason for this is that international journals and high impact journals, in particular, demand papers of very high quality which the librarians are unable to meet. A related finding of this study is that as many as 65% and 44% of respondents in two of the universities mentioned their frustration arising from unacceptability of their papers by journals as a barrier to their publication output (Table 5). This is where mentoring and collaborative research between young librarians who are ready to learn and experienced librarians who are ready to share their knowledge is required. The librarians sampled in this study reported respectable total and annual numbers of publications. Also, 86% of the librarians confirmed having had mentors while about 75% of them affirmed that mentoring has developed their abilities to conceptualize research topics and publish articles in reputable journals (Table 6). These findings, when taking together, suggest that mentoring most likely played a crucial role in the respectable publication output profile reported by the librarians.

Conclusion and Recommendations

Scholarship is one of the criteria used for promoting librarians in academic libraries. In order to be at par with the academics in the faculties, they must have articles published in reputable journals. The paper studied the impact of mentoring on the publication output of librarians in academic libraries on some Nigerian universities. Results confirm that mentoring had a positive impact on the publication output of librarians in all the institutions.

By way of recommendations, academic librarians in Nigeria should seek ways to reduce the amount of the routine tasks they perform in their libraries. Para-professionals should be engaged and assigned to undertake some of these routine jobs in order to free the professional librarians to concentrate more on intellectual tasks. Also, librarians should cultivate the habit of reading extensively other peoples' works so as to be able to conceptualise research topics and build their capacity to write scholarly papers. Upcoming professionals should seek and engage in collaborative research with their senior colleagues in order to acquire and hone their research skills.

References

Bahr, A.H. and Zemon, M. (2000). Collaborative authorship in the journal literature: perspectives for academic librarians who wish to publish. Retrieved November 13, 2010 from http://www.ala.org/.

Carson, B. (1972). *Think Big: unleashing your potential for excellence*. Michigan: Zondervan, 261p.

Eby, L. (2007). Understanding relational problems in mentoring: A review and proposal investment model. In Belle Rose Ragins and Kathy Kram (Eds.), *The Handbook of Mentoring at Work* California: Sage, pp. 323-334.

Ekoja, I.I. and Oji, S.E. (1999). Faculty status in Nigerian university libraries: A case study. African Journal of Library, Archives and Information Science 9(1) 37-48

Farnes, L. (2003). Guidelines for a mentoring scheme for Academic Staff. Retrieved June 3, 2010 from www.city.ac.uk.

Free Management Library (2010). *Mentoring*. Retrieved July 21, 2010 from www.managementhelp.org/guiding/mentoring/mentrng.htm.

Gregory, G.M. and Medford, N.J. (eds.). 2006. The successful academic librarian: winning strategies from library leaders. Retrieved November 13, 2010 from www.books.google.com.ng/books.

Harway, M. (2001). Mentoring and feminist mentoring. In: J. Worell (ed.), *Encyclopedia of Women and Gender*. New York: Academic Press, pp. 743-748.

Igbokwe, C. (2006). Mentoring as a prerequisite for career success. *The Punch*, Wednesday, March 8, p. 4.

Kuyper-Rushing, L. (2001). A formal mentoring program in a University Library: components of a successful experiment. *The Journal of Academic Librarianship* 27(6) 440-446.

Lary, M.S. (1997). Mentoring: a gift for professional growth. *The Southeastern Librarian* 47: 23-31.

Ogbomo, E.S. (2010). Publication output of librarians in tertiary institutions: a case study of Delta State University, Abraka, Nigeria. *Library Philosophy and Practice*, *http://digitalcommons.unl.edu/libphilprac/322*.

Odusanya, O.K. and Amusa, O.I. (2006). Mentoring and getting published. *Journal of Library and Information Science*, 3(1/2) 10-22.

Oduwole, A.A. and Adediji, O.O. (2006). Writing publishable papers by Library and Information Science (LIS) Professionals in Nigeria. *Library Hi Tech News*, 23(7) 3-5.

Powell, R.R, Baker, L.M. and Mika, J.J. (2002). Library and information science practitioners and research. *Library and Information Science Research*, 24(1) 49-72.

Roberts, D.L. (1986). Mentoring in the Academic Library. *College and Research Libraries News*, February, 117.

Verzosa, F.A. 2007. Research in librarianship: challenges, competencies and strategies. Retrieved November 13, 2010 from http://eprints.rclis.org/archive.

Utulu, A.S.C. (2005). Role of journals in developing emerging scholars in library and information science. Proceedings of the conference held at Conference Centre University of Ibadan, Nigeria: Third World Information Services Ltd.

***Mrs. Yusuf Felicia** is currently the Acting University Librarian of Landmark University, Omu Aran, Kwara State, Nigeria. She holds a master's degree in Library and Information Science from University of Ibadan, Nigeria. Her research interests include ICT applications in cataloguing, promoting reading habits among secondary school students and library services to specialised groups.

Afr. J. Lib & Inf. Sc. Vol.21, No. 2 (2011) 117-125

Mentoring and its Impact on the Publication Output of Librarians in Selected Academic Libraries in South-West Nigeria

Felicia Yusuf
yusuffelicia@yahoo.co.uk
Landmark University Library
Omu Aran, Kwara State, Nigeria

Abstract

The paper examined the possible role of mentoring in explaining the publication output of librarians in selected academic libraries. The paper sought to find out the number of papers that the academic librarians published annually, whether they are required to publish the same number of papers for promotion to particular grades as required of mainstream academics in their universities, whether they had mentors, and their perceptions of the impact of mentoring on their publication output. Data were collected from 66 academic librarians in four purposively selected universities in South-West Nigeria. Mentoring was perceived by the librarians to have a positive impact on their publication output, and that the major constraints on their publication efforts were their routine jobs and inability to conceptualise research topics. The study recommends that upcoming academic librarians should have mentors and collaborate with their senior colleagues until they are able to acquire the necessary skills to conceptualize research and publish quality papers. They should also transfer some of their routine duties to para-professionals in their libraries in order to be able to concentrate more on research-related activities such as reading extensively other peoples' works.

Introduction

Research is an important component in the growth and development of academics in general. The decision in the Nigerian university system to accord librarians in academic libraries academic status brought along with it the requirement of them to publish in reputable journals. Ekoja and Oji (1999) averred that the attainment of faculty status by the academic librarians carries with it such responsibilities as teaching, research and publications. As Odusanya and Amusa (2006) also noted, academic librarians are expected to publish extensively in both local and foreign journals and other outlets in order to merit promotion, notwithstanding any remarkable performances on the other criteria for promotion. This is not peculiar to academic librarians in Africa as, for instance, Kuyper-Rushing (2001) had stated that the Louisiana State University has rigorous tenure and promotion guidelines, and that librarians must meet these expectations just as the teaching faculty does.

Accordingly, along with the grant of academic recognition for academic librarians came the albatross of publish or perish. Oduwole and Adediji (2006) observed that all universities and research institutes in Nigeria consider scholarly publication as a prerequisite to promotion and career development of their academics. This has made librarians, especially those young and desirous of progress in their careers, to be running from pillar to post in order to publish high quality articles in reputable journals. One of the possible ways to facilitate this and cushion the associated stress, especially among those new in the academic librarianship field, is through the instrumentality of mentoring. Young academic librarians can seek or be paired either formally or informally with more senior people in the profession in order to learn and master the research terrain.

Research Problem and Objectives

The requirement that academic librarians publish in reputable journals, and simultaneously also meet up with the demands of their routine jobs in order to be promoted, has left many of them in a fix. Academic librarians, especially those young in the profession, find it difficult to write publishable articles which in turn leaves them stagnated and frustrated in particular positions in their libraries. This study therefore sought to investigate the challenges that the librarians face and the potential influence of mentoring in improving their publication output. Accordingly, the study sought to achieve the following objectives:

1. Find out whether academic librarians are required to publish the same number of papers for promotion to particular grades as required of teaching academics.
2. Determine the number of papers that the academic librarians publish annually.
3. Investigate the kind of journals the librarians publish in.
4. Ascertain if the librarians have mentors and the possible impact of mentoring on their publication output.
5. Investigate the constraints on the publication output of the librarians.
6. Recommend strategies for tackling the challenges that the librarians face.

Literature Review

Previous studies in Nigeria have revealed that the publication output of librarians is low. Ogbomo (2010) lamented that despite the benefits of publications to librarians, their publication output is low partly because the requirement to publish is an entirely new one for librarians in Nigeria. She further stated that in the past, librarians had only three requirements for promotion which are two to four years work since the last promotion, availability of vacancies and satisfactory performance. This however is no longer the case as scholarship has been introduced as one of the major criteria for promotion, and this has left many librarians stranded in positions and influenced their career development adversely. Powell, Baker and Mika (2002) and Utulu (2005) adduced the low publication output of librarians to lack of training which hinders the acquisition of adequate research and writing skills and identification of research problems and topics. Oduwole and Adediji (2006) proposed that library and information science (LIS) professionals need to acquire skills in researching and reporting usable research findings, and that honing these skills would help in the production of quality papers, as well as promoting their careers and LIS research.

Engaging in research and publishing the output of same is highly beneficial to librarians. This, according to Gregory and Medford (2006), is because it allows them to maintain their faculty status, obtain promotions and avail them the opportunity of adding to the body of knowledge. Verzosa (2007) also believes that it is very important for librarians to engage in research, as this will add value to librarianship. She however lamented that research in librarianship, particularly in the Philippines, is disappointing, and that although there is abundance of well educated, well trained library professionals, there is an unfortunate shortage of research-oriented librarians. In contrast to Verzosa's findings, Bahr and Zemon (2000) opined that academic librarians in the Western countries publish a lot.

Mentoring, as perceived by Igbokwe (2006), is a supportive one-on-one relationship between an accomplished individual and an aspiring individual to facilitate the aspirant's growth and development. Lary (1998) described mentoring as a professionally supportive relationship between an experienced, successful, mid-career employee and a beginner. She further opined that it is a time honoured method of encouraging new talent, and of sharing expertise and connections towards promoting rapid, upward mobility. Commenting on the role of mentoring and mentors, Carson (1992) avers that no one is truly self-made, but that people give their best so that others could learn to give their best.

Mentoring relationships in academics can either be formally or informally contracted. Odusanya and Amusa (2006) described informal mentoring relationship as one that develops on its own between partners, while the formal mentoring are administratively assigned relationships. Roberts (1986), writing on mentoring in the academic library, described the mentoring relationship as one that allows new people

to observe organisational and unit activities, functions, goals, policies and procedures through consultation with experienced professionals.

Harway (2001), citing Kram (1983), described the process of becoming involved in a mentor-mentee relationship as consisting of four phases. Initiation is the first phase which she described as a scenario where mentor and mentee select each other and begin to learn about the other's style and habits. The second phase is cultivation, which leads to increases in mentoring behaviours and the development of a strong relationship between mentor and mentee. The third phase of redefinition occurs when the mentoring relationship changes into what more closely resembles a peer relationship. The final phase, separation, is when the mentoring relationship ends, often as a result of geographic separation. A mentor's role involves providing support and resources to his/her mentee. He/she is also expected to facilitate a supportive and developmental relationship with the mentee.

Mentoring is beneficial both to the mentor and the mentee. Eby (2007) listed learning, developing personal relationships and enhancing managerial skills as some of the benefits of mentoring to the mentor. Farnes (2003) also highlighted the following as benefits of mentoring to both parties:

Mentee benefits:

- It aids induction into a new job culture.
- It helps in the process of understanding formal and informal structures of the organisation.
- It helps with developing skills in a structured way based on individual needs.
- It improves professional and personal networks.
- It provides an opportunity for a new member of staff to reflect on his/her own progress and resolve his/her own problems.

Mentor benefits:

- It broadens his/her own skills and knowledge.
- It brings new insight into the organisation.
- It enables him/her to demonstrate additional skills in developing other individuals.
- It consolidates and extends his/her professional networks.

Despite these important benefits of mentoring to the mentor and mentee alike, there are however some pitfalls associated with mentoring in academics which Odusanya and Amusa (2006) identified as absence of academic culture, issues bordering on integrity or distrust in the mentoring relationship, paucity of mentors and non-conducive work environments. For an individual to be adjudged to be a good mentor, he/she must possess the following characteristics as outlined by Free Management Library (2010):

- A desire to help.
- Positive experiences to share.
- A good reputation for developing others.
- Time and mental energy to devote to the relationship.
- Up-to-date knowledge.
- Learning attitude.
- Effective mentoring skills.

Methodology

The descriptive survey method was used in the study. Four universities were randomly selected from three states selected purposively out the six states in South-West Nigeria. The universities were: Covenant

University (private university, Ogun State) and Tai-Solarin University of Education (public university, Ogun State); University of Lagos (first generation public university, Lagos State), and Nigeria's oldest university, the University of Ibadan (public university, Oyo State). Two universities were chosen from Ogun State because it has the highest number of universities in the South-West region. A total of 66 librarians in the four academic libraries participated in the study. In each of the four universities, librarians from the status of Assistant Librarian who have worked for three (3) years and above and who were present as at the time of this study were used as respondents. A total of 88 librarians across the four academic libraries were contacted to participate in the study, and 22 (25%) failed and/or declined to return the questionnaire.

A questionnaire was designed and self-administered by the sampled librarians to collect data during May to June 2010. Out of the 88 copies of the questionnaire distributed to the librarians, 66 (75%) were duly completed, retrieved and used for the analysis. Table 1 provides the distribution and returns of copies of the questionnaire by university.

Table 1: Distribution and Returns of Questionnaire by University

University	**(a) Copies distributed**	**(b) % of copies distributed (a)/88**	**(c) Copies retrieved**	**(d) Response rate [(c)/(a) * 100]**
University of Lagos (UNILAG)	25	28	18	72.0
Covenant University (CU)	11	13	11	100.0
University of Ibadan (UI)	30	34	20	66.7
Tai Solarin University of Education (TASUE)	22	25	17	77.2
Total	**88**	**100**	**66**	**75.0**

Almost two-thirds (62%) of the 66 sampled librarians were female. In terms of their qualifications, 18% of them had BLS degrees; 73% had MLS degrees and 9% had doctoral degrees. Table 2 provides their work experience and status characteristics, which indicate that most of them (67%) were in the lower to mid-level positions of Librarian II, Librarian I and Senior Librarian.

Table 2: Work Experience and Status of the Respondents

Work experience	**Frequency**	**%**		**Status**	**Frequency**	**%**
1-3 years	10	15		Assistant Librarian	08	12
4-6 years	15	23		Librarian II	17	26
7-9years	28	42		Librarian I	15	23
10 years or more	13	20		Senior Librarian	12	18
				Principal Librarian	10	15
				Deputy University Librarian	04	06
Total	**66**	**100**		**Total**	**66**	**100**

Data Analyses and Findings

Quantity of Publication Output Expected of Academic Librarians

All the sampled librarians affirmed that they were expected to publish the same number of papers as other academics. This confirms that, compared to academics in university faculties, the librarians were or at least did not perceive themselves as enjoying any favour in terms of the quantities of publication output required for promotion to various grades.

Papers Published

Table 3 shows the publication output reported by the respondents per year and in total in their career. From the table, almost three-quarters (73%) of the respondents were publishing one or two papers per year, and only 12% published more than 3 papers per year. Also, the respondents with total publications of between six and nine were almost two-fifths (38%). This shows that, at least in terms of quantity of publications, the sampled librarians were doing quite well.

Table 3: Number of papers Published in a year and Overall

Papers per year	Frequency	%		Total publications	Frequency	%
1	28	43		0-2	18	27
2	20	30		3-5	15	23
3	10	15		6-9	25	38
> 3	08	12		> 9	08	12
Total	**66**	**100**		**Total**	**66**	**100**

Table 4 shows the types of journals in which the respondents published. Almost all the respondents had published in local journals– all the respondents from University of Lagos and Covenant University had published in local journals while 90% and 88% of the respondents from University of Ibadan and Tai Solarin University of Education had published in such journals, respectively. Also, between 82 and 85 per cent of the respondents from University of Lagos, Covenant University and University of Ibadan had published in international journals while only 53% of those from Tai Solarin University of Education had done so. Slightly more of the respondents had published in academic journals than in professional journals. Only one respondent each from University of Lagos and University of Ibadan claimed to have published in high impact journals.

Table 4: Types of journals where Respondents Publish

Type of Journal	University of Lagos		Covenant University		University of Ibadan		Tai Solarin University of Education	
	N	%	N	%	N	%	N	%
Local	18	100	11	100	18	90	15	88
International	15	83	9	82	17	85	9	53
High Impact	1	6	-	-	1	5	-	-
Professional	15	83	5	45	18	90	7	41
Academic	15	83	7	64	18	90	14	82
Others	-	-	-	-	-	-	-	-

Percentages are proportions of respondents from each university who published in each type of journal.

Barriers to Research and Publication Output

The respondents were asked to specify the barriers that limit their efforts to improve the quantity and quality of their research output. Table 6, which summarises their responses, shows that four barriers were mentioned. The routine nature of their job tasks was the most frequently mentioned barrier, mentioned by all the respondents from Covenant University and Tai Solarin University of Education, as well as 89% and 85% of the respondents from University of Lagos and University of Ibadan, respectively (Table 5). The second most frequently mentioned barrier was inability to conceptualise research topics, mentioned by between 56 and 64 per cent of the respondents from the four universities, and the third barrier was frustration arising from rejection of articles submitted for publication.

Table 5: Barriers to effective Research Output of Respondents

Barriers	University of Lagos		Covenant University		University of Ibadan		Tai Solarin University of Education	
	N	%	N	%	N	%	N	%
Inadequate research skill	06	33	04	36	7	35	07	41
Routine jobs of librarians	16	89	11	100	17	85	17	100
Inability to conceptualize research topics	10	56	07	64	11	55	10	59
Frustration arising from unacceptability of articles for publication	08	44	03	27	07	35	11	65
Others	02	11	-	-	-	-	01	06

Percentages are proportions of respondents from each university who mentioned each barrier.

Impact of Mentor-Mentee Relationships

When respondents were asked if they had mentors, Tai Solarin University of Education (all respondents), University of Ibadan (75%), Covenant University (81%) and University of Lagos (88%) agreed thay had mentors. Table 6 also shows that most of the respondents agreed that their mentor-mentee relationships had helped in different ways to ameliorate the barriers to improved research output, with 83% (University of Lagos), 82% (Covenant University), 80% (University of Ibadan) and 65% (Tai Solarin University of Education) of the respondents affirming.

Table 6: Impact of Mentor-Mentee Relationship on Research Output

Impact of mentoring relationships	University of Lagos		Covenant University		University of Ibadan		Tai Solarin University of Education	
	N	%	N	%	N	%	N	%
It has sharpened myresearch skills	9	50	8	73	6	30	7	41
I can now conceptualize research topics	16	89	9	82	13	65	11	65
It has helped me to publish articles in reputable journals	15	83	9	82	16	80	11	65
There is no improvement in my research abilities	0	0	0	0	7	35	3	18
Undecided	3	17	2	18	4	20	1	6

Percentages are proportions of respondents from each university who mentioned each barrier

Discussion

The routine job tasks that academic librarians often have to perform were identified as biggest barrier to their publication output. Such routine tasks are performed either because the professional librarians do not or cannot delegate the tasks adequately to para-professionals, or that there are insufficient para-professionals to delegate to. Research work usually demands quality time, often in seclusion, to read widely and think deeply about research topics and projects. In the context of the finding on the adverse role of routine tasks, it is clear that academic librarians need to recognise and pay adequate attention to their intellectual roles in the academic environments where they work, delegate effectively to their subordinates and/or push for the adequate staffing of their libraries at the lower levels, and devote more time on their research tasks.

Almost all the 66 sampled librarians published in local journals, and much fewer published in international journals, and only two reported publishing in high impact journals. One reason for this is that international journals and high impact journals, in particular, demand papers of very high quality which the librarians are unable to meet. A related finding of this study is that as many as 65% and 44% of respondents in two of the universities mentioned their frustration arising from unacceptability of their papers by journals as a barrier to their publication output (Table 5). This is where mentoring and collaborative research between young librarians who are ready to learn and experienced librarians who are ready to share their knowledge is required. The librarians sampled in this study reported respectable total and annual numbers of publications. Also, 86% of the librarians confirmed having had mentors while about 75% of them affirmed that mentoring has developed their abilities to conceptualize research topics and publish articles in reputable journals (Table 6). These findings, when taking together, suggest that mentoring most likely played a crucial role in the respectable publication output profile reported by the librarians.

Conclusion and Recommendations

Scholarship is one of the criteria used for promoting librarians in academic libraries. In order to be at par with the academics in the faculties, they must have articles published in reputable journals. The paper studied the impact of mentoring on the publication output of librarians in academic libraries on some Nigerian universities. Results confirm that mentoring had a positive impact on the publication output of librarians in all the institutions.

By way of recommendations, academic librarians in Nigeria should seek ways to reduce the amount of the routine tasks they perform in their libraries. Para-professionals should be engaged and assigned to undertake some of these routine jobs in order to free the professional librarians to concentrate more on intellectual tasks. Also, librarians should cultivate the habit of reading extensively other peoples' works so as to be able to conceptualise research topics and build their capacity to write scholarly papers. Upcoming professionals should seek and engage in collaborative research with their senior colleagues in order to acquire and hone their research skills.

References

Bahr, A.H. and Zemon, M. (2000). Collaborative authorship in the journal literature: perspectives for academic librarians who wish to publish. Retrieved November 13, 2010 from http://www.ala.org/.

Carson, B. (1972). *Think Big: unleashing your potential for excellence*. Michigan: Zondervan, 261p.

Eby, L. (2007). Understanding relational problems in mentoring: A review and proposal investment model. In Belle Rose Ragins and Kathy Kram (Eds.), *The Handbook of Mentoring at Work* California: Sage, pp. 323-334.

Ekoja, I.I. and Oji, S.E. (1999). Faculty status in Nigerian university libraries: A case study. African Journal of Library, Archives and Information Science 9(1) 37-48

Farnes, L. (2003). Guidelines for a mentoring scheme for Academic Staff. Retrieved June 3, 2010 from www.city.ac.uk.

Free Management Library (2010). *Mentoring*. Retrieved July 21, 2010 from www.managementhelp.org/guiding/mentoring/mentrng.htm.

Gregory, G.M. and Medford, N.J. (eds.). 2006. The successful academic librarian: winning strategies from library leaders. Retrieved November 13, 2010 from www.books.google.com.ng/books.

Harway, M. (2001). Mentoring and feminist mentoring. In: J. Worell (ed.), *Encyclopedia of Women and Gender*. New York: Academic Press, pp. 743-748.

Igbokwe, C. (2006). Mentoring as a prerequisite for career success. *The Punch*, Wednesday, March 8, p. 4.

Kuyper-Rushing, L. (2001). A formal mentoring program in a University Library: components of a successful experiment. *The Journal of Academic Librarianship* 27(6) 440-446.

Lary, M.S. (1997). Mentoring: a gift for professional growth. *The Southeastern Librarian* 47: 23-31.

Ogbomo, E.S. (2010). Publication output of librarians in tertiary institutions: a case study of Delta State University, Abraka, Nigeria. *Library Philosophy and Practice*, *http://digitalcommons.unl.edu/libphilprac/322*.

Odusanya, O.K. and Amusa, O.I. (2006). Mentoring and getting published. *Journal of Library and Information Science*, 3(1/2) 10-22.

Oduwole, A.A. and Adediji, O.O. (2006). Writing publishable papers by Library and Information Science (LIS) Professionals in Nigeria. *Library Hi Tech News*, 23(7) 3-5.

Powell, R.R, Baker, L.M. and Mika, J.J. (2002). Library and information science practitioners and research. *Library and Information Science Research*, 24(1) 49-72.

Roberts, D.L. (1986). Mentoring in the Academic Library. *College and Research Libraries News*, February, 117.

Verzosa, F.A. 2007. Research in librarianship: challenges, competencies and strategies. Retrieved November 13, 2010 from http://eprints.rclis.org/archive.

Utulu, A.S.C. (2005). Role of journals in developing emerging scholars in library and information science. Proceedings of the conference held at Conference Centre University of Ibadan, Nigeria: Third World Information Services Ltd.

***Mrs. Yusuf Felicia** is currently the Acting University Librarian of Landmark University, Omu Aran, Kwara State, Nigeria. She holds a master's degree in Library and Information Science from University of Ibadan, Nigeria. Her research interests include ICT applications in cataloguing, promoting reading habits among secondary school students and library services to specialised groups.

Afr. J. Lib & Inf. Sc. Vol.21, No. 2 (2011) 127-137

Open Access: Perceptions and Reactions of Academic Librarians in Nigerian Private Universities

Omolara Bolarinwa
bolarinwaaduni@yahoo.com

Medical Library, College of Medicine, University of Lagos, Nigeria

Samuel C. Avemaria Utulu
yavehmaria@yahoo.com

RUN Library, Redeemer's University, Ogun State, Nigeria

Abstract

Open Access (OA) has been heralded as a key strategy for promoting the electronic dissemination and access to quality scientific knowledge by researchers in developing countries. The objective of this paper is to evaluate the perceptions and reactions of academic librarians in Nigerian private universities to OA publishing as a medium for disseminating quality scientific knowledge and for assessing the contributions of scholars to global knowledge improvements. Ten of the seventeen private universities in Southwestern Nigeria were randomly selected, and 42 academic librarians from the ten universities were surveyed. A questionnaire adapted from Palmer, et al. (2009) was used to collect data. The findings showed that academic librarians in Nigerian private universities have positive perception of OA scholarly publishing. However, their level of involvement in creating awareness and contributing to the development of OA at the time of the study was low. It needs to be improved in view of the potential benefit of OA for promoting the visibility of the research output of researchers in the universities.

Introduction

Scholarly publishing has created a lot of challenges for stakeholders since its evolution in the mid 17th Century. This is the reason why stakeholders have continuously developed scholarly publishing models meant to guarantee that scholarly publishing maintains its quality. This quality assurance is meant to ensure that scholarly publishing maintains its value as a source of global knowledge and a means to assess the contributions of scholars to global knowledge development. Consequently, the evolution of scholarly publishing from personal letters and idea-notes shared by scholars among themselves to bulky, periodically published and paper-based journals, and of recent to electronic journals, is a practical example of ways stakeholders have transformed and tried to maintain scholarly publishing quality. The number of stakeholders involved in scholarly publishing has therefore increased beyond scholars who shared scholarly letters and idea-notes within a locality. It now includes an array of scholars who serve as authors, peer reviewers and editors, academic and research institutions, librarians, and publishers. Scholarly publishing stakeholders also include organisations and individuals that work for commercial publishers as agents and middle-men. Governments and agencies that legislate on intellectual property and copyright may also be included as scholarly publishing stakeholders.

These evolving scenarios have led to the increase in the number of studies focused on the various roles different stakeholder groups play in the publishing chain. For instance, studies have been carried out on the serials crises and their effects on stakeholders. Studies by Bosch (2005), Liu (2003) and Cox (1998) were conducted to elicit the effects of serials crisis on the finances of

academic institutions and libraries and the gains commercial publishers derive from the crisis. Morris (2004) outlined how libraries' prestige had dwindled because of their inability to provide expectant users with the array of scholarly information they need due to decreases in their acquisitions budget and the high prices charged by commercial publishers.

There are also studies in the literature on business models and economics of scholarly publishing, especially as it concerns the comparison of the economic model adopted by professional and commercial publishers and open access publishers (SQL 2004; Willinsky, 2009; Conlley and Wooders, 2009). Some studies have also looked at the challenge of archiving open access articles which are normally in digital forms and are believed to be lacking the kind of archival quality possessed by articles published in paper form (Moghaddam, 2007). Other studies, like that of Crawford (2003), down-played the fact that the open access scholarly publishing model was more economical than the commercial scholarly publishing model on the ground that research value should be assessed on what users are willing to pay to access it, and not by its ease of access.

Similarly, the evolution of the open access publishing model has been reported to have diverse effects on stakeholders. For example, research-based institutions have been advised to transfer the money they pay for scholarly publishing subscriptions to support open access initiatives by paying the publication fees of authors from their institutions (Gass, 2005). Libraries, on the other hand, have found open access as good alternatives to or complements of subscription based scholarly publications. Scholars, on the other hand, also have to accommodate the two sides of a coin, which are the free access they have to their peers' scholarly works and the visibility their own works enjoy on one side, and the economic implications of paying publication fees (Regazzi, 2004; Bjork and Oorni, 2009). They also have to grapple with the issue of prestige and reward, as academic institutions still find it difficult to accord research that appears in open access outlets the same kind of prestige and credit in promotion and continuing status reviews that they accord research in paper-based journals (Bosch, 2005). Another factor is the extent of scholars' awareness of, and willingness to use open access publishing outlets (Nicholas and Rowlands, 2005; Utulu and Bolarinwa, 2009). Despite these challenges, there is a growing recognition by academic libraries in Africa that open access is an economically viable alternative that would help provide access to global research and knowledge (Nwagwu, 2005; Christian, 2005).

Over the years therefore, research on open access has been channelled towards understanding how various stakeholders perceive and react to its evolution, and a large portion of the research has focused on academic institutions, publishers and scholars. It is however, unfortunate that studies concerning how librarians are reacting to open access publishing are sparse. The study by Palmer et al. (2009) is however a significant effort geared towards understanding how librarians are reacting to the evolution of open access publishing. The present study follows in the steps of that study, and is thus carried out to understand how academic librarians in private universities in Southwestern Nigeria perceive and are reacting to the open access initiative. Admittedly, this study did not attempt to collate and present a complete Nigerian situation report, as it focused only on the academic librarians in Nigerian private universities. However, it was hoped that, based on the number of private universities in Southwestern Nigeria, the study could provide a picture of the situation at least in respect of academic librarians in private universities in Nigeria.

Research on Open Access (OA)

The literature is replete with many reported studies on open access (OA) publishing most of which attempted to provide definitions for the term. Although there have been slight disagreement among scholars on the definition of OA publishing, scholars are beginning to agree

on a definition relying on the following three concepts: free access, online based and absence of copyright restrictions, as emphasised in the Budapest, Bethesda and Berlin declarations. Hence, according to Palmer et al. (2009), open access is "scholarship that is available online free of charge."

There have been research efforts regarding OA publishing models, and their economics, impact and quality as means of disseminating scientific knowledge and assessing the contributions to knowledge of scholars and researchers. Attempts have been made in the literature by proponents of OA publishing using yardsticks such as those that were used by Bjork and Oorna (2009) to justify how scholarly journals can serve as service providers to authors. Efforts have also been made to justify OA in the light of Liu's (2003) proposition on how scholarly journals are transforming to accommodate interdisciplinary discourses and the volumes of research contents that scholars produce. Fytte and Schlenburger (2002) have confirmed that OA publishing is able to provide authors with required services like the provision of infrastructure, readership, high prestige and high performance qualitative review processes. Studies have also been carried out regarding how OA publishing is able to manage copyright (Suber, 2004; Kawooya, 2008). There are also studies that looked at the practical applications of the OA publishing principles and practices, and their contributions to the development of scholarship (Regazzi, 2004; Fitzpatrick, 2001).

Major contributions from Africa on scholarly publishing are sparse and are mostly limited to issues concerning the effects of the serials crisis on scholarly publishing in the continent. The effects of Africa's dwindling economy on Africa's contributions to global scholarship and knowledge have also been assessed (Altbach and Tefera, 1998). Other areas that have been covered by African scholars regarding scholarly publishing are bibliometric and citation analyses which are primarily meant to assess the structure of Africa's use of scholarly publications (Adeniran, 1988; Bikai-Nyunai, 2006a, 2006b). From another perspective, Nwakanma (2003) investigated where Nigerian library and information science (LIS) scholars published their scholarly works. The study's objective was to assess Nigerian LIS authors' quest for visibility through publishing their research output in readily available journals, and often without adequate consideration of the relevance of the output to the communities where the journals are circulated. Some authors have carried out empirical studies in areas relating to the evolution of electronic scholarly publishing systems for Africa, a successful example among which is the African Journal Online (Rosenberg, 2003; Cumming, 2006). An increasing number of studies have looked at the benefits of OA to Africa and the challenges Africans are facing in their quest to adopt it (Utulu and Bolarinwa, 2009; Christian, 2008; Nwagwu, 2005). Other studies have focused on levels of acceptance of OA by academics and the effects of socio-technical factors such as the digital divide on its adoption. However, empirical studies that compare the cost of paper-based journal publications with OA journals especially as it relates with economic situations in Africa are still being awaited.

Methodology

A questionnaire was used as the data collection instrument in the study. The questionnaire, which is a modified version of the questionnaire used by Palmer et al. (2009), was administered on 55 academic librarians in 10 private universities selected randomly from the 17 private universities in Southwestern Nigeria. The 10 universities comprise 62.5 % of the total number of private universities in the region and 41.5 % of the total number (41) of private universities in Nigeria, as at the time of the study. The questionnaire copies were distributed by hand and by postal service to the academic librarians in their institutions between September 2009 and March 2010. The overall questionnaire return rate was 76.4 per cent, as detailed in Table 1.

Table 1: Questionnaire Distribution and Returns by University

S/N	*University*	*Year established*	*Questionnaire copies distributed*	*Questionnaire copies returned*	*Return rate %*	*Percentage of total sample*
1	Babcock University	1999	15	7	46.7	15.9
2	Lead City University	2002	9	7	77.8	15.9
3	Redeemer's University	2005	9	9	100.0	20.5
4	Crescent University	2005	3	2	66.6	4.5
5	Bells University of Technology	2005	5	5	100.0	11.9
6	Crawford University	2005	5	3	60.0	7.1
7	Joseph Ayoola Babalola University	2006	3	3	100.0	6.9
8	Fountain University	2007	2	2	100.0	4.5
9	Caleb University	2007	2	2	100.0	4.5
10	Achievers University	2007	2	2	100.0	4.5
		Total	**55**	**42**	**76.4**	**100.0**

Findings

Of the 42 academic librarians who participated in the study, 23 (54.8 %) were male, while 19 (45.2 %) were female. Also, only 2 (4.8 %) of the universities where the academic librarians were employed offered courses at the undergraduate and post-graduate levels while only one (2.4 %) offered courses at the diploma and undergraduate levels and 39 (95.2 %) offered courses at the undergraduate level only.

Table 2 shows that most of the respondents had been involved with multiple assignments in the libraries. Interestingly, the highest proportion of the academic librarians was involved in assignments that had to do with user access facilitation services – circulation, reference and public services, etc. Also, high percentages of them were involved in acquisitions and administration duties, and the maintenance of electronic systems such as digital library, library system and networks, and web services.

Table 2: Distribution of the Academic Librarians by Official assignment

S/N	*Official function*	*Number*	*Percentage*
1	Circulation/Access /Public /Reference Services	23	76.7
2	Acquisition and Collection Management	19	63.3
3	Administration	18	60.3
4	Digital Library/System Network/Web Development	16	53.3
5	Cataloguing/Metadata	15	50.0
6	Archives/Government Documents/ Special Collection	11	36.6
7	Audiovisual/Media Services	9	30.0

8	Instructional Services	7	23.3
9	Interlibrary Loan	6	20.0
10	Subject Specialist	4	13.3
11	Development/Fundraising	3	10.0

Table 3 shows that the academic librarians' perceptions of issues such as taking actions to shape the future of scholarly publications, active involvement of librarians in the success of OA, development of quality measurement tools and provision of financial support through increased professional engagement with OA were very positive.

Table 3: Perceptions of Roles of Academic Libraries in shaping the Future of Scholarly Publishing

Perception Factors	*SD*		*D*		*NS*		*A*		*SA*		*No Response*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
AL should take actions to shape the future of scholarly publishing	3	7.1	-	-	-	-	9	21.4	27	64.3	3	7.1
OA will fail without the active involvement of academic librarians	3	7.1	3	7.1	6	14.3	14	33.3	15	35.7	1	2.4
The Principles of OA relate to the purpose of AL	1	2.4	1	2.4	6	14.3	17	40.5	13	31.0	4	9.5
Involvement in OA is one way for AL to stay relevant in the changing information landscape	3	7.1	1	2.4	2	4.8	19	45.2	17	40.5	-	-
AL should help develop impact measurement tools for OA journals	2	4.8	-	-	-	-	19	45.2	20	47.6	1	2.4
Providing financial resources to support OA should be a priority of AL	2	4.8	2	4.8	-	-	17	40.5	19	45.2	-	-
AL should reallocate existing resources	1	2.4	-	-	2	4.8	23	54.8	16	38.1	-	-

Note: AL= Academic Libraries; OA= Open Access

The respondents also agreed that academic librarians should educate faculty and campus administration on copyright issues, submission of pre-prints to their university libraries and the publishing of their papers in OA outlets (Table 4). They also agreed that academic librarians should perform leadership roles in educating university administration in accepting OA publications for all academic rewards.

Table 4: Academic Librarians' Perception of their Roles in Promoting OA in University Communities

Perception Factors	*SD*		*D*		*NS*		*A*		*SA*		*No Response*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*

AL Should educate faculty about OA	1	2.4	-	-	2	4.8	23	54.8	16	38.1	-	-
AL should educate campus administration about OA	-	-	2	4.8	5	11.9	28	66.7	7	16.7	-	-
AL should educate faculty about copyright issues related to their publications	2	4.8	2	4.8	10	23.8	22	52.4	6	14.3	-	-
AL should encourage faculty to submit pre-published versions of their research to OA journals	2	4.8	1	2.4	11	26.2	15	35.7	13	31.0	-	-
AL should encourage faculty to publish their research in OA peer-reviewed journals	1	2.4	2	4.8	23	54.8	15	35.7	15	35.7	1	2.4
AL should encourage faculty to deposit scholarly work that they do not intend to publish into OA repositories	1	2.4	-	-	-	-	21	50.0	19	45.2	1	2.4
AL should encourage campus administration to adopt tenure and promotion policies that support the growth of OA	2	4.8	-	-	8	19.0	16	38.1	15	35.7	1	2.4

Note: AL= Academic Libraries; OA= Open Access

As summarised in table 5, the respondents' perceptions of the role academic libraries should play in creating access OA resources is positive. In fact, 73.8 % of the respondents agreed that academic libraries should create links to OA resources in their websites while 92.9% agreed that academic libraries should include bibliographic records for OA journals in their catalogues.

Table 5: Distribution of Respondents' Perception of their Roles in Creating Access OA Resources

Perception Factors	*SD*		*D*		*NS*		*A*		*SA*		*No Response*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
AL should include bibliographic records for OA journals in their catalogues	1	2.4	-	-	2	4.8	21	50.0	18	42.9	-	-
AL websites should include links to OA journals	-	-	3	7.1	7	16.7	20	47.6	11	26.2	1	2.4
AL should create	2	4.8	4	9.5	4	9.5	18	42.9	14	33.3	-	-

professional positions whose main duties concern OA												

Note: AL= Academic Libraries; OA= Open Access

Table 6 shows further that the respondents had positive perception of issues concerning repository management in universities, replacement of expensive subscription-based journals with high quality OA journals and giving subscription preference to subscription-based journals that allow authors to retain copyright in their works.

Table 6: Distribution of Respondents' Perception of their Roles in Supporting and Promoting Policies Meant to Regulate OA

Perception Factors	*SD*		*D*		*NS*		*A*		*SA*		*No Response*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
AL are the best suited to manage campuses' OA repositories	1	2.4	3	7.1	10	23.8	16	38.1	11	26.2	1	2.4
AL should replace exorbitantly priced journals with comparable OA journals when available	2	4.8	4	9.5	6	14.3	20	47.6	9	21.4	1	2.4
AL should give subscription preference to journal publishers who allow authors to retain copyright	-	-	2	4.8	12	28.6	19	45.2	8	19.0	1	2.4

Note: AL= Academic Libraries; OA= Open Access

Finally, table 7 reveals that the respondents' reactions to issues regarding the popularisation of OA were however not forceful enough. The data in the table show that the OA popularisation actions taken by the majority of the respondents were only occasional and reactive, instead of being proactive.

Table 7: Distribution of Respondents' Frequency of Engagement in Educating Members of the University Communities about OA

Perception Factors	*Never*		*Occasionally*		*Always*	
	No.	*%*	*No.*	*%*	*No.*	*%*
On average I read literature that discusses OA	3	7.1	27	64.3	12	28.6
On average I discuss OA with librarians at the campuses outside my own	12	28.6	24	57.1	6	14.3
On average I discuss OA with librarians at my campus	7	16.7	20	47.6	15	35.7
On average I discuss OA with non-librarians at my campus	12	28.6	16	38.1	13	31.0
On average I discuss OA with non-librarians at campuses outside my own	18	42.9	19	45.2	5	11.9
On average I discuss OA administration at my library	8	19.0	22	52.4	12	28.6

On average I discuss OA with non library administrators at my campus	18	42.9	17	40.5	7	16.7

Note: AL= Academic Libraries; OA= Open Access

Discussion

OA access has become a dynamic tool or, better still, a publishing model used for diverse academic information management reasons. Most adopters of OA are now using it as a medium for online journal publishing, for online repositories that can provide access to research, and as medium of preserving and providing access to educational resources such as reports, guides, manuals, etc (Xia, 2008; Xia and Opperman, 2010; Utulu 2010).

Noteworthy is the fact that 92.9 % of the Nigerian private universities that were studied provide only undergraduate programmes, which means that their interest in OA would not be primarily for disseminating research. Undergraduate programmes usually require only basic information resources for undergraduate teaching and learning, and this may limit perceptions and adoption of OA solutions in these private universities. Thus, the official assignments of the academic librarians who participated in the study might have accounted for why most of them had positive perceptions of OA initiatives. Although their individual assignments seem diverse, the majority of the academic librarians indicated that they were involved in circulation, access creation, public services and reference services. Thus, they are likely to see opportunities to use worldwide OA resources to overcome the challenges of providing adequate information resources to academic staff and students in their universities, and not really creating their own OA resources. The librarians are therefore likely to have positive perceptions of the importance of OA initiative and the role they would want to play in popularizing the initiative.

The study found out that a significant percentage of academic librarians in Nigerian private universities believed that they should be involved in shaping the future of scholarly publishing and that their active involvement in OA initiative development will help develop and sustain the initiative. In fact, 92.9 % of them agreed that academic librarians should include OA sources in their bibliographies, 73.8 % agreed that they should create links on their websites to OA journals, while 76.2 % agreed that it is important to establish a professional position whose official duties would be mainly the management of OA sources and services. They also are of the opinion that OA initiative is in alignment with the principles and practices of academic librarianship and, therefore, that they should be involved in developing tools to assess their quality and also give financial support to the initiative.

This study found out that academic librarians in Nigerian private universities are willing to start off programmes to contribute to the measurement of the quality of OA resources. This may have arisen because of the frequent criticisms of the quality of OA resources in the literature. Apart from developing quality measurement parameters, 69 %, of the sampled librarians agreed to replacing expensive journals with comparable OA journals and patronising journal publishers who allow authors to retain copyright as ways to support the OA initiative financially. Hence, monies used for subscribing to journals can be used to pay authors' fees normally charged by OA outlets to cover publication costs. It is however doubtful that any of the private universities studied have plans or plans in the offing that may allow them pay authors' fees for their academic staff who are interested in publishing in OA journals. Moreover, the acquisition of journals and other academic materials in academic libraries involves a lot of procedures and stakeholders. Hence, these suggestions would require the involvement and approval of academic staff who desire quality information resources and university administrators who make final funding decisions on acquisitions to be made by their university libraries. To replace already known, but expensive paper-based scholarly resources with little known OA resources will need the input of a wide range of stakeholders in a university setup. This underscores the crucial roles that

academic librarians need to play to educate and lobby the various stakeholders (management, academic staff and students).

Unfortunately, the study also found out that the academic librarians' reactions to or participation in activities that are required to bring their perceptions into fruition was not encouraging. As shown in table 7, the libraries mostly either never or only occasionally performed all the seven practical activities and measures that would have helped them to promote OA initiatives, policies and programmes in their universities. For instance, the activity of reading the literature to improve their understanding OA initiatives, which Utulu (2010) considered very essential to planning and executing OA projects, was reportedly done by the librarians only occasionally. Other actions such as discussing OA with fellow librarians within and outside their universities, and with university administrators were also done occasionally.

Conclusion

This paper concludes that academic librarians in Nigerian private universities had positive perception of the importance of the OA initiative to the development of scholarship, especially in regard to facilitating access to a wide range of academic information resources. However, they did not show adequate support for the popularisation of OA through learning more about, influencing the development of policies, or promoting and educating stakeholders on the importance of OA to scholarship in Nigerian private universities. With these kinds of reactions, the adoption of OA by Nigerian private universities might not be as fast as one might have imagined.

But even then, beyond the private universities, many public universities in Nigeria have not been making the required fast progress in implementing OA projects, and this is despite the fact that some of them have been in existence for decades apart from receiving annual government subventions that private universities do not get. At present, only one of the more than sixty public universities in Nigerian has an institutional repository (www.opendoar.org/countrylist.php#nigeria). This is an indication that Nigerian universities are still far from actualising their dreams of joining the league of universities harnessing the benefits of OA resources from the demand, as well as the supply sides. This is not encouraging when compared to other developing countries like South Africa and Egypt that have seized the opportunities that OA initiatives offer.

References

Adeniran, O. (1988). Bibliometrics of Computer Science Literature in Nigeria. *International Library Review*, 20 (3) 347-359.

Bikai-Nyunai, (2006a). Bradford's Law: Part I-an Explanatory Approach for Librarians. *African Journal of Library, Archives and Information Science*, 16 (2) 109-122.

Bikai-Nyunai, (2006b). Bradford's Law: Part II-an Alternative Explanation from the Field of Economics. *African Journal of Library, Archives and Information Science*, 16 (2) 123-128.

Bjork, B. and Oorni, A. (2009). A Method for Comparing Scholarly Journals as Service Providers to Authors. *Serials Review*, 35 (2) 62-69.

Bosch, S. (2005). Buy, Build, or Lease: Managing Serials for Scholarly Communications. *Serials Review*, 31 (2) 107-115.

Christian, G. (2005). Issues and Challenges to the Development of Open Access Institutional Repositories in Academic and Research Institutions in Nigeria. A Research paper prepared for International Development Research Centre (IDRC), Ottawa, Canada.

Christian, G. (2008). Open Access Initiative and the Developing World. *African Journal of Library, Archival and Information Science*, 18 (1) 1-9.

Conlley, J. and Wooders, M. (2009). But What have You done for Me Lately: Commercial Publishing, Scholarly Communication and Open Access. *Economic Analysis and Policy*, 39 (1) 71-88.

Cox, J. (1998). The Changing Economic Model of Scholarly Publishing: Uncertainty, Complexity, and Multimedia Serials. *Library Acquisitions: Practice and Theory*, 22 (2), pp. 161-166.

Crawford, B. (2003) Open Access Publishing: Where is the Value? *Lancet*, 362, November 8, 1578-1580.

Cumming, S. (2006). African Journal Online (AJOL): A Second Internal Evaluation, 2003-2005. Available at: www.inasp.info/psi/ajol/evaluation2005/ Accessed on October 13, 2008.

Fitzpatrick, J. (2001). Scholarly Publishing: Current Issues of Cost and Quality, Fueled by the Rapid Expansion of Electronic Publishing. 14 (1) Editorial 1-2.

Fyffe, R. and Shulenburger, D. (2002). Economics as if Science Mattered: the BioOne Business Model and the Transformation of Scholarly Publishing. *Library Collections, Acquisitions and Technical Services*, 26, 231-239.

Gass, A. (2005). Paying to Free Science: Costs of Publication as Cost of Research. *Serials Review*, 31 (2) 103-106.

Kawooya, D. (2008). An Examination of Institutional Policy on Copyright and Access to Research Resources in Uganda. *The International Information and Library Review*, 40, 226-235.

Knowledge Dissemination in Africa: The Role of Scholarly Journals, P. Altbach and D. Teferra (eds.), Massachusetts: Bellagio Publishing Network.

Liu, Z. (2003). Trends in Transforming Scholarly Communication and their Implications. *Information Processing and Management*, 39, 889-898.

Moghaddam, G. (2007). Archiving Challenges of Scholarly Electronic Journals: How Do Publishers Manage Them? *Serials Review*, 33 (2) 81-90.

Morris, S. (2004) Open Access: How are Publishers Reacting? *Serials Review*, 30 (4), pp. 304-307.

Nicholas, D. and Rowlands, I. (2005). Open Access Publishing: The Evidence of Authors (Guest Editorial). *The Journal of Academic Librarianship*, 31 (3) 179-181.

Nwagwu, W. (2005). The Open Access Movement: Interrogating IT's Potentials for Inserting Africa in the Global Scientific Information Chain. *Ibadan Journal of the Social Sciences*, 3 (1) 41-54.

Nwakanma, C. (2003). Research Publications in Library and Information Science (LIS) in Nigeria: Publishing to the Wrong Audience? *African Journal of Library, Archival and Information Science*, 13 (2) 93-106.

Palmer, K., Dill, E., and Christie, C. (2009). Where There is a Will There's a Way?: Survey of Academic Librarian Attitudes about Open Access. *College and Research Libraries*, 70 (4) 315-335.

Peterson, L. (2003). Operationalizing Barriers to Dissemination of Africa Research and Scholarship-Case Study. *Research Review* (Ghana). Being a report to OCLC as fulfillment of the ALISE/OCLC research award.

Regazzi, J. (2004). The Shifting Sands of Open Access Publishing, a Publishers View. *Serials Review*, 30 (4) 275-280.

Rosenberg, D. (2003). Africa Journal Online (AJOL): An Internal Evaluation, 2000-2002. Available at: www.inasp.info. Accessed on October 13, 2008.

SQL (2004). *Costs and Business Models in Scientific Research Publishing*. Cambridgeshire: SQL Ltd.

Utulu, S. (2010). Institutional Repository: The Untapped Academic Goldmine. Proceedings of the Professional Summit on Information Science and Technology, Nsukka: University of Nigeria, 16-23.

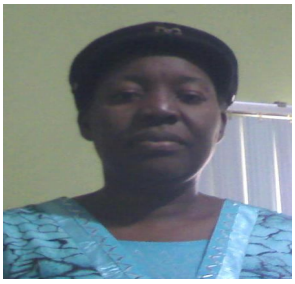
Utulu, S. and Bolarinwa, O. (2009). Nigerian Academics Adoption of Open Access Initiative. *Library Review*, 58 (9) 660-669

Willinsky, J. (2009). The Stratified Economics of Open Access. *Economic Analysis and Policy*, 39 (1) 53-70.

Xia, J. (2008). A Comparison of Subject and Institutional Repositories in Self-Archiving Practices. *The Journal of Academic Librarianship*, 34 (6) 489-495.

Xia, J. and Opperman, D. (2010). Current Trends in Institutional Repositories for Institutions Offering Master's and Baccalaureate Degrees. *Serials Review*, 36 (1) 10-18

***Omolara M. Bolarinwa** is the Acquisition Librarian at the Medical Library, College of Medicine, University of Lagos, Nigeria. She holds bachelor's and master's degrees in Library and Information Science from Ahmadu Bello University and University of Ibadan, respectively. She is currently completing a PhD degree at the Abadina Media Resource Centre, University of Ibadan, Nigeria.



***Samuel C. Avemaria Utulu** obtained his Master of Information Science from the Africa Regional Centre for Information Science (ARCIS), University of Ibadan, Nigeria in 2005, after obtaining a Bachelor of Library and Information Studies degree from the Department of Library, Archival and Information Studies in the same university in 2000. He is also currently a doctoral student at ARCIS. His research interests include open access initiative, web use analysis, e-readiness analysis and corporate library services.

Afr. J. Lib & Inf. Sc. Vol.21, No. 2 (2011) 139-151

Toward Enhanced Access to Africa's Research and Local Content: A Case Study of the Institutional Depository Project, University of Zululand, South Africa

Brenda van Wyk
bvanwyk@pan.uzulu.ac.za

Janneke Mostert
jmostert@pan.uzulu.ac.za

University of Zululand, Private Bag X1001,
KwaDlangezwa, 3886, South Africa

Abstract

Institutional Repositories (IR) enhance access to institutional information resources that are of a local nature, and which also often focus on local issues. Also, the digital representation and availability of such local content through open access institutional repositories makes available to global researchers the information that would otherwise never have been accessed. This paper reviews progress and future plans in respect of the Institutional Repository of the University of Zululand, South Africa. The repository currently makes available theses and dissertations of the university. Among the essential lessons learned during the implementation of the project are the key role of an inclusive steering committee, the support of other institutions that had implemented such projects, and the importance of cultivating the awareness, thrust and participation of faculty and researchers in the project. The observed use patterns of the repository show that it is playing an invaluable role in making available previously inaccessible content.

Keywords

Institutional repository, local content, digital preservation, digital access, universities, South Africa

Introduction

The establishment of digitized institutional repositories (IR) worldwide has revolutionised access to local or institutionalized information content. As most repositories embraced the open access principle, it meant that for the first time information previously inaccessible and mostly "hidden" from researchers and other interested parties now became freely accessible from anywhere in the world. Especially among Western university libraries, huge strides have been achieved in making available their local content. In contrast, African university libraries have been hesitant to follow suit. Among the reasons for the lack of enthusiasm are the perceive lack of local audiences to use such repositories, the fear of exposing and losing control over their valuable and strategic local content to outsiders particularly foreigners, and the myriad of legal complexities associated with making information available through the Internet (Ford, 2005). Other challenges are resistance to participate by faculty and researchers, insufficient funding and technologies, insufficient bandwidth, the high price of Internet services, high import duties on ICT equipment, limited training and lack of manpower.

Southern African university libraries however have been very active in establishing institutional repositories (IR) with varying degrees of success, to the extent that a number of repositories such as those from the Universities of Pretoria, Johannesburg and Stellenbosch, are seen as leaders in their field and are

ranked relatively high on the IR ranking lists (Ranking World of Web Repositories, 2010). Though the majority of repositories mainly make theses and dissertations available, the information contained in them is deemed of such valuable nature that most of them are regularly accessed and utilised. The library of the University of Zululand (Unizulu) is the latest Southern African library, which despite its rural location and the associated challenges of inadequate capacity, staff and funding, has managed to establish an institutional repository that is gradually becoming a well utilised information source for users from all over the world (Van Wyk and Mostert, 2010).

The aim of the paper is to discuss the processes and achievements in the development of the Unizulu Institutional Repository as a case study. The paper also hopes to provide valuable lessons for other African university libraries that also face much the same problems as Unizulu.

`

Institutional Repositories

The term Institutional Repositories (IR) is presently commonly used to describe the digitised content of institutions of higher learning, though in some cases it may also be used to describe the content of any other institution that is preserving and disseminating its internally created information. Institutional repositories are still in their infancy, originating from only the late 1990's; therefore, requirements for institutional repositories are still being defined and the software required to fulfil their needs are still in its developmental phases (Wheatley 2004).

Digital repositories: Helping universities and colleges (2005) defines a digital repository as: "where digital content assets are stored and can be searched and retrieved for later use." A repository supports mechanisms for import, export, identify, store and retrieve digital assets Lynch in Wheatley (2004) defines a university-based institutional repository as "a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members." From the definitions, it is clear that providing access to information produced locally, as well as the preservation thereof to ensure long-term retrieval thereof, is a major component of the service delivery ethos of an IR.

According to Heery and Anderson (2005), institutional repositories are required to:

- have content deposited into the repository, either by the owner of the content, a content creator or any other third party.
- institute the required architecture to manage the content as well as the metadata.
- offer a basic set of services such as searching and accessing services.
- be sustainable and trusted, well-supported and managed.

Institutional repositories can be organized as departmental, special collections, centralised, departmental federated or university federated repositories. Institutional repositories are designed to complement other forms of publishing. Items typically deposited are peer-reviewed materials (pre- or post-print, if rights are retained), supplementary materials, grey literature (conference papers, working papers, documentary evidence), dissertations and theses, work that will not be finished, and student research. The eventual selection policy and practice of each individual IR is reliant on the aim and purpose of the specific IR (Wheatley, 2004).

Lor (2005) points out that the term digitisation requires that the documents to be digitised are available, accessible and retrievable. Within universities, intellectual assets such as published theses and dissertations, research reports, datasets, presentations, learning materials and audiovisual objects are normally available. In many cases, these assets are often the property of individuals within the institution, thus prohibiting open access to much of the available knowledge. In such a situation, an institutional repository offers great benefits by providing a coherent and coordinated approach to capture, identify, store and retrieve these assets. Benefits derived by universities from making available their intellectual, educational and research assets by way of institutional repositories include enhanced utilisation thereof,

improved learning experiences and teaching methods, the introduction of different learning styles, and importantly the publication and dissemination of publicly funded research results. For staff and students, it offers a means of storing and sharing their intellectual assets (Digital repositories: Helping universities and colleges, 2005).

Local Content and Institutional Repositories

According to Mutula (2008), content may include products (e.g. information, knowledge, website, song, dance, record, design, artefact, system, etc.); processes (e.g. engineering procedure, an algorithm, workflow rules, etc); and services (e.g. public service broadcasting, news, advertisement, presentations, content scrapping, video on demand, animations, etc). UNESCO, in Mutula (2008), describes local content as knowledge that is specifically created and owned by a community and that bears relevance to their situation, while Balantyne in Vosloo (2005) refers to it as content produced either locally or adopted from external sources and assimilated into the knowledge base of the community. Several other definitions of what constitute local content exist, but according to Vosloo (2005), much of the confusion can be attributed to the vagueness of the word "local" which, depending on its context, could be seen as "a country, a village, a local language, or a cultural or special interest group".

Africa is often referred to in literature as being an information-poor continent. Much of this criticism is derived from the fact that that there is a paucity of information sources containing local content, African authors often prefer to disseminate information in languages other than their local languages, such as English, and publish in media that are often not readily available to local audiences (Brits, 2009). Misuraca (2007) concurs with this observation by pointing out that Africa still faces problems with its inclusion into the information society mainly because of its lack of appropriate and accessible local content. Mutula (2008) argues that it is not always a case of information content not being available, but often that the documentation and resultant dissemination is inadequate.

According to Chisenga (1999), the Internet is providing Africa with a rare opportunity to contribute towards content for a global information infrastructure thereby enabling African people to be producers of knowledge, provide African researchers and scientists with access to African local content, and put them on equal footing with their counterparts worldwide. This opens up new avenues for collaboration with researchers worldwide, apart from empowering local communities into culturally self-assured societies (Tjek, 2005). Some African governments have now awoken to the fact that the publication of local content has become a necessity and are now urging their citizens to make local content available on the Internet (Adam, 1998; Chisenga, 1999). Responding to this call, academic and research institutions are taking the lead by establishing an Internet presence by way of websites and also by providing access to their scholars and staff members to access the Internet.

Information Management Processes for Institutional Repositories

Chaffey and Wood (2009) see information management as the process of managing information as a strategic resource for improving organisational performance. Tiamiyu and Aina (2008) describe it as the process of facilitating the exchange and use of information. Information management practices cover a wide field and include issues such as the capturing, storing, management, preservation and dissemination of information (AIM, 2010). Among the essential requirements, strategies and processes are the following:

(i) Normal practice with most IR is to concentrate firstly on theses and dissertations available on campus, mainly because copyright issues are not at stake.

(ii) Capturing and populating the IR involves two methods, i.e. the digitisation of existing records kept with the institution or through the process of self archiving.

(iii) Libraries also have the option to either set up a centre to handle all digital related matters or to outsource some of the facilities such as the scanning and production. Westell (2006) sees the availability of an in-house digitisation centre as vital to the success of an IR

partly because it demonstrates to faculty that the necessary expertise is available to preserve their research.

(iv) Self archiving. This is defined as: "the electronic processing, without publisher mediation, of author research." (Self Archiving FAQ, in Xia and Sun, 2007). It involves the process of accessing a simple web interface, supplying the appropriate metadata and attaching the full text document to it. Various reasons are advanced for disseminating a researcher's work to a wider public, especially his peers. These include to promote further research and thereby continuing the scholarly research cycle, and to further the researchers' careers by way of promotion and tenure (Burris, 2009). Set against these positives however, are some deterrents including those bordering on issues of copyright and the possibility of plagiarism (Abrizah, 2009).

(v) IR software such as DSpace, ePrints, and others, are used to store, support and manage material kept in an institutional repository in an efficient manner, while also providing visibility and accessibility to the wider public (Smith et al., 2003). Additional to these software, national and international aggregators and harvesters such as Open DOAR and DRIVER are used to enhance global access to IR.

(vi) Digital preservation. This is seen as "…. the act of physically and intellectually protecting, and technically stabilising, the transmission of the content and context of electronic records across space and time, in order to produce copies of those records that people can judge reasonably authentic. To accomplish this, the preservation system requires natural and judicial people, institutions, applications, infrastructure, and procedures," Hockx-Yu (2006) identified four issues paramount to digital preservation of repositories, i.e.: (a) The data must be maintained in the repository without being damaged, lost or maliciously altered; (b) The content, as well as the metadata, is to be managed by the repository architecture; (c) A minimum set of basic services such as searching and access control must be offered; and (d) The repository needs to be sustainable, trusted, well supported and well-managed.

Several authors (Thibodeu, 2006; Westell, 2006; Yalek et al., 2009) have ventured to identify factors that will enhance acceptance and trust in IR, both from the side of scholars whose work is to be preserved in, and disseminated through the repository, and the users who will access it for research or information retrieval purposes. Issues such as determining a clear mandate for the IR, proper planning, interoperability, a sound funding model, and ensuring long term preservation of documents, are issues that are pertinent in gaining the trust of potential contributors towards making their work available for digitisation, storage and dissemination via the Internet. With the focus still being on the creation of repositories, especially in developing countries, the challenges presented by digital preservation, such as who is responsible, the financing thereof, the building of trust between the repository administrators and the depositors that their information will be authentically preserved over time, co-operation with other departments or professions to assist in managing the process, and the viability of such a repository, are still to be solved. On a sobering note, Caplan (2007) warns against the cost of digital preservation by saying that: "….unless your institution is very large and very wealthy, it is unlikely to have the capacity to run a true preservation repository."

Global Developments in Institutional Repositories

Institutional repositories have a very short history dating back to the early 1990's; though in 2010 the average age of repositories is a about six years (Halling, 2010). The development of the World Wide Web provided the impetus for the first online repository on theoretical physics in New Mexico in 1999 (Halling, 2010). From these humble beginnings, institutional repositories mushroomed with 1991

repositories currently registered on the Registry of Open Access Repositories (http://roar.eprints.org/). Of these 54 are situated in Africa.

According to Shreeves and Graggin (2008), IR can range in size from only few items to hundreds of thousands, while the goals of the repositories vary widely ranging from providing open access to research and scholarship, to act as catalyst for exorbitant serials fees, to promote the institution or to provide a means of managing and preserving the research and other materials produced by an institution. Despite the differences in goals and contents however, many commonalities exist among IR such as the fact that their contents are mostly freely available to whoever has access to the Internet, and that persistent URL's are used to ensure long-term access. Most IR, also make their metadata available for metadata harvesting and provide RSS feeds to ensure the discovery and dissemination of their materials to a wide audience. Content is collected using self archiving by authors or by using an intermediary such as a librarian to input the materials. In many cases, the content does not go through a peer review process, neither does it follow the traditional acquisitions processes of a library. Lastly, some degree of preservation is offered (Shreeves and Gragin, 2008). According to Ball (2010), the issue of preservation and curation is currently receiving a lot more attention, but a lot more progress need to be made before it will be fully integrated into the work of IR.

Institutional Repositories in Africa

Chisenga (1999) advocates that most African university and research libraries are in possession of large paper collections of locally produced research reports, thesis and dissertations which are not available in any other institutions. Additionally, academic staff is also producing materials such as annual reports, technical papers, consultancies reports, and feasibility study reports. Should these collections and individual productions be made available in electronic format, it would make a significant contribution towards the development and growth of African local content.

According to the Registry of Open Access Repositories (2010), 54 institutional repositories are registered on the African continent. Countries such as Botswana, Swaziland, Lesotho, Uganda, Namibia, Zimbabwe and South Africa are currently actively involved in the development of such repositories. Dubbeld (2007) points out that many benefits can be derived on the African continent from open access initiatives such as institutional repositories. Benefits include the enabling of development and innovation; ensuring researcher visibility worldwide and creating awareness of research conducted elsewhere; creating a forum for discussions which can lead to further innovation; and providing accessibility to available information.

Taking into account the fact that most African countries have multiple universities established within their countries, for example Nigeria has 92 universities (Christian, 2008), as well as the obvious advantage of making available local content; the question can be asked why there is such a slow uptake in the establishment of institutional repositories at these institutions. Christian (2008), Anbu (2006) and Kanyengo (2006) elaborate on some of the problems that currently prohibit the development of repositories. Among the problems mentioned are issues such as ongoing commitment to the funding of the repositories, lack of familiarity with Open Access repositories, lack of an Information Policy governing issues such as intellectual property rights and copyright, poor ICT infrastructure, insufficient technical knowledge to make informed decisions on the hardware and software required for digital preservation, and lack of training by library staff members to preserve and archive digital information sources. Ford (2005) also mentions the issue of legal complexities as well as the fact of perceptions among African scholars that providing open access to their intellectual effort will result in the "theft" thereof by developed countries. According to Chisenga (1999), the degree of severity of these problems varies from country to country, and can only be solved if the political will of African leaders is directed towards finding solutions. An example of such willpower is demonstrated by the establishment of the African Information Society Initiative (AISI).

In 1997, Rosenberg lamented the sustainability of programmes digitising African university resources due to the continued dependence on donor input of most universities. (Rosenberg 1998). This is

still the case with many initiatives, especially those on a scale wider than one institution, such as the DATAD (The Database of African Theses and Dissertations) programme of the Association of African Universities (AAU), which was established in partnership with the Centre for Research Libraries, Chicago. This initiative seeks to collect, classify and disseminate information on higher education research, with particular reference to Africa (Association of African Universities, 2009). Currently, they are in the process of developing an economically viable model and intellectual property management regime for the dissemination of the theses and dissertations produced by African scholars. Another such initiative, also under the auspices of the AAU, and in collaboration with UNESCO, is a pilot project hosted by the University of the Witwatersrand (South Africa) and the Addis Ababa University (Ethiopia) concerning the electronic production and publication of theses and dissertations (Lor, 2005).

South African University Libraries are currently the leader, among African Universities in terms of the development of institutional repositories with a total of 29 registered and active repositories (Registry for Open Access Repositories http://roar.eprints.org/). The Council for Scientific Research and Industrial Research (CSIR), though not a university, but a major research institute with a wealth of research documentation available, is also part of the development of South African institutional repositories.

The Unizulu Institutional Repository

The development of the University of Zululand library repository is one of the latest additions to the growing list of repositories in South Africa. Although the project is still in the early stages of implementation, valuable lessons have already been learned that should be shared with universities to assist with the unique challenges of the rural university environment.

The University of Zululand is a rural-based university on the east coast of the KwaZulu/Natal province, about 20 kilometres from the port city of Richards Bay. With the nearest other university 160 kilometres away, this institution caters mainly for rural school leavers from the whole of the northern part of KwaZulu/Natal, as well as from neighbouring countries such as Swaziland, Lesotho and Botswana. It also attracts a relatively large number of students and researchers from other African countries. Known within the South African context as a previously disadvantaged institution, combined with its isolated geographical location, it faces its own unique challenges in terms of information access and dissemination of its published local content to the outside world.

The mission of the university's library is to be an integral part of teaching, learning and research support by offering quality information services and resources to students, academics and staff members. To attain this mission, the library promotes access to information, provides information literacy training and collects and maintains relevant and balanced stocks of information resources. A major part of its existing stocks of information resources is the Unizulu collection, which is a special collection of information resources with local content and consists among others of a total of 3300 bound copies of thesis and dissertation of master's and doctoral research done at the university. A significant percentage of research done at the university reflects information and knowledge of the Zululand region, as research topics often focus on issues in the region. The collection also houses several policy documents, minutes of meetings and historical Zululand documents. The collection is used extensively by students and researchers alike, despite the fact that it has, up to very recently, only been available in hard copy. Though research output at the University of Zululand is relatively high and well used locally, the collection shares the same fate as those of other African university research collections, which is that its visibility beyond its immediate physical environment is minimal, mainly because of access and publishing inabilities (Anbu, 2006).

The decision to develop an institutional repository on campus was taken in 2007. In October 2008, a steering committee to plan and implement the project was established. The committee recognised the importance of adequate representation of various stakeholders in the university in order to get to buy in from as wide a community as possible. Accordingly, the initial committee consisted of the Deputy

Director of the Library who is also the chair person, two representatives of the Department of Information Studies, the ICT Department, a senior information librarian, a library assistant and a technician. A representative of the Research Committee of the university was later co-opted as a member.

The following summarise the key strategies, processes and decisions that were used during the implementation and deployment of the repository project.

Aim and Purpose: The aim and purpose of the repository is to make available existing and future local content. A decision was also being taken that the depository should not act as institutional archive, which implies that policy and other administrative documents will be excluded from the depository. Currently, the emphasis is on making research results from local research activities available to the university community and the global research community, and not to be an administrative archive. Accordingly, although the current Unizulu collection houses several administrative documents, these are excluded from the digitization project.

Project Phasing: A three-phase project plan with flexible time lines stretching over three years was drafted. In accordance with global practices in the development of institutional repositories, phase one concentrated on the technical setup of the system. The scanning of all existing hard copy theses and dissertation was also implemented under the phase. Phase two, which is currently in operation, concentrates on recently completed Masters and Doctoral theses, as well as examination papers, with their accompanying metadata records. This is to be linked to the OPAC catalogue through metadata editing. In the last phase, the Unizulu Art Collection will be added, as well as all research articles published by staff and researchers affiliated to the campus. Both phases two and three will be ongoing, catering for future deposits.

Open Access Approach: In order to achieve the aim of providing access to local content sources for both local and global users, the decision was taken right from the outset to follow the open source route. Other than being the most affordable option, a major contributing factor supporting this choice was the fact that local universities who had already implemented open source policy.

Hardware, Software, and File Formats: Decisions on the most appropriate hardware and software were taken during phase one. In terms of hardware, an IBM 3400 with 125 GB storage space and a scanner with optical recognition capabilities were acquired. DSpace was the logical choice in terms of software, as it was already being used by most of the South African institutional repositories, that found its functionality adequate to support storing, retrieval and access provision. These institutional repositories have been extremely supportive in providing guidance and practical support. Since most of the initial content to be digitized were mainly text based, a decision was taken to require that all the files be stored in PDF format so as to prevent alterations to the original content. For the implementation of phase three, which covers content, some of which is mainly image based, a decision is still pending as to the preferred file format. The current restriction to a very specific format is contrary to many other repositories which provide scope for a wider selection of formats that can be used to deposit content (Digital Preservation Through Using DSpace Open Source Institutional Repository Software, n.d.; Tjek, 2005). The draft policy document however states that other formats will also be used should content other than print be introduced.

Technical Human Resources: Maintenance of the system is currently provided by a systems technician who also supports the esAL (Eastern Seaboard) Consortium, consisting of Unizulu, Mangosuthu Technikon (Durban) and DUT (Durban University of Technology). According to the draft policy developed by the library governing the establishment, governance and maintenance of the IR, meta-data editors will be responsible for adding and describing the meta-data according to international standards. Meta data cataloguing proved a challenge, as this is a new field of expertise required from staff members who are not in possession of the required skills or resources to adequately and correctly describe the materials for easy retrieval. The situation was addressed by training and dedicating a specific staff member to the position as metadata cataloguer. Quality control checks are also being done on a regular basis to ensure quality control and reliable retrieval. To ease the workload until more staff can be dedicated to the unit, the emphasis is currently only on adding new research documents, while retrospective digitisation will be resumed when the situation has stabilized.

Preservation of Repository Records: The draft policy document does not state explicit preservation measures, other than that "the university may transfer the information to another medium for access and preservation." In terms of the permanence of records in the database of the repository, the situation is that the records will be kept permanently and only be deleted once the information in them becomes inaccurate. This however will not be done without prior consultation and approval by the steering committee and the researcher concerned.

Quality Control: An interesting dilemma presented itself in that some departments expressed severe reservation about the quality of some of the research reports currently housed in the Unizulu collection and requested that a moratorium on its digitisation and open access be put in place. A solution to this problem of content quality control has not yet been found, but the documents in questions are currently not made available on the open access system, till a solution can be found.

Publicity and Marketing: In order to overcome the reluctance of researchers to entrust their research results to the library and allow publication of their work on the system, the system was demonstrated to members of the local community, as well as the management and Senate members to gain their support. Several marketing initiatives were launched such as addressing the academics during lunch hour research meetings, inviting them to attend user training in the library, and sensitising staff via e-mails concerning the existence of the repository and its benefits in terms of exposure of their research output to the wider research community and preserving it for posterity.

Copyright Issues: In order to avoid all the pitfalls of copyright, the project is currently only concentrating on the areas where copyright is not in dispute, for example, theses and dissertations as they belong to the university.

Deployment, Accessibility And Use: At this stage, the project has 260 dissertations and theses digitised and accessible online. The access and usage statistics shows huge interest and is a promising indicator for the future relevance and growth of the project.

Future plans

As the project develops and needs of users are re-addressed, it is envisaged to expand and give access to research articles, conference proceedings, presentations, and to form links with parallel projects such as that initiated by the Indigenous Knowledge Centre at the university. Apart from formal research documents, other resources with local content such as electronic examination papers, local news, and copies of seminar presentations are future information objects that will be added in the later phases of the project. Unizulu has a rare art collection which is housed off campus due to unfavourable environmental factors. DSpace software offers the ideal opportunity to capture and provide the collection electronically to the Zululand community, as well as sharing it with the global information society. This collection has been earmarked for digitising in the very near future. Plans are being contemplated to refine administrative procedures in order to accommodate quality control measures, promote active participation by departments and address copyright issues. Many of these developments require the cooperation of and developments in quality control and legal services in various other units.

Unizulu has learned a great deal from other institutions locally and abroad. According to Caplan (2007), the trend in Europe regarding digitisation is still concerned with curation, archiving and preservation. The trend differs from initiatives in the United States, as well as South Africa, where there is a movement towards a broader concept of knowledge asset management. Conway (2008) states that as the concept of IR expands to include various digitised formats and digital asset management that is broader than just an institutional repository model. Such an initiative still needs to be initialised at Unizulu. The university needs to develop and implement a digital asset management policy, which will entail cooperation between various departments, and through which various kinds of institutional content resources defined and preserved and exploited.

Finally, the short term needs of the IR users will have to be weighed against long term preservation plans. Sustainability of the long term preservation is certainly a major issue. Although the

Unizulu IR project initially benefited from the Andrew Mellon Foundation for start up funding, the long term strategy will have to depend on operational funds for contingency.

Discussion

Universities produce huge amounts of local information that can be of great value to local and external researchers, businessmen, public policy makers, other individuals and organisations. However the persisting notion among African universities of restricting public access to most of their documents, as well as the inadequate marketing of the documents to local researchers and external parties who may be interested, usually leads to their gross under-utilisation. This situation should change quickly, particularly in Africa where the lack of local content is often cited as a major drawback in sustainable development.

Although African university libraries have so far been relatively slow in establishing institutional repositories, there are promising signs of improving recognition of the crucial importance of institutional and open access repository strategies for development. This can be seen in the increasing number of local conferences and workshops dealing with the topic, as well as the gradual growth in the number such repositories in the Registry of Open Access Repositories. South Africa specifically is playing a leading role in establishing and developing institutional repositories and as such has become the leaders in the field in Africa. (IR talk@list.lib.sun.ac.za). By sharing expertise and ways of overcoming practical problems such as lack of skills, the choice of appropriate software, and how to manage an IR without sufficient funding, the country contributes towards a more positive attitude towards the sharing of institutional information sources. An example of the value of sharing expertise was experienced at the recent African Digital Scholarship Conference (2009), held in Botswana, where much interest was expressed concerning the issues and challenges experienced in the practical implementation of IR.

According to Hockx-Yu (2006) and Wheatley (2004), due to the short age profile of most IR, preservation issues have not been the focus of attention and as yet are not critical. Forward planning on this issue is however crucial, as most materials degrade over time. Typical degradation of digital materials concerns format obsolescence due to rapid changing software application technology (Hitchcock *et al.*, 2007). However, it is in the best interest of each repository to put in place long-term preservation policies as technology and formats are constantly changing. As a single strategy for all formats and digital objects is not feasible, sufficient research should be conducted on appropriate preservation and migration policies and procedures. Due to the financial constraints under which most repositories are operating, infrastructure and affordability in terms of technology and financing are important issues to be addressed, as it will influence all future preservation strategies (Verheul, 2006). This will also be the case for the Unizulu IR project, especially since financing is currently not based on very sound and sustainable principles.

Conclusion

The value of open access to the available research at the University of Zululand lies not in " how big" or " how many" but in the uniqueness of the " what". The information systems of the indigenous knowledge and local content of research resources will add value to the knowledge collective of Africa. The views expressed by Van Der Merwe and Kroeze (2008) that knowledge only becomes valuable when it is shared is part and parcel of the reasons for the establishment of the Unizulu IR. Though literature on institutional repositories in Africa indicates that that access to research information through out Africa is still very limited and that a great deal of development needs to take place, many universities have already taken the first steps in what can become an invaluable contribution towards providing access to, and preserving for posterity, the information treasures currently locked away on bookshelves. The University of Zululand shares many of the challenges and constraints of the universities in Africa, but the project is proof that success can be achieved with the minimum of skills and funding if approached correctly. The challenge remains in keeping the project sustainable and involving all stakeholders in the university, as well as the industry. Even though the Unizulu IR project is still very small compared to similar projects such as the

University of Pretoria's UP Space, as well as those belonging to one of the eSAL consortium members, Durban University of Technology, it is a positive initiative towards enhancing the universal availability of local information content from the university.

References

Adam, L. (1998). Giving the Internet an African Voice: Expanding African Content Is As Important As Widening Access. *Africa Recovery*, 12(3), 8.

AIM. (2010). What Is Information Management? [Online]: Http://Www.Aiim.Org/What-Is-Information-Management. Accessed 8 November 2010.

Anbu, J.P. (2006). Institutional Repositories: Time for African Universities to Consolidate the Digital Divide. [Online]: Http://Www.Acu.Ac.Uk/Lowcostjournals. Accessed 26 March 2009.

Association of African Universities. (2009). Institutional Repository Advocacy Seminar. [Online]: Http://Www.Aau.Org/Datad/Ws/Iras09/Inrod.Htm. Accessed 26 March 2009.

Abrizah, A. (2009). The Cautious Faculty: Their Awareness and Attitudes towards Institutional Repositories. *Malaysian Journal of Library and Information Science*, 14(2), 17-37. [Online]: Http://Majlis.Fsktm.Um.Edu.My/Document.Aspx?Filename=746.Pdf. Accessed 18 March 2011.

Ball, A. (2010). Preservation and Curation in Institutional Repositories. [Online]; Http://Www.Era.Lib.Ed.Ac.Uk/Bitstream/1842/3381/1/Ball%20irpc-Report-V1.3.Pdf. Accessed 30 November 2010.

Burris, B. (2009). Institutional Repositories and Faculty Participation: Encouraging Deposits by Advancing Personal Goals. *Public Services Quarterly*, *5*(1), 69-79. [Online]: Http://Eric.Ed.Gov/Ericwebportal/Search/Detailmini.Jsp?_Nfpb=True&_&Ericextsearch_Searchvalue_0=EJ867010&Ericextsearch_Searchtype_0=No&Accno=EJ867010. Accessed 18 March 2011.

Brits, J. (2009).Open Access: Challenges and Barriers to African Scholars. *Inkanyiso*, 1(1), 22-27.

Caplan, P (2007). Ten Years After. *Library Hi-Tech* 25(4) [Online]: Http://Www.Emeraldinsight.Com/Insight/Viewcontentservlet?Filename=/Published/Emeraldfulltextarticle/Pdf/2390240205ref.Html. Accessed On 8 February 2010

Chaffey, C. And Wood, S. (2009). *Business Information Management: Improving Performance Using Information Systems.* New York: Prentice Hall.

Chisenga, J. (1999). Global Information Infrastructure and the Question of African Content. [Online]: Http://Archive.Ifla.Org/IV/Ifla65/Papers/118-116e.Htm. Accessed 26 March 2009.

Christian, G.E. 2008. Issues and Challenges to Development of Institutional Repositories in Academic and Research Institutions in Nigeria. [Online]: Http://Idl-Bnc.Idrc.Ca/Dspace/Bitstream/123456789/36986/1/127792.Pdf. Accessed 23 March 2009.

Conway, P. (2008). Modeling the Digital Content Landscape in Universities. *Library Hi-Tech*, 26(3). Http://Www.Emeraldinsight.Com/Insight/Viewcontentservlet?Filename=/Published/Emeraldfulltextarticle/Pdf/2390240205_Ref.Html. Accessed 26 March 2009.

Digital Preservation Through Using Dspace Open Source Institutional Repository Software: A Case Study (N.D.) [Online]: Http://Www.Ais.Up.Ac.Za/Digi/Docs/Smith_Paper.Pdf. Accessed 25 January 2010.

Digital Repositories: Helping Universities and Colleges (2005). [Online}; Http://Www.Jisc.Ac.Uk/Upload_Documents/HE_Repositories_Briefing_Paper_2005.Pdf. Accessed 30 April 2009.

Dubbeld, C. (2007). *North-South Divide and Why Open Access in Africa*. [Online]: Http://Www.Sivulile.Org/Workshp/Carnegie/Index. Accessed On 2 April 2009.

Ford, H. (2005). Why the Lack of Open Content in Africa? [Online]: Http://Www.Cultralivre.Org.Br/English/Index.Php?Option=Com_Content&Task=View&Id=30&Itemid=47. Accessed 30 April 2009.

Halling, C. (2010). History of the Institutional Repository. [Online]: Http://Www.Ehow.Com/About_6693254_History-Institutional-Repository.Html

Heery, R. and Anderson, S. (2005). Digital Repositories Review [Online}: Http://Www.Jisc.Ac.Uk/Uploaded_Documents/Digital-Repositories-Review-2005.Pdf. Accessed 26 January 2010.

Hitchcock, S., Brody, T., Hey, J.M.N. and Carr, L. (2007). Digital Preservation Service Provider Models For Institutional Repositories: Towards Distributed Services. *D-Lib Magazine*, 13(5/6). [Online]: Http://Www.Dlib.Org/Dlib/May07/Hitchcock/05hitchcock.Html. Accessed 9 December 2009.

Hockx-Yu, H. (2006). Digital Preservation in the Context of Institutional Repositories. *Program: Electronic Library and Information Systems*, 40(3), 232 243. [Online]: Http://Www.Emeraldinsight.Com/Insight/Viewcontentservlet?Filename=Published/Emeraldfulltextarticle/Articles/2800400304.Html. Accessed 26 January 2010.

Kanyengo, C.W. (2006). Managing Digital Information Resources in Africa: Preserving the Integrity of Scholarship.[Online]: Http://Www.Ascleiden.Nl/Pdf/Elecpublconfkanyengo.Pdf Accessed 2 April 2009.

Lor, P. (2005). Preserving African Digital Resources: Is There A Role For Repository Libraries? *Library Management*, 26 (1/2), 63-72.

Misuraca, G. (2007). E-Governance in Africa: From Theory to Action A Handbook On ICTs For Local Governance [Online]: Http://Www.Crdi.Ca/Fr/Ev-115670-201-1-DO_TOPIC.Html. Accessed 25 January 2010

Mutula, S. (2008). Local Content Development Projects In Africa. *South African Journal Of Library And Information Science*, 74(2), 105 -115.

Ranking World Of Web Repositories. 2010. [Online]: Http://Repositories.Webometrics.Info/Top800_Rep_Inst.Asp?Offset=750. Accessed 5 November 2010.

Rosenberg, D. (1998). The Financing of University Libraries in Africa. *Information Development,* 4 (2), 73-79.

Shreeves, S.L. Gragin, M.H. (2008). Introduction: Institutional Repositories: Current State And Future. *Library Trends*, 57(2), 89 – 97. [Online]: Https://Www.Ideals.Illinois.Edu/Bitstream/Handle/2142/10679/Shreevescragin.Pdf?Sequence=2 . Accessed 30 November 2010.

Smith, M., Barton, M., Bass, M., Branschofsky, M., Mcclellan, G., Stuve, D., Tansley, R., and Walker, J.H. (2003). Dspace: An Open Source Dynamic Digital Repository. *D-Lib Magazine*, 9(1). [Online]: Http://Mit.Dspace.Org/Bitstream/Handle/1721.1/29465/D-Lib%20article%20January%202003.Htm?Sequence=1

Suleman, H. (2007). *What and Why of IRS*. [Online]: Http://Www.Sivulile.Org/Workshp/Carnegie/Index. Accessed 2 April 2009.

Tiamiyu, M.A. and Aina, L.O. (2008). Information and Knowledge Management in the Digital Society: An African Perspective. In L.O. Aina, S.M. Mutula and M.A. Tiamiyu, M.A. (Eds.) Information and Knowledge Management in the Digital Age: Concepts, Technologies and African Perspectives. Ibadan: Third World Information Services, Pp. 3-27.

Thibodeau, K. (2007). If you build it, Will it fly? Criteria for Success in a Digital Repository, *Journal of Digital Information*, 8(2). [Online]: Http://Journals.Tdl.Org/Jodi/Article/View/197/174Walters Accessed 30 July 2010.

Tjek, L.T. (2005). Desa Informasi: Local Content Global Research. [Online]: Http://Docs.Google.Com/Viewer?A=V&Q=Cache%3a0mxiyyt0-Q8j%3Aarchives.Msu.Edu%2Ficasuv%2Fpapers%2fdesainformasi.Pdf+Desa+Informasi%3A+Local+Global+Content+Reach&Hl=En&Gl=Za&Sig=Ahietbq1ypkf_Njmgkzzrqihetveuhw6uwaccessed 25 January 2010.

Van Der Merwe, A. and Kroeze, J.H. (2008). Development and Implementing of an Institutional Repository within Science, Engineering and Technology (SET) Environment. [Online]: Http://

Http://Researchspace.Csir.Co.Za/Dspace/Bitstream/10204/2500/1/Van%20der%20Merwe1_2008.Pdf Accessed 12 May 2009.

Van Wyk, B and Mostert, B.J. (2010). Institutional Repositories: Gateways to Enhanced Access to Research Information. Paper Delivered at the 2010 LIASA Conference In Pretoria From 27 – 31 October 2010. Unpublished Paper.

Verheul, I. 2006. Networking For Digital Preservation: Current Practice in 15 National Libraries. IFLA Publications 119. Munchen: K.G. Saur.

Vosloo, S. (2005). Towards A Sustainable Development View of Local Content Using ICTs in South Africa: A Key Priority in the National Information Society Strategy. [Online]:Http:// Networks_Dev_Connection_Africa.Pdf. Accessed 12 May 2009.

Westell, Mary. (2006). Institutional Repositories in Canada: Institutional Repositories: Proposed Indicators of Success. *Library Hi Tech*, 24 (2), 211-226. [Online]: *Http://*Www.Emeraldinsight.Com/Journals.Htm?Articleid=1558875&Show=Html . Accessed 30 April 2010.

Wheatley, P. (2004). Institutional Repositories in the Context of Digital Preservation. DPC Technology Watch Series Report 04-02. [Online]: Http://Www.Dpconline.Org/Docs/Dptctwf4word.Pdf. Accessed 3 December 2009.

Xia, J. And Sun, L. (2007). Factors to Assess Self-Archiving in Institutional Repositories. *Serials Review*, 33(2), 73-80. [Online]: Http://Www.Sciencedirect.Com/Science/Article/Pii/S0098791306001365. Accessed 17 March 2011.

Yalek, E., Rieh, S.Y. ,Mareky, K., St. Jean, B. And Yao, X. (2010). Secrets of Success: Identifying Success Factors in Institutional Repositories. [Online]: Http://Smartech.Gatech.Edu/Bitstream/Handle/1853/28419/118-449-1-PB.Pdf?Sequence=2. Accessed 30 July 2010.

***Mrs. Brenda van Wyk** is currently the Deputy Director of Library and Information Services at the University of Zululand, where she is among other duties responsible for the IR digitisation project. She was a part time LIS lecturer at the then RAU, UNISA and currently also at The University of Zululand.

*** Dr. Janneke Mostert** is currently a Senior Lecturer in the Department of Information Studies at the University of Zululand where she teaches subjects such as collection development, multimedia, electronic publishing and information-seeking behaviour. Her research interests are in the field of information seeking behaviour, institutional repositories and digital representation of information.

Afr. J. Lib & Inf. Sc. Vol.21, No. 2 (2011) 153-166

Role of Information and Communication Technologies in Sustainable Livelihoods in Selected Rural Areas of Tanzania

Wanyenda Leonard Chilimo
wchilimo@yahoo.com
University of KwaZulu-Natal, Information Studies Programme, South Africa

Patrick Ngulube
ngulup@unisa.ac.za
University of South Africa, Department of Information Science, South Africa

Abstract

In the recent past, Information and Communication Technologies (ICTs) have been accorded significant importance in development and poverty reduction. This article reports findings and conclusions of a study that used the sustainable livelihoods framework to investigate the link between ICTs and rural livelihoods in four rural districts in Tanzania. The study, which used a multi-case study research design, found out that, while ICTs may not fully support and sustain socio-economic development in poor countries, the impact of these technologies extends to various aspects of the livelihoods of the rural people. Economically, these technologies lead to better earnings and savings. Socially, they help in community interaction and knowledge sharing, and enable improved follow up for remittances and the creation of savings and credit cooperative societies. In relation to human capital, the impact extends to ICTs literacy, improved farming techniques and better access to information on new cash crops. The study concludes that increased access to ICTs may give people in the rural area access to more livelihoods resources and assets, and recommends that barriers to ICTs access such as illiteracy, lack of electricity and ICTs affordability be addressed.

Keywords

Sustainable livelihoods framework, information and communication technologies, rural development, Tanzania

Introduction

Telecentres have been characterised as public facilities in the community that afford people the opportunity to use computers, networks, photocopiers, scanners, telephone, printed materials, and audio and video resources for information searching, communication, training and entertainment. In many developing countries, telecentres have become like a hub for rural connectivity; and in many rural areas, telecentres are the only places that provide Internet services, computer training and other ICT related services to the public. In Tanzania, most telecentres are donor funded projects operated jointly by donors (in some cases more than one donor) and the Tanzanian Government represented by the Tanzania Commission for Science and Technology (COSTECH) and the Tanzania Communications Regulatory Authority (TCRA) at the national level. At the community level, there is also a local organising committee which in most cases is embedded within the local government structures at the district level. The services provided in telecentres are either free or available at an affordable cost.

In Tanzania and in many other African countries, mobile phone services have also experienced phenomenal growth in recent years, and cellular telephone is described as an 'ICT' that is bridging the digital divide in Africa and is considered the most significant entry point to the information society for Africans (Heeks, 1999). For these reasons, this study refers mainly to these services when investigating the link between ICTs and livelihoods of the people leaving in rural areas. It is in this context that this study investigates the link between ICTs and rural livelihoods in selected rural areas of Tanzania. The investigation uses the concept of sustainable livelihoods with an asset/vulnerability approach (Chambers and Conway, 1992; DFID, 2001) as a lens through which to assess the contribution to livelihood sustainability made by ICT services. Mobile phone services and ICTs services provided by telecentres located in four rural districts in Tanzania form the basis of the investigation.

Rural areas of Tanzania exhibit interesting characteristics which make the areas relevant for carrying out this kind of study. Seventy per cent of the Tanzanian population lives in rural areas where agriculture, in the form of smallholder producers, is the major economic activity (United Republic of Tanzania, 2005). However, in most rural areas, small scale activities of other sectors such as livestock keeping, business, handicrafts, fishing, arts and cultural activities are also common. Most of these economic activities are underdeveloped, and poverty levels are still high in most rural areas of Tanzania (United Republic of Tanzania, 2005).

Sustainable Livelihoods Framework

The sustainable livelihoods approach is widely used in the field of development, and increasingly, in the context of ICT based development initiatives (Arun, Heeks and Morgan, 2004; Soriano, 2007; Souter *et al*, 2005). In addition, Heeks (1999) pointed out that as ICTs continue to diffuse and as greater attempts are made to apply them to current poverty-focused agenda goals, there are increasing opportunities for livelihoods frameworks and tools to make a contribution to understanding the linkages between ICTs and development.

Furthermore, Gerster (2006) emphasised that application of the livelihoods approach in poverty reduction initiatives using ICTs is of paramount importance because the role of ICTs in poverty reduction is not only limited to reducing income poverty, but also helps to address non-economic challenges such as empowerment, unequal access to land, credit, and services (for example health and education), vulnerability (towards violence, external economic shocks, natural disasters), powerlessness and social exclusion. The use of sustainable livelihoods framework is also useful in this study because bridging the rural-urban digital divide is not merely about increasing the number of telephone lines or providing improved Internet access, but is basically about impacting the lives of people and empowering them through ICTs (Singh, 2006).

The sustainable livelihoods framework is an approach to development and poverty reduction which has evolved from changing perspectives on poverty, participation and sustainable development (Chambers and Conway, 1992; DFID, 2001). Criticisms of narrow indicators of poverty that are confined to income alone led to interest in livelihoods approach which is based on a holistic perspective to understanding poverty (Moser, 1998). The livelihoods approach focuses on sustainable local-level poverty reduction strategies which strengthen people's own innovative solutions. According to Chambers and Conway (1992), a livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintains or enhances its capabilities and assets both now and in the future, while not undermining the natural resource base.

A sustainable livelihoods framework based on the DFID (2001) approach (Figure 1) includes the following major principles: vulnerability context, capital assets, processes and livelihoods outcomes that are all related to poor livelihoods. The sustainable livelihoods framework identifies five types of assets or capital upon which livelihoods are built. Increasing access (ownership or rights to use) to these assets can make a central contribution

to poverty reduction. The various components of the sustainable livelihoods framework are as discussed below.

Vulnerability context: The vulnerability context is the starting point of the sustainable livelihoods framework. The lives of the poor people are strongly affected by factors that make them and their assets vulnerable. Some of these factors include trends such as population change, national and international economic trends; shocks such as natural disasters, epidemics, civil conflict and economic crises; seasonality variations in prices, costs, production, food supply and economic opportunity.

Capital assets: These assets include the following:

- *Human capital* represents the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives.
- *Social capital* is the genre of social resources upon which people draw in pursuit of their livelihood objectives. It includes networks, participation in social or productive groups and mutually-beneficial relationships.
- *Natural capital* is the term used for the natural resource stocks from which resource flows and services useful for livelihoods are derived.
- *Physical capital* comprises the basic infrastructure and producer goods needed to support livelihoods.
- *Financial capital* denotes the financial resources that people use to achieve their livelihoods such as available stocks, which can be held in several forms such as cash, bank deposits, liquid assets such as livestock and jewellery, or resources obtained through credit-providing institutions and regular inflows of money, including earned income, pensions, other transfers from the state and remittances.

Transforming structures and processes: These include institutions, organisations and policies which are crucial in shaping livelihoods. They operate at all levels, from the household to the international arena, and in all spheres, from the most private to the public.

Livelihood outcomes: Livelihood outcomes are the achievements or outputs of livelihood strategies. They could include outcomes such as higher income levels, an increased sense of well-being, reduced vulnerability, improved food security, and more sustainable use of natural resource base. Livelihoods outcomes are sustainable when they are resilient in the face of external shocks and stresses.

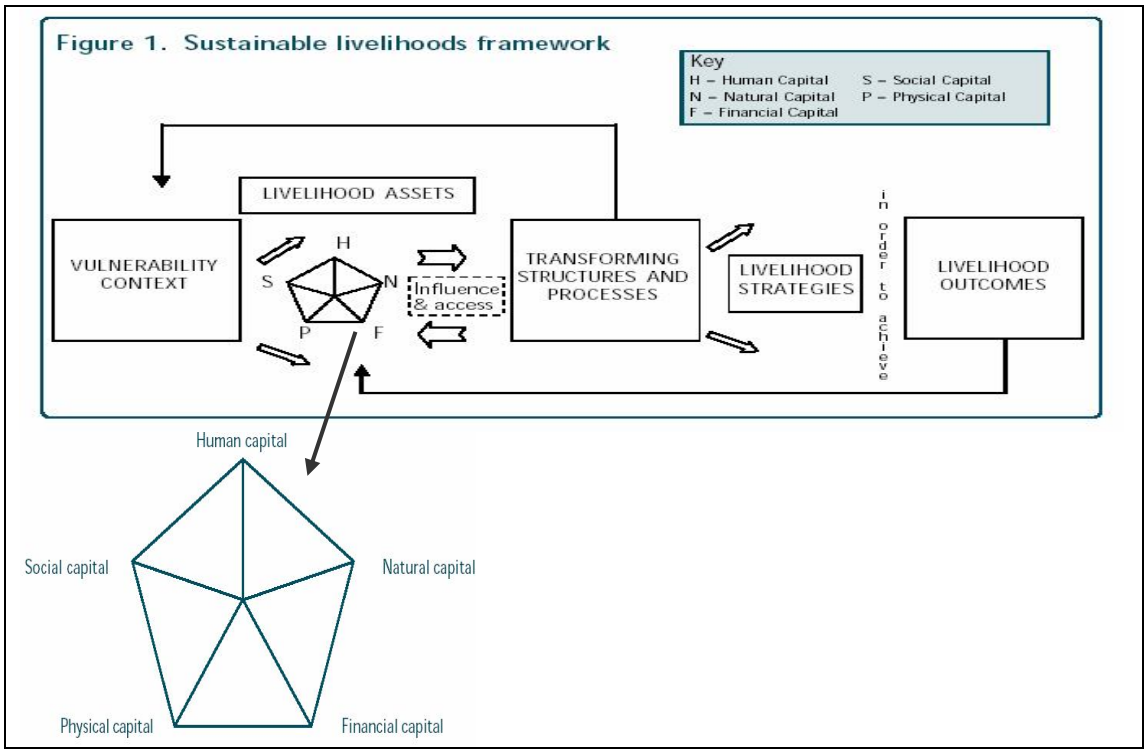


Figure 1: The sustainable livelihoods framework (DFID, 2001)

Methodology

The study was conducted in four rural districts located in two regions in the North-West of Tanzania. The districts are Ngara, Karagwe, Magu and Sengerema, and the study was conducted in the district headquarters. Ngara and Karagwe are two of the five districts in Kagera region, which is situated in the extreme north west of Tanzania. The region borders Rwanda to the North and Burundi to the Southwest, and lies more than 1,500 kilometres from Dar es Salaam, the capital city of Tanzania. Magu and Sengerema are two of the seven districts of the Mwanza region located in the North-Western part of Tanzania bordering Lake Victoria.

The four districts do not fall directly under the Tanzanian political and administrative definition of rural areas; however, in terms of ICT infrastructure development, all these areas are considered rural and they comply with the International Telecommunication Union [ITU] (2000) definition of rural and remote areas. According to ITU (2000), a rural area is characterised by absence of public facilities such as reliable electricity supply and regular transport, scarcity of technical personnel, low level of economic activity mainly based on agriculture, fishing or handicrafts, low per capita income and underdeveloped social infrastructures such as health and education. These characteristics are common to the four selected study areas. Besides, the areas face the challenge of bringing sustainable ICT solutions to remote areas poorly served with basic infrastructure such as transport, electricity and communication infrastructures. Therefore, the term 'rural' as it used in this study is more associated with remote and disadvantaged regions rather than the size of the town. Furthermore, according to Nielinger (2003), district headquarters reflects the status quo of Tanzanian upcountry ICT deployment that had started from the centre in Dar es Salaam and subsequently included major regional towns, and is now about to target the district level, which is the focal point of this research. Nevertheless, during the time of the study, all the four districts had community telecentres. Sengerema and Ngara also had community radio stations, while Ngara was in the final process of launching two different community radio stations.

The study was conducted using multi-case study research design with a combination of qualitative and quantitative methods of data collection. A case study is defined as an empirical enquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidence are used (Yin, 1994, 2004). It is a method used to study a social phenomenon through a thorough analysis of an individual case which may be a person, group, community, society, or any other unit of social life (Leedy and Ormrod, 2001). Yin (2004) and Leedy and Ormrod (2001) also pointed out that case study research can include a single or multiple cases, while Yin (1994) sees evidence gathered from multiple case studies as being "more robust" and provides stronger basis for generalization than single case study.

In the study, telecentres and the communities surrounding them were considered to be the cases in focus, and households in the wards surrounding the telecentres in the four districts were considered to be the population of study. Sampling of households was done using non-proportional quota sampling method. Economic activities such as farming, livestock keeping, small scale business and fishing formed the strata from which the quotas of respondent households were chosen. Perceived adequate sample sizes were obtained in each of the communities. On the basis of these sampling techniques, the numbers of respondents sampled from the four communities as shown in the table 1.

Table 1: Districts, wards, telecentres and respondents involved in the study

District	Population of district*	Ward	Number of households around telecentre	Telecentre involved	Number of respondents
Sengerema	498,993	Sengerema	180	Sengerema Multi- Purpose Community Telecentre	53
Magu	415,005	Magu and Lubugu	250	Crop and Marketing Bureau (CROMABU) Telecentre[1]	60
Karagwe	424,287	Kayanga	100	Family Alliance for Development Cooperation (FADECO) Telecentre[1]	40
Ngara	334,409	Ngara	200	Ngara Multi- Purpose Community Telecentre	50
				Total	**203**

Note: Crop and Marketing Bureau (CROMABU) Telecentre was studied in the district of Magu while Family Alliance for Development Cooperation (FADECO) Telecentre was studied in Karagwe.

* *Source:* United Republic of Tanzania (2011).

Various data collection methods were employed in this study. These include semi-structured interviews which were conducted with representatives of the sampled households. Focus group discussions (FGDs) were also conducted with respondents sampled from the same communities. The participants in the FGDs were additional to the interview respondents listed in Table 1. There were between 8 and 12 participants in the FGDs, as advised in the literature (Mosia and Ngulube, 2005). Two FGDs were conducted in each community, for a total of eight FGDs in the entire study. A semi-structured interview protocol and a focus group discussion guide were used as data collection instruments.

The SPSS® Version 15 was used to analyse the quantitative data from closed ended questions in the semi-structured interview protocol, whereas the Nvivo 8 software was used for analysing the qualitative data from the focus group discussions and the open ended responses in the semi-structured interviews. The Nvivo software was used for coding, analysing and organising qualitative data into themes, and the identified themes were used in the interpretation and discussion of the results of the study.

Results and Discussion

This section discusses the components of the sustainable livelihoods framework and the impact of the ICTs on these components based on the results of this study. However, before going to the actual discussion on the link between ICTs and rural livelihoods, an overview of access and use of ICTs in the research areas is presented so as to help the reader understand the context under which this study was conducted.

Access and Use of Available ICT Services in the Communities

ICTs services involved in this study were two folds. These include ICT services provided by telecentres, and telephone services which were mainly mobile phone services. Various services were offered by the telecentres involved in this study. These include Internet services (including e-mail and web browsing), computer training, community radio services, and agriculture marketing information services. None of the telecentres was offering telephone services directly. Some had public phones fitted in their premises (Sengerema and CROMABU), but these were rarely used. Both users and non-users of these services were interviewed as shown in Figure 2.

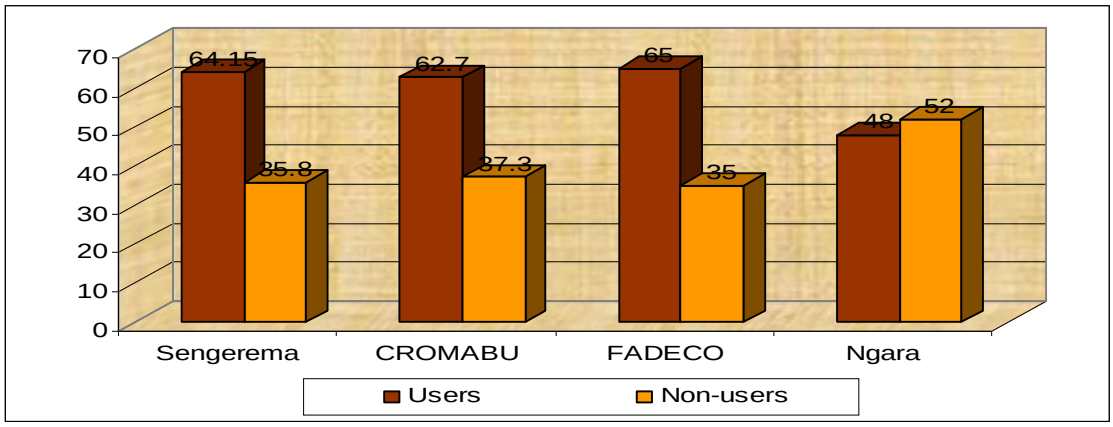


Figure 2: Users and non-users of the telecentre services

The use of telephone services in these communities as indicated by the respondents was dominated by mobile phones. Results show that mobile phone was the most used type of telephone (93%), with fixed line phones accounting for a mere 2% and households with no access accounting for the rest, as shown in Figure 3. Furthermore, most people had access to the mobile phone devices through ownership (66%), borrowing (26%) and public phones (3%).

ICTs and the Vulnerability Context

The sustainable livelihoods framework views people as operating in a context of vulnerability. Within this context, they have access to certain assets or poverty reducing factors. In addition, the vulnerability context influences the livelihood strategies or the various ways of combining and using assets that are open to people in pursuit of beneficial livelihood outcomes that meet their livelihood objectives (DFID, 2001).

In the sustainable livelihoods framework, the vulnerability context frames the external environment in which people exist (Devereux, 2001). People's livelihoods and their assets are fundamentally affected by trends or shocks emanating from government, politics, technology, economic trends, conflicts, natural disasters, and epidemics. Furthermore, the lives of poor people are also affected by seasonal variations in prices, production and economic opportunities. The vulnerability context gains importance through direct impacts

upon people's asset status (Devereux, 2001). In most cases, poor people have limited or no control on these trends, shocks and seasonalities. The vulnerability context can have direct impact upon people's asset status and the options that are open to them in pursuit of beneficial livelihood outcomes. However, not all trends and seasonality must be considered as negative; they can move in favourable directions too. Trends in new technologies or seasonality of prices could be used as opportunities to secure livelihoods.

DFID (2001) pointed out that the different components of the vulnerability context affect different people in different ways. For instance, changes in international commodity prices would affect those who grow, process or export such commodities, but would have little direct effect on those who produce for or trade in the local market. ICT can help poor people by making their assets to become less vulnerable to shock, trends and seasonality through providing access to timely, relevant and adequate information. Gerster and Zimmermann (2003) pointed out that information can prevent poor people from exposure to risks and, in case of disasters, also help to get aid to them more efficiently.

In this study, the communities involved in the study were analysed in relation to their vulnerability context. It was found out that the major sources of vulnerability were remoteness, family related shocks such as injury or death of a close relative, high unemployment, severe weather conditions such as excessive drought or flooding and seasonal variation in the prices and availability of food stuff. In addition, the community was found to be vulnerable to fluctuating global commodity prices of their traditional cash crops such as cotton and coffee.

Concerning the impact of ICTs on the vulnerability context, respondents acknowledged the beneficial impact of the mobile phones in the ability to deal with family emergencies such as health issues, injury and death of a close relative. Mobile phones were also found to be beneficial in calling for help in cases of emergency. For instance, mobile phones were used to call for a taxi or a person with a bicycle in the event that someone became sick and needed to be taken to the hospital. These are some of the things that a few years ago people living in the rural areas could not do.

Therefore, ICTs, and in this case the mobile phones, were helping these people to be less vulnerable to family emergencies and shocks. The mobile phones were providing them with an opportunity to get help from places beyond their immediate community. Friends and relatives in distant places could thereby respond and offer help where needed. Similar results had been reported by Souter *et al,* (2005) where a mobile phone was reported as the most important channel for emergency information and communications between family members. The mobile phone is helping these people overcome remoteness and access social capital even from relatives living far away. The study by Souter *et al,* (2005) pointed out that much of the vulnerability that people face comes from lack of knowledge or information. Farmers have often been vulnerable to the market power of intermediaries and large companies due to lack of information

Nevertheless, information provided by ICTs may not mitigate all the vulnerabilities that rural communities are facing. For instance, it is unlikely that ICTs may affect the fluctuating global commodity prices of their traditional cash crops such as cotton and coffee. However, the technologies are providing people with information that helps them diversify their sources of income.

The Assets Pentagon

The livelihoods framework explains further that within the vulnerability context explained above, people deploy five types of livelihood assets or capital (represented by the asset pentagon shown in Figure 1). People's lives are built upon these core asset categories or types of capital. Increasing access (ownership or rights to use) can make a central contribution to poverty reduction (DFID, 2001).

The assets include social capital, natural capital, financial capital, physical capital and natural capital. These assets are deployed in various combinations within circumstances influenced by institutional structures and processes in order to pursue diverse livelihood

strategies with more or less measurable 'livelihood outcomes'. Devereux (2001) pointed out that the capital assets represent peoples' strength and it's crucial to analyse their endeavours to convert their assets into positive livelihood outcomes. This study assessed the impact of ICT in three of the five capital assets, i.e., human capital, social capital and financial capital.

ICTs and Human Capital

Human capital represents skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives (DFID, 2000). At the household level, it varies according to household size, skill levels, leadership potential, health status, etc. and appears to be a decisive factor– besides being intrinsically valuable – in order to make use of any other type of assets. Therefore, changes in human capital have to be seen not only as isolated effects, but as a supportive factor for the other assets.

The result of this study shows that ICTs such as Internet, community radio and mobile phones have made some positive contribution to the human capital. However, the use of Internet and mobile phones for knowledge acquisition which is the primary component of the human capital was not very common. Similar results were also reported by Souter *et al*, (2005), which reported that the telephone was having no impact on information-gathering and that face-to-face communication remains the overwhelmingly dominant medium of communications for information-gathering. Souter *et al* (2005) further reported that Internet use was low and failed to achieve any significant degree of usage in knowledge acquisition.

Online access to the examination results of secondary school students delivered by the National Examination Council of Tanzania (NECTA) was one of the services widely used in all the telecentres. Mlaki (2007) pointed out that the application of ICTs in the processing and delivery of the examination results in Tanzania led to faster processing and early release of the results which in turn enabled candidates to join colleges without delay. Mlaki (2007) further suggested that more online transactions needed to be implemented such as e-ordering of results slips, e-registration of candidates and adoption of SMS services. The online delivery of the examinations results positively impacted on the human capital in the rural areas, as it gave people an opportunity to access education services and opportunities faster and at a low cost.

ICTs and Social Capital

In the context of the sustainable livelihoods framework, social capital represents social resources upon which people draw in seeking for their livelihood outcomes. These include networks and connectedness that increase people's trust and ability to cooperate. It also includes membership in more formalised groups and their systems of rules, norms and sanctions. The result of this study shows that social communication was the main reason as to why people were using ICTs. E-mail was mainly used for social communication with friends and relatives living in urban area and outside the country. In addition, mobile phones were mainly used for communication with friends and family members.

Similar results were also reported by Souter *et al*, (2005), which pointed out that of the five main categories of livelihoods assets (human, social, financial, natural and physical capital), telephone is most closely associated with social capital.

Close integration between the people living in rural areas and their relatives living in urban areas is important for rural people in terms of remittances from migrant family members and help in times of need. Creating innovative ICT applications that are tailored to the need of the rural people will make ICTs much more relevant to them.

Some mobile phones solutions which are tailored to the need of the rural people in Africa are already in the market, including mobile phone banking and mobile phone money transfer services. In the case of Tanzania, a company by a name of E-Fulusi (T) Africa, trading under the name *Mobipawa*, has created a complete Mobile Banking solution for the people of Tanzania. The Mobipawa service goes by the motto of "*simu ni Benki*" (meaning "a

phone is a bank" in Swahili) became available to the citizens in November 2007 (Mahunnah, 2007). Through this service, people are able to open an account (*Mobipawa* account) where they can deposit and save money, transfer money to other *Mobipawa* account holders and non-account holders all through a mobile phone. Other transactions which can be performed on a mobile phone include payment of certain bills and other simple transactions. Customers can also have their salaries deposited directly to their mobile phone accounts (Sebastian, 2007).

Another aspect of social capital that is facilitated by the telecentres is the provision of a space/venue where people can meet and exchange ideas, information and knowledge. This facility provided an opportunity for telecentre management in two telecentres (CROMABU and Sengerema) to organise the community into a group that among other things operates as credit cooperative society (SACCOS). The SACCOS societies not only help to strengthen the social capital but they also help the community members financially. This is important in communities with no access to banking or insurance services. As the study by Soriano (2007) also pointed out, the telecentres provided an additional common space for communities to meet and exchange information, various employment and other opportunities available, they also exchange information on major events happening in their communities and in the country as a whole.

ICTs and Financial Capital

Financial capital denotes the monetary resources that people use to achieve their livelihood objectives and comprises the availability of cash or equivalent that enables people to adopt different livelihood strategies. In terms of financial capital, telecentre services such as computer training enabled community members to secure employment or self employment opportunities that provided them financial capital. Furthermore, the agricultural marketing information services provided by one telecentre provided farmers with information on prices of their products in various markets within their surroundings.

Therefore, it is crucial for farmers to know the price that their products fetch in other markets especially in urban areas. Thus, information that links farmers directly to markets or wholesale buyers in the markets is very essential. Providing small holder farmers with access to pricing information for their products empowers them to bargain for better prices for their products.

In terms of the impact of mobile phone on their financial capital, the respondents confirmed that their use of mobile phones helps them to save money which could otherwise be used in travelling. In many cases, business people in rural areas reported that they make orders of supplies in urban areas using mobile phones and the supplies are sent to them using the normal public transport system. With local passenger buses (both in large towns and in districts) operating as unregistered but trusted courier companies, the mobile phone e-commerce loop is completed. In the rural areas and in the districts, this kind of business is normally conducted based on trust and a small fee is paid by the users of the service.

Souter *et al*, (2005) reported that the telephone was considered to have value by a high proportion of users when it comes to saving money (for example, by substituting for transport or postal costs), but that it is not considered to have value by most users when it comes to earning income. However, in this study, some respondents indicated that mobile phones create employment and entrepreneurship opportunities through re-selling of the service, selling of the air time vouchers, and operating mobile phone battery charging services**.**

ICTs and Diverse Livelihoods Strategies

Livelihood strategies include approaches that people adopt using assets that they have access to in order to secure livelihoods outcome. It comprises a range of activities and choices that people undertake in order to achieve their livelihood goals (Devereux, 2001; DFID, 2001). DFID (2001) pointed out that livelihood strategies constitute a dynamic process through

which people combine activities to meet their various needs at different times and on different geographical or economical levels.

Providing opportunities for farmers to diversify their livelihoods is very important given the global decline in the prices of the traditional cash crops from Africa. For a long time, farmers in Tanzania have relied on the cultivation of traditional cash crops for their livelihoods and for economic growth and development. These crops include cotton, coffee, tobacco, cashew nuts, tea and sisal. Returns to traditional export commodities have been declining over the years due to a fall in world prices, and as a result, domestic production has declined and farmers who were solely dependent on these cash crops have been deeply affected (Temu and Temu, 2005).

Information provided by the telecentre enabled some farmers to try out new livelihood strategies and adopt them in combination with the existing ones. This was especially the case in Magu and Karagwe districts. In Magu district, a group of women, the *Isandula* women group, learned how to cultivate mushroom and more productive techniques of raising indigenous chicken. This information complemented their traditional livelihoods strategies that relied mainly on the cultivation of cotton as a sole cash crop. Also, young people were encouraged to cultivate vegetables to complement their livelihood strategies which hitherto also relied mainly on cotton cultivation. In Karagwe district, the cultivation of highly valued agricultural products such as spices, vanilla, fruits and vegetable complemented the traditional livelihoods strategies that relied mainly on traditional cash crops such as coffee.

Another form of livelihoods diversification that the rural people are adopting is diversification towards more formal kinds of employment, education and computer training at the telecentres. Parents are diversifying the livelihoods of their children by taking them to school and getting them to learn computers at the telecentre. Telecentres are helping a lot in this by providing information on various educational opportunities in the country and outside the country. For instance, young people in Sengerema district seem to embrace the popular culture that they learn from the Internet. However, these young people also tend to desert rural life for the urban centres, as was also reported by Mercer (2005). The negative aspect of this kind of livelihoods diversification is the diminishing of the human capital resource in rural areas.

Transforming Structures and Processes

Transforming structures and processes represent institutions, organisations, policies and legislation that shape livelihoods (DFID, 2001). They are of central importance as they operate at all levels and effectively determine access, terms of exchange between different types of capital, and returns to any given livelihood strategy (Keeley, 2001). Structures which Devereux (2001) called 'hardware' represent private and public organisations that set and implement policy and legislations, deliver services, purchase, trade and perform all manners of other functions that affect livelihoods (DFID, 2001). Processes which Devereux (2001) called 'software' determine the way in which structures and individuals operate and interact. Important processes for livelihoods include policies, legislation, culture and power relations.

The "transforming structures and processes" aspect of the sustainable livelihoods framework provides macro-micro policy linkages. The sustainable livelihoods framework emphasises the importance of macro level policy and institutions to the livelihood options of communities and individuals. It also stresses the need for higher level policy development and planning to be informed by lessons learnt and insights gained at the local level (DFID, 2001). The framework provides a way of grounding policies and interventions in reality and taking a broader look.

In the ICT sector, policy making strategies, and legal and institutional frameworks at the national level have a profound impact on the accessibility of ICTs by the people living in rural areas. Furthermore, the actions of institutions such as the ministry responsible for ICTs and the regulatory authority, TCRA, also affect access to ICTs by the rural people. So far, processes such as the telecommunications sector reform have brought significant changes to

the telecommunication landscape in Tanzania. However, more pro-poor and pro-rural polices and strategies are needed to address the persisting imbalances between urban and rural access to ICTs. Many ICT initiatives have gone ahead in relative isolation and without the benefit of central and local coordination. Therefore, the networking and central coordination aspect is needed at the national policy making level.

The study further found out that mobile phone access is highly valued by all sections of the community. This is especially the case for its potential role in social communication and in dealing with family emergencies. The mobile phone will be even more valuable because of new services such as mobile banking and money transfer services. This implies that policies that will make this technology more accessible, affordable and ensure quality of services in rural areas will have a substantial social and economic value to the rural communities. At the moment, the quality of mobile phone services in most rural areas is poor, and the networks are always patchy and totally absent in certain areas. The poor people will certainly benefit from improved mobile phone services and will be empowered by opportunities to engage with governance structures. This is due to the fact that the mobile phone technology is being adopted at a very fast rate and new services are always being introduced. Further research to assess the impact of this technology on livelihoods and study the adoption trends over time will be beneficial.

Due to the cross cutting nature of the ICT sector, ICT based project and initiatives should be implemented in coordination with other sectors. The results of this study showed that most farmers are vulnerable to various agriculture-related challenges. However, there was very little cooperation between the telecentres and the people from the agricultural sector both at the national level and at the local level in the districts. The findings of this study show that there is a separation between “rural experts” and “ICT experts” and therefore ICTs solutions do not address the real needs of the rural people. Zappacosta (2008) pointed out that ICT policy is a cross-cutting domain, affecting several policy areas such as technology, research, industry, telecommunications, agriculture, education and health. Without properly considering these elements during the process of policy formulation, ICT diffusion would not match local needs and circumstances and its impact in terms of rural development could be limited or even be negative.

Conclusion and Recommendations

In conclusion, the results of this study show that ICTs are making some positive contributions to the rural livelihoods. Their impact extends to economic issues such as better earnings and saving money, social issues such as community interaction and knowledge sharing, better follow up for remittances and creation of savings and credit cooperative society. The impact also extends to human issues such as – ICT literacy, improved farming techniques and information on new cash crops. The impact of the changes experienced may not be able to fully support and sustain socio-economic development in poor countries. Clearly, improved access to ICTs will facilitate the adoption of diverse livelihoods strategies, thereby make rural livelihoods more sustainable.

This study makes a few recommendations from its findings. Firstly, telecentres should capitalise on building the social capital for the communities they serve. This will help in terms of the sustainability of the telecentres. Simpson (2005) revealed that social capital is important for effective implementation, widespread uptake, greater social inclusion and sustainability of ICT initiatives. The provision of marketing information to farmers is one of the telecentre services which have the potential to produce immediate positive impact on the financial capital and improve the livelihood of rural people. Telecentres should be more active on this. Secondly, old technologies such as radio and television should also be taken into consideration as they play a part in poverty reduction. Thirdly, for the communities and technology to work in harmony, there has to be an enabling environment in terms of appropriate policies, legal and regulatory frameworks and political environment, appropriate locally developed content and the necessary social services such as health services and

schools. Such a framework is likely to facilitate the use of ICTs for sustainable rural livelihoods.

References

Arun, S., Heeks, R. and Morgan, S. (2004). Researching ICT-based Enterprise for Women in Developing Countries: A Livelihoods Perspective. http://www.womenictenterprise.org (Accessed 27 June 2004).

Chambers, R. and Conway, G. (1992). Sustainable Rural Livelihoods: Practical Concepts for the 21st century. Discussion Paper 296. Brighton: IDS.

Department for International Development (DFID). (2001). Sustainable Livelihoods Guidance Sheets 1-7. http://www.livelihoods.org/info/info_guidancesheets.html#7 (Accessed 10 March 2006).

Devereux, S. (2001). Livelihood Insecurity and Social Protection: A Re-Emerging Issue in Rural Development. *Development Policy Review,* 19(4): 507-519.

Duncombe, R. (2006). Using the Livelihoods Framework to Analyze ICT Applications for Poverty Reduction Through Microenterprise. *Information Technologies and International Development,* 3(3): 81–100.

Gerster, R. (2006). Lessons for Donors: ICTs for Poverty Reduction. http://www.i4donline.net/issue/july03/poverty_full.htm (Accessed 10 September 2006).

Gerster, R. and Zimmermann, S. (2003). Information and Communication Technologies (ICTs) for Poverty Reduction? http://www.gersterconsulting.ch/docs/ICT_for_Poverty_Reduction.pdf (Accessed 15 March 2008).

Heeks, R. (1999). Information and Communication Technologies, Poverty and Development, Development Informatics. Paper No.5. University of Manchester. http://www.man.ac.uk/idpm/idpm_dp.htm (Accessed 2 February 2006).

International Telecommunication Union (ITU). (2000). New Technologies for Rural Application: Final Report of ITU-D Focus Group 7. http://www.silocal.org/datos/si/04/07.%20New%20Techn%20for%20rural%20appl..pdf. (Accessed 10 May 2006).

Keeley, J. (2001). Influencing Policy Processes for Sustainable Livelihoods: Strategies for Change. http://www.livelihoods.org/post/Docs/INFLUENCING%20POLICY.pdf (Accessed 20 May 2008).

Leedy, P. D. and Ormrod, J. E. (2001). *Practical Research: Planning and Design*. 7th ed. Upper Saddle River, New Jersey: Prentice-Hall.

Mahunnah, M. (2007). Tanzania's Place in the Mobile Revolution. http://www.mobipawa.co.tz/mobi.pawa?kom=106420&nid=9 (Accessed 20 March 2008).

Mercer, C. (2005). Telecentres and transformation: modernizing Tanzania through the Internet. *African Affairs,* 105(419) 243-264.

Mlaki, T. (2007). Impact Assessment of ICT in Education in Tanzania: The Case of the National Examination Council in Dissemination of Examination Results. Paper Presented in Helsinki Process, ICT Track Workshop Assessing the Impact of ICT in Education Workshop 23 & 24 May, 2007. http://www.helsinkiprocess.fi/netcomm/ImgLib/33/257/Final%20Report%20of%20the%20workshop%20on%20assessing%20the%20impact%20of%20ICT%20in%20education.pdf (Accessed 19 March 2008).

Molony, T. S. J. (2006). Information and Communication Technology in the Developing Country Informal Construction Sector: A Case Study From Tanzania. *Journal of Information Technology,* 261. http://www.parliament.uk/documents/upload/postpn261.pdf (Accessed 20 September 2007).

Moser, C. (1998). The Asset Vulnerability Framework: Re-Assessing Urban Poverty Reduction Strategies. *World Development,* 26 (1): l-19.

Mosia, L. and Ngulube, P. (2005). Managing the Collective Intelligence of Local Communities for the Sustainable Utilisation of Estuaries in the Eastern Cape, South Africa. *South African Journal for Library and Information Science*, 71(2): 175-186.

Mukhebi, A. (2004). Kenya Agricultural Commodity Exchange Limited (KACE) Reaching the Poor in Rural Kenya With Market Information: A Case Study of a Market Information System. Paper Presented at the CTA seminar on the Role of Information Tools in Food Security, Maputo, Mozambique, November 8-12 2004.

Nielinger, O. (2003). Rural ICT utilization in Tanzania: Empirical Findings From Kasulu, Magu, and Sengerema. http://www.duei.de/iak/de/content/forschung/pdf/projektnieltext6.pdf (Accessed 1 May 2005).

Scott, N., Batchelor, S., Ridley, J. and Jorgensen, B. (2004). The Impact of Mobile Phones in Africa. http://www.commissionforafrica.org/english/report/background/scott_et_al_background.pdf> (Accessed 20 March 2006).

Sebastian, C. (2007). Tanzania Eager to Reap Mobile Banking Benefits. http://www.mobipawa.co.tz/mobi.pawa?kom=106420&nid=10 (Accessed 20 March 2008).

Simpson, L. (2005). Community Informatics and Sustainability: Why Social Capital Matters. *The Journal of Community Informatics*, 1(2): 102-11.

Singh, A. (2006). Information and Communication Technologies (ICT) and Sustainable Development. http://www.ceeindia.org/esf/download/paper28.pdf_(Accessed 18 June 2006).

Souter, D., Scott, N., Garforth, C., Jain, R., Mascarenhas, O. and McKemey, K. (2005). The Economic Impact of Telecommunications on Rural Livelihoods and Poverty Reduction: A Study of Rural Communities in India (Gujarat), Mozambique and Tanzania. http://www.cto.int/downloads_programmes/kar8347.pdf (Accessed 20 March 2006).

Soriano, C. R. (2007). Exploring the ICT and Rural Poverty Reduction Link: Community Telecentre and Rural Livelihoods in Wu'an, China. *The Electronic Journal of Information Systems in Developing Countries*, 32 (1): 1-15.

Temu, A. E. and Temu, A. A. (2005). High value agricultural products for smallholder markets in Sub-Saharan Africa: trends, opportunities and research priorities. Paper Presented at an International Workshop on How Can the Poor Benefit from the Growing Markets for High Value Agricultural Products? International Center for Tropical Agriculture, Cali, Colombia. 3 -5 October 2005.

United Republic of Tanzania. (2005). Tanzania Poverty and Human Development Report. http://www.repoa.or.tz/documents_storage/PHDR%202005%20FINAL.pdf (Accessed 27 February 2006).

United Republic of Tanzania. (2011). Censuses (2002). http://www.tanzania.go.tz/nbsf.html (Accessed 27 February 2006).

Yin, R. K. (1994). *Case Study Research: Design and Methods*. 2nd ed. Thousand Oaks: Sage.

Yin, R. K. (ed). (2004). *The Case Study Anthology*. Thousand Oaks: Sage.

Zappacosta, M. **(**2008). Connectivity in Rural Regions: Bottlenecks And Policy Options. http://www.jrc.es/home/report/english/articles/vol58/REG1E586.htm (Accessed 20 March 2006).

***Wanyenda L. Chilimo** received her PhD in Information Studies from University of KwaZulu-Natal, South Africa. She had worked as a librarian and as a lecturer in the information science field at Sokoine University of Agriculture for more than ten years. She currently works as a University Librarian at Pwani University College in Kenya. Her research interests are ICT for development and ICT policy and regulation.

***Patrick Ngulube (PhD)** is a professor in the School of Graduate Studies, University of South Africa (UNISA) and has served in various positions in the East and Southern Africa Regional Branch of the International Council on Archives (ESARBICA). His research interests are indigenous knowledge systems, knowledge management, information and communication technologies and sustainable development.

Afr. J. Lib & Inf. Sc. Vol.21, No. 2 (2011) 167-177

Status of Secondary School Libraries under the Secondary Education Development Plan: A Case Study of Dodoma Municipality, Tanzania

S. Mgina
mmgina.steve@yahoo.com
District Education Office, Kyela-Mbeya, Tanzania

M. J. F. Lwehabura
lwehabura@suanet.ac.tz
Sokoine University of Agriculture, Tanzania

Abstract

This study was undertaken in Dodoma Municipal, Tanzania in order to assess the development and status of school library services under the Secondary Education Development Plan (SEDP). The study involved 44 secondary schools, 186 teachers, 44 heads of schools, 16 school librarians, one Regional Education Officer, and one Region Librarian. Data were collected through a survey method using a questionnaire that has both closed and open-ended items, as well as through interviews and observation. The study found that only 16 (36%) out of 44 secondary schools had libraries, while during SEDP implementation period, no public school and only one private school established a library out of the 27 schools that did not have libraries at the beginning plan period. In the schools with libraries, only 11 (69%) of them had separate buildings for the library, while only seven (44%) had trained librarians. The study concluded that, despite SEDP, school library services were generally poor as most schools lacked libraries, or lacked information resources and staff. It is recommended that in order to improve the quality of school library services, the Tanzania government should enforce its regulation requiring every registered school to have a library.

Keywords

Education, School libraries, Tanzania, Resources, Evaluation

Introduction

Education is a crucial aspect of the development in all countries because it is an empowering tool to equip people with skills to overcome various social, political and economic challenges that they encounter in their lives. Because of the importance attached to education, Tanzania has since its independence implemented a number of education policy measures and reforms intended to achieve quality education. These include the enactment of the Education Act of 1962, Education for Self Reliance (ESR) programme in 1967, and Universal Primary Education (UPE) policy of 1974. In 1995, the government introduced an Education and Training Policy (ETP) in order to guide and harmonize education structures, plans and practices at all levels. In 1998, the Ministry of Education and Culture (MOEC) initiated an Education Sector Development Program (ESDP) and a Secondary Education Master Plan (SEMP) as part of ESDP (URT, 2004). The ESDP produced other two programmes – the Primary Education Development Plan (PEDP) 2002– 06 and the Secondary Education Development Plan (SEDP) 2004– 09. The overall goal of the SEDP

was to increase the proportion of Tanzania youths completing secondary education with acceptable learning achievements.

The SEDP had five strategic components and priorities, namely: improvement of access, equity, quality, management of education system, and management reforms (URT, 2004). The quality improvement component addresses the provision of high quality competences, required aptitudes and right attitudes in all subjects with particular attention to competences in the sciences, mathematics and the languages. Specifically, the quality improvement component outlines the following aspects (United Republic of Tanzania, 2004):

(i) Improvement of qualifications and quality of teachers and tutors;
(ii) Review of curricula for secondary and teacher education to make them more relevant;
(iii) Improvement of school libraries;
(iv) Increase of capitation grant for teaching and learning materials and other charges;
(v) Enhancement of quality of examinations and assessment systems;
(vi) Increase of graduates of diploma and first degree teachers;
(vii) Sensitization and Education on HIV and AIDS, gender and environment.

Under SEDP, a number of achievements have been realised. These include increase in students enrolments from 99,744 in 2003 to 243,359 in 2006, improvements of infrastructure in terms of school buildings rehabilitation and increases in the number of new schools from 1,083 in 2003 to 2,289 in 2006, and improvement in secondary school enrolment gender at entry from 46.6 per cent in 2003 to 47.4 per cent in 2006 (United Republic of Tanzania, 2010). In terms of policy, one achievement was the reduction in school fees for day students from 40,000 Tanzanian shillings (Tshs) in 2004 to 20,000 (Tshs) in 2005 and up to date, and the devolution of authority and responsibilities to lower education administration levels. These education policies and reforms provide evidence that Tanzania has achieved significant progress over the years. The country is also poised to continue its efforts to transform and improve its education quality. It is this understanding that the Government of United Republic of Tanzania acknowledges the country's Development Vision 2025 in the following words:

> *Education should be treated as a strategic agent for mindset, transformation and for the creation of a well educated nation, sufficiently equipped with the knowledge needed to competently and competitively solve the development challenges which face the nation* (United Republic of Tanzania, 1999:19).

However, despite the above policy, reform and plan achievements and commitments, it is of concern whether educational planners took seriously the SEDP quality improvement commitment concerning the improvement of school libraries. This concern also relates specifically to effective implementation of provision of section 5.4.6 of the Education and Training Policy that *"every secondary school shall have a library, adequate stock of books and well trained and competent library personnel."* (United Republic of Tanzania, 1995:43)

This concern motivated this study, which was conducted in Dodoma Municipal, Tanzania in order to achieve following two main objectives**:**

(i) To establish the extent to which SEDP framework has addressed school library services for improving education quality.
(ii) To assess the status of school libraries in terms of their building structures, information resources, staffing and coordination in general.

Literature Review

Contribution of School Libraries to Academic Performance

The availability and services of school have significant influence on students and their academic performance in general. According to Arko-Cobbah (2004), four objectives of school libraries include providing resources for wider and deeper understanding by students of various subjects in the school, promotion of reading habit among the younger generation, initiation of career interests among the youth, and insurance of feeding philosophical and social values into the community. The regular reading by students of the diverse information resources provided by adequately stocked school libraries enables them to develop their familiarity with different philosophical ideas and professions, and economic and socio-political developments.

School libraries support the students' learning process by equipping them with some of the essential skills to succeed in a constantly changing social and economic environment. Through the use of various information resources, students develop and acquire skills to search for, identify, collect, critically analyse and organise information, solve problems and communicate their understandings. Consequently, students enrich their intellectual, cultural and emotional growth. It is through those aspects that a number of studies have confirmed that students in schools with good school libraries learn more, get better grades, and score higher on standardied test scores than their peers in schools without libraries (NCLIS, 2008). School libraries also provide teachers with access to materials relevant to the curriculum they are expected to teach and to their professional development. IFLA (2006) confirms these benefits when it points out that libraries are essential to every long-term strategy for literacy, education, economic, social and cultural developments.

In recognition of the importance of school library services, IFLA adopted in 1999 the School Library Manifesto that defines and advances the role of school libraries and learning resources centres in facilitating students' acquisition of learning tools, ideas and services such as books and other resources that enable learning and allow them to develop their full capacities, to continuously acquire life-long learning skills, and to make informed decisions in today's information and knowledge-based society **(**UNESCO, 2009).

For effective school library operations, among others, the Manifesto encourages the following policies and actions:

- School libraries services be supported by specific legislation and policy so that it is clearly defined, what are the goals, priorities and services in relation to school's curriculum.
- School libraries be run by professionally qualified librarians.
- School libraries be organized and properly maintained according to professional standards (IFLA/UNESCO, 1999).

It is therefore important for every country to recognise the importance and potential role that can be exerted by school libraries towards education quality improvement. School library services should therefore be given priority in various government plans. However, as observed by Dzandu (2007), the school library can only perform its academic functions as the hub for academic work in schools if it is adequately resourced. This means a school library must be supported with appropriate buildings, infrastructure and information resources, and managed by qualified library staff.

School Libraries in African Countries

Several studies on school libraries in most developing countries indicate that school libraries are poorly managed and neglected (Amaral, 2000; Sidibe, 2000; Obajemu, 2002; Dike and Amucheazi, 2003; Bello, 2004; Olafinaswe, 2006; Dzandu, 2007). According to Obajemu (2002), findings from a study done in some secondary schools in Oshodi/Isolo Local

Government Area of Lagos State, Nigeria showed that school libraries were under-staffed, improperly organised and had inadequate and obsolete library facilities. In the same vein, Bello (2004) and Olafinsawe (2006) also note poor school library standards in terms of their collection, staffing, building space and furniture. Similarly, Dzandu (2007) observed that at the basic level of education, school libraries in Ghana were the least developed and most neglected.

Methodology

Dodoma Municipal is one of the six districts of Dodoma region located in the Central Zone of Tanzania (Fig. 1). Other districts in Dodoma region are Chamwino, Bahi, Mpwapwa, Kondoa and Kongwa. The Dodoma Municipal has since 1974 been serving as the official capital of Tanzania, and it hosts a number of government offices including the office of the Prime Minister. During the time of the study, Dodoma Municipal had a total of 51 secondary schools of which 36 were public schools while 15 were private schools. In addition, out of the 51 schools, 43 offered only ordinary level secondary school education, seven offered both advanced and ordinary level secondary school education, while one school offered advance level education only. Like other regions in Tanzania, Dodoma has one public library (REO, 2008).

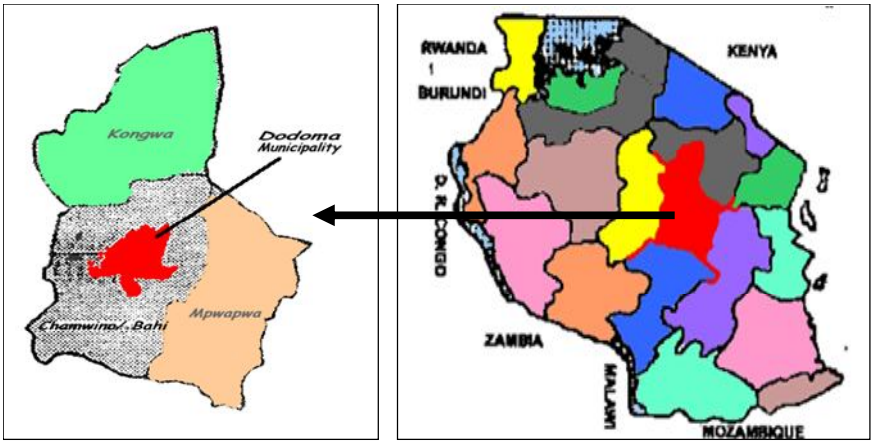


Fig. 1: Maps of the Tanzania showing Dodoma Region and Dodoma Municipality

Sampling

The study used a combination of qualitative and quantitative research approaches. Data were collected through survey method, while both probability and purposive sampling techniques were used to select samples. Under probability sampling, the stratification technique was used to sample from the population of teachers in the Municipality stratified by gender. Simple random sampling was then used to select teachers within each stratum. Again, under probability sampling, the systematic sampling technique was used to sample from the population of schools by listing their names alphabetically and selecting every fourth school. Purposive sampling was used to select the Regional Education Officer (REO) (only one person), heads of the selected schools, (all of them) and the librarians of the selected schools that had libraries (all of them), in view of their administrative roles.

The sample sizes for schools, students and teachers were based on their population sizes. A table of recommended survey sample sizes by Krejcie and Morgan (1970) was applied to come

up with the sample sizes during the survey where the exact populations were established. In the end, in addition, 44 secondary schools were sampled from the 51 schools, and 248 respondents from five categories participated in the study, as summarized in Table 1.

Table 1: Sample of the Study for various Respondent Categories

Population	*Population size*	*Selected sample size*
Teachers	368	186
Heads of Schools	44	44
School Librarians	44	16
Regional Education Officer	1	1
Chief Region Librarian	1	1
Total	**459**	**248**

Demographic Characteristics of the Respondents

Teachers: The study involved 186 secondary school teachers, 54 (29%) of which were from private secondary schools and 132 (71%) from public secondary schools. Their qualifications were as follows: five (3%) had a master's degree; 41 (22%) had a bachelor's degree; 131 (70%) had diplomas; seven (4%) were form six school leavers; and two (1%) had no teaching professional qualifications, but possessed a diploma in accountancy. With regards to gender, 110 (59%) were males while 76 (41%) were females. In terms of teaching experience, 94 (51%) of the teachers had an experience of between one to four years while 92 (49%) of the teachers had five or more years of teaching experience.

School Librarians: Only 16 of the 41 schools had a library, and the study involved all 16 librarians, of which nine (56%) were from private secondary schools while seven (44%) were from public secondary schools. In terms of their qualifications, nine (56%) had no professional training; five (31%) had certificates; while two (13%) had diplomas. In respect to their work experience; 12 (75%) had worked as librarians for five years or more; four (25%) had had four years or less of work experience.

Head of Schools: Forty-four heads of schools were involved in the study, of which 11 (25%) were from private secondary schools and 33 (75%) were from public secondary schools. In terms of education qualification two (4%) had master's degrees; 10 (23%) had bachelor's degrees; and 32 (73%) had diplomas. In terms of their working experiences, 23 (52%) had had working experience of four years or less while 21 (48%) had had working experiences of 5 years or more. Nine (20%) of them were female while 35 (80%) were male.

Regional Education Officer (REO): The study involved one REO who had worked as a primary and secondary school teacher for seven and nine years respectively since 1978. He also worked as District Education Officer for five years before being appointed as REO in 2001.

Regional Librarian: Like other regions in Tanzania, Dodoma region has only one public library which is headed by a Region Librarian. He had been working in public libraries since 1987 and worked at Dodoma public library for 6 years. He had a diploma in librarianship.

Data Collection

Data were collected using questionnaire, interviews and observation. A self-administered questionnaire with both closed and open-ended questions were administered on the teachers, while interviews were conducted with the Regional Education Officer, Regional Librarian and the heads of schools. In addition, non-participant observation was used to observe library facilities and resources, including buildings, books and other learning resources, storage facilities, etc.

Findings and Discussion

Improvement of School Library Services under SEDP

In order to assess the improvement of school library services that had been made under the SEDP, the 44 school heads were asked about their awareness of SEDP and its roles and achievements. It was found out that 34 (77%) of the respondents were aware of SEDP while 10 (23%) were not. In terms of library services improvement, out of 34 respondents, 20 (59%) reported that their schools were supported with some resources and facilities, especially text and reference books. Eight of them (24%) reported that SEDP provided staff training and their allocation while six (17%) mentioned construction of buildings as the support that their schools got from SEDP.

Regarding the responsibility of SEDP in the development of school libraries, the study established that although the establishment of school libraries is in the Education and Training Policy (ETP) of 1995, its implementation is the responsibility of the school community, while the government only provides matching fund to support the efforts made by each community and school. This arrangement applies to public schools only while private schools are expected to undertake the implementation of the policy on their own. Also, from the responses given by the REO and teachers, it appears that the actual responsibility and role of SEDP in the development of school library services is very minimal. However, from the interviews with the 44 school heads, 33 (75%) of them expressed the opinion that, as a mechanism for improving education quality, as well as ensuring access to reading resources and improving independent learning habit among students, the government should be responsible in order to ensure that all secondary schools have adequately stocked libraries.

This current situation is likely to lead to the stagnation or decline of school library services, thus negatively affecting the entire learning processes of the students. For example, in terms of assistance given to schools for development, improvement and organising school library resources under SEDP, the Chief Regional Librarian indicated that SEDP has done nothing important in terms of involving professional librarians on issues of staff development, book procurement, classification and cataloguing.

According to the SEDP, a number of standards were expected to be met by 2009, including the provision of textbooks by subject at a student-book ratio of 1:1. However, most of the targets have not been realised. It can therefore be concluded that although SEDP has attempted to support schools by providing fund to purchase books as reported by heads of school, it failed to develop an adequately professional and effective school library infrastructure, a situation that contributes to the poor status of secondary school library services.

School Library Buildings, Information Resources and Staffing

The study examined the state of school libraries in terms of building structures, information resources and facilities in general, as well as staffing.

Availability of School Library

The study found out that the majority of the schools in the study area did not have school libraries. Out of 44 secondary schools, only 16 (36%) had libraries. The study also established that out of 33 public secondary schools, only seven (21%) schools had libraries while out of 11 private secondary schools, as many as nine (82%) had libraries. This indicates that the non-availability of school library situation in public schools is a serious problem in public schools, and much less so in the private schools. Furthermore, the study found out that, out of 44 secondary schools studied, 17 (39%) were established before SEDP implementation and that out of these schools, only two (12%) schools had no libraries. On the other hand, out of the 27 (61%) schools established during SEDP implementation period, only one (4%) school from private sector had established a library while no public school established a library (Table 2). These

findings clearly indicate that since 2004 when the SEDP implementation started, the establishment of school libraries in public schools stagnated compared to pre SEDP period.

Table 2: Profile of School Libraries Established Before and During SEDP (N=44)

Type of School	*Schools established before SEDP*			*Schools established after SEDP*			*Total*
	With Libraries	Without Libraries	Total	With Libraries	Without Libraries	Total	33 (75%)
Public	7	1	8	0	25	25	11 (25%)
Private	8	1	9	1	1	2	44 (100%)
	15(88%)	2(12%)	17	1 (4%)	26 (96%)	27	

Source: Field Data (2009)

School Library Structures

Appropriate library structures are very important because they facilitate good and comfortable library services and learning environment. In this regard, the study attempted to find out the status of the available library structures in the schools. It was found that 11 (69%) of the schools had their school libraries in dedicated buildings, while five (31%) schools had libraries as single rooms in buildings used for other activities. Almost two-thirds of the schools (28, 64%) lacked library buildings. The heads of schools that had no libraries were asked to mention the places where school books and other information resources were kept, the findings show that 13 (46%) of the 28 respondents said they used store rooms, eight (29%) used teachers' offices, five (18%) used teachers' residences while two (7%) said they used special boxes in staff rooms.

It was further noted that for those schools that had libraries, the quality was poor in terms of material organisation, ventilation and spacing. For instance, out of 16 schools with libraries, only six (38%) schools had favourable reading spaces, with the capacity to accommodate 40 students/users at a time while 10 had unfavourable reading spaces. Libraries with good quality structures are those that are likely to enable library staff to provide good services and motivate students to learn effectively in them (Poll, 2008).

Information Resources

The availability of current information resources in various formats is very important for any school library (Banjo, 1998; Ray, 1990). The heads of schools were therefore requested to speak on the availability of information resources and the associated challenges in their schools. The study found out further that, book acquisition rate in the schools was much lower compared to what would have been expected during the SEDP. For example, between 2004 and 2008, only 16 schools acquired new books as shown in Table 3.

Table 3: Books Acquisition Rate by Schools (N= 16)

Numbers of book volumes acquired between 2004-2008	*Frequency by type of school*	
	Private	*Public*
5000-7000	1 (6%)	0 (0%)
2000-4000	1 (6%)	3(18%)
500-1000	4 (25%)	1(6%)
400-100	2 (13%)	2(13%)
99-0	1 (6%)	1(6%)

Source: Field Data (2009).

For those schools that acquired new books, nine (56%) were private secondary schools while seven (44%) were public secondary schools. Comparatively, this means that nine (78%) of the 11 private secondary schools and only seven (21%) of the 33 public secondary schools acquired new books during the 2004–2008 period. This was in spite of the SEDP that was expected to assist the public secondary schools in the acquisition of new books. As shown in table 4, several constraints were mentioned as responsible for the limited acquisitions of books.

Table 4: Constraints on Books Acquisition (N=29)

Constraint	*Frequency*
Scarcity of text and reference books	9 (56%)
Difficulty of managing books and other learning materials	6 (14%)
Lack of specialists (librarians)	6 (14%)
Lack of space, tables and chairs	6 (14%)
Poor performance in library management	2 (5%)

Compared to schools with libraries, schools without libraries had fewer books bought through SEDP capitation grant. Public schools with libraries were stocked with books bought through SEDP grants while private school libraries obtained their books through various sources including school funds and donors. The situation suggests that students in schools with libraries services had a relatively good opportunity of acquiring quality education than those in schools without libraries. This observation is in line with William and Wavell (2002) who reported that where library provision is poor, students' ability in information handling, research and study skills are correspondingly under-developed.

School Library Staffing

Training and availability of trained personnel to man school libraries is of paramount importance in the provision of effective library services in the school system (Egunjobi, 2003). However, adequate staffing is often neglected in most school libraries. Data collected in the study showed that out of 16 schools with libraries, only seven (44%) had trained librarians manning their libraries, while nine (56%) had no permanent trained staff. Of the seven trained librarians, five had certificate in librarianship (lower qualification) and two had diploma in librarianship (higher qualification). Also, out of the seven, five were employed by public secondary schools and two were employed by private secondary schools. Regarding the librarians with diplomas, all were employed by public schools while out of the five librarians with certificates, three were from private schools and two were from public schools. The findings of the study therefore show that private secondary schools often do not employ qualified librarians.

Furthermore, the study found out that in the nine schools whose libraries had no trained librarians, six (67%) were supervised by designated teachers while three (33%) were supervised by staff with qualifications and skills not related to library work, such as store keeper and school matron. It was therefore evident that the majority of the secondary schools had no trained librarians to offer professional library services. In this regard, the training and engagement of adequate school librarians is a challenge that should be seriously addressed by various education authorities in Tanzania as an imperative strategy for education quality improvement.

Finally, the study also investigated whether the teachers who participated in the questionnaire survey had received any kind of exposure to library and information work or if they studied a module or a course related to library and information services during their teachers' training courses. The study found that out of 186 teachers, 128 (69%) did not attend any programme related to library and information service during their teachers' training programmes. This means that in situations where schools had no trained librarians to manage their libraries,

they probably also had no teachers skilled in aspects of school library services to supervise their libraries. It does appear from these findings that, in general, it can be concluded that the curricula of teachers' colleges in Tanzania have neglected the development of library management skills in trainee teachers.

Conclusion and Recommendations

This study found out that, in general, the development of school library services under the Secondary Education Development Plan (SEDP) in Tanzania was unsatisfactory. Majority of the schools had no libraries and, where there existed, the libraries were in poor conditions in terms of inappropriate or inadequate buildings, inadequate information resources and lack of qualified librarians. Also where schools had librarians, they had low library qualifications. As a general conclusion, school library services have not been given its due status under SEDP. These findings and observations pertain to Dodoma Municipal that had served as the nation's capital since 1974, which makes one to wonder what the situation would be in other parts of the country with expectedly lower central government presence.

In view of the findings of the study, the following recommendations are addressed to the political, administrative and educational authorities for consideration and implementation in order to improve school library services in Dodoma and other parts of the country:

- The government should reaffirm, enforce or implement its regulation that requires every registered school to have a library. In addition, school libraries should have qualified librarians.
- The library coordination unit in the Ministry of Education and Vocational Training (MOEVT) should be strengthened to enable it to deliver its services more effectively.
- The curriculum of teachers' colleges should include a module on school library services and its management. These will help to fill the gap for lack of trained librarians, and ensure that teachers have knowledge and skills for assisting students in the effective use of various information resources within and outside the school libraries.
- This final recommendation is addressed to educational, library and information researchers and professionals who should undertake and publicise studies similar to this one in various other parts of Tanzania.

References

Amaral, W. (2000). Book Box Libraries: Mozambique, In D. Rosenberg (Ed.) *Books For Schools: Improving Access to Supplementary Reading Material in Africa*. London: Association for the Development of Educational In Africa, Pp. 91-111.

Arko-Cobbah, A. (2004). The Role of Libraries in Student-Centred Learning: The Case of Students from the Disadvantaged Communities in South Africa. *The International Information and Library Review*, 36: 263-271.

Banjo, G. (1998). Libraries and Cultural Heritage in Africa. *IFLA Journal*, 24 (4), 228-232.

Bello, N. (2004). The Place of School Libraries in the Universal Basic Education (UBE) Programme in Nigeria. *African Journal of Library Archives and Information Science*, 14 (2), 139-150.

Dike, V. W. And Amucheazi, O. N. (2003). Information Literacy Education in Nigeria: Breaking Down Barriers through Local Resources. In: S. Zinn, G. Hart and E. Howe (Eds.) *International Association of School Libraries Reports 2003: School Libraries Breaking Down Barriers, Durban, 7th-11th July 2003*, Pp. 195-205. Washington: International Association of School Libraries.

Dzandu, L. (2007). The Effect of School Library Provision on First Cycle Schools in the Public System. *Ghana Library Journal*, 19 (1), 69-82.

Egunjobi, R. A. (2003). Training of School Librarians for the New Millennium in Nigeria: A Review of the Past. *Lagos Journal of Library and Information Science,* 1(1) 2003, 28-31.

International Federation of Library Associations and Institutions, (2006). *The School Library in Teaching and Learning for All*. The School Library Manifesto, UNESCO, Paris. [Http://Www.Ifla.Org/VII/S11/Pubs/Manifest.Htm], Accessed: 28/5/2006.

Krejcie and Morgan (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement* (Autumn), 607-610.

National Commission on Libraries and Information Science (2008). Research Foundation Paper School Libraries Work (3rd Ed.) Http://Www.*Nclis*.Gov/Statsurv/Summarystats.Pdf (Pdf), Accessed: 1/8 2011

Obajemu, A.S. (2002). Assessment of School Library Service in a Local Government Area, Lagos State, Nigeria: A Case Study. *African Journal of Library, Archives and Information Science*, 12 (1), 59-68.

Olafinsawe, A. A. (2006). Assessment of School Library Services in Ile-Oluji/Oke-Igbo Local Government Area of Ondo State, Nigeria. *Journal Of Technology And Education in Nigeria,* 11 (1) 23-27.

Poll, R. (2008). High Quality - High Impact? Performance and Outcome Measures in Libraries. Tilburg University, Ticer. [Http://Www.Ifla.Org/VII/ S22/Impact_and _Outcome_Oflibraries_07_12-01.Pdf], Accessed: 27/5/2009.

Ray, C. (1990). *Running A School Library: A Handbook for Teachers-Librarians*. Macmillan Publishers Ltd, Malaysia, 100 P.

Regional Education Officer (2008). Interview Session, Dodoma, Tanzania.

Sidibe, A.B. (2000). School Libraries. In D. Rosenberg (Ed.) *Books For Schools: Improving Access to Supplementary Reading Materials in Africa*. London: Association for the Development of Education In Africa, Pp. 41-57.

United Nations Educational, Scientific and Cultural Organisation (2009). UNESCO/IFLA School Library Manifesto Http://Www.Unesco.Org/Webworld/Libraries/Manifestos/School_Manifesto.Html Accessed: 2/8/2011

United Republic of Tanzania (1995). *Education and Training Policy*, Ministry of Education and Culture, Government Printer, Dar-Es-Salaam, 117 P.

United Republic of Tanzania (1999). *The Tanzania Development Vision 2025*. The President's Office, Planning Commission, Government Printer, Dar-Es -Salaam. 32 P.

United Republic of Tanzania (2004). *Education Sector Development Programme (SEDP) 2004-09*, Ministry of Education and Culture, Government Printer, Dar-Es-Salaam. 60p.

United Republic of Tanzania (2010). Basic Education Statistics in Tanzania (BEST) 2006-2010: Revised National Data. Ministry of Education and Vocational Training. Dare-Es-Salaam.

Williams, D., And Wavell, C. (2002). Recent Research on the Impact of the School Library Resource Centre On Learning. *SCAN,* 21 (3) 37-40.

***Mr. Stephen Mgina** is District Education Officer for Kyela District, Mbeya Region, Tanzania. He attended the University of Dar-Es-Salaam and Sokoine University of Agriculture where he obtained Bachelor of Education and MA (Rural Development) degrees, respectively.

***Dr. Mugyabuso J. F. Lwehabura** is a Senior Librarian and Deputy Director of Sokoine National Agricultural Library, Sokoine University of Agriculture, Tanzania. He attended the University of Dar-Es-Salaam, University of Sheffield and University of KwaZulu-Natal. He holds a Bachelor of Arts (Education), MA (Librarianship) and PhD (Information Studies) degrees.