Evaluating Electronic Resource Programmes and Provision

INASP Research and Education Case Studies

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Evaluating Electronic Resource Programmes and Provision

Case Studies from Africa and Asia

Edited by

Diana Rosenberg
INASP

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Telephone: +44 1865 249909; Fax: +44 1865 251060
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Notes on Contributors

A. M. El Hassan (MD, Ph.D., FRCP, F.R.C.Path., DSC) is an Emeritus Professor at the Institute of Endemic Diseases, University of Khartoum, Sudan. He is a former Dean of the Faculty of Medicine and Deputy Vice-Chancellor of the University of Khartoum, and Minister of Higher Education and Research. His main research interests are infectious diseases and the impact of research on improving diagnosis, prevention and treatment of disease and on community development.

Alison Kinengyere (M.Sc.Inf.Sc., BLIS) has worked as a Serials Librarian at the Albert Cook Medical Library, Faculty of Medicine, Makerere University, since 2003. She is a doctoral student at the School of Library and Information Studies in the same university. She is also in charge of electronic resources as well as information literacy in both the Albert Cook Medical Library, and also at the Makerere University Main Library. She is part of the training team of the Information Competence and Management course (ICM) recently introduced by the library. Alison was involved in the INASP cascading workshops as a facilitator at the University of Zambia and co-facilitator at Makerere University. She is also on the PERI (Programme for the Enhancement of Research Information) co-ordinating team for Makerere University. She has published a few papers and presented at conferences.

Elizabeth Kiondo is currently Secretary-General, UNESCO National Commission, Tanzania. She is on the staff of University of Dar es Salaam Library and was its Director to 2006. She holds an MLS degree from University of Toronto, Canada and Ph.D. from the University of Natal, South Africa. She has co-ordinated several library ICT projects. She has also been instrumental in initiating and implementing the information literacy training programme at University of Dar es Salaam Library. She has conducted research in library and information science and published a number of articles in refereed journals. Her most recent research works include impact of library automation in services provision at the University of Dar es Salaam and an assessment of information literacy skills of users and levels of usage of electronic resources at the University of Dar es Salaam.

Wondimeneh Mammo is Head, Faculty of Science Library, Addis Ababa University Libraries System, Ethiopia.

Paul Manda did undergraduate studies in sociology at the University of Dar es Salaam and a Postgraduate Diploma and Masters Degrees at the then College of Librarianship Wales, United Kingdom. He undertook Ph.D. studies in sociology at the University of Minnesota, USA. Currently an Associate Library Professor and Associate Director, Research and Publications, University of Dar es Salaam Library, his area of research interest is on social impact assessment of new technologies including the impact of the use of electronic resources in library and information services.

Aynalem Megersa is Head, Computer and Information Retrieval Center, Addis Ababa University Libraries System, Ethiopia.

Gwyneth Morgan is a chartered librarian, based in the UK. She has more than thirty years' experience of working in libraries, mainly in the academic sector and mainly in the UK, but also in other sectors and in countries in Africa, Asia and Europe. Much of her career as a librarian has been spent in training library users and library colleagues in effective information retrieval. Over the last twenty years this has involved the use of electronic information resources. Since 2002 she has worked as an independent (freelance) information consultant. Until the end of 2007, she worked with INASP as an external Training Associate.

Maria G. N. Musoke (B.Sc., Dip.Ed., P.G.D.Lib., M.Lib, Ph.D.) was appointed University Librarian/Director of Makerere University Library Services in November 2004. She also teaches at the School of Library and Information Science and supervises graduate students. As part of her post-doctoral contribution to Uganda, Dr Musoke started a rural outreach information literacy programme where she conducted sessions to demonstrate the available information resources, which rural health workers could access by making requests for document delivery. Furthermore, Dr Musoke started a cross-cutting course on information competence and management for graduate students and researchers. She has presented at many conferences and published several papers.

Rebecca Priestley is Programme Officer for Programme Development at INASP. She works closely with the Director of Programmes on a variety of cross-cutting areas, including working with country co-ordinators, supporting peer-exchange visits, and monitoring and evaluation. After graduating in Modern Languages (French and Italian), Rebecca spent three and a half years in China as an English teacher and teacher trainer with the development organisation Voluntary Services Overseas (VSO) before joining INASP in 2006.

Muhammad Furqan Sher was Regional Co-ordinator, Digital Library programme, in the Higher Education Commission, Pakistan, until the end of September 2007. He has now moved to the USA for further studies. He was involved in promoting awareness of the programme and the need for capacity building in the educational sector of Pakistan. Apart from actively arranging awareness workshops in local universities, he had the opportunity to organize nationwide events in close collaboration with a number of leading foreign publishers. He also received training in the area of promotional strategy development and has a strong background in maintaining and developing e-services, where researching, developing and cultivating business partnerships, supported by excellent communication skills and creativity, is key.

Foreword

In the past decade there have clearly been significant moves from paper-based to electronic access to information and knowledge for higher education. This move from a physical to a virtual product has created many new ways to create, store, access, use and manage content. It has also created new challenges in how to understand and learn from those processes.

A key way to develop this understanding is through the monitoring and evaluation (M&E) of programmes or provision of e-resources. Successful M&E can help to identify needs that should be met, resources that could be used more effectively, and problems and issues to be addressed; to document outcomes and impact; to generate information useful in planning and decision-making; and to provide information about an organization's performance.

Of course, M&E of something as intangible as information and knowledge is not a simple task, and there no single methodology that will provide all the answers needed. However, basic guidelines – such as taking evaluation into account at the planning stage of the programme or provision, ensuring that the evaluation involves and is useful to key stakeholders, and making sure that what is learnt leads to action to improve the programme or provision being evaluated – should help to frame any approach.

The eight case studies in this volume examine various aspects of M&E as applied to the provision and use of journals, and more specifically journals in electronic format, in countries of Africa and Asia. After earlier experimentation with information on CD-ROMs, these countries began receiving online electronic journals between 2001 and 2003, through free and discounted programmes like PERI, HINARI, AGORA, OARE and eIFL. Because of the substantial investment made in providing the required infrastructure and training, let alone the cost of the journals and other e-resources, programmes and libraries felt the need to show that the new resources were being used and were having a positive impact on the quality of teaching and research. So M&E became a factor crucial to future sustainability, to justify past and ensure future funding.

The first case study examines the methodology and process used to carry out a mid-term review of INASP's PERI, one of the e-journal access programmes, which set out not only to improve access to international journals but also to improve the overall production and dissemination of research and knowledge in developing countries. Five areas were considered: relevance, usage, management, sharing and sustainability. Impact was not included, as it was thought that three years into the programme was too soon. Although led by INASP, the review team was a mix of internal (INASP) and external (recipients and funders) personnel. This resulted in a good balance of perspectives, experiences and

contexts, and a certain level of objective scrutiny. Quantitative and qualitative data were collected using a mixture of tools. The results were very consistent. However, the review failed to determine impact indicators for future M&E, one of its stated objectives.

The second case study looks at the impact of an M&E training programme, INASP's Monitoring and Evaluation Workshop, which was delivered to library staff in universities in Africa and Asia in 2006 and 2007. It covered the concept of M&E and ways of interpreting quantitative data, concentrating on statistics of e-journal use provided by PERI and journal publishers. Included was the planning of a practical M&E project, to be continued in situ in the participants' own libraries. It was intended that libraries would use the results to support the selection of e-resources in the future. The author concludes that, while some very useful learning did take place and some participants used the knowledge gained (e.g. in Ethiopia, as evidenced by a case study later in this volume), overall, not a lot of M&E work came about as a result of the workshop and no reports were received of using data provided by M&E in the renewal of journal subscriptions. Training is obviously not a quick-fix solution.

Four case studies from Africa then follow , which evaluate the use of e-resources in specific countries (Tanzania and Ethiopia) and in specific institutions (the University of Dar es Salaam and Makerere University). Each of these studies concentrates on discussing factors within the e-resource environment (e.g. availability and access to PCs, bandwidth, computer and IL skills of users, levels of awareness, user behaviour) and how these can affect and be a barrier to usage. As yet little emphasis has been placed in these countries on evaluating M&E techniques or on the relevance and impact of e-resources.

The next case study is in marked contrast. The Digital Library of Pakistan provides e-resources as a centralized service to all universities and research institutions in the country. After using full-text downloads as the main way to evaluate its use, it quickly moved to monitoring the number of research articles published in internationally recognized journals, as a quality output indicator of usage. The success of its provision of e-journals is measured by the number of universities now involved in research and the extent of this involvement.

The final case study does not deal with the M&E of the use of e-journals per se but looks at a methodology for finding out whether the results of research published in journals had been used to improve the diagnosis or for the treatment/prevention of diseases. Major articles on selected health problems in Sudan were assessed to identify the extent to which published research results had been used by practising physicians, other health workers or policy-makers. The conclusion was disappointing. The research was very rarely used. For the situation to improve, Internet access must be as easily available to practitioners

as to researchers, publication in local journals has to be encouraged, and research needs to be relevant to local health needs.

Are there any themes common to all the case studies which might provide pointers to future work in this area?

All programmes and projects need clear and specific terms of reference, with M&E integral to them, not as an optional add-on. This is not the case at the moment. The PERI review concluded that a culture of M&E had not yet developed in partner countries, and this presented a challenge to the evaluation of the e-resource programmes. For most countries, M&E had stopped at the discovery of factors that were limiting usage and initiating strategies to encourage greater use. Pakistan was the exception. There, the Higher Education Commission had a clear remit and mission to boost research productivity, with the national Digital Library as the flagship project. Providing evidence of impact and outcomes was therefore considered essential. Without clearly laid-down TORs and a culture of M&E, it is much more difficult to establish, collect and analyse comparable indicators of use and impact.

Similar techniques for collecting evaluation data were used by all the case study countries – user surveys and interviews, in-house usage data, and usage data provided by vendors/publishers. However, as pointed out by the UDSM case study, in-house usage data are restricted to access from the library, while the majority of academics and post-graduates access e-resources from computers outside the library. To get an accurate picture of total downloads, it is necessary to be able to monitor remote usage. What is more, collecting and analysing the data provided by vendors is a complicated, cumbersome and elusive process, again as experienced by UDSM. Whereas compliance with COUNTER may make it easier in the future to compare like with like, it does not cover issues such as whether an article is counted twice, if, for example, it is opened in HTML but downloaded as a PDF file. And COUNTER does not require any level of standardization in terms of presentation. These problems can be worked around, but the solution is neither quick nor simple.

Downloads are used as an indicator of use in all the case studies, but there is no consensus as to what should be considered an acceptable number of downloads for a university of a certain size with access to a certain number of e-resources. The libraries contributing to this volume are satisfied so long as there is a year-on-year increase. Actual download figures differ considerably. In Pakistan, the total downloads for 55 public universities in 2006 was just over 2 million, with an average of 37,202 per institution. At UDSM, in 2007, there were just under 10,000 uses of commercial databases, but this was for in-library use only. In Ethiopia, 30 institutions downloaded a total of 27,631 articles in 2005. It would be useful if a formula for acceptable optimum use

could be established, something to which libraries could aim. A cost–benefit indicator is the cost per article downloaded. This has not been used in any of the case-study libraries except those Pakistan. There, the Digital Library was happy to report that the cost per article went down from US$2.30 in 2005 to US$1.65 in 2006 – and this was in spite of the fact that funding for the Digital Library programme had risen by approximately 54% owing to an increase in the number of resources made available.

The case-study libraries appear to have been able to address successfully the diversity of contextual factors that affect use. More PCs have been made available, bandwidth has been increased, user training provided, and marketing and promotion undertaken. However, it is salutary to note from Ethiopia that, while 86% of the libraries said that they actively promoted the use of e-resources, only 78% of faculty considered that the promotion had been inadequate. So marketing in itself is not necessarily the answer.

One problem remains and is much harder for libraries to address. Users of e-resources have to battle with the very different mechanisms that providers have for delivering information – user names and passwords, interface design, lack of integrated searching. An enormous range of valuable publisher content is offered by libraries but through systems that are not as intuitive or simple to use as the common search engine. Library systems need to change. In addition, gender and its effect on use is as yet under-explored. UDSM is currently addressing this issue, while it was noted in Ethiopia that 90% of the respondents to its survey were male.

Finally, the research carried out in Sudan underlines the fact that it is not enough to evaluate the impact of e-journal access on the quality of research. If this research remains locked in the journals and is not read and acted upon by practitioners, its value is curtailed. The collaboration of policy-makers and researchers in identifying research topics, and the publication of results locally rather than in prestigious international journals, can be of the utmost importance where getting research into practice is concerned.

This volume is the third of PERI's Research and Education Case Studies to be published. Many thanks go to the case-study authors who have so willingly agreed to share their experiences of M&E and contribute chapters to this volume. We hope that it will assist many more institutions in developing countries begin or continue the work of monitoring and evaluating their e-resource services and build even stronger provision in the years ahead.

Sara Gwynn
Director of Programmes, INASP

Diana Rosenberg
Adviser, INASP

Introduction

INASP's Programme for the Enhancement of Research Information (PERI)

INASP's Programme for the Enhancement of Research Information (PERI) was developed over an 18-month period between 1999 and 2000 in consultation with research partners from many countries. It was created to help strengthen research capacity in developing and emerging countries by:

- *Delivering research and scholarly information:* In response to requests by partner countries, INASP negotiates with international publishers for affordable, country-wide subscriptions to journals and other scholarly resources, based on electronic delivery. Any national non-profit-making institution is eligible to benefit from the discounted subscriptions. Each country, through a co-ordinating institution, makes an annual selection according to its research needs. In some cases, subscription costs are supported initially with funds from international development agencies. The aim in all cases is for this to change to sustainable funding by the country itself, usually via collective purchases by participating institutions. Once the subscriptions are in place, libraries register on behalf of their institution, and researchers can access the resources directly through their institutional library.
- *Disseminating national research:* Supporting journals in developing and emerging countries to become more visible and accessible, mainly through 'online journals' initiatives (AJOL, etc.). These are hosted on Open Journals software, which allows the management of the entire journal publication process from submission to publication, if required, and allows at least the tables of contents and abstracts of the journals to be accessible globally free of charge.
- *Enhancing ICT skills:* Strengthening capacities in the use, evaluation and management of ICTs to support research via cascading workshops which build on national capacities to administer and facilitate training events.
- *Strengthening local publishing:* Strengthening the efforts of journal editors and publishers in developing and emerging countries to produce, publish and disseminate national research information more effectively.

To give a sense of the scale and scope of this work, the table below shows the situation in 2002 and 2007:

	2002	*2007*
Partner countries	*Africa:* Ghana, Kenya, Malawi, Tanzania, Uganda, Zimbabwe, Zambia	*Africa:* Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Rwanda, Tanzania, Uganda, Zambia, Zimbabwe *Asia Pacific:* Bangladesh, Nepal, Pakistan, Sri Lanka, Vietnam *Latin America:* Bolivia, Cuba, Ecuador, Honduras, Nicaragua
% of total programme funding contributed by partner countries	34%	59%
Number of international journal titles available	10,300	29,300
Number of full-text articles from international journals downloaded via IP*	≈ 150,000	≈ 2,500,000
Number national journal titles available via JOLs	150	320
ICT training workshops	Introduction to using the Internet Electronic Journals and Electronic Resources Library Management	Electronic Journals and Electronic Resources Library Management Monitoring & evaluation of e-resource use PC Troubleshooting for Library Personnel Train the trainer: administering and facilitating effective training events Web Page Design and Authoring, leading to Library Web Pages Working together to support research: optimizing the use of e-resources Publishing support workshops

*As it is not possible for INASP to track statistics for username/password, and not all partner publishers were able to provide download data, the actual number of downloads is likely to be significantly higher.

Between 2002 and 2007, this work has resulted in:

- researchers downloading over five million full-text academic papers;
- journal editors and publishers from developing and emerging countries making the abstracts of over 350 journals titles available online, with

over 14,000 hard copies of papers delivered to researchers in addition to full-text downloads;

- over 10,500 librarians, journal editors and researchers taking part in training, the majority of it administered and facilitated by people who had taken part previously in INASP-enabled workshops.

This first phase of PERI ended in 2007, giving INASP and its partners a chance to evaluate it, review current needs in the field, and tap into renewed international interest in higher education. This led to the development of the second phase of the programme – PERii.

PERii will build on and link the successes and best practice from PERI, and integrate INASP's other programme work around library development, management and optimization of ICTs for research, and support for researchers in writing and communicating their work.

This will create a holistic set of activities that will expand the use of existing opportunities and extend support from 'research information' to 'research communication'.

Working with researchers, librarians, journal editors, publishers, ICT professionals and policy-makers at all levels, PERii aims to support a sustainable network of stakeholders that owns and drives an enabling environment for research communication because, as the recent Commission for Africa report neatly summarized: [1]

> Scientific skills and knowledge enable countries to find their own solutions to their own problems, and bring about step-changes in areas from health, water supply, sanitation and energy to the new challenges of urbanisation and climate change. And, critically, they unlock the potential of innovation and technology to accelerate economic growth, and enter the global economy.

PERii will contribute to this by working with partners to:

- Strengthen human *capacities* – through, for example, curriculum development, cascading workshops, distance learning courses and mentoring.
- Support *networks* of people and systems – through, for example, peer exchanges, online communities, support for professional associations and collaborative meetings.
- Improve *policy and practice* – through, for example, jointly developing policy-level briefings, providing grants forthe piloting and development of innovative approaches and solutions, the publication and sharing of best practice, and advice and advocacy to key decision- and policy-makers internationally.

[1] See <http://www.commissionforafrica.org/english/report/introduction.html>.

Key to all of this work together are the following core themes:

Equity

INASP uses the United Nations *Human Development Index* (HDI) and the World Bank *Gross National Income* (GNI) to identify eligible countries.[2] The partnerships between eligible countries and INASP work towards activities being led, implemented and sustained by the countries themselves. This involves a significant, long-term commitment of expertise, time and money from both sides. As it is not possible to work with all eligible countries in this depth, they are divided into two groups:

1. *Partner countries:* INASP and the country jointly commit to making appropriate staff capacity, resources and funding[3] available to support research communication activities, according to the country's specific needs, plans and policies. Partnerships are professional collaborations between Country Co-ordinating Teams (see below) and INASP, and the holistic set of activities is available for selection by all partner countries.
2. *Network countries:* INASP commits the time and funds to enable access to resources such as training materials, publications, and a Directory of Free/Open Access Resources via country-specific Web pages.

If a network country's involvement adds value to partner countries and/or INASP's wider network, that country may also be involved in multi-country or regional initiatives such as research networks, professional associations, Journals OnLine services, peer exchanges, case studies or small grants.

Decisions on involving network countries in specific activities are dealt with on a case-by-case basis, and INASP will transparently share information about how these decisions are made.

Stakeholder participation

Central to the management and implementation of the work are Country Co-ordinating Teams based in partner countries and ideally drawn from bodies that already have a national mandate in supporting research capacity. These teams are not employed or paid through PERii, but PERii supports their existing work, within their communities' identified needs and strategic and policy frameworks. Country Co-ordinating Teams provide the 'voice' for stakeholders in their

[2] <http://en.wikipedia.org/wiki/Human_Development_Index>; <http://www.worldbank.org/data/countryclass/classgroups.htm>

[3] Funding from development agencies secured by INASP if necessary, transitioning to funding secured by the country.

countries and will be closely involved in guiding PERii. INASP will also seek advice from other stakeholders through, for example, monitoring and evaluating activities, participation in strategic meetings, etc.

Strategic partnerships

As well aswith its primary stakeholders (researchers, librarians, publishers, ICT professionals and policy-makers), INASP will continue to work with key partners such as professional associations, national research and education networks, learned societies and academies, as well as like-minded sister organizations, to extend the reach and impact of the work.

Social responsibility

INASP aims for all activities to contribute to long-lasting and sustainable change. Therefore, PERii will take full consideration of how its activities contribute to sustainable development, seeking to balance environmental, economic, political and social concerns both directly (in relation to the specific activity) and in general (in terms of wider development implications). Actions that can be demonstrably shown to conflict with sustainable development will not be undertaken.

Sustainability

The ultimate goal of PERii is to strengthen or build capacity, networks or the policy environment, so that the activities become country-owned, country-driven, country-managed, country-funded and implemented. The common theme of all of INASP's activity design is the concept of a 'cascaded approach', with the aim that every INASP-facilitated activity will lead to a subsequent country-owned follow-on. This builds or strengthens capacities within structures and systems, rather than justin individuals, and extends the reach and impact of INASP's work. Over time, the aim is that each country will build a sustainable, self-supporting network, provide and receive guidance and support to similar countries, and INASP's role will shift to meet any new demands that may arise.

Sara Gwynn
Director of Programmes, INASP

PERI Resources

Resource	*INASP publisher page*	*Publisher's direct URL*
African Journals OnLine (AJOL)	http://www.inasp.info/file/409/african-journals-online-ajol.html	http://www.ajol.info
American Astronomical Society	http://www.inasp.info/file/408/american-astronomical-society.html	http://www.aas.org
American Chemical Society	http://www.inasp.info/file/451/american-chemical-society.html	http://pubs.acs.org/about.html
American Institute of Physics	http://www.inasp.info/file/708/american-institute-of-physics-aip.html	http://www.aip.org
American Physical Society	http://www.inasp.info/file/590/american-physical-society-aps.html	http://publish.aps.org
American Society of Agricultural and Biological Engineers	http://www.inasp.info/file/452/american-society-of-agricultural-and-biological-engineers.html	http://asae.frymulti.com
American Society of Civil Engineers	http://www.inasp.info/file/453/american-society-of-civil-engineers.html	http://www.ascelibrary.org
Annual Reviews	http://www.inasp.info/file/392/annual-reviews.html	http://arjournals.annualreviews.org
Beech Tree Publishing	http://www.inasp.info/file/454/beech-tree-publishing.html	http://www.ingentaconnect.com/content/beech
Bentham Science Publishers – Bentham Science Journals Online	http://www.inasp.info/file/407/bentham.html	http://www.bentham.org
Blackwell Publishing – Synergy*	http://www.inasp.info/file/557/blackwell-publishing.html	http://www3.interscience.wiley.com
British Library Document Supply Centre	http://www.inasp.info/file/456/british-library-document-supply-centre-bldsc.html	http://www.bl.uk/services/document/docsear.html
CABI Publishing – CAB Abstracts	http://www.inasp.info/file/331/cabi---cab-abstracts.html	http://www.cabdirect.org
CABI Publishing – CAB Compendia	http://www.inasp.info/file/676/cabi-compendia-cabi-publishing.html	http://www.cabi.org/datapage.asp?iDocID=221
CABI Publishing – Global Health Database	http://www.inasp.info/file/675/global-health-database-cabi-publishing.html	http://www.cabi.org/datapage.asp?iDocID=169

*Synergy is now incorporated in Wiley-Blackwell (INASP subscribers still have access to former Synergy content).

Resource	*INASP publisher page*	*Publisher's direct URL*
Cambridge University Press – Cambridge Journals Online	http://www.inasp.info/file/398/cambridge-university-press.html	http://journals.cambridge.org
Cochrane Medical Library	http://www.inasp.info/file/374/cochrane-library.html	http://www3.interscience.wiley.com/cgi-bin/mrwhome/106568753/HOME?CRETRY=1&SRETRY=0
Duke University Press	http://www.inasp.info/file/376/duke-university-press.html	http://www.dukejournals.org
EBSCOhost	http://www.inasp.info/file/394/ebsco.html	http://search.ebscohost.com
Emerald Publishing Group Limited	http://www.inasp.info/file/406/emerald.html	http://www.emeraldinsight.com
Gale (Thomson Learning) – Academic ASAP and Health & Wellness Resource Center	http://www.inasp.info/file/558/gale-cengage-learning.html	http://www.gale.com/ExpandedAcademic/index.htm
Gale Virtual Reference Library	http://www.inasp.info/file/560/thomson-gale-gale-virtual-reference-library.html	http://www.gale.com/gvrl/index.htm
Geological Society – Lyell Collection	http://www.inasp.info/file/600/the-geological-society.html	http://www.lyellcollection.org
Institute for Operations Research and Management Sciences (INFORMS)	http://www.inasp.info/file/458/institute-for-operations-research-and-the-management-sciences-informs.html	http://www.informs.org/Pubs/
Institute of Electrical and Electronics Engineers (IEEE/IET Electronic Library (IEL))	http://www.inasp.info/file/457/institute-of-electronic-and-electrical-engineers-ieee.html	http://www.ieee.org/ieeexplore
Institute of Physics Publishing	http://www.inasp.info/file/382/institute-of-physics-publishing.html	http://journals.iop.org
Institution of Chemical Engineers	http://www.inasp.info/file/378/institution-of-chemical-engineers.html	http://www.icheme.org/journals
International Forestry Review – Commonwealth Forestry Association	http://www.inasp.info/file/380/international-forestry-review.html	http://www.cfa-international.org/publications.html

Resource	*INASP publisher page*	*Publisher's direct URL*
JSTOR	http://www.inasp.info/file/459/jstor.html	http://www.jstor.org
Mary Ann Liebert, Inc., publishers	http://www.inasp.info/file/460/mary-ann-liebert-inc.html	http://www.liebertonline.com
Mineralogical Society of Great Britain & Ireland – MinAbs Online	http://www.inasp.info/file/402/minabs.html	http://www.minabs.com
Multilingual Matters / Channel View Publications	http://www.inasp.info/file/388/multilingual-matterschannel-view-publications.html	http://www.multilingual-matters.net
National Academy Press	http://www.inasp.info/file/674/the-national-academies.html	http://www.nap.edu
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NISC SA Databases	http://www.inasp.info/file/461/nisc.html	http://www.nisc.co.za
NRC Research Press Journals Online	http://www.inasp.info/file/545/nrc-research-press.html	http://pubs.nrc-cnrc.gc.ca
Organization for Economic Co-operation and Development – Source OECD	http://www.inasp.info/file/384/oecd.html	http://www.sourceoecd.org
OSA – Optical Society of America	http://www.inasp.info/file/767/osa---optical-society-of-america.html	http://www.opticsinfobase.org
Oxford University Press – Oxford Journals	http://www.inasp.info/file/386/oxford-journals.html	http://www.oxfordjournals.org
Oxford University Press E-Books	http://www.inasp.info/file/618/oup-e-books-oxford-scholarship-online.html	http://www.oxfordonline.com
Palgrave Macmillan Journals	http://www.inasp.info/file/546/palgrave-macmillan.html	http://www.palgrave-journals.com/pal
Project MUSE	http://www.inasp.info/file/602/project-muse.html	http://muse.jhu.edu
Royal Society for Chemistry – RSC Journals Archive	http://www.inasp.info/file/548/royal-society-of-chemistry-rsc-journals-online.html	http://www.rsc.org
Royal Society for Chemistry – RSC Journals Online	http://www.inasp.info/file/548/royal-society-of-chemistry-rsc-journals-online.html	http://www.rsc.org

Resource	*INASP publisher page*	*Publisher's direct URL*
Royal Society Journals Online	http://www.inasp.info/file/390/royal-society.html	http://publishing.royalsociety.org/index.cfm?page=1564
Sage Online Journals	http://www.inasp.info/file/550/sage-publications.html	http://www.sagepub.com
SPIE Digital Library	http://www.inasp.info/file/598/spie-digital-library.html	http://www.SPIEDigitalLibrary.org
Springer eJournals	http://www.inasp.info/file/395/springer.html	http://www.springerlink.com
Taylor & Francis Journals	http://www.inasp.info/file/567/taylor--francis-online-journals.html	http://www.informaworld.com
Taylor & Francis Online eBook Library, Agropedia and Europa World Plus	http://www.inasp.info/file/565/taylor--francis-online-ebook-library.html	http://www.ebooksubscriptions.com
Thomson Reuters – Web of Science including ISI Journal Citation Reports	http://www.inasp.info/file/404/web-of-science.html	http://www.thomson.com/solutions/scientific/academic
University of California Press – Caliber	http://www.inasp.info/file/551/university-of-california-press.html	http://caliber.ucpress.net
University of Chicago Press – Chicago Journals Online	http://www.inasp.info/file/554/university-of-chicago-press.html	http://www.journals.uchicago.edu
Walter de Gruyter Online Journals:	http://www.inasp.info/file/556/walter-de-gruyter.html	http://www.degruyter.com
Wiley InterScience – John Wiley and Sons*	http://www.inasp.info/file/419/wiley.html	http://www3.interscience.wiley.com
World Bank Online Resources	http://www.inasp.info/file/399/world-bank-publications.html	http://www.worldbank.org/elibrary

*John Wiley and Sons are now Wiley-Blackwell.

Chapter 1

The PERI Review: An Example of Participatory Evaluation

Rebecca Priestley

Monitoring and evaluation (M&E) are sometimes presented as add-ons to a programme, an extrinsic force imposed upon organizations by those to whom they are accountable. M&E can and should be seen as an intrinsic, positive process, with outcomes that improve and strengthen activities, linking them to actual needs.

Evaluations often tie in with funding cycles and allow funding agencies to gauge the return on their investment. These agencies are also accountable to others, and evaluation of the programmes they support then feeds into the evaluation of their own work. However, they can and should also involve an element of self-learning. In 2004, the International Network for the Availability of Scientific Publications (INASP) began a review of one of its key programmes, the Programme for the Enhancement of Research Information (PERI), which involves several components and was at that time active in nearly twenty countries.

This chapter will look at the methodology used by the review in order to provoke thinking on the value and implementation of evaluations such as this.

The Programme for the Enhancement of Research Information

Originally a pilot project set up in November 2000, PERI became a full programme at the beginning of 2002. It was developed in response to calls for assistance from research partners and librarians in developing and emerging countries. This assistance related to information production, access and dissemination using ICTs. More detailed information on the specific objectives of PERI can be found on INASP's Website,[1] but the overall aim is to improve access to, production and dissemination of research information and knowledge, both on a national and an international scale.

Activities that make up this programme include negotiating with international

[1] See: <http://www.inasp.info/peri>.

scientific publishers to provide locally sustainable subscription rates for developing and emerging countries; working with countries to develop systems to disseminate nationally produced research information; supporting training workshops around the use of electronic resources for research within library, university and research communities; and enabling networking both within and between countries.

Background to the evaluation

In 2004 INASP found itself approximately halfway through PERI (the initial proposal estimated that the programme would last six or seven years). This also coincided with the end of one funding phase and it was time to prepare for the next.

The programme had experienced rapid growth, with three or four new countries being added each year, and continuing demands from countries that wanted to be involved. Rapidly changing technologies and the arrival on the scene of other actors working on similar initiatives meant that a review at this point would be timely in addressing progress up to 2004, and in adjusting goals and the implementation of activities to achieve them.

The review was not intended to consider the impact of PERI (an almost impossible task at this early point in the project) but rather to:[2]

- document and assess progress towards goals and objectives and so learn from the implementation and management of the programme [January 2002 to October 2004].
- establish appropriate data and indicators for future monitoring and evaluation.
- help identify appropriate priorities and directions for the next phase of the programme.
- share information and learning with PERI stakeholders, funders, and other interested organizations or individuals.

The Review Team opted to focus on five key areas: relevance, usage, management, sharing and sustainability.

INASP understood that the funders of PERI wanted a mid-term evaluation so that findings from the first few years of the programme could be taken into consideration for the next funding cycle. An external evaluation would then be undertaken at the end of the next funding phase (around 2007/08). The term 'review', rather than 'evaluation', was felt to provide a more accurate description of this process as it gave a better idea of progress to date and consideration of

[2] *INASP Infobrief 4: February 2005*. 'PERI Review 2001-2004: Executive Summary', <http://www.inasp.info/uploaded/documents/infobrief4-PERI-english.pdf>.

ways the programme could develop during its second phase. The term evaluation can have connotations of 'impact' and a certain level of finality, perhaps towards the end of a programme.

The people

Initial feelings were that the review should be led internally i.e. by INASP itself, but with a mixed team comprising both internal and external people. There were several reasons for this: That internal leading of a review such as this was a recognized and accepted practice. It was also felt that the review would be a valuable learning exercise for all those involved. Informally, some other organizations had expressed their own poor experience with external reviews. A lack of time also played a part in this decision, as a lengthy process of proposal submission by external organizations was not possible. As INASP had already been looking at strengthening M&E in other areas, and had therefore been investigating methods and approaches, an internally led review made sense. The review was also seen as an important opportunity to further strengthen capacity within INASP and among key partners in M&E.

The team was composed of two members of INASP staff (Peter Ballantyne and Sara Gwynn, at the time Deputy Director and Programme Officer, ICT Training, respectively); the INASP country co-ordinators (CCs)[3] for Tanzania (Paul Manda), Ghana (Helena Asamoah-Hassan) and Nepal (Krishna Mani Bhandary); as well as representatives (Yvonne Thomas and Dylan Winder), from the UK Department for International Development (DfID). These people were approached so that a range of regions, experiences and stakeholder perspectives could be incorporated into the team. Ghana and Tanzania were part of the pilot PERI project, Nepal joined the programme later, and DfID represented a donor perspective. As one member of the team succinctly put it, 'the approach reinforced the notion that PERI … was a collaborative programme'.

INASP approached possible review team members with an e-mail outlining the background to the review, tasks they would be involved in, possible methodology, and the next steps if they felt able to take part. Early clarification of these areas in a way that invited comment and discussion was important, as this again gave a feeling of ownership and equality. It was also agreed that

[3]Each of INASP's partner countries has a country co-ordinator who, as the designation suggests, co-ordinates activities within that country. They are people involved in areas of work that INASP itself is involved in, e.g. as a university librarian, a journal editor, a researcher, etc. Their own job remit often mirrors one or more elements of the remit of INASP, of increasing access to, dissemination and publication of research information. As this wide-ranging remit is often not present in just one person's post, country co-ordination teams involve several members, with diverse skills and networks, to form a coherent and strengthened whole.

the lead organization should be as honest as possible when portraying what it felt the objectives should be, and other participants should feel able to question elements that were unclear. This feeling of ease and team spirit was achieved even within the time constraints, something which can prove difficult if an evaluation is purely external. The CC members of the review team led the process within their country, and this meant that they were able to ask about the real issues and challenges faced, as they were familiar with the local context. It also meant that INASP could take a step back and reduce any pressure that the participant stakeholders might feel to gloss over particular challenges or weaknesses of the programme.

When deciding on the team, opinions differed as to the value of having evaluators that understood the specific context of the organization. This was mentioned by several members of the team, but to varying degrees. One stated that it was very important that everyone understood the specific realm that INASP worked in; another that it helped a lot, and added that building a team of different PERI stakeholders ensured that all contexts were familiar to at least one member of the team. Another member said that understanding the context was certainly an advantage but not critical, as the guidelines and questions decided upon at the outset were so clear. He did admit, though, that as 'adoption of innovations such as electronic resources are very much influenced by specific social-cultural situations [these are] better understood by individuals who know those specific contexts.'

When asked what value having a review team, as opposed to a single reviewer, had, everyone felt that this approach gave a good balance of perspectives, experiences and contexts. Each had something to give and something to gain from the experience. Involving a funding agency meant that it had a first-hand view of the achievements of the programme, in a more 'real' way than reading a report. One team member recalls feeling nervous about the inclusion of a funder in the team 'as it felt like we might have to "whitewash" rather than scrutinize the programme honestly, but this was absolutely not an issue as it turned out.'

The mixture of perspectives and experiences meant that a real cross-fertilization of ideas was possible, and the peer-review dimension allowed CCs to learn from and exchange ideas with their colleagues in other countries. The international composition of the team meant that issues that could be seen differently owing to diverse cultural backgrounds were understood in the widest way possible.

Although the term 'external participants' was used, all members of the team were in fact 'internal' as far as PERI was concerned, in that they were direct participants in the programme. However, the key aspect here was that this slight

detachment from the inner workings of INASP meant that a level of objective scrutiny was gained while a sympathetic understanding of the programme was also maintained.

The methods

Even before the team was in place, INASP had conducted some investigations into the ins and outs of evaluation methodology. While it was important to allow ownership of the evaluation by the participants in the programme, it was also important that INASP staff felt that they could provide input into the process, that again it did not become something imposed on them. A strongly held view was that INASP staff members were also stakeholders in the programme and therefore input from them should be sought.

One set of documents that proved very useful when putting together the terms of reference (TORs) for the review were the guidelines developed by the Evaluation Unit of the International Development Research Centre (IDRC).[4] While these are meant for the IDRC's own evaluation programmes, the basic tenets are clear and easily transferable, and matched INASP's own guiding principles well.

Once the objectives of the review had been decided (through discussions at staff meetings and by working through some of the questions that the IDRC guidelines threw up), INASP staff were invited to fill in a 'purpose table', indicating what percentage of time/effort should be spent on the different elements of the review (Table 1).

Table 1: Purpose table

Purpose	*Percentage of time*
1. Impact assessment	
2. Project management/planning	
3. Organizational learning	
4. Understanding stakeholder perspectives	
5. Public accountability	
TOTAL	100%

This, coupled with a questionnaire (Appendix 1) that allowed more in-depth feedback from staff, again meant that the review was owned by those whom it would affect. Draft TORs were drawn up from staff responses to this questionnaire and some input from the CCs. These were then finalized at

[4] <http://www.idrc.ca/en/ev-32492-201-1-DO_TOPIC.html>.

the first meeting of all the team members, in Dar es Salaam, Tanzania, in late August/early September 2004. This two-phase approach meant that, although some areas, such as the objectives of the review, were agreed upon internally within INASP, the full development of the methodology and approach took place among the whole team. Questions that staff and CCs had raised as 'key performance issues' were considered in Tanzania, and grouped under the five headings of relevance, usage, management, sharing and sustainability. The review team felt that these were the overarching themes of the concerns and hopes expressed in the questionnaire.

Other aspects that were clarified during the initial review team meeting included the notion that this process was very much a 'review' rather than an 'evaluation'. A matrix was drawn up of the themes mentioned above and of the informants that would be particularly relevant to those themes so that questions could be more focused.

It was also in this meeting that the key methods were defined, again in a matrix format, putting informants against methods such as stakeholder meetings, questionnaire, interviews, existing data and in-country visits, to show, as a general indicator, what the most useful approach would be with each of these groups.

The principles adopted by INASP were developed into a clear methodology by the whole team at the initial meeting in Tanzania. One member of the team felt that this approach 'allowed most members to take ownership of the whole framework and methods'. They designed the whole process to be participatory and build on the skills of those involved.

When working on the methods to be used, it is, of course, necessary to think about what you want to find out, and it can be difficult to decide whether quantitative or qualitative data will be more effective in assessing progress towards goals (although this may be addressed earlier on in a project, when indicators are developed near the outset, and often involve a balance between the two types). INASP, like many other organizations, combined the two types of data to reinforce the rounded and deep picture of the programme they were trying to capture.

The review team put together an electronic questionnaire (Appendix 2), administered by e-mail. Interviews were conducted, with questions based on the electronic questionnaire, either by telephone or in person, to capture a richness of data that does not usually come out of a solely questionnaire approach. Focus groups/stakeholder meetings were also arranged in some of the countries in which the organization works. Key documents were reviewed by the evaluation team. Towards the end of the review process a workshop was organized in which the draft findings were presented to stakeholder representatives. This offered an opportunity for peer review and validation of the findings.

As well as allowing for both quantitative and qualitative data, a mixture of methods provided, according to one member of the team, 'triangulation so that findings from one source/method could be confirmed/questioned by findings from another'; hence, the validity of the results was heightened.

The other factors to be taken into consideration were those of time and money. Clearly, these two factors are key to the design and implementation of any form of M&E. It is also important to remember that the stakeholders that are consulted during a review process such as this do not have unlimited time available. Evaluators need to work out what can realistically be achieved within the available time and budget constraints, and without pursuing stakeholders to the detriment of evaluation outcomes. It was always made very clear during the review that it was the programme that was being evaluated, not the people or organizations that were approached for feedback about it.

The team approach also meant that the workload could be shared, something which was particularly important when related to budget issues. For example, it would not have been possible for each member of the team to visit each country where focus groups were held, but the division of labour meant that there could be at least one representative present.

The process

At the Tanzania meeting the team put together a schedule of all the tasks that would be involved in the review process. They also worked out the timing of these tasks by indicating deadlines, the lead person, and other members of the team who would also be involved.

The basic time allocated for the review was four months, with the final report ready by the end of December 2004. With timing fairly tight, putting together this schedule was a necessary starting point as it meant that, from the outset, all members of the team were aware of what was expected of them in terms of time and tasks.

After the initial visit to Tanzania, various members of the team also made visits to Nepal and Ghana; these both took place in October and each lasted around five days. A further workshop was scheduled just before the biennial INASP symposium that took place in Oxford at the beginning of November. This enabled a wider number of stakeholders to provide face-to-face input into the review. After each of the country meetings, including the one in Oxford, there was a strict process of note collation. One of the team members would be the central collator, and the other members of the team who had taken part in the visit would send their own notes to that central person. A draft of the collated notes would then be circulated before the finalized report on the visit was put together.

The electronic questionnaire was circulated to PERI stakeholders in mid-September, and a deadline of four weeks was given.

As well as the in-country meetings at which members of the review team were present, other countries were invited to submit proposals to arrange their own stakeholder meetings to feed into the review. Proposals were invited at the beginning of September, with a deadline for submission of two weeks. This resulted in four further stakeholder meetings taking place in Ethiopia, Kenya, Zambia and Zimbabwe. A draft report was compiled and circulated to all review team members and INASP staff, and they were given ten days to comment before the report was finalized by the end of December 2004.

The key elements that gave a strong foundation to the process were the buy-in from all members of the team in terms of time and effort, and the tight scheduling in the early stages.

The positives

As mentioned above, INASP specified that the review process should be participatory. One INASP member of staff involved in the review noted that it 'generated lots of learning, and really empowered the participants'. It seems that the process really did develop the skills of the review team, both in terms of the methods used in conducting a review of this kind and in the need for M&E in aspects of their own work.

There were many positive outcomes from the review process itself. Yet again, the team approach and the involvement of a variety of representative stakeholders were cited as having worked well. It was felt that everyone learned a lot about how to carry out such a review, as well as it provoking more reflective thinking on the part of each team member in terms of how they viewed their own work.

The feeling of this being a really collaborative exercise, which mirrors the aims of PERI, is one that came across very strongly from all members of the team. They all seemed to emerge empowered by the process, and there was also a strong sense of enjoyment. In a relatively short space of time, networks, contacts and capacity were strengthened, between those involved directly as part of the review team, those involved as stakeholders, and other like-minded organizations with which the outcomes and process were discussed on completion of the review.

The recommendations that came out of the review were very consistent, providing further validation that the methodology chosen for the review gave a rounded and honest picture. Working in an international, diverse team and provoking thinking about M&E related to use of electronic resources are areas that team members cited as particularly positive outcomes for them personally.

The review team were quite surprised by the honest opinions that they received throughout the review, especially in the stakeholders meetings. Again, as mentioned above, the fact that these were led by CCs so that INASP could fade into the background meant that participants did not seem unwilling to criticize.

It was also felt that the process of developing the TORs, which involved different groups of people who would be affected by the review (INASP staff, CCs, donors), was one that worked very well – much better than if INASP had developed them by itself and then presented them as a fait accompli. Yet again this improved the ownership of the whole process and ensured that the TORs were truly a reflection of the objectives the review.

The negatives

One of the original objectives had been to develop future impact indicators that could be used in the next phase of the programme. However, this did not really come out of the review. It is not clear whether perhaps the methodology did not address this objective clearly enough, or whether clear indicators for this type of work are just very difficult to ascertain.

The INASP members of the team felt that too much of the final writing up and compilation of the review report was done by INASP, which went against the collaborative feeling that had characterized the rest of the review.

Although not particularly related to the review methodology, it became clear to all the team members that the culture of monitoring and evaluation was not very developed at local level in many of INASP's partner countries. The only exception to this was when someone external was involved, again suggesting that M&E was viewed as an extrinsic add-on to day-to-day work rather than an essential part of it.

Some elements of the review were criticized as focusing too strongly on the way forward, rather than looking back at what had already been achieved up to then. However, as one review team member noted, 'I would defend this approach, as one of the objectives of the review was precisely that – to guide our future activities.'

Moving on

So how was the review report used? As well as being made available online,[5] the report itself was distributed to stakeholders. All felt it raised important questions and challenges, and INASP certainly tried to use these when planning

[5] <http://www.inasp.info/file/211/peri-review-2001-2004--enhancing-access-to-research-information-in-developing-countries.html>.

and implementing the next phase of PERI. It is doubtful that any programme can ever address all the issues raised by its stakeholders, but it is important to report against findings of reviews such as these so that, when people are asked to provide feedback in the future, they feel that it will be taken into consideration and reflected upon. The review team shared the recommendations that came out of the PERI review with their stakeholders (including INASP staff), and asked that they put them in order of priority. This again reinforced a process that had tried to be as collaborative and inclusive as possible and ensured that the whole PERI community could shape the next steps from the review.

Many of the recommendations have been implemented. One recommendation had been to increase staff capacity within INASP. This resulted in the creation of a new post, namely that of PERI Co-ordinator. Sara Gwynn undertook this role, to co-ordinate activities across all of the components that made up the programme. This meant that one person had an overview of what was going on in each area, so that gaps or synergies could be identified more easily.

Increased capacity was also called for among the CCs, specifically that CC teams be developed that were more representative of the various stakeholder groups involved in PERI. This has also been implemented in that INASP actively encourages the formation of teams in all the countries where it works.

A couple of recommendations focused on a stronger feeling of community within and between countries. As a result, there are now small grants available for small stakeholder meetings in-country. These often take the form of a day-long meeting, involving representatives from the institutions involved in PERI co-ordination in that country, to discuss achievements, challenges and solutions, as well as very practical matters such as the selection of electronic resources for the following year's subscriptions. The uptake of these meetings is increasing year by year.

To strengthen relationships between countries, and to encourage peer-to-peer development, INASP now also provides funding for people from one country's co-ordinating team to visit another's to meet and share ideas about areas such as forming a library consortium or promoting available electronic resources to researchers and other users. All the peer exchange visits that have taken place so far have proved to be successful, and it is intended to increase the frequency of these visits.

A further recommendation prioritized by CCs and staff was that documentation relating to PERI should be simplified and improved, including both process documentation and INASP's own Web pages. In 2006 many INASP staff members attended a Plain English course in an effort to work on this recommendation, and in 2007 the INASP Website was redeveloped.

Recurring 'last click' problems when accessing electronic resources were

addressed through the development of Frequently Asked Questions (FAQ) documents that were then circulated to CCs and are included on the INASP Website[6] and in many workshop material packs.

One of the CCs involved in the process felt that the findings of the review could have been disseminated through workshops in each country. In-country presentation and discussions of the findings could have reinforced the idea of M&E as an intrinsic part of all activities. However, how would stakeholders have responded to this? Perhaps asking for more time from already busy people would have been detrimental to the review.

As well as recommendations leading to the concrete actions mentioned above, the PERI review has been used as a basis for setting the TORs for the external evaluation of PERI at the end of its programme cycle. It was felt that this evaluation needed to be conducted by a fully external team, although the principles that guided the review have been put forward as the guiding principles for the PERI evaluation, which will be completed by the end of March 2008.

The IDRC document mentioned above was again used as a basis for the TORs, which were drafted with input from INASP staff. Tenders were then invited and a team selected who clearly shared and understood the stakeholder-led and participatory approach.

Conclusions?

Evaluations can feel very final – like the final stamp on a project file – but they can very much be forward-looking. It is important, however, that an evaluation (or a review) does not try to be all things to all people. Developing solid TORs – which take into consideration the perspectives of those that will be affected by the process and outcomes, and are well thought through at the outset – is a key step in any evaluative exercise.

The PERI review found that M&E was not viewed by many as an integral part of an activity. This is something that all stakeholders should work together to recognize, again to avoid it becoming an external requisite that is not seen as a useful tool for planning and implementation in itself. It plays a key part in developing projects that respond to real needs, not those perceived to be needs by external actors.

Throughout the PERI review, the review team tried to keep stakeholders involved as much as possible. Being clear on what the evaluation objectives are, and giving regular updates at key points, encourage feedback, as people can see how their input will go forward. An evaluation report may signal the end of a project, but the learning that comes from it can be continuous. It should also

[6] <http://www.inasp.info/file/188/faqs-on-information-resources.html>.

be made clear at an early stage that it will not possible to react to every single piece of feedback gathered during the process. With this in mind, it can be worth reminding all stakeholders of the defined vision and mission of an organization or programme so that this can be referred to when providing feedback.

Overall, the PERI review tried to take values of the programme, such as collaboration between all stakeholders, to provide a rich picture of what PERI had achieved at that point, whether the programme needed to change, and what form any improvements or changes could take. The methodology adopted tried to reflect these basic objectives while strengthening the capacity of those involved.

Appendix 1. Questionnaire completed by INASP staff

1. Why are we going to conduct this evaluation?

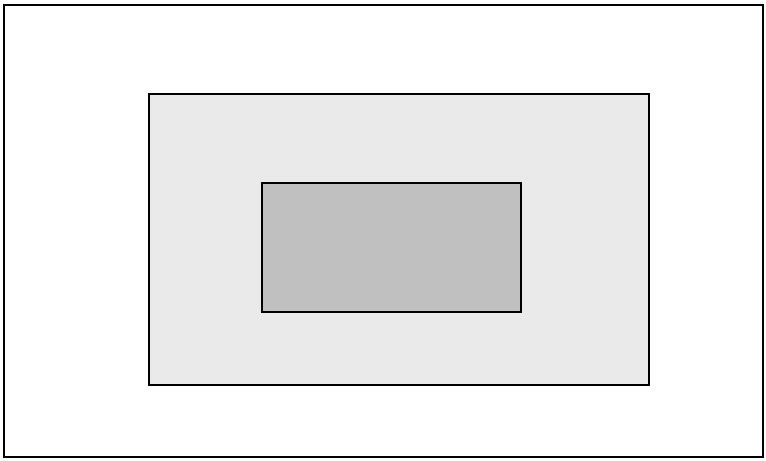
Our three main reasons for carrying out the evaluation are to:

Reasons given during other NGO evaluations are

- To identify the organisation's strengths and weaknesses
- To identify problems and issues before correction becomes difficult
- To identify needs that should be addressed through specific actions
- To identify human and other resources we could be using to effectively improve our performance
- To document the desired outcomes of the organisation's activities
- To generate information useful in planning and decision making
- To provide donors with information about the organisation's performance

2. Who are the stakeholders in the evaluation process?

IDRC define stakeholders in this case as "individuals or organisations that will be affected in some significant way by the outcome of the self assessment process or that are affected by the performance of the organisation, or both."



= strongly affected
= medium affected
= little affected

Add the stakeholders to the appropriate box above. Of those identified:

Which groups will be evaluated?
Which groups will be asked for feedback?
Which groups will use the outcomes?

If there are any significant relationships which you think should be evaluated please link the groups in the diagram above.

3. What outcomes and deliverables do we want?

E.g. Terms of reference? Evaluation report? Final report on lessons learnt? Guidelines of best practice? Recommendations for future monitoring? Statement of the appropriateness of log frame input/outputs? Report on stakeholder perspectives and expectations? Etc. …

Outcome/Deliverable	*When?*

4. What aspects of PERI will be evaluated and what information do we want from the evaluation?

In the literature on evaluation the same criteria for evaluating performance arise time and time again. Sida provide a nice summary of them:

- *Relevance:* is the intervention relevant in relation to the goals and policies of the organisation and the needs and priorities of partner countries and target groups? Is it appropriate in relation to the societal problem identified?
- *Effectiveness:* have outputs been produced as planned? Have project and programme objectives been filled?
- *Impact:* what are the intended and unintended effects of the activities, including effects on intended beneficiaries and on others? What are the positive and negative effects in the short and long term?
- *Efficiency:* are there more cost effective methods of achieving the same results? Could the same outputs have been produced with a smaller amount of input/ resources or could the same inputs/resources have produced a larger output?
- *Sustainability:* will the activities or organisation supported through the intervention deliver benefits to an acceptable extent for an extended period of time after the withdrawal of development assistance? To what extent will activities, outputs and effects be maintained or acceptable returns be provided when the donor support has come to an end?

Within these criteria we could consider aspects such as

- The CC role
- The delivering information function of PERI
- The training function of PERI
- Support for national and regional research
- Support for local journal publication
- Multi-lingual working
- The structure of the PERI team
- Relationships between PERI team and CCs
- Relationship between PERI team and rest of INASP
- Relationships between PERI and donors
- The political/technical/economic/cultural environment we/stakeholders work in
- The impact of INASP/PERI's history/mission/culture/etc
- Human resources
- Core resources
- Programme/process management
- Etc

With the above ideas in mind, one way of considering which aspects of PERI to evaluate is to list the main performance issues to be addressed and what reasons we have for believing these are issues/problems. Once this is completed we could identify priorities as a whole group and go on to discuss appropriate indicators for (some of!) those priorities …

Main performance issue	*What makes you think this is a problem?*
Did researchers benefiting from training?	Much training is given to librarians and it is not clear that this is being effectively shared with researchers

5. What data sources are available?

E.g. contact lists, DfID log frames, AJOL evaluation, CC role document, meetings with CCs in coming months, etc.

6. What data collection methods will we use?

Clearly which data collection techniques are used will depend on the information we wish to find out and the indicators chosen. Considering the performance issues you have identified above, what collection technique would you recommend?

Method	*Use?*	*Carried out by*	*Responses from*
Email questionnaire			
Mail questionnaire			
Web questionnaire			
Telephone interviews			
Teleconference			
Face-to-face interview			
Group meeting			
Document review			
Other			

7. Who will be responsible for what actions?

Appendix 2. Questionnaire administered electronically

Review of PERI
Questionnaire for PERI 'promoters'
September 2004

Introduction

Dear PERI 'promoter' or 'champion' (by which we mean individuals who enable the adoption and use of products and services provided and made available through the Programme for the Enhancement of Research Information – PERI).

We are currently undertaking a learning review of PERI to identify and assess progress made so far and to help identify future priorities for the Programme.

The review team is seeking feedback on PERI from various types of stakeholders - end-using researchers and academics, publishers, librarians, editors, practitioners, sponsors and others.

With this questionnaire, we would like to obtain your comments and feedback on the activities of PERI from the perspective of someone who 'enables' various PERI activities or services to take place in your institution and country. You may also be a user of some PERI services.

Your assistance with this survey will help us to better understand the contributions that PERI is making – or is not making – in your situation. It will also directly help us to identify improvements that need to be made.

Responses will remain anonymous and your identity will not be revealed in the review report.

Please give us your answer to these questions in electronic form (just save and edit this document). Please type your responses in the boxes provided.

Please send the completed file to Sara Gwynn (sgwynn@inasp.info) – on or before Friday 22 October 2004.

Thank you very much for your time and your contributions

PERI Review Team

Helena Asamoah-Hassan (Ghana), Krishna Bhandary (Nepal), Paul Manda (Tanzania), Sara Gwynn (INASP), Peter Ballantyne (INASP), Yvonne Thomas (DFID), Dylan Winder (DFID).

Background: About PERI

The Programme for the Enhancement of Research Information (PERI) strengthens research capacities in developing and transitional countries by reinforcing local efforts to produce, disseminate and gain access to scholarly information and knowledge.

It does this by bringing affordable 'global' information to researchers in developing countries, by stimulating and supporting the publication and dissemination of in-country research findings, and by providing information and communication skills training for researchers, practitioners, librarians and publishers.

It seeks to address many elements of the research cycle (seeking information, preparing and proposing projects, documenting research results, disseminating research outputs, etc.). It does this through four main elements:

1. *Delivering research and scholarly information:* Activities in this component aim to improve ICT-enabled national access to international research findings especially in journals and databases.
2. *Disseminating national research:* Activities in this component aim to increase the visibility and accessibility of research carried out in developing countries, mainly through 'online journals' initiatives (AJOL, etc)
3. *Enhancing ICT skills:* Activities in this component aim to enhance the skills of information professionals, researchers and academics in developing countries to make effective use of electronic information resources and tools.
4. *Strengthening local publishing*: Activities in this component aim to strengthen the efforts of scientific and scholarly editors and publishers in developing countries to more effectively produce, publish and disseminate research information (mainly in journal format).

About You

Your name (OPTIONAL):

Your email address (OPTIONAL):

Name of your institution (OPTIONAL):

Country where you work:

Title of your job:

Your principal PERI role(s): librarian / editor / researcher / academic / other

PERI and You

How did PERI begin in your country and institution?

How did you determine the relevance of PERI to the your needs and the needs of your users? Is there a record of this?

Are you aware of, or participate in, other research information related initiatives? In what ways do you think that PERI complements or duplicates these?

In what ways, if any, does PERI support wider academic and research agendas and priorities in your institution and country?

Relevance of PERI

What information and communication skills do your users or your colleagues need in order to carry out effective research?

What types of information are your users or colleagues looking for or needing, and where do they find it?

How well do PERI activities (resources, training, publishing support) satisfy any of these needs? Please give examples.

Which other sources or projects do you or your colleagues make use of that provide the same or similar support as PERI?

Usage of PERI

Which of the four PERI components have you, your users or your colleagues made use of? Give brief details.

In what ways have PERI services contributed to or influenced research and academic activities in your institution or country?

Describe any challenges or problems encountered in using the type of services or skills obtained through PERI. What additional support is needed to overcome these problems?

Do you sense that PERI is having any impact? If so, who is being impacted on, and who is making the impact? How would you measure or assess usage and impact?

Management of PERI

How is PERI structured and managed and coordinated in your country?

Explain the benefits and drawbacks to the current coordination system?

Comment on the effectiveness of the county coordinator-institution relationship and how it could be improved?

If you are the PERI country coordinator (or member of the coordination team), how effective is the CC-INASP relationship and how might it be improved?

What are the key ingredients of an 'ideal' system to coordinate such activities in your country?

Sharing experiences

What form, if any, are the interactions between PERI activities in your country and PERI in other countries? If there were some interactions, what would be useful to learn or to share?

What form, if any, are the interactions between your institution and other institutions using PERI in your country? If there were some interactions, what would be useful to learn or to share?

Who could take responsibility for this, and how might it most effectively be done?

Sustainability of PERI

Assuming that there is continuing demand for the kinds of services that PERI currently provides:

- *How* do you think they could be sustained in your situation?
- *Who* could/should make it sustainable? And what is their specific role in doing so?

Other questions

What reports or studies or statistics do you and your institution have that would help us learn about the relevance and use of PERI services and resources in your situation?

Is there anything else specific to your institution or situation that could have an impact on your involvement in PERI?

Please mention any other relevant issues that you would like to raise.

Chapter 2

INASP's Monitoring and Evaluation Workshop: Where It Came from and How It Is Working

Gwyneth Morgan

Each year INASP consults the country co-ordinators (CCs) of PERI to find out what training and support is required by their national teams in the following 12 to 24 months. In the 2004 consultation, to prepare for 2005/06 activities, eight of the thirteen CCs requested monitoring and evaluation training, to enable their colleagues to begin assessing the impact of e-resource provision on the academic and research communities in their countries. By that time, late 2004, most had been participating in PERI and using e-resources for more than two years, and it was felt to be time to examine the new services and see how effectively they were being used.

INASP's response

Initially, in response to the CCs' requests, INASP asked a member of its library development programme team to plan a suitable training workshop. This was to be written during 2005, for delivery in 2006. The outline was then passed to me to develop further.

The need was to provide an introduction to monitoring and evaluation concepts, with practical guidance on getting started, as quickly as possible, using statistical and other quantitative data made available by INASP and e-resource vendors (publishers), and to develop evaluation techniques. The focus was on the monitoring and evaluation of the use of e-resources, not evaluation of the resources themselves. The target group was the university library and ICT staff who provide e-resource services for their academic and research communities, based on the resources made available to their country through PERI.

INASP wanted to make this training available to the requesting countries as quickly as possible, so that a start could be made on the provision of regular data to support the selection of appropriate e-resources during the annual e-resource subscription renewals undertaken through PERI.

How then could we develop and deliver an appropriate training workshop?

Finding a partner

In 2004, a research team, Evidence Base,[1] based at the University of Central England (now renamed Birmingham City University) was commissioned by the Higher Education Funding Council for England to produce a toolkit and associated training for the UK's academic library community to monitor and evaluate the use of e-resources in UK universities. Its brief was 'to develop a transferable model for e-library evaluation in higher education and to provide dissemination and training in e-library evaluation.'

In response to the brief, Evidence Base developed the eVALUEd toolkit.[2] This was the end-product of a project incorporating surveys of existing evaluation practice in university libraries in the UK, wide consultation with university library staff, testing of the developing toolkit resources, and reporting back to the library community. Once the toolkit was created, Evidence Base continued to promote and manage it on behalf of the higher education community and provide initial training in its use.

Given this existing body of work – a tested toolkit, an established training programme, and the expertise developed by the research team – it seemed sensible for INASP to draw on what Evidence Base had created, rather than start again from scratch on its own with more limited resources than had been available for the eVALUEd project.

On behalf of INASP, I approached Evidence Base, to request the inclusion of the eVALUEd toolkit and some of the associated training materials in INASP's own workshop. Evidence Base agreed to this and to provide additional support materials in the form of a CD-ROM version of the Website and a printed booklet to accompany the workshop materials. INASP is immensely grateful for this support.

So, through its partnership with Evidence Base, INASP secured a ready-made online tutorial on the principles and practicalities of evaluating e-resources, created specifically for use by academic library staff and a collection of core questionnaires and associated database structures for the collection, management and analysis of data.

Creating the workshop: Structure and content

Two people were designated by INASP to develop the workshop – I, as an external training associate, and Anne Powell, a member of the INASP staff with expertise in handling statistics provided by e-resource vendors, detailed knowledge of the e-resources available through PERI, and first-hand knowledge

[1] <http://www.ebase.bcu.ac.uk>.
[2] <http://www.evalued.bcu.ac.uk>.

of the problems that PERI partners were experiencing in trying to access statistical information about use of resources in their own institutions.

We wanted to provide a workshop that would enable participants to:

- Understand the concept of and need for monitoring and evaluation.
- Be able to access and download usage statistics provided by the e-resource publishers.
- Be aware of statistics of national usage provided by INASP to their country co-ordinator and know how to access them.
- Be aware of the shortcomings of the available statistics.
- Be able to access and use the eVALUEd toolkit.
- Start work as a group, led by their national co-ordinator or another person from their national university library community, on a practical evaluation project, which they would continue after the workshop.

This last activity would support other colleagues who were concurrently being trained in negotiating skills and would in future have the responsibility of dealing with publishers on behalf of their consortium to agree annual subscription rates. One of INASP's goals in running the monitoring and evaluation workshops was for the participants to begin an ongoing evaluation process that would supply data to the negotiating teams and provide a regular source of evaluative data to inform purchasing decisions.

As developers of the workshop, Anne Powell and I wanted to allow adequate time at each event for participants to learn new skills and network with colleagues from other organizations who were running similar services. But we were also aware of the cost to the participating institutions of having staff away for extended periods. We eventually developed a three-day event, comprising:

Day 1

- introduction to the concept of monitoring and evaluation
- collecting and interpreting quantitative data
- using INASP's and publishers' Websites to access quantitative data

Day 2

- introduction to evaluation planning and techniques
- use of the eVALUEd toolkit
- planning an evaluation project

Day 3

- starting a project, using the eVALUEd toolkit: deciding the purpose, identifying stakeholders, planning data collection

Once the agreement had been made with Evidence Base, I went through all the eVALUEd training materials – handouts, exercises and presentations – pulling out those that would fit with the structure of the proposed INASP workshop and adapting them as required for use outside the UK. I then developed workshop units covering the content of Days 2 and 3 of the workshop, incorporating selected materials from the eVALUEd project. In parallel with this, Anne Powell developed four units for Day 1, with associated presentations and exercises, looking at how to access data already available from INASP through its public and administrative Websites and how to collect data from publishers by registering as an administrator and gaining access to a range of statistical data.

We worked to a pattern of four units a day as we believed that this made the best use of the time available and allowed long enough breaks between each unit for any over-run and to enable facilitators and participants to have a reasonable break before embarking on the next section of the workshop. We believed that having longer sessions or shorter breaks would not improve learning.

Workshop units consisted of a plenary introductory presentation with an element of discussion, followed by a practical exercise on which participants worked in small groups. Each small group fed back their results to the plenary group for further discussion. The small groups were of four to five people and were designated by the facilitator (rather than being self-selecting) so that everyone worked with different colleagues each day.

The workshop was named Monitoring and Evaluation of E-Resource Use, shortened to the acronym MEERU. It was developed during the first four months of 2006.

Populating the workshop: Selecting participants and facilitators

All national co-ordinators who had requested the workshop were kept informed of its development and given the opportunity to comment on it as it progressed. All were provided with a workshop outline before its launch and before recruitment began. Co-ordinators were consulted over the recruitment of participants and asked to nominate a workshop facilitator from their country who would assist in the facilitation of their own workshop and then go on to lead the workshop in another country. This followed the established pattern of INASP's travelling workshops.

The workshop was designed for librarians already offering e-resource services to their academic and research communities. In the suite of INASP workshops for PERI, it was placed as a last-stage training exercise for participants who were already confident users of e-resources and experienced in providing them to their users. It was not intended to be an introductory workshop.

INASP was particularly keen that there should be some practical results from the workshop, hence the link with the negotiating skills workshop and detailed guidance on recruitment. It was felt that post-workshop project work would be more likely to continue if participants were recruited in pairs so that they could continue working together on the project started at the workshop when they returned to work. It would also help continuity within their institution: if one of them left their post, another would remain with the knowledge within the institution and linked into the network established at the workshop.

The eventual design of the workshop was for attendance by two participants from each of ten institutions. These were to be selected, in each country, by the national co-ordinator using her or his knowledge of the individuals most suited to the training and the organizations most able to take a leading role in cascading the training to other institutions, thus creating follow-on regional training after the initial national training workshop. In some countries, the country co-ordinator worked with a consortium team to make the selection.

All this required high levels of commitment and communication from the country co-ordinators and their workshop teams. To assist this, INASP established a Website and mailing list for each workshop group, using the Dgroups discussion group facility.[3] This enabled INASP staff, workshop facilitators, workshop administrators and country co-ordinators to communicate easily with the entire group of workshop participants for each country and enabled the participants to keep in touch with each other after the workshop.

The plan was for all participants to have at least one month's notice of the workshop and for the facilitator to contact all of them at least two weeks before the start to outline its purpose and content and to set pre-workshop assignments. The mailing list was to be used for participants to introduce themselves to each other and ask questions about the workshop or assignments.

Scheduling the workshop series: The travelling workshop scheme

We needed to run eight workshops in a relatively short space of time. The workshop had been created in the early months of 2006. The requesting countries wanted it to run in 2006 and it needed to fit in with the rest of their PERI training programme and the work schedules of the participants, country co-ordinators and host organization. To allow as much lead-time as possible we decided not to launch the workshop until the second half of the year. One of the requesting countries agreed to host a pilot workshop for us to test the materials we had developed, but we needed to allow enough time between that and the launch of the workshop series to enable amendments to be made to workshop structure

[3] <http://www.dgroups.org>.

and materials in the light of experience gained at the pilot.

We followed INASP's established travelling workshop method of delivery as we believed that this was the most cost-effective and time-effective way of rolling out eight workshops in six months, and it would enable facilitators from the host countries to gain experience from teams of similar professionals in other countries.

The planned structure of the workshop series is shown in Figure 1. This was the result of much consultation between INASP and country co-ordinators to find dates that were appropriate and convenient for each country, but would also fit into the general flow of the series.

Anne Powell and I facilitated the pilot and launch workshops. Facilitators from the host countries of these two workshops attended the pilot workshop to familiarize themselves with the structure and materials and to help shape the eventual format. These were two experienced trainers from the academic library communities in Tanzania and Kenya.

They became co-facilitators for the launch workshop the following month and then each went on to lead a first workshop in one of the parallel cascades (A1 or B1 in Figure 1).

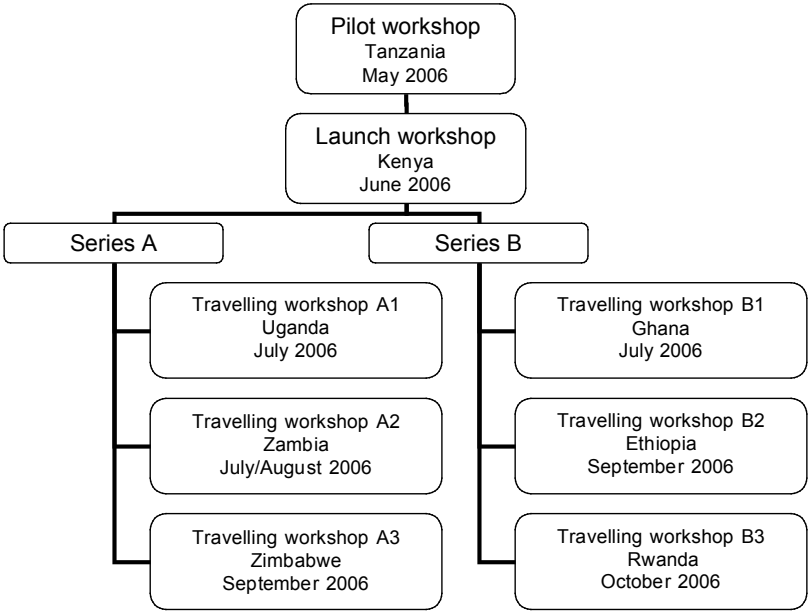


Figure 1: Travelling workshop structure

Facilitators from the host countries of workshops A1 and B1 attended the launch workshop as participants and then co-facilitated the workshops in their own countries before going on to be the lead facilitators for the workshops A2 and B2. This pattern was repeated until the end of each cascade. Thus each facilitator had the experience of attending the workshop and then of co-facilitating it before having to lead the workshop themselves. They also had the opportunity to meet teams of colleagues from two other countries and bring this experience back to share with their own national teams.

Later in the year, after the travelling workshop cascade had been organized in eight African countries, a request for the workshop was received from Vietnam. This was run directly from INASP, as a stand-alone workshop, and delivered, through a translator, in Vietnamese. In the event, the final workshop of Series B in Africa had to be postponed and did not run until August 2007.

Running the workshop series

Inevitably, the reality was rather different from the plan. Table 1 summarizes what actually happened in 2006.

Table 1. MEERU workshops held in 2006

Country	*Date of workshop*	*Type of workshop*	*Lead facilitator from*	*No. of institutions represented at workshop*	*No. of participants at workshop*
Tanzania	May	pilot	INASP	11	19
Kenya	June	Travel-launch	INASP	19	22
Uganda	July	Travel-A1	Tanzania	10	20
Zambia	July/Aug.	Travel-A2	Uganda	12	17
Zimbabwe	Sept.	Travel-A3	Zambia	9	19
Ghana	July	Travel-B1	Kenya	12	16
Ethiopia	Sept.	Travel-B2	Kenya	13	17
Vietnam	Sept.	stand-alone	INASP	12	24
Totals				98	154

While the pattern of facilitation went more or less to plan, the recruitment of participants did not always conform to the guidance given by INASP. Participants were not always adequately experienced to be able to benefit from the workshop. For example, in one country, some participants had not even started delivering a service or used e-resources themselves, so were not able to contribute to discussions or make much sense of the workshop content. Often participants were recruited very close to the beginning of the workshop and did not have enough

time to prepare. Sometimes participants selected by national co-ordinators were unable to attend themselves and delegated colleagues to attend instead. Whilst most participants probably gained some benefit from the experience of meeting other colleagues and discussing e-resource provision, not all were able to contribute in the way the workshop developers had anticipated.

Co-ordinators were also keen to spread the benefit of the workshop as widely as possible throughout their country and were sometimes reluctant to follow the advice of recruiting two people from each institution. Interestingly, the lowest response rate to the impact survey came from those countries which had least followed this guidance – where most participants did not have a colleague from the workshop to work with in their own institution. Sometimes non-attendance by those offered a place meant that the workshop was not full.

Each participant was provided with a handbook containing copies of all the materials used in the workshop. Additionally, each participant had access to the Dgroups Website and mailing list created for the workshop.

The Website provided a list of all the people associated with the workshop, together with their e-mail addresses and a note of who they were and where they worked – if they chose to supply that information. It also provided a collection of resources associated with monitoring and evaluation for participants to draw on and the facility for them to add resources themselves. These could be either documents or links to Websites that would be of interest to the group, or documents such as reports, presentations and questionnaires that participants had prepared themselves as a result of the workshop, which they wanted to share with the group or on which they wanted comment. In most cases these facilities were little used.

At the end of each day of the workshop, the facilitator summarized what had been covered in the four units and all participants spent about ten minutes noting what they had learned and any points they needed to follow up on their return to work. This was intended to consolidate the learning that had taken place.

The workshop feedback forms submitted to INASP show that the majority of people participating in the workshop found it useful and were enthusiastic about how they would use the skills and information they had acquired on their return to work. There were occasional complaints over administrative aspects of the workshop and adverse comments on particular sessions – 'not enough time' being the most frequent – but the overwhelming consensus was that the workshop had been useful and the some learning had taken place.

Post-workshop follow-up by the country co-ordinator or another authoritative person in the national academic library community was important for the continuation of activity started at the workshop as well as for the outcomes of individual monitoring and evaluation projects that were to be harnessed for

use in national subscription renewal selections. In most countries, there is no evidence that this follow-up took place.

Workshop results: What happened next

Whatever the immediate feedback on a workshop, its success has to be determined according to the impact it makes over the subsequent weeks and months. It may have provided an interesting three days for the participants, with opportunities to learn some new skills, revise existing ones, and meet colleagues from other institutions facing the same professional challenges. However successful a workshop may have been in those terms, it doesn't provide good value unless something happens as a result of participants attending it. So, what did happen next?

Crucial to being able to find this out was the ability to stay in touch with workshop participants. In a limited way the Dgroups facility described earlier enabled the progress of the group to be monitored – limited because not all participants or country co-ordinators used the facility and only a few workshop participants chose to inform their colleagues of their post-workshop activity through the list.

However, it did provide us with a ready means of contacting the majority of people who had attended each workshop to enquire what activities they had undertaken. This was done at intervals after each workshop in 2006 and then, as a single evaluation exercise, in November 2007. Theoretically, I should have been able to contact every workshop participant by sending an e-mail message to each of the workshop mailing lists. In practice, some of the participants may not have received my enquiry – if they had changed their e-mail addresses, if connectivity problems meant that they were unable to receive mail regularly, or if, for any other reason, they did not check mail sent to the address registered on the workshop Website.

In November 2007 I sent an e-mail message to all the workshop mailing lists for the 2006 MEERU workshops and an additional message to the eight country co-ordinators. The message to the mailing list should have reached everyone who participated in the workshop, as well as its facilitators, administrator and the country co-ordinator. So the country co-ordinators would have received two enquiries: one via the workshop mailing list and one directly.

Responses were received from 31 of the 98 institutions that had participated in the workshops and from four of the eight co-ordinators. Some of the replies from participants were from individuals; some were explicitly from the two delegates to the workshop from that institution. The response rate is shown in Table 2.

Table 2. Survey of participants from MEERU workshops in 2006

Country	*No. of institutions represented at workshop*	*No. of participants at workshop*	*No. of responses to 2007 survey*	*Percentage response rate for 2007 survey**
Tanzania	11	19	3	27
Kenya	19	22	1	5
Uganda	10	20	5	50
Zambia	12	17	4	33
Zimbabwe	9	19	7	78
Ghana	12	16	5	42
Ethiopia	13	17	2	15
Vietnam	12	24	5	42
Totals	98	154	32	33

*Response rate is based on the number of institutions represented, not the number of individual participants.

Of those who responded, 71% claimed to have used the eVALUEd toolkit since returning from the workshop. The different versions of the toolkit (Website, booklet, CD-ROM) had been used in roughly equal numbers, most respondents using at least two of the versions but preferring the Website when access to this was available and adequately fast.

Reported usage of the eVALUEd site included all four main sections, and some respondents provided information about questionnaires that they had developed using the eVALUEd toolkit. One respondent, using the toolkit, had gone on to train other library staff. Approximately 60% of the respondents said that the toolkit was very useful; most also commented that it was easy to use. One respondent had difficulty with it not being available in her own language as all the tools had to be translated before they could be used.

Eighteen of the 32 respondents (56%) said that they had carried out some form of monitoring or evaluation of e-resource use since attending the workshop. Twenty-three (72%) said that they had shared their learning with colleagues, either through meetings, reports, training sessions or informal discussions. The same proportion reported that they had been consulted on subscription renewals by their national consortium, and most of these said that they had based their own decision on which subscriptions to request on usage statistics, consultation with users and affordability.

Some of the additional comments received were:

> … enabled me to assess whether the PERI resources are meeting our users' needs; we're able to tell which areas need improvement; we're receiving value for money (*Kenya*)

> We have initiated a process where we work with the … vendor to enable us to collect data about e-resource usage from our OPAC. This was in response to the realization, through MEERU training, that not all [vendors] … provide all statistics that are required … (*Tanzania*)

> Not many librarians are monitoring usage mainly because access to e-resources is still poor. I recommend that librarians who attended this workshop … could pass on these skills to the rest (*Uganda*)

> Use of the resources is still on the low side as people are still used to the book. The process of monitoring and evaluation … has assisted us [to] know which areas to concentrate on in encouraging our users (*Zambia*)

> The use of the resources is hampered by challenges of poor bandwidth and Internet connectivity (*Zimbabwe*)

> I am very glad to note that MEERU opened up an avenue through which we could assess the level of usage of e-resources. As an institution, we also learnt that we have to assess the level of usage of all our resources apart from e-resources. After the survey, we realized we had a job to do, i.e. marketing the e-resources, training our clientele on how to access them. We had to emphasize e-resources usage during our information literacy skills (ILS) training sessions (*Zimbabwe*)

Other comments from participants indicated that, for some respondents, the main benefit of the workshop had been an increased awareness of PERI resources and the need to promote them, rather than learning evaluation and monitoring skills.

Comments from the country co-ordinators who responded included:

> [we used the eVALUEd toolkit] as part of a survey we did … on the Use of E-Resources in Research Institutes (*Zambia*)

> Our heartfelt appreciation and thanks go to the team who has diligently developed … Evidence Base's eVALUEd toolkit which has made our life simpler while designing and administering survey questionnaires. I think INASP should continue to promote

> the toolkit so that librarians who are not aware of it start using [it] (*Ethiopia*)

Was the workshop a success?

To some extent. The evidence collected shows that some individuals have made use of what they learned at the workshop and that some institutions have undertaken an evaluation of their e-resource services. At least two national surveys of e-resource use have been carried out using resources and information from the workshops. From this we can conclude that some learning took place and know that some monitoring and evaluation has taken place as a result.

What is missing from most countries is evidence that the group work, which was begun at the workshop, continued, or that the group stayed in touch, or that a lead was given by the country co-ordinator to keep the project going and develop a system of regular returns from member organizations. There has been no report that a co-ordinator or national consortium received data from institutions that participated in the workshop to use when considering e-resource subscription renewals the following year. This does not mean that it did not happen, only that no evidence has been collected.

Four of the eight country co-ordinators responded to the survey. Three of these reported some monitoring and evaluation activity in which they had been involved since the workshop, but it is not clear to what extent this includes contributions from institutions that participated in the MEERU workshops.

Of those workshop participants who responded to the survey, the majority reported some benefit having been derived from the workshop and that they went on to use the toolkit and their learning to monitor and evaluate their services or to train others.

But how representative of the total group of people who attended the workshops is the group of respondents? Thirty-two of the 98 institutions represented at the workshops sent a response, but 66 did not. Does that mean that two-thirds of the institutions that sent delegates to the workshop derived no benefit from it? That the participants who did not respond to the survey had not done anything with their learning from the workshop? Or should we assume that the results amongst non-responding institutions are similar to those from their responding colleagues?

We should assume nothing. There are many possible reasons for the lack of response, other than a lack of activity: lack of time, non-receipt of the survey questionnaire, lack of enthusiasm to participate in the survey, reluctance to join in a debate in English. Workshop participants and country co-ordinators are busy people with many demands on their time. Responding to another survey from INASP may not be their highest priority.

Feedback obtained at the end of each workshop shows that most of the participants found the experience useful and the quality of the workshop satisfactory. Evidence collected a year later shows that some of the participants have used their learning to start monitoring and evaluating the use of e-resources in their institutions and that they and other participants are more aware of the need to promote their e-resources as a result of the workshop (even though this was not an intended outcome).

Postscript

In 2007, the workshop ran four more times: three countries (Pakistan, Malawi and Rwanda) took it for the first time, one of the countries participating in the 2006 series (Kenya) ran a repeat workshop for another group of university librarians, and another country from the 2006 series is about to hold a follow-up meeting for the original participants to check progress to date. Of the three countries taking the workshop for the first time in 2007, two do not yet have any record of post-workshop activity or even communication within the group. The third country, less than two months after the end of the workshop, has produced at least two questionnaires for academic staff and made several approaches to publishers for the supply of usage data.

Good luck to them all![4]

[4] MEERU Workshop materials, including participants' handbooks and notes for facilitators, can be downloaded from the INASP Website: <http://www.inasp.info/file/639/monitoring-and-evaluation-of-e-resource-use-meeru.html>.

Chapter 3

Access to Electronic Library Resources and Services in Academic and Research Institutions in Tanzania

Paul Akonaay Manda

In Tanzanian academic and research institutions, the use of CD-ROM facilities from the early 1990s was heralded as the first innovative programme towards the adoption of electronic library resources. By the late 1990s popular use of Internet and Internet resources had begun to take root. The initiative of the International Network for the Availability of Scientific Publications (INASP) through its Programme for the Enhancement of Research Information (PERI) in 2001 was the first significant attempt to introduce the use of full-text electronic journals to the research and academic community in Tanzania. The government and academic and research institutions in Tanzania have recognized the importance of ICTs in teaching, learning and research, and as a factor in national development. The national ICT policy and various ICT-related programmes in a number of academic and research institutions point to the perceived key role that ICTs play in various organizations.

The need to undertake a survey arose from the observation that electronic library and information resources, and especially the PERI resources, were underutilized in Tanzania. It was observed that few institutions and end-users were accessing and using these resources. Even within institutions where there was significant use, there was a feeling that this use did not involve a wide spectrum of users. Furthermore, questions were being raised as to whether those who were using the resources were doing so effectively. This survey therefore examined factors that influenced the use of these electronic resources.

Mutula (2005) describes Africa as 'epitomizing the cradle of world's poverty' and for this reason the participation of Africa in the global knowledge arena is deficient. Rosenberg (1998) called the lack of funding for libraries in African universities a 'permanent headache'. She further observed that, even after attempts to revitalize the higher education sector in Africa, university library collection development, and especially journal subscriptions, had been neglected. Other studies (Alemna and Cobblah, 2005; Mutula, 2005; Kiondo, 2004; Ondari-Okemwa, 2004; Mutula, 2001; Chisenga, 2000) have detailed

numerous challenges that hamper access to electronic resources in Africa. In the first place there is an inadequate information infrastructure and the absence of basic facilities required to access electronic resources efficiently. These include power supply and telecommunications (satellite communication, fibre optic cables and digital telephone transmission). Secondly, there is a cultural dimension related to the adoption of innovation, where academic and research libraries fail to provide the visionary and committed leadership required. Ondari-Okemwa (2004) also observed the lack of a culture of sharing knowledge and information in Africa as one of the challenges to the adoption of innovation generally: 'What you know belongs to you and you alone. People in the region stay with important knowledge and die with it without bothering to pass it to the younger generations.' Mutula (2005) underscores this point as being problematic: 'the presumption of a one-size-fits-all technology approach to bridging the digital divide, implementing technologies without integrating them into people's cultural priorities'.

Research methodology

A sample of twenty-three research and academic institutions in Tanzania was selected for the study (Table 1). They comprise fifteen universities and university colleges, five colleges and three research institutes. Most of these institutions had participated in the electronic resource workshops organized jointly by INASP and the University of Dar es Salaam (UDSM).

The PERI programme, an initiative of INASP, became operational in Tanzania in the year 2002, although an experimental phase began in mid-2001. By 2005 a total of fifty-two institutions had registered to use the resources. The major activities in 2005 included: provision of scientific and technical information; training in the use of electronic information and communication technologies (ICTs); document delivery from the British Library Document Supply Centre (BLDSC);[1] and disseminating information on journals from Tanzania through African Journals Online (AJOL).[2]

In Tanzania, PERI resources and services were supported from 2001 mainly through a Sida/SAREC grant to UDSM Library. However countrywide licenses were purchased for all the resources. Therefore the resources and services were available to all non-profit-making institutions in the country. PERI was managed centrally by the UDSM Library but continued to collaborate and network with other libraries nationwide.

[1] <http://www.inasp.info/file/456/british-library-document-supply-centre-bldsc.html>.
[2] <http://www.ajol.info>.

Table 1. List of institutions surveyed

CEDHA	Centre for Educational Development in Health, Arusha
CBE	College of Business Education
CW	College of Wildlife
DIT	Dar es Salaam Institute of Technology
ESAMI	Eastern and Southern African Management Institute
HKMU	Herbert Kariuki Memorial University
IA	Institute of Accountancy, Arusha
IFM	Institute of Finance Management
IMS	Institute of Marine Sciences
MUCCOBS	Moshi University College of Co-operative and Business Studies
MUCHS	Muhimbili University College of Health Sciences
MU	Mzumbe University
NIMR	National Institute for Medical Research
OUT	The Open University of Tanzania
SUA	Sokoine University of Agriculture
SAUT	St Augustine University of Tanzania
	Tumaini University (Iringa College)
	Tumaini University (Kilimanjaro Christian Medical College)
	Tumaini University (Makumira College)
UDSM	University of Dar es Salaam
UCLAS	University College of Lands and Architectural Studies
SUZA	Zanzibar State University
ZA	Zanzibar University

In 2005 a total of 18 resources were subscribed to under PERI. These included current-awareness services (African Journals OnLine (AJOL) and British Library Inside Web) and full-text journal resources (Blackwell Publishing, Cochrane Library, EBSCOhost, Emerald, Gale, Institute of Physics Publishing, International Forestry Review, Institute of Scientific Information, Mary Ann Liebert, Multilingual Matters, NRC, Organization for Economic Co-operation and Development, Palgrave Macmillan, Oxford University Press, Royal Society, Springer and Wiley InterScience).

The BLDSC provided photocopies of articles that were not available in the libraries or online. In 2005, a total of 939 articles, worth £5,100.07, were received, mainly by UDSM Library. In 2005, the following PERI programme training workshops were conducted: PC Trouble Shooting Workshop for Library

Personnel; Electronic Journals and Electronic Resources Library Management; Web Page Design and Authoring leading to Library Web Pages.

Libraries organized information literacy programmes at their institutions. For example, the UDSM Library organized the following two workshops: Information Services in Electronic Environment, and E-resource Sensitization. Additionally, voluntary training in electronic resources (including PERI resources) was conducted, with students signing up for the training sessions each day. The training sessions were conducted by the senior members of the library and were successful.

The promotion and marketing of PERI resources and services was undertaken at national and institutional level using a variety of techniques. For example, at the national level, UDSM Library sent e-mails to research and academic libraries informing them of the availability of additional resources for the year 2005 to enable them to register. At UDSM, brochures with access information were sent to all departments and teaching staff at the university's main campus. Other marketing strategies were library Websites, library newsletters and, for UDSM, the Dar es Salaam International Trade Fair. Most institutions also used meetings, such as committee meetings at university or faculty level and library association meetings.

Primary data were collected through face-to-face interviews and questionnaires.[3] Interviews were conducted either with directors of libraries or with heads of ICT units in the libraries. Fieldwork was undertaken in 23 academic and research institutions in Tanzania between June 2004 and October 2005. The units of investigation and analysis for this phase of the research were institutions and libraries.

Findings

Access to electronic resources

The findings revealed that all the institutions do have access to some electronic information resources (Table 2). Free Internet resources – such as Yahoo, Google and other general search engines, subject gateways, and e-mail services – are used in all institutions. With the exception of one institution, all also have access to CD-ROMs, whether these were donated or were subscribed to by the libraries. Some institutions were also accessing resources that are specific to their disciplines: for example, HKMU and MUCHS have access to HINARI and PubMed, while UDSM and MU have access to AGORA. In addition, UDSM has access to e-books and EOLSS. SUA has access to AGORA and TEEAL.

[3] The questionnaire used can be found in the Appendix to this chapter.

Table 2. E-resources accessed by libraries

Name of resource	*No of libraries reporting access*	*Percentage*
CD-ROMs	22	96
AGORA	3	13
HINARI	6	26
PubMed	3	13
Wiley InterScience	6	26
Springer	5	22
Oxford University Press	12	52
Emerald	7	30
Gale	6	29
EBSCOhost	12	52
Blackwell Publishing	13	57
Royal Society	5	22
Cochrane Library	9	39
African Journals Online (AJOL)	12	52
E-books	9	39
General search engines	19	83

The major difference between the institutions surveyed was in accessing electronic journals, and specifically journals that are made available through the PERI programme. At one extreme are institutions like the UDSM Library, which has registered for all the PERI resources, and at the other are HKMU and IFM, which have not registered for any of them. Fifty-seven per cent of the libraries have not registered to use specific PERI resources and therefore cannot access them. The critical question, then, is, Why is there this differentiated access to PERI resources among the institutions surveyed?

The libraries have advanced a number of reasons for not accessing some of the electronic resources that are available to them: lack of skills to register, lack of awareness of the availability of a specific resource, or simply lack of interest, time and commitment to use electronic resources. Three libraries reported a variety of technical problems in accessing resources. SAUT library failed to register. CBE observed the problem of Internet connectivity, but this does not explain the selective registration of resources at the institute. The major reasons could be a lack of commitment to the adoption of electronic resources, and the limited demand from library users for them. It was also observed that users tended to be put off if they experienced any difficulty in using the resources:

'We are very busy, and if accessing the database is difficult we will abandon it' was an observation made by one of the respondents.

The issue of relevance was also raised by some libraries in relation to the PERI resources. UCLAS, IMS and HKMU noted that most of the resources did not meet the specialized information needs of their clientele. A large proportion of PERI resources are multi-disciplinary in content (e.g. EBSCOhost) and institutions have little say in what full-text journals are made available in a particular package. The PERI experience in Tanzania, where the selection of PERI resources is managed centrally by the co-ordinating library, has limited networking among the various institutions and contributes to a feeling of a lack of ownership of the process by other institutions. With the establishment of the Consortium of University and Research Libraries, the selection process will be harmonized, information needs assessed, and a framework and strategies developed for sustainable access to electronic resources.

Access to PCs and Internet connectivity

Access to and availability of PCs has an influence on access to electronic resources. The findings revealed that the number of PCs available for users in libraries is very small compared to those available at other sites in the institutions. In addition, high levels of access by teaching and research staff to PCs connected to the Internet were reported in most of the institutions. The ratio is almost 1:1, and the PCs are often located in the offices of individual staff members so that they are conveniently available for use. The findings also indicated relatively good availability of PCs for students in some of the institutions. However, all the libraries surveyed indicated that the number of PCs available for users was inadequate, ranging from none at DIT and CBE to 32 at UDSM Main Campus Library. It is encouraging to note that in most of the institutions plans are under way for improving the PC–student ratio.

Variations were observed among libraries in terms of access to Internet-connected PCs within the library. Three libraries had no PCs connected to the Internet for users; five libraries had only one or two. Even in the bigger libraries, such as that at the University of Dar es Salaam Main Campus, access to PCs connected to the Internet was inadequate, indicated by long lines at the Reference Internet site, even though several access points had been established in different sections. Only at Tumaini University (Iringa College) were there substantial numbers of Internet-connected PCs available for users in the library. In smaller libraries – such as those at MUCHS, UCLAS, CW, MUCCOBS and ESAMI – access points were at a single site.

Thirty-one per cent of the libraries in the survey indicated that most users obtained access to electronic resources from workstations in the library. The

majority of libraries (61%) said that users accessed the Internet from workstations within the institution but outside the library, and only 8% indicated that users connected from workstations outside their institutions. This signifies a need to have an adequate number of PCs connected to the Internet within the library and institution, as access to the Internet is limited in most of the institutions surveyed. A balanced location of Internet access sites within institutions is essential for efficient service delivery.

Students' access to PCs is often limited by opening hours and, in some cases, usage charges. Staff and students with Internet connectivity potentially have 24-hour remote access to library services and online electronic resources; but, as has been observed for a large proportion of users, the library is where they go to to access the electronic resources. Varied access times were observed among the institutions, especially for Internet sites within the institution but outside the library. For maximum use of the Internet, and because of slow access speeds during the afternoon hours, the opening hours for workstations need to be extended to 24 hours a day.

Technical infrastructure to support electronic resource access

Eighteen (78%) of the libraries surveyed had established a Local Area Network (LAN) system, and the others were in the process of laying out the technical infrastructure for their LAN systems. Fourteen (61%) reported having servers in their libraries. The findings of the study therefore indicate that substantial investment had been made, or was being made, by institutions to develop the basic technical infrastructure required to support access to electronic resources.

Bandwidth and Internet speed

The size of the bandwidth is among the major determinants of the efficiency of downloading and uploading electronic information. Sixty-nine per cent of the institutions surveyed that provided data on the size of their bandwidth indicated that that available to the library for downloading was less than 1MB per second. Only the UDSM Main Campus Library has 2MB per second, and MUCCOBS, DIT, ESAMI and UCLAS have 1MB per second. Seventy-five per cent of the sixteen institutions that provided data on this variable have bandwidth less than 500KB per second for uploading. UDSM Main Campus, ESAMI, MUCCOBS and UCLAS libraries reported having 1MB per second for uploading.

Technical and human resource support

The study found that libraries generally did not have a pool of expertise with formal training in computer- and ICT-related fields (Table 3). A number of

libraries that had no such formally trained staff reported sending their staff to training workshops and seminars so that they could acquire skills to use and manage electronic resources. Such seminars and workshops included those organized by INASP and UDSM Library.

Table 3. ICT-related levels of competencies in libraries

Qualifications in computer or related field	*No. of libraries*	*Percentage of libraries*
Masters degree	2	9
Bachelor degree	3	14
Diploma	3	14
Certificate	4	18
Libraries without staff with formal computer or related field training	14	64

Seven (30%) of the libraries in the sample had ICT sections. These ICT sections were manned by staff with formal training from certificate to degree level in computer or related fields. However, in one university library, the section was manned by staff without such formal training. NIMR, although without an ICT section, has staff who have been formally trained in ICT- and computer-related fields to certificate and degree level. At CW and OUT, whose libraries do not have their own ICT sections, ICT services are administered centrally, and the provision of ICT support to the library comes from the institution's unit.

As a matter of policy – as libraries become fully automated, and access to electronic resources becomes widespread – libraries will need to develop their own technical capacity, and have incentive schemes to retain these personnel. Furthermore, the curriculum of library schools in the country and in the region needs to take account of the changing technical and professional needs of their graduates. This study further supports the notion that the provision of electronic resources in libraries is not only a technical matter but also a professional one. Therefore, the joint management of ICT sections/units in libraries by competent information/library professionals and computer/technical staff is critical, and a prerequisite in the efficient provision of electronic resources services.

Forty-four per cent of the libraries reported that they had an e-resource co-ordinator, who co-ordinated the selection, acquisition, training and management of electronic resources in the library (Table 4).

Five libraries out of 23 had a system administrator, and these had almost completed the automation of their library services. The system administrators in the institutions surveyed were individuals with qualifications ranging from certificates to degrees in computing. At MUCHS and MU, system administration

was undertaken by the ICT directorate of their institutions. Ninety-one per cent of the libraries had computer support services within their institutions; fourteen (61%) got only technical support from the computer units within their institution, while six (26%) got both technical and managerial support with issues related to electronic resources. For example, such support is provided by the Computer Department at DIT and the Computer Directorate at MUCHS.

In other institutions there are computer centres or units, and the support they provide can be free or at a cost. In addition, libraries and institutions are free to outsource expertise from outside their parent institutions. For example, MUCCOBS and CEDHA, because they do not have ICT units in their libraries or computer units in their parent institutions, outsource all the technical support they require.

Table 4: Available ICT-related expertise in the library and institution

Type of expertise available	*No. of libraries*	*Percentage*
ICT section in the library	7	30
E-resource co-ordinator in the library	10	44
System administrator in the library	5	22
Computing unit in the institution	21	91

Training in the use of electronic resources

In the electronic environment libraries must enable library staff and users to acquire new skills and the capacity to make effective use of e-resources, so training in the use and evaluation of e-resources is important. With the exception of DIT, all the libraries indicated that most library staff had received some training in the use of electronic resources, undertaken by a variety of agencies.

Training of library staff was conducted either through in-house library training programmes or by their attending training programmes outside the library. In-house training was conducted mainly by a library electronic resource co-ordinator or someone in a similar position; ICT sections of the libraries were mentioned by four libraries. Outsourced training included the use of software engineers or technical experts/consultants, who were mentioned by three libraries. Training in electronic resources outside the library included staff attending workshops or seminars, either within or outside the parent institution; nine libraries cited this: for example, UDSM library sent its staff to the University Computer Centre, and IFM sent its staff to the Global Learning Centre. Most libraries in the survey reported that they had sent their staff to the PERI workshops organized by INASP and UDSM Library.

This study also investigated whether, and if so how, end-user training was conducted in each of the institutions. Forty-one per cent of the libraries reported that they had trained their users in the use of electronic resources. The reasons given for the lack of training in most of the libraries included inadequate skills on the part of the library staff, a lack of interest or a heavy workload. The end-user training was conducted mainly through short seminars and workshops, or informally when users visited the library. In some libraries students and staff were requested to register for training on a voluntary basis. The training in most of the institutions was carried out by ICT staff in the institution (where there was no ICT section in the library) in collaboration with library staff or the library's ICT section, where it existed. The common structure of end-user training was a short presentation followed by longer sessions of hands-on experience and some form of assignment. The end-users were normally divided into groups and by degree programmes, and the training was normally conducted in the library or in computer labs, depending on the local situation.

The major weakness of end-user training practices was the lack of a programme for the entire community. The focus was on particular groups, such as graduate students, who the library staff think are in greatest need of training. Perhaps the most important issue is to determine how end-user training of both staff and students can best be integrated into the academic programmes.

Marketing of electronic resources

How are electronic resources marketed or promoted? Three libraries reported that they did not market electronic resources. However, results of the survey show that about 46% of the libraries used three or four strategies to promote the electronic resources that are available to library users in their institutions (Table 5).

Table 5. Marketing strategies used

Type of marketing strategy	*No. of libraries*	*Percentage*
Individual users making enquiries	14	64%
Library orientation	12	55%
Posters, flyers, etc.	11	50%
Training in the library	9	41%
List on the library's Website	6	27%
Listing in OPACs	3	14%
Liaison with departments	3	14%

The strategy most widely used was direct communication with individual users when they make enquiries. This is not a proactive marketing strategy, and the majority of users do not go to the library to make such enquires. The second marketing strategy was during an orientation programme, mainly for undergraduates when they enrol, but this is probably too early in their academic studies. A third strategy involved sending flyers and posters to library users. At UDSM, promotional materials were sent to individual teaching members of staff but not to students unless they were participating in some form of training. Students were expected to see these flyers or brochures on noticeboards in the library or departments, or to be informed about them by their lecturers. A fourth, although not a purely marketing technique, was the training of users in searching for electronic resources. A fifth important marketing strategy was to use the library's Website, which has the potential of reaching all those who visit the site. However, the limitation of this strategy is that users may never visit the library's Website unless they have a specific need to do so.

Conclusion

This chapter has examined the state of access to electronic library resources and services in twenty-three academic and research institutions in Tanzania. The findings of this research have revealed the following: firstly, all the institutions surveyed are in the process of developing the required infrastructural, manpower and technical capacities (including access to PCs) for the efficient access and utilization of electronic resources. However, the pace at which this is being implemented varies significantly. There is therefore a potential for the development of a digital divide both between institutions and between researchers within institutions. Secondly, the marketing strategies to promote electronic resources to a wide range of potential customers are generally weak. Thirdly, a training package is required for library users to enable them to access and use e-resources efficiently. The study has shown that there is great diversity of skills and knowledge about e-resources, but these are not always specifically targeted at the use of e-resources.

Recommendations

All academic and research libraries in Tanzania should develop policies and standards, strategies and action plans to support access to electronic information. This will provide access to global information and knowledge at a rate not possible in the print environment. These policies and strategies will address issues of standardizing and harmonizing resource acquisition, infrastructure development, management and training to promote the skills and competencies required for librarians in the digital age. Academic and research libraries should

form an ICT committee within the framework of the Consortium of University and Research Libraries to ensure the formulation and implementation of policies relating to access to electronic resources. This committee should also develop the capacity and skills of consortium members to negotiate effectively with electronic publishers on the terms of licences and prices.

Appendix. Questionnaire on access to electronic resources and services in the higher learning institutions in Tanzania

The intent of the survey is to gain information on access to electronic resources including infrastructure support in the Higher Learning Institutions in Tanzania

Q1 Name of the Institution

Q2 Gender of respondent
1. Male
2. Female

Q3 Position of the respondent
1. Chief Librarian/Director
2. In charge ICT Unit
3. Other (specify)

Q4 Number of professional staff in the library and their academic and professional qualifications

Q5 Number of users served by the library (by disciplines where possible)
1. Undergraduate Students
2. Graduate students
3. Teaching/research staff
4. Purely Research staff
5. Other staff (specify)

Q6 List the major academic/research programmes in your institution by faculty/section/ department where appropriate etc (e.g undergraduate or graduate degrees; diplomas etc)

Q7 Number of computers (functioning) available to users in the library

Q8 Number of computers (functioning) available to students in the entire institution (e.g. UDSM)

Q9 Number of computers (functioning) available to researchers/teaching staff in the entire institution (e.g. UDSM)

Q11 Is the number of computers available to users in the library adequate
1. Yes
2. No

Q12 Is the number of computers available to students in your institution (e.g UDSM) as a whole adequate
1. Yes
2. No

Q13 Is the number of computers available to researchers/teaching staff in your institution (e.g UDSM) as a whole adequate
1. Yes
2. No

Q14 What is the recommended ratio of computer to students in your institution?

Q15 What is the number of servers available in the library

Q16 How many computers are connected to the internet in the library?

Q17 How many computers that are connected to the internet are available to users in the library?

Q17(b) How many computers are dedicated as OPACs only in the library?

Q18 Are computers that are connected to the internet and available to users in the library adequate?
1. Yes
2. No

Q19 How many computers are connected to the internet in the institution (eg. UDSM)?

Q20. Are the computers that are connected to the internet in the entire institution adequate?
1. Yes
2. No

Q21 What type of media does the Local Area Network (LAN) system use in the Library?
1. Fiber Optic (100 Base Fx)
2. Unshielded Twisted Pair (UTP) Cable?
3. Other (specify)

Q22 What type of the technology does the backbone of the institution network use?

1. Fiber Optic (100 Base Fx)
2. Wireless
3. Other (specify)

Q23a) Indicate budgetary allocation for electronic resources in 2004 in your library

a) From institutional budget
b) From donor funding
c) From other sources (specify)
d) No budget allocation

Q23b) if there was no budget allocation explain why?

Q25 How much money did your library spend for the purchase of computers during the 2003/2004 financial year (including donor money)

Q26 How much money did your library spend for the purchase of software during the 2003/2004 financial year (including donor money)

Q27 How much money did your library spend on the maintenance of computers during the 2003/2004 financial year (including donor money)

Q28 How much money did your library spend on internet connectivity during the 2003/2004 financial year (including donor money)

Q31a) Where do most of the users get connected?

a) From workstations in the library
b) From workstations in the institutions (besides the Library)
c) From workstations outside of the institution
d) I don't know

Q31b) How do you get information on the above?

Q32a) What is the number of hours workstations are available to users in the library?

1. OPACs only dedicated computers
2. Other computers connected to the library

Q32b) What is the number of hours workstations are available to users in other computer clusters and cafes within the institutions?

Q33a) What is the speed (bandwidth) of the system for downloading in the library

1. Less than 1 Mb per second
2. 1 Mb per second
3. 2 Mb per second
4. Other (specify)

Q33b) What is the speed (bandwidth) of the system for uploading in the library

1. Less than 500Kb per second
2. 1 Mb per second
3. Other (specify)

Q33c) Mention other clusters or cafes within the institution with bigger bandwidth size than the library

Q34a) Is network speed faster at certain periods of the day than others (e.g early morning and late evenings than in the afternoon)?

1. Yes
2. No

Q34b) If yes please explain

Q35a) How many CD-ROM titles are available in the library?

Q35b) Of the available CD-ROM in the library how many are online?

Q36a) Show which electronic databases and fulltext journal services your institution currently access

Name of Resource	*Access*	*Don't Access*
Wiley Interscience		
Springer Verlag		
Oxford University Press		
Emerald		
Gale Database		
Ebsco Host		
Blackwell Publications		
Ingenta		
Royal Society Journals		
Cochrane Library		
Silverplatter		
British Library Inside Web		
African Journals Online (AJOL)		
E-books		
Free internet resources		
Search engines (google, yahoo)		
Amazon		
Other (specify)		
Other (specify)		
Other (specify)		
Other (specify)		

Q36b) For all resources that you are not accessing can you explain why

Q37 How were electronic resources that your institution accesses selected? (Check all that apply)

1. Electronic resources coordinator
2. Electronic resources review committee
3. Collection development librarian
4. Acquisitions section staff
5. ICT staff
6. Library system administrator
7. Liaison between librarians and teaching staff
8. Other (specify)
9. Not involved in the selection

Q38 If your library uses an electronic resources review committee who are the members of this committee? (Check ALL that apply)

1. Collection development/acquisitions librarians
1. Reference librarians
2. Electronic resource librarians
3. Technical services librarians
4. Other librarians
5. Non-librarians
6. Faculty/users
7. Computer support staff
8. Other (specify)
9. NA

Q39a) Was user needs assessment done prior to selection of electronic resources?

1. Yes
2. No

Q39(b) if YES how

Q40a) Does your library/institution belong to any consortia to purchase electronic resources?

1. Yes
2. No

Q40b) If yes name the consortia

Q41a) In your opinion do most users know the availability of electronic resources?

1. Most users know
2. Some users know
3. Most users don't no know
4. I Don't know

Q41b) if answered 1or 2 or 3 can you say how you get this information

Q42a) Do you actively market electronic resources to your users?
1. Yes
2. No

Q42b) IF YES: which of the following marketing strategies do you use? (Check ALL that apply)
1. List on the web page by title
2. List on the web page by subject
3. List on the web page by "What is new"
4. Catalogue each title in OPAC
5. Create paper flyers, banners, posters
6. Use e-mail to inform users
7. Conduct training sessions in the library
8. Create course-integrated path finders
9. Use departmental selectors/liason
10. Information provided during orientation programme
11. When individual users come to the library and ask
12. Other (specify)

Q43a) Is there an ICT section/unit in the library
1. Yes
2. No

Q43b) if yes what is the number of library staff that work in the ICT section
1. Full-time
2. Part-time

Q44 What is the number of staff with the following levels of qualification work in the Library ICT section?
1. Certificate in Computing or related fields
2. Diploma in Computing or related fields
3. 1st Degree in Computing or related fields
4. Other (specify)

Q45 Is there an electronic resources coordinator or equivalent position in the library?
1. Yes
2. No

Q46 What are the primary responsibilities of the electronic resources coordinator? (Check all that apply)
- Do research on products
- Suggest materials
- Approval for final purchase
- Install products

- Maintain/trouble shooting
- Training
- Statistical reporting
- Hardware
- Coordinate free trial
- Negotiate consortia agreement
- Selection of materials
- Other (specify)

Q47a) Is there a computing center/unit at your institution (e.g UDSM)?

1. Yes
2. No

Q47b) If yes, what type of support does the library get from the institutional Computing center/unit?

1. Technical
2. Managerial
3. Other (specify)

Q47c) If no, where does the library get its technical support?

Q48a) Does the library have a System Administrator?

1. Yes
2. No

Q48b) If yes what are his/her qualifications?

1. Certificate in Computing or related fields
2. Diploma in Computing or related fields
3. 1st Degree in Computing or related fields
4. Other (specify)

Q49a) Have library staff been trained in the use of electronic resources

1. Yes
2. No

Q49b) if yes:

by who
where

Q50a) Is the training of end-users conducted

1. Yes
2. No

Q50b) if yes:
- How is it done?
- By Who?
- How is it taught?
- How are users divided?
- Any evaluations by users?
- Where is it conducted?
- When is it conducted

Q51a) Is there a demand for electronic resources
1. Yes
2. No

Q51b) If yes what methods do you use to get information on this

Q51c) if Yes How big is the demand

Q52 Explain how does electronic resource provision fit into the overall library strategic plan

Q53 Explain how does electronic resource provision in the library fit into the overall institutional strategic plan

Q54 Explain how document delivery has been affected by the use of electronic resource?

Chapter 4

Monitoring and Evaluation of Electronic Resource Usage: A Case Study of the University of Dar es Salaam Library, Tanzania

Elizabeth Kiondo

Over the last two decades African university libraries have moved swiftly from a precarious situation, which threatened their very existence, to a more robust environment marked by impressive developments stimulated by the application of ICTs in the provision of information services. Until then, the sky-rocketing cost of printed journals and other materials, as well as budget cuts, severely limited researchers' and scholars' access to scholarly information. The university library, as the heart of the university, was under severe threat, as scholars searched for alternative ways to access information to support their activities. ICT investments offered opportunities for libraries to revitalize themselves and regain their status as reliable information and knowledge centres, and included the installation of network infrastructure, Internet connectivity, computer hardware and software, as well as user competence-building through computer and information literacy programmes. Others included making accessible a wide range of electronic information resource packages such as electronic databases and journals.

The ICT-enhanced environment in African universities led to great expectations as it facilitated access by the academic community to global research and scholarly information and knowledge. But the main question of concern to librarians and university management was the extent to which these resources could be put into use to justify the massive investments made.

This chapter discusses the monitoring and evaluation of the use of electronic resources at the University of Dar es Salaam (UDSM), Tanzania. It takes a case-study approach to discuss in detail issues related to electronic resource usage, including:

- the concept of and strategy for the monitoring and evaluation of electronic resource use;
- techniques used in monitoring and evaluating electronic resource use;
- challenges in electronic resource provision and use;
- the way forward for e-resource provision at the UDSM.

The University of Dar es Salaam and its Library

UDSM has been expanding rapidly over the past ten years in response to the dynamic socio-economic environment of the country, where demand for high-level manpower in all sectors has been evident. In response to this external challenge, in 1990 the university developed its Corporate Strategic Plan and embarked on an Institutional Transformation Programme. The objectives of the programme were to systematically introduce and monitor changes, which included an increase in the academic programmes and student intake and introducing several support services. One area that received significant attention was the introduction of ICT services at the university. In terms of the application of ICTs in teaching and learning, the university has invested heavily in infrastructure and in ensuring access to computing facilities by students, researchers, academic and other staff. It has instituted an Information Technology Resource Unit whose objective is to ensure that IT is integrated in teaching and learning through the Technology Enhanced Independent Learning programme.

The developments undertaken by the parent institution challenged the library to invest increasingly in IT applications and to expand its services and facilities to facilitate the process of teaching, learning and research at university. The UDSM library developed its own strategic plan which guided information services developments. At the centre of the plan was the need to move consistently towards the digital world. ICT developments in the library included creating an ICT infrastructure, which would facilitate access to and use of ICT-enhanced information services. Infrastructure development included the creation of a local area network, acquisition of over 100 computers, the creation of local-content databases and an online public access catalogue (OPAC), subscriptions to online databases and journals, the development of a UDSM library portal, electronic document-delivery services, a library Website, and the introduction of an innovative information literacy training programme for users.

Electronic resources provided at UDSM library

The UDSM library provides a wide range of electronic resources to its users. It has a number of CD-ROMs published by international and non-governmental organizations, which include bibliographic databases, electronic books, conference proceedings, open-access training modules, statistical abstracts and full-text journals. There is a collection of 700 electronic books, which can be accessed within the library, and local-content bibliographic databases, which contain over 2,000 records of published and unpublished reports on Tanzania. There are two types of local-content databases: those which are subject-specific and regional bibliographic databases containing bibliographic details of regional

research output. Other electronic resources include the OPAC, the UDSM Virtual Library Portal, the Database of African Theses and Dissertations, free full-text databases for low-income countries such as HINARI and AGORA, BIOLINE and INASP's PERI resources. Currently, UDSM users can access the following resource packages through PERI: EBSCO Host, Springer Verlag, Blackwell Publishing, Oxford University Press, Emerald, Ingenta, Royal Society journals, and Gale databases.

Monitoring and evaluation of electronic resource usage: Concept and strategy

The UDSM library has deployed various strategies to monitor and evaluate the use of its e-resources. As well as the statistical data supplied by publishers, the library has collected in-house usage data from those using the computer laboratory in the Reference Section, and has also conducted user surveys, which are used to supplement these data. The advantage of user surveys is that they consider both quantitative and qualitative aspects of e-resource usage.

It is important to note that, conceptually, e-resource usage is viewed within a wider context that considers all factors that may influence different levels of use. Invariably usage data can be interpreted only within a specific context, which would include factors such as levels of computer access, computer and information literacy skills, user behaviour, awareness levels and gender. All these factors affect and influence in one way or another the levels of electronic resource usage (Luther, 2000; Huyer and Sikoska, 2003; Manda and Mukangara, 2007). The following sections will examine the context of e-resource provision and a description of the techniques used to monitor e-resources usage.

The electronic resource use environment

In monitoring and evaluating the use of e-resources, the UDSM library uses a holistic approach that not only examines electronic resource usage data but also looks at the context of its use. Luther (2000) argues that a lack of context leads to a lack of understanding of electronic resource usage data. This can be dangerous because critical decisions may be made without due consideration of context.

Availability of and access to PCs

It is obvious that access to and availability of PCs will influence the use of electronic resources. At the UDSM, surveys undertaken by Kiondo, (2004), Kiondo and Nawe (2005) and Manda (2005) show that there have always been high levels of access to Internet-connected PCs among academics at a ratio of almost one to one. While most of the staff access computers directly from

their offices, most students access computers from Internet cafés, the university library, or public access rooms or the faculty computer labs (University of Dar es Salaam Library, 2007).

Computer and information literacy skills

In order for users to be able to use electronic resources effectively it is important that they posses both computer and information literacy skills. At UDSM, IT investment and user competence-building have occurred simultaneously. Training users not only in the use of computers but also in the skills required to search and use electronic resources was given priority. In monitoring usage, the levels of users' skills were also monitored. A survey undertaken in 2007 indicated that 85% of users said that they had good computer skills while only 49.8% said that they had good information literacy skills. This compares to 80% and 40.8%, respectively, in a 2005 survey, and indicates a slight increase in the levels of skills of users. Skills of users greatly influence the pattern of usage of electronic resources. In his study of electronic resource usage in Tanzania, Manda (2005) noted that the use of PERI resources was related to the status of the user, their training and their awareness of availability of the resources. For instance, 70% of the trained users used the resources as opposed to 36% of those who have not been trained.

Levels of awareness of electronic resource provision

Another area of concern when monitoring the use of electronic resources is the level of awareness of them – are users aware of the wide range of electronic resources that they can access and use? User surveys conducted at UDSM examine levels of awareness among the various categories of users in order to determine where to direct future promotional efforts. Manda's study concluded that there was still not widespread awareness of the full range of full-text electronic journals (2005: 276). In addition he found that there was a positive relationship between the status of the respondent and an awareness of PERI resources. While 45% of academic staff exhibited an awareness of between six and thirteen resources, only 33% of postgraduates were aware of this number, and 33% of undergraduates were aware of between only one and five. Table 1 shows users' levels of awareness of the various electronic resources at UDSM.

Awareness levels range widely between one resource and another. The survey conducted in 2006 showed that most of the users (85.2%) were aware of the OPAC but less than 20% were aware of full-text resources such as SAGE (10.9%) and Springer Verlag (16.4%) These findings confirm those of Manda (2005) who found that at least 86% of the respondents in Tanzanian academic and research institutions were aware of one or more of the electronic resources

available. Although there may not be direct correlation between awareness and use of resources, lack of awareness inevitably has an impact upon observed patterns of the use of electronic resources. In their study Kiondo and Nawe (2005) concluded that the lack of awareness of the wide range of electronic resources available has contributed to the low level of use of library resources.

Table 1: Library users' awareness of electronic resources at UDSM

Types of resources	*Awareness**							
	Yes		*No*		*No response*		*Total*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
E-Books	67	52.3	36	28.1	25	19.5	128	100
OPAC	109	85.2	11	8.6	8	6.2	128	100
Blackwell Publishing	32	25.0	53	40.6	43	33.6	128	100
AGORA	42	32.8	46	35.9	40	31.3	128	100
Oxford University Press	29	22.6	56	43.8	43	33.6	128	100
Sage	14	10.9	66	51.6	48	37.5	128	100
EBSCOhost	47	36.7	42	32.8	39	30.5	128	100
Encyclopaedia of Life Sciences (EOLSS)	37	28.9	55	43.0	36	28.1	128	100
Springer	21	16.4	61	47.7	46	35.9	128	100
Library Website	98	76.6	14	10.9	16	12.5	128	100
Local-content database	38	29.7	49	38.3	41	32.0	128	100

*Total sample $n = 128$. *Source:* UDSM Library (2006). Carnegie library user survey report.

Gender factors in e-resource usage

Another factor that has not received adequate attention in monitoring the use of electronic resources is gender. Although the status of users has been subjected to scrutiny in evaluating usage data, gender has not. The University of Dar es Salaam has established a Gender Centre and formulated a gender policy. The university has made issues of gender equality and equity a priority, so academic and service units need to consider gender in their activities. One of the recommendations has been to integrate gender into the collection of usage statistics. This is a challenge because it may be possible to collect gender-based data from in-house and computer lab use across the university, but how can publishers integrate gender in their usage statistics? It is a challenge that needs to be considered in the future. At UDSM, Manda and Mukangara (2007) conducted a study to examine the influence of gender on electronic resource use. The findings indicated that gender does affect the pattern of usage of electronic resources.

Monitoring and evaluation techniques

E-resource user surveys

Despite the massive investments undertaken to facilitate access to ICT services, it was not until 2001 that the library started subscribing to current-awareness databases and PERI electronic resource packages. Prior to that, the library provided CD-ROM and Internet services. After the introduction of electronic information services, there was concern in certain quarters – and especially from the librarian, university administrators and donors supporting the efforts – about the marked difference that existed between the level of investment in electronic resources and the level of awareness and use of them.

This concern prompted scientific user surveys to collect data that would supplement the in-house usage data collected by the library. The first user study was done in 2003/4, and the findings indicated that the levels of use of electronic resources ranged from 0.5% to 15% (Kiondo, 2004). The survey identified a number of challenges confronting access to and use of the various electronic resource packages, and encouraged the library to undertake a more proactive stance in promoting the e-resources and in training users in both computer and information literacy skills.

A second user survey was undertaken in 2005/6, the objective being to assess the impact of ICT-enhanced services on the core mission of the university. Levels of resource usage were among the variables examined. The findings indicated a significant increase in the use of e-resource packages and services. For instance, the use of the OPAC and Internet search engines registered a significant increase in comparison to that of subject gateways and electronic journals (Table 2).

Table 2. Use of electronic resources and services at UDSM

Resource	*Total 2004 (n = 169)*	*Total 2005 (n = 335)*
Library OPAC	66 (39.05%)	213 (63.58%)
Local databases	42 (24.85%)	129 (38.50%)
Internet search engines	113 (66.86%)	244 (72.83%)
Information/subject gateways	20 (11.87%)	45 (13.43%)
E-journals	32 (18.93%)	92 (27.92%)
Current-awareness services, AJOL, etc.	24 (14.20%)	n/a
E-document delivery	13 (7.69%)	n/a
Library Website	39 (23.07%)	n/a
Technology-enhanced learning	39 (23.07%)	97 (28.95%)

Source: Field survey data, 2004, 2005.

Table 3 shows the usage levels of individual electronic resource packages. Findings indicate that there is an increase in the levels of use from between 5% and 15% in 2004 to between 10% and 29% in 2005. This means that usage has almost doubled in a period of one year, which can be attributed to several factors, including the electronic resource marketing and publicity campaign and a rigorous information literacy programme, which was aimed at imparting electronic information searching skills.

Table 3. The use of PERI resources at UDSM

Use of PERI resources	*Total 2004 (n = 169)*		*Total 2005 (n = 335)*	
	Yes	*No*	*Yes*	*No*
AGORA	17 (10.05%)	63 (37.28%)	61 (18.20%)	218
Blackwell Publishing	21 (12.42%)	63 (37.28%)	61 (18.20%)	212
Cochrane Library	09 (5.32%)	71 (42.01%)	43 (12.80%)	180
EBSCOhost	21 (12.42%)	66 (39.05%)	62 (18.50%)	213
Emerald	16 (09.46%)	68 (40.23%)	43 (12.80%)	226
EOLSS	N/A	N/A	69 (20.59%)	202
Gale	09 (05.32%)	70 (41.42%)	43 (12.80%)	226
Ingenta	13 (07.69%)	66 (39.05%)	42 (12.53%)	220
Oxford University Press	31 (17.75%)	69 (40.83%)	97 (28.95%)	182
Royal Society	15 (08.87%)	71 (42.01%)	60 (17.91%)	207
Springer	17 (10.05%)	69 (40.83%)	35 (10.44%)	239
Wiley InterScience	N/A	N/A	34 (10.14%)	236
Silverplatter	11 (06.50%)	67 (39.64%)	37 (11.04%)	235
British Library Inside Web	19 (11.24%)	67 (39.64%)	71 (21.19%)	204
African Journals OnlLne	26 (15.38%)	74 (43.78%)	N/A	N/A

Source: Field survey data, 2004, 2005.

According to Luther (2000) several factors can equally influence the usage level of electronic resources. She argues that the amount of time that a specific database has been available influences its use, and also that it is important to allow users to integrate new information-search behaviours in their routines. It may take between sixteen months and three years for users to internalize the use of resources. The findings of a more recent survey (University of Dar es Salaam Library, 2007) of electronic resource usage indicate that more and more users were using both Internet search engines (93.58%) and the electronic journals and databases subscribed to (51.28%). This suggests that, with time, users will make the use of electronic resources part of their routine academic activities.

In-house e-resource usage

At UDSM library in-house usage of e-resources is tracked manually by requiring users to keep a register in a book or on statistical sheets. The data collected include the name of the user, faculty or institute, year of study and the resource the user has consulted. However, in-house data provide only a small part of usage patterns, given the increasing use of remote access of e-resources made by users at other locations. In-house data have to be used in conjunction with vendors' usage data and, wherever possible, with e-resource survey data. In-house usage data from the Reference Section, where the public-access workstations are located, indicate that in the past two years there was a total of 52,929 (2005/06) and 48,567 (2006/07) uses. Further analyses show that most of the users of the in-house services are undergraduates, who constitute about 75% of the users, followed by postgraduates (22%) and academic staff (1.0%) (Table 4.)

Table 4. In-house usage data for users of e-resources

Year	*2005/6*	*2006/7*
Undergraduates	39,697 (75.0%)	36,668 (75.5%)
Postgraduates	12,174 (23.0%)	11,170 (23.0%)
Academic	794 (1.5%)	583 (1.2%)
Other	265 (0.5%)	146 (0.3%)
Total	52,929	48,567*

***** Data collected up to November 2007.

Source: UDSM Library Reference Section. In-house usage data, 2005–2007.

When monitoring e-resource usage it is equally important to see the extent to which users make use of the various e-resources that are accessible to them. In-house data show that the majority of in-house users of electronic services used e-mail services (71.8%), Internet search engines (70.5%), the OPAC (69.3%), and news and information (69.2%). These findings corroborate those of earlier studies, which show high usage of e-mail and search engines. In-house data for 2007 (Table 5) show that the majority of in-house users were undergraduate students, who searched the OPAC mainly to locate printed materials or used Internet search engines to find e-resources for their academic work. Findings from previous user survey data indicate that the users of commercial databases were mostly postgraduate students and academic staff. More often than not these users accessed such resources from their offices, homes or from faculty and departmental computer labs. This state of affairs is also reflected in the in-house data, which show that only 20.3% of in-house users used commercial databases subscribed to by the library.

Table 5. In-house use of e-resources, 2007

E-resource	*Frequency (Percentage)*
E-mail services	34,871 (71.8%)
Search engines (Google, etc.)	34,240 (70.5%)
Internet games/entertainment	9,325 (19.2%)
Commercial databases	9,859 (20.3%)
Internet news and information	33,608 (69.2%)
OPAC	33,657 (69.3%)
Information gateways	20,058 (41.3%)

Source: UDSM Library Reference Section. In-house usage data, 2007.

In-house usage data are critical in determining the extent to which libraries provide access to facilities for the use of e-resources, and to determine who the main users of in-house electronic resources and services are. However, these data constitute only part of overall usage data as more and more users have computer facilities that enable them to access e-resources from remote locations. At UDSM, for example, academic staff have access to computers in their offices, while postgraduate students in most departments have access to computer facilities in postgraduate rooms. Comprehensive monitoring and evaluation of the use of e-resources should therefore consider both in-house and remote use of the library's electronic resources.

Publishers' e-resource usage data

Although usage data can be tracked locally using special software, this is not done at UDSM library. From time to time publishers' data from the various e-resource packages subscribed to by the university are collected and analysed for specific purposes. Publishers' usage data are more comprehensive and detailed and need appropriate skills to manipulate. Publishers' data may include information on site visits, pages viewed, and articles requested in both HTML and PDF formats, as well as downloads. The process of collecting and analysing publishers' data is complicated and time-consuming. This is mainly due to a lack of standardization, with each vendor approaching the provision of data in a different manner. In this case one has to move from one vendor's site to another, searching for usage data. At the UDSM a librarian has been given the task of searching and analysing vendors' data to enable the library make more informed decisions on commercial e-resource usage.

Challenges of electronic resource provision and usage

Luther (2000), Dygert (2004) and Anderson (2006) identify several challenges

faced by academic librarians in the provision of e-resources and in monitoring their usage. All these experts agree that monitoring e-resource use is a complex task as a result of several factors, including the diversity of resources and publishers, the diversity of mechanisms used to deliver usage statistics, the diversity of methods and formats for data transfer, and the incomparability of data across different providers, which inevitably prevents useful local analyses. Dygert (2004) identifies further challenges, such as infrastructure support, the integration of e-subscriptions into the libraries' e-collections, and the ability to search multiple databases simultaneously. Anderson (2006) notes that the issues associated with electronic resource usage statistics are complex, involving the technical, conceptual, political and financial.

The provision of e-resources to users at the University of Dar es Salaam is faced by similar challenges. Technically, each e-resource provider has a different authentication mechanism, and users are bombarded with several user names and passwords. Users are required to register and to remember user names and passwords. Interface design, lack of integrated searching capabilities, and lack of access to full text e-resources accessed directly from the OPAC affect levels of e-resource usage as they make the whole searching process cumbersome and time-consuming to most users. In most cases these technical capabilities are lacking in most African academic libraries, including that of the University of Dar es Salaam.

On the other hand, a lack of standardization of usage statistics delivery makes the whole process of collecting and analysing vendors' usage data complicated. One has to move from one resource package to another using a different mechanism to access usage data. Although, the UDSM library is collecting publishers' usage data, the whole process remains cumbersome and elusive.

Infrastructure support, especially in African libraries, is a challenge since in most cases budgets for the provision and maintenance of computer workstations are limited, thus also limiting access for most in-house users of the resources. At UDSM users are given an average of thirty minutes to search for information at the workstations, which also affects levels of e-resource usage to some extent.

Conclusion and recommendations

Monitoring and evaluation e-resource usage in African academic libraries is something that rose out of the need to justify the massive investments made in the application of ICT to the management of information services. Various techniques for monitoring e-resource usage have been employed, ranging from user surveys to the collection and analysis of data from publishers. Usage statistics validate library investments in e-resources but also provide insights into

usage patterns. The UDSM case study shows that, although several techniques have been employed in monitoring and evaluating e-resource usage, various contextual, technical and financial challenges need to be addressed.

In view of these the following recommendations are made:

- UDSM library should address technical and contextual issues related to the use of e-resources in order to promote usage levels. Contextual issues include making sure that users have access to facilities, are made aware of the packages available, and have the requisite skills to search for electronic information confidently. In addition, gender should be mainstreamed in e-resource services provision.
- The library should also look into the possibility of integrating e-resources into its OPAC for greater visibility and to allow users direct full-text access from the online catalogue.
- Federated searching[1] should be implemented to allow more comprehensive searching and browsing of the various e-resource packages in order to boost usage levels.
- The library needs to look for techniques that will enable it to monitor in-house e-resource usage electronically.
- Publishers should opt for user-authentication methods (e.g. IP addresses) that are alternatives to user names and passwords.
- There is a need for concerted efforts to standardize the mode of delivery of usage data. Usage statistics need to be consistent and credible to allow the best decisions to be made.

[1] Federated searching is the ability to search several subscription databases simultaneously or to search a database, OPAC or the Web and some combination simultaneously.

Chapter 5

Evaluation of the Use of PERI Resources in Academic Institutions in Ethiopia*

Aynalem Megersa and Wondimeneh Mammo

Ethiopia is one of the countries participating in PERI and has had access to various electronic journals and scholarly databases since 2003. A series of training workshops were provided to librarians, information workers and researchers after they had subscribed to these resources. There are currently about thirty PERI-participating institutions in different regions of Ethiopia, mainly universities and colleges, research institutions, and other government bodies. The library of Addis Ababa University (AAU) is the co-ordinating institution for Ethiopia and has been undertaking various activities in order to implement the programme throughout the country.

In October 2004, there was a meeting at which research on an evaluation of PERI resources and services in Ethiopia was presented. However, it was evident that it was not exhaustive in terms of target groups and methodology and in the way usage statistics had been analysed. No national survey has been conducted to measure the use of electronic resources (e-resources) or to assess factors that might influence their use. Very little is known about how the resources are used, who uses them, what barriers might hinder their use, and what the overall impact of the service is.

Our study in 2006/2007 therefore aimed to explore the usage, relevance, impact and barriers to the use of PERI resources in higher learning institutions in Ethiopia. It was conducted in nine different public higher learning institutions: Adama University, Addis Ababa University, Arbaminch University, Graduate School of Telecommunication and Information Technology (GSTIT), Bahir Dar University, Ethiopian Civil Service College (ECSC), Gondar University, Jimma University, and Mekelle University.

Faculty staff, postgraduate students and librarians were included in the survey and a non-probability sampling technique, quota sampling, was used not only to cover the overall population but also to ensure representation of the

* This chapter is a summary of research undertaken by the authors, with financial support from INASP, and completed in March 2007.

key subgroups. The study used a variety of research methods: questionnaires, one for faculty and postgraduates and one for librarians, based on Evidence Base's eVALUEd toolkit;[1] focus group discussions and interviews; and personal observation and analysis of existing documentation, e.g. national usage statistics. A total of 496 potential respondents, 456 faculty and postgraduate students and 40 librarians, were sent questionnaires.[2] Focus group discussions were held in four of the universities.

The data collected through the questionnaires were analysed and presented using automated statistical software.[3] The data obtained through the qualitative methods (focus groups discussions, in-depth interviews with key informants, and observations) were organized manually.

The overall response rate for faculty and postgraduate students was 259 (56.8%), and for librarians 32 (80%); 144 of the faculty and postgraduate respondents were from AAU, as were 23 of the librarians. The faculties of natural science, technology, social sciences, business, language studies, education, medicine, law, and agriculture were represented. Almost 90% of respondents were male and below 41 years of age; 60% of the academic respondents were faculty and of these over 60% held the rank of lecturer and above. Just less than 6% of the academics were expatriates and all the librarians were Ethiopian.

General awareness and extent of use of e-resources

General awareness

Awareness of the availability of resources and services is a key factor in their subsequent use. Of the 259 respondents, 79% were aware of the existence of PERI resources, while the remaining 21% were not. However, institutions differed in their level of awareness, ranging from 47% at Adama University to 94% at GSTIT. Faculty and postgraduate students recorded a similar level of awareness. Respondents were also asked to indicate the number of resources that they were aware of at the time of the survey. Out of the number of available PERI resources, the majority of the respondents (58%) were aware of only between one and five, with just 19% aware of ten or more. Respondents were asked how they knew of the existence of these resources and the majority said that they were told either by librarians (28%) or by colleagues (26%); of the remainder, 16% learnt from information on the library's Website, 8% during an orientation session, 6% from posters, 5% from a library workshop, and 3% from leaflets/newsletters/flyers; 8% used other sources of information.

[1] <http://www.evalued.bcu.ac.uk/index.htm>; see Chapter 2.

[2] The questionnaires are reproduced in the appendices to this chapter.

[3] SPSS Version 12. <http://www.spss.com>.

Place of access

The effective utilization of e-resources is totally dependent on the level of access available. The survey contained questions about where the respondents accessed the resources and the preferred locations for accessing them. As shown in Figure 1, faculty (71%) preferred to access the resources from elsewhere on campus, mainly from their offices.[4] However, the preferred access location for the majority of postgraduate students (57%) was the library, with a significant minority (38%) opting for faculty or departmental computing laboratories. Very few preferred to access the resources off campus.

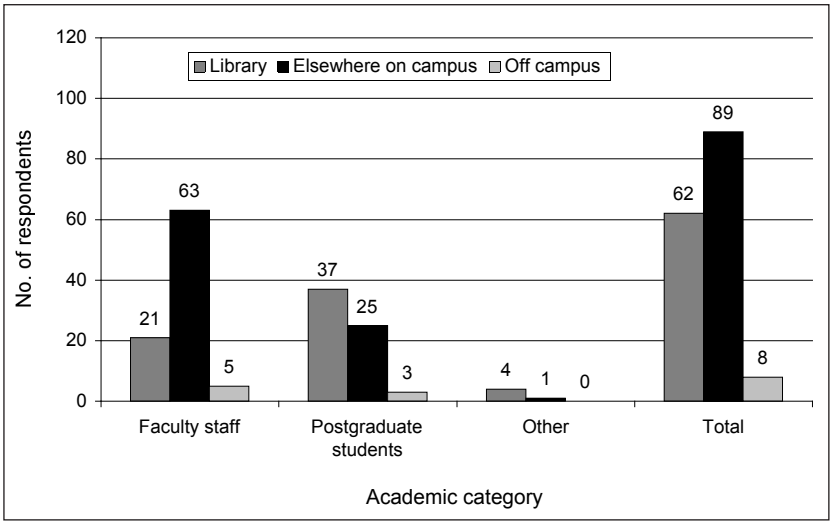


Figure 1. Preferred access location by academic category

Figure 2 shows where respondents reported that they actually accessed e-resources from, which shows a similar pattern to the replies on their preferred place of access, with slightly more using off-campus locations.

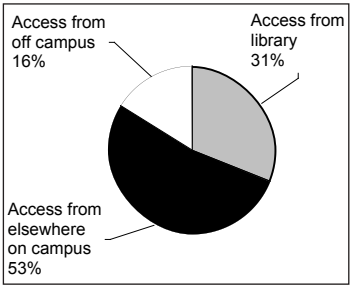


Figure 2. Access locations

[4]Note that not every respondent answered every question and the percentages are from those actually answering a particular question, not from the whole sample.

Extent of usage

The number of institutions registered for each database was investigated (Table 1).

Table 1. Databases by number of registered institutions

Database	*No. of institutions registered*	*Percentage*
Blackwell	22	73
EBSCOhost	16	53
Emerald	16	53
Oxford University Press	16	53
Cambridge University Press	15	50
Gale	15	50
Multilingual Matters	9	30
Wiley InterScience	9	30
American Physical Society	7	23
Mary Ann Liebert	5	17
Royal Society for Chemistry	5	17
Annual Reviews	4	13
Institute of Physics	4	13
Cochrane Library	2	7
Beech Tree	1	3

Respondents were asked whether they had ever used PERI resources. From the 192 responses, 72 (37%) said they had not used them. Again there were differences between institutions: in three universities a large majority had not used PERI resources – Arbaminch (100%), Bahir Dar (60%) and Mekelle (56%). Further analysis was made in relation to academic rank and it was found that those of higher academic rank tended to use the resources more than those with a lower academic rank.

The use of the available resources was also investigated by faculty, and the data show that PERI resources were used as follows: language studies (100%), law (75%), sciences (73%), business (73%), social sciences (69%), technology (64%), agriculture (50%), medical (47%) and education (38%). In addition, of those who reported having used PERI resources (124), the majority reported that they used between three and five databases only (Figure 3).

The frequency of use of these databases was also analysed. In general, JSTOR, Blackwell Publishing, Emerald, EBSCOhost, Wiley InterScience, and Cambridge University Press were found to be the most frequently accessed databases followed by AGORA, Annual Reviews, and Cochrane Library.

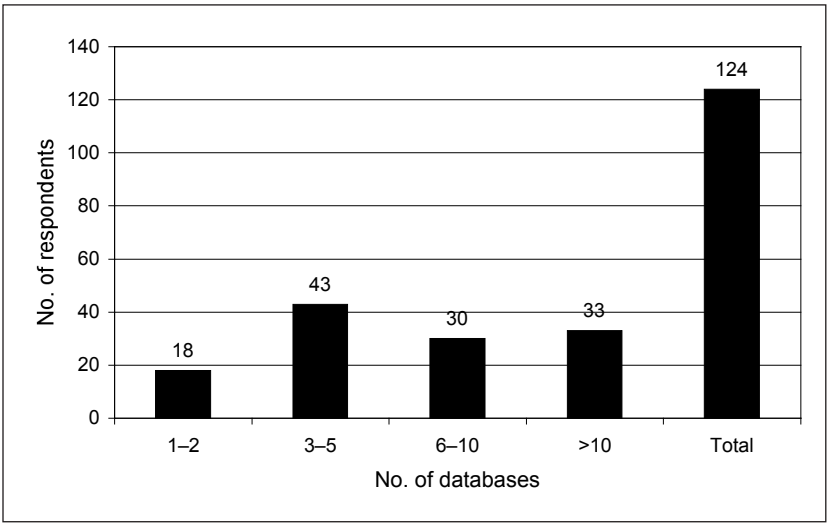


Figure 3. Distribution of number of databases used

The extent of use was also measured against the respondents' level of Internet knowledge (Table 2). A direct relationship was observed between the level of Internet knowledge and the use of PERI resources.

Table 2. Usage distribution by level of Internet knowledge

Level of Internet knowledge	*Ever used PERI resources?*		*Total*
	Yes	*No*	
Advanced	48 (77%)	15 (23%)	63
Moderate	63 (58%)	46 (42%)	109
Poor	7 (41%)	10 (59%)	17
Never used	0 (%)	1 (100%)	1

Annual usage statistics were reviewed to determine the trend of the usage, as shown by the total number of articles downloaded, since 2003 (Table 3). In general the trend is upwards.

Asked whether they had access to other e-resources, 53% of the respondents said that they did, but those who had access to other resources also used PERI resources.

Table 3. Total number of articles downloaded, 2003–2005

Database	*2003*	*2004*	*2005*
Blackwell Publishing	38	6,402	11,367
EBSCOhost	1,437	5,794	8,331
Emerald	1,069	2,216	2,695
Gale	235	989	666
Wiley InterScience	0*	562	3,208
Others	1,339	1,484	1,364
Total	4,118	17,447	27,631

*No subscription

Quality of content and relevance

Relevance

The relevance of the available resources and services in a library environment is a key issue for their effective use. The majority of respondents (84%) asserted that PERI resources were relevant to their subject interest. Respondents were also asked to rate fifteen different databases according to their relevance. Two databases, Oxford University Press and Blackwell Publishing, were rated as moderately or highly relevant by more than three quarters of their users, while a further six databases – Gale, Annual Reviews, Wiley InterScience, EBSCOhost, Cambridge University Press and JSTOR – were given this rating by between half and three quarters of their users.

Coverage

Asked whether or not the available PERI resources were sufficient for their needs, 61% of respondents said that they were not satisfied. Table 4 shows satisfaction levels according to discipline: those in languages, law and technology were the least satisfied. Those who reported accessing ten or more databases were also the most satisfied by the coverage.

Impact and barriers

Impact

The provision of e-resources and services demands considerable investment, and if they are to be sustained it needs to be demonstrated that they have a positive impact on academic achievement. Respondents were asked whether using the PERI resources improved the standard of their work, to which 91% responded positively. Moreover, the data obtained from librarians showed that nearly all

librarians (97%) agreed that the introduction of PERI resources had helped to improve the standard of their library service.

Table 4. Adequacy of PERI resources by subject

Faculty	*PERI resources are sufficient*		*Total*
	Yes	*No*	
Science	10 (48%)	11 (52%)	21
Technology	3 (20%)	12 (80%)	15
Social Sciences	9 (50%)	9 (50%)	18
Business	7 (50%)	7 (50%)	14
Language Studies	0 (0%)	5 (100%)	5
Education	2 (40%)	3 (60%)	5
Medicine	3 (30%)	7 (70%)	10
Law	1 (17%)	5 (83%)	6
Agriculture	3 (60%)	2 (40%)	5

Examining the purposes for which PERI resources were used shows that the majority of respondents (89%) reported that they used PERI resources to plan their teaching or to support research: 73% referred their students to these resources, and 91% said that the resources helped them contribute to the body of knowledge in their field of study. This was true for all disciplines. In addition, both faculty members (93%), whatever their rank, and postgraduate students (86%) believed that the resources helped them to improve the standard of their work.

Barriers

Those respondents who had never used PERI resources were asked their reasons for not using them (Figure 4).

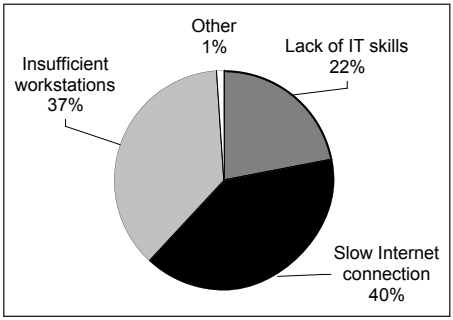


Figure 4.
Reasons for not using PERI resources

ICT infrastructure

An inquiry was made to determine whether the difference in bandwidth capacity had any effect on the use of PERI resources; the resultant data are shown in Table 5. As many as 80% of the respondents with access to

moderate or fast Internet connections reported that they used the resources. Conversely, the majority of the respondents with very low Internet connection speeds (56%) said that they had never used the resources at all.

Table 5. Usage of PERI resources by Internet connection speed

Internet connection speed	*Ever used PERI resources?*		*Total*
	Yes	*No*	
Fast	12 (67%)	6 (33%)	18
Moderately fast	67 (80%)	17 (20%)	84
Very slow	39 (44%)	49 (56%)	88

The low level of server capacity and a shortage of office space were also identified during the focus group discussions as barriers to the use of PERI resources. With regard to the available equipment in the libraries, the survey indicated that the average number of workstations available in a library for electronic resources was only fifteen. Although it could be argued that faculty members might have access to these resources from their offices, the majority of the postgraduate students might face problems in this regard in situations where well-equipped faculty/department computing labs are not available.

Preferred format

The survey data indicated that 23% of users preferred print resources, 17% electronic formats, and 60% were indifferent. The high percentage preference for print resources can help explain the low use of PERI resources.

Promotion

The majority of the librarians (86%) asserted that they promoted e-resources among their respective user communities. The mechanisms used to promote the PERI resources were found to be orientations (66%), Websites (44%), posters (34%), e-mail (31%), leaflets/newsletter/flyers (28%), and meetings (25%). To determine the success of the promotion made by the librarians, faculty members and postgraduate students were asked whether PERI resources were adequately promoted in their institutions, and the majority of respondents (78%) answered in the negative. Respondents were also asked if they were consulted about the inclusion or exclusion of PERI resources and 76% said that they were not.

Support

Seventy per cent of the respondents indicated that they had encountered problems when accessing the resources. Fifty-two per cent had sought help from library

staff members and, of these, 25% rated the help to be highly effective, 46% as moderately effective, and 29% considered it ineffective.

End-user training

In an environment where technology is consistently affecting the extent of the use of e-resources, training is of paramount importance in equipping users with the necessary skills. Only 25% of respondents said that they had received training in PERI resources and services. Seventy-seven per cent of those who had never used PERI resources were also those who had not received any training. At the institutional level, the majority of respondents in Gondar University and ECSC were found to have had training in the use of electronic resources, while the majority in the other institutions had not received any training.

Other factors

In addition to the above barriers, the data obtained through interviews, focus group discussions and personal observations showed the following factors also affect the usage of PERI resources:

- Internet use was not always directed towards research. During discussions at Mekelle University, it was mentioned that a study made to assess the purpose of Internet use on campus showed that the majority browse scholarship/university Websites.
- There was not a common portal from which to access PERI resources in an integrated way.
- Some publishers' Websites were not user friendly.
- Some databases were not well managed.

With respect to the last item, it was observed that the average number of databases for which an institution did not register was eight (about 50%).

Conclusions

In reaching the following conclusions, it needs to be recognized that the research revealed significant differences between institutions – for example, in the level of awareness and in use of PERI resources.

The use of electronic resources is greatly affected by how widely they are known to potential users. In this respect, the promotion and marketing of PERI resources in most of the institutions has not been very effective. In addition, in almost all the institutions, the provision of electronic services, which includes e-journal provision and services, was set as major strategic issue. However, the required inputs for achieving this task appear to have been inadequate. For example, an acute shortage of human resources was observed in the majority of the institutions, especially at the regional university libraries.

This study has shown that few or no local monitoring mechanisms were in place in the majority of the institutions. No formal mechanism was established for the selection of PERI resources, although there are attempts to get feedback from selected librarians.

The study also highlighted the diversity of factors affecting the use of PERI resources. The extent of their use has been hampered by the poor infrastructure and inadequate IT equipment (servers, workstations, etc.) available in most of the institutions. But other factors have held back the use of these resources. These include: the absence of end-user training in PERI resources; inadequate ICT skills on the side of the library and the users; inadequate promotion; inadequate support services from the library; the absence of a common portal for the resources; Internet usage patterns in some institutions not being fully focused towards research; and a failure to register for all the available PERI resources.

The positive impact of the use of PERI resources was strongly recognized, as reported by faculty staff, postgraduate students and librarians. This impact will eventually contribute towards building the local research capacity of the institutions and the country at large, if increased access to these resources is achieved. In view of this, the following recommendations are suggested for the more efficient utilization of PERI resources:

- Each institution should design effective marketing and promotion strategies. Appropriate training should be given to librarians so that they are able to develop such strategies.
- Institutions should work towards integrating the provision of continuous end-user training on the use of PERI resources within their library's electronic services.
- Formal mechanisms for consulting all stakeholders while selecting PERI resources should be established.
- Libraries need to develop the in-house technical and professional capacity required in the provision of effective electronic resource services.
- Each institution should devise a system of monitoring and evaluating the use of PERI resources locally. Although the monitoring activity is done at each institution, designing an appropriate data-collection policy framework on usage is crucial in maintaining the comparability and reliability of data.
- Efforts should be made towards developing a common portal for uniform access to PERI resources.
- Upgrading the existing infrastructure and increasing the number and capacity of IT equipment (servers and workstations) required for efficient access to PERI resources is vital. In this respect, the current IT infra-

structure development initiatives of government need to be speeded up.

- Institutions should properly set up access to the full range of the available PERI resources.
- Close communication between and among PERI-participating institutions should be established to benefit from best practices available and to tackle problems collaboratively.
- Further investigation should be made about the use and non-use of electronic resources to identify institution-related problems.
- Provision of a service without ensuring its sustainability creates a problem; therefore, further research should be undertaken to identify appropriate means to sustain the utilization of PERI resources.

Appendix 1. Survey Questionnaire for Faculty Staff and Postgraduate Students

Questionnaire for Evaluating the Usage of PERI Resources
in Academic Institutions in Ethiopia

Dear respondent,

It has been more than three years since the introduction of Program for the Enhancement of Research Information (PERI) in academic and research institutions. The project has been initiated by International Network for the Availability of Scientific Publications (INASP) with basic objective of enhancing the dissemination scientific information in the developing countries. To this effect, Addis Ababa University Library system has been serving as a national coordinating institution and academic and research institutions in Ethiopia are currently accessing more than 10,000 scholarly journals online through the project. However, there has never been any evaluation made to know the strength and weaknesses of the electronic information service, what users feel about it, the impact that these electronic resources have created on the day to day activities of the users, etc. Thus, this questionnaire has been designed to explore the above stated issues. Your cooperation is highly important for the success of the study.

Thank you in advance for your cooperation

SECTION 1 Identification and General Awareness of Electronic Resources Service

No	Questions	Coding categories
Q101	University/School	1. Adama University 2. Addis Ababa University 3. Haramaya University 4. Arbaminch University 5. GSTIT 6. Bahir Dar University 7. Jimma University 8. Gondar University 9. Mekelle University 10. Civil Service College
Q102	Faculty ***(Please specify your faculty)***	_____ Faculty
Q103	Academic Category	1. Full time teaching staff 2. Researcher 3. Post Graduate Student 4. Other (***Please specify***) _____
Q104	Academic Rank	1. Graduate Assist./Asst. Lecture 2. Lecturer 3. Assist. Prof. 4. Assoc. Prof. 5. Prof. 6. Other(***Please specify***)
Q105	Nationality	1. Ethiopian 2. Expatriate
Q106	Sex	1. Male 2. Female
Q107	Age	1. ≤ 30 Years 2. 31– 40 Years 3. 41 – 50 Years 4. >50 Years
Q108	Do you prefer to use electronic or printed resources from the library?	1. Printed resources 2. Electronic resources 3. Both (no special preference)
Q109	How do you rate your current level of knowledge in using the Internet?	1. Advanced 2. Moderate 3. Poor 4. never used
Q110	Your internet connection is	1. Fast 2. Moderately Fast 3. Very slow
Q111	Are you aware of the online electronic journal services provided by the library?	1. Yes 2. No ***(IF No,*** **-->END)**
Q112	How many electronic resources are you aware of?	1. >10 resources 2. 6-10 resources 3. 1-5 resources
113	How did you come to learn about these resources?	1. Leaflets/newsletters/flyers 2. Posters 3. library workshop 4. Information on library website 5. Told by a Colleague 6. Told by a librarian 7. Orientation session 8. Other (Please specify) _____

Q114	Where do you access online electronic resources? ***(Please put (✓)where appropriate)***		yes	
		The library		
		Elsewhere on campus(e.g., office, lab, etc)		
		Off Campus		
Q115	From which location do you prefer to access electronic resources?	1. The library 2. Elsewhere on campus 3. Off Campus		

SECTION 2 Extent of Usage, Relevance, and Impact Assessment

No	Questions	Coding Categories
Q201	Have you taken any training on the use of e-resources?	1. Yes 2. No
Q202	Do you have access to other e-resources apart from those subscribed by the library?	1. Yes 2. No
Q203	Have you ever been using electronic resources that are subscribed by the library?	1. Yes *(IF Yes-->***Q 205**) 2. No
Q204	What are the reasons for not using the e-resources? ***(Please put (✓)where appropriate)*** -->**END**	**Possible Reasons** Lack of IT skills, especially the Internet Insufficient number of workstation in the faculty/library Slow internet connection Others(Please specify) _____
Q205	How long have you been using electronic journals subscribed by the library?	1. 6 months 2. 6-12 months 3. 12-18 months 4. >18 months
Q206	How many electronic resources do you use?	1. >10 resources 2. 6-10 resources 1. 3-5 resources 2. 1-2 resources
Q207	Please specify the Frequency of your use of the electronic journals databases? ***(Please put a (✓) where appropriate)*** **1= at least 2 to 3 times a week** **2= Once a week** **3= once a month** **4= once per semester**	**Resource Name** / **F** / 1 Blackwell-Synergy EBSCO Host Emerald Gale databases John Wiley & Sons Oxford Univ. Press AGORA HINARI JSTOR Institute of Physics American Physical Society Annual Reviews Beech Tree Publishing Cambridge Univ. Press Cochrane Library Mary Ann Liebert Multilingual Matters Royal Society for Chemistry
Q208	Did you face any problem while you were trying to access the electronic resources?	1. Yes 2. No ***(IF No-->*****Q 211**)
Q209	Have you ever sought for help from the library staff whenever you are faced with problems regarding e-	1. Yes 2. No

Q210	How effectively do library staff respond to your individual needs?	1. Highly Effective 2. Moderately effective 3. Ineffective
Q211	How do you find out about new electronic resources and developments?	

	(Please put a (✓) where appropriate)	Leaflets/newsletters/flyers Posters Targeted e-mails Information on library website Meetings/committee Not informed Other (please specify)_____
Q212	Do you think there are sufficient electronic resources in your subject area?	1. Yes 2. No
Q213	Are the journals that you accessed relevant to your interest?	1. Yes 2. No
Q214	How do you rate the quality of content of the resources that you frequently consult? ***(Please put a (✓) where appropriate)*** **1= Highly Relevant** **2= Moderately relevant** **3=Irrelevant** **DK= Do not Know**	**E-resources Name** | **1** Blackwell-Synergy EBSCO Host Emerald Gale databases John Wiley & Sons Oxford Univ. Press AGORA HINARI JSTOR Institute of Physics American Physical Society Annual Reviews Beech Tree Publishing Cambridge Univ. Press Cochrane Library Mary Ann Liebert Multilingual Matters Royal Society for Chemistry
Q215	Do you think electronic resources have helped you to improve your standard of work?	1. Yes 2. No
Q216	Do you use electronic resources to plan your teaching or to support your research?	1. Yes 2. No
Q217	Do you refer students to electronic resources (verbally and/or in written materials)?	1. Yes 2. No
Q218	Do you think electronic resources have helped you to contribute to the body of knowledge in your field of study?	1. Yes 2. No
Q219	Do you think electronic resources are adequately promoted in your institution?	1. Yes 2. No
Q220	Are you consulted about the inclusion/exclusion of online resources?	1. Yes 2. No

END

Thank you for your time

Appendix 2. Survey Questionnaire for Librarians

Questionnaire for Evaluating the Usage of Electronic Resources
in Academic Institutions in Ethiopia

Dear respondent,
It has been more than three years since the introduction of Program for the Enhancement of Research Information (PERI) in academic and research institutions. The project has been initiated by International Network for the Availability of Scientific Publications (INASP) with basic objective of enhancing the dissemination scientific information in the developing countries. To this effect, Addis Ababa University Library System has been serving as a national coordinating institution and academic and research institutions in Ethiopia are currently accessing more than 10,000 scholarly journals online through this project. However, there has never been any evaluation made to know the strength and weaknesses of the electronic information service, what users feel about it, the impact that these electronic resources have created on the day to day activities of the users, etc. Thus, this questionnaire has been designed to explore the above stated issues. Your cooperation is highly important for the success of the study. Thank you in advance for your cooperation.

No	Questions	Coding Categories
Q101	University/School	1. Adama University 2. Addis Ababa University 3. Arbaminch University 4. Haramaya University 5. GSTIT 6. Bahir Dar University 7. Jimma University 8. Gondar University 9. Mekelle University
Q102	Nationality	1. Ethiopian 2. Expatriate
Q103	Sex	1. Male 2. Female
Q104	Age	1. ≤ 30 Years 2. 31– 40 Years 3. 41 – 50 Years 4. >50 Years
Q105	Do you prefer to use electronic or printed resources from the library?	1. Printed Resources 2. Electronic resources 3. No Preference
Q106	How do you rate your current level of knowledge in using the Internet?	1. Advanced 2. Moderate 3. Poor or never used
Q107	Your internet connection is	1. Fast 2. Moderately Fast 3. Very slow
Q108	Are you aware of the online electronic journal services provided by the library?	1. Yes 2. No *(IF No* **-->END)**
Q109	How many databases are you aware of?	1. >10 databases 2. databases 3. 1-5 databases
Q110	How did you come to learn about these resources?	1. Leaflets/newsletters/flyers 2. Posters 3. library workshop 4. Information on library website 5. Told by a Colleague 6. Told by a librarian 7. Orientation session 8. Other ***(Please speeify)*** _____

Q111	How many computers are available in your library for electronic resources service?	_____ Computers
Q112	Do you regularly maintain any kind of usage statistics in your library?	1. Yes 2. No
Q113	Are the resources that are made available through PERI balanced in terms covering the different disciplines?	3. Yes 4. No
Q114	Please specify the field/subject that can be mentioned as a weak spot in terms of the e-resources coverage?	_____Field/Subject
Q115	Are the journals that are made available through PERI relevant to the interest of your library users?	1. Yes 2. No

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Q116	How do you rate the quality of content of the databases from your library users' perspective? ***(Please put a (✓) where appropriate)*** **1= Highly Relevant** **2= Moderately relevant** **3=Irrelevant** **DK= Do not Know**	**Database Name**	**Relevance**			
			1	**2**	**3**	**DK**
		Blackwell-Synergy				
		EBSCO Host				
		Emerald				
		Gale databases				
		John Wiley & Sons				
		Oxford Univ. Press				
		AGORA				
		HINARI				
		JSTOR				
		Institute of Physics				
		American Physical Society				
		Annual Reviews				
		Beech Tree Publishing				
		Cambridge Univ. Press				
		Cochrane Library				
		Mary Ann Liebert				
		Multilingual Matters				
		Royal Society for Chemistry				
Q117	Do you think electronic resources have helped you to improve the standard of service in your library?	1. Yes 2. No				
Q118	Are you aware of any problem experienced by users wishing to access electronic resources from the library?	1. Yes 2. No *(IF NO -->**Q120**)*				
Q119	If yes, please rank the mentioned possible problems according to their dominance.	1. no terminals available _____ 2. network down_____ 3. difficulties with logins_____ 4. lack of necessary skills_____ 5. Other ***(please specify)***_____				
Q120	Do you promote the use of electronic resources?	1. Yes 2. No				

Q121	If yes, which promotion mechanism has been used in your library?		yes	No
		Leaflets/newsletters/flyers		
		Posters		
		Targeted emails		
		Information on library website		
		Meetings/committee		
		Orientation		
		Other ***(please specify)***_____		

Any Additional comments or observations on the PERI resources?_____

_____

_____

END

Thank you for your time

Chapter 6

Changing the Strategies to Enhance the Use of Electronic Resources among the Academic Community in Uganda with particular reference to Makerere University

Maria G. N. Musoke and Alison Annet Kinengyere

Makerere University Library (Maklib) started accessing electronic information on CDs in the late 1980s which served the entire university. In addition to its Medline, AIDSline and Popline CD-ROMs, the Albert Cook Medical Library also accessed electronic information when it joined the HealthNet family.[1] HealthNet was a computerized communication network, established to facilitate the exchange of information among health professionals in developing countries, and to link them with their counterparts abroad. In Uganda, a HealthNet ground station was established in 1990 at the Makerere University Medical Library. Using a combination of computers, low earth-orbit satellites, simple ground stations, telephone lines and radio links, the project provided access to current medical literature. Soon that technology was overtaken by new developments, and an electronic-mail dial-up system was preferred. Since then, there have been many technological developments and the e-mail/Internet service is much more developed. However, the high cost of bandwidth has greatly affected access to the Internet and the use of e-resources in Uganda (Musoke, 2006).

Notwithstanding the Internet-access challenge, there has been a gradual but steady change from the use of predominantly print to the use of both print and electronic resources (e-resources) in Maklib in the past decade. The acquisition and use of e-resources has been one of the top priorities in Maklib's activities. Consequently, Maklib, in collaboration with development partners, has managed to increase ICT infrastructure and the number of e-resources to support learning, teaching and research in the 85-year-old university. This is because reliable,

[1] HealthNet stations were established by SATELLIFE (an NGO based in USA) in several African (and Asian and Latin American) universities, such as Ghana, Kenya, Uganda, Tanzania, Zambia and Zimbabwe, which provided the first e-mail facilities in the medical schools. See <http://www.healthnet.org>.

accurate and timely information is a crucial component of quality assurance in university education.

Elsewhere, significant funds from academic/research library budgets are allocated to licensing e-resources, which complement the traditional print information. Identifying and analysing the benefits and costs of this new trend is, therefore, important for academic libraries (Bati, 2006).

This chapter focuses on three types of e-resources: electronic journals (e-journals) and related periodical literature, electronic books (e-books) and electronic document delivery service (EDDS), which is both a resource and a service. The Maklib online public access catalogue, the Uganda Scholarly Digital Library and other electronic resources and services have been omitted for reasons of space.

Maklib started accessing online journals in 2000 through INASP's PERI programme, and Maklib became the Uganda country co-ordinator for the PERI resources provided for all universities and research institutions in a country. Since 2005, Maklib has purchased 281 e-book titles, mainly in the sciences, but as they were purchased for Makerere University, they are accessible only to Makerere, unlike the PERI resources, which are provided countrywide. As far as EDDS is concerned, Maklib had previously been operating a traditional print document-delivery service (DDS), which was enhanced electronically.

Resources available to Makerere University

This section attempts to put what follows into context by outlining the e-resources available to Makerere University as well as the institutions involved in their provision.

Makerere University has access to e-resources mainly through institutional subscription. While some of the resources are paid for, others are accessed free of charge. These include the resources negotiated by the United Nations organizations, such as the World Health Organization (WHO) and Food and Agriculture Organization (FAO), to be accessed free by Uganda and other less developed countries. These include:

- Health InterNetwork for the Availability of Research Information (HINARI).
- Access to Global Online Research in Agriculture (AGORA) and Online Access to Research on the Environment (OARE).
- Medline resources accessed through PubMed supported by the US National Library of Medicine (NLM). The NLM also provides free access to e-books and clinical trials.
- Medical journals, which are made free after a certain period of time, ranging from six months to two years.

- Other resources accessed via OVID,[2] including e-books, CINAHL,[3]and some full-text journals.
- *African Index Medicus* (AIM), a regional database of bibliographical records. The AIM co-ordinating centre is at the WHO Regional Office for Africa.[4]

Resources that are fee-based include:

- E-books purchased for the Makerere University community from NetLibrary.[5]
- Databases: Emerald, EBSCOhost, Blackwell Publishing, Gale, Palgrave Macmillan, Springer, Royal Society for Chemistry.[6]

The contribution of INASP/PERI to Makerere and other universities/research institutions in Uganda

In 2000, INASP, through PERI, introduced the provision of full-text electronic journals to the research and academic community in Uganda. As already indicated, SATELLIFE, through HealthNet, had pioneered the provision of e-resources to the medical community in Uganda and other selected developing countries in early 1990. The PERI programme, however, was broader in coverage, as it included almost all the disciplines in Makerere University and other academic institutions in Uganda.

INASP has been able to support Uganda by:

- Negotiating with publishers for fair pricing to ensure accessibility of the PERI resources.
- Providing training and training manuals in the use, evaluation and management of electronic information and ICTs.
- Supporting member universities through workshops, which have included Monitoring and Evaluation of E-resources Usage (MEERU); Working Together Workshop for Librarians and Researchers; Licensing and Negotiation Skills for Librarians; Electronic Journals and Electronic Resources Library Management; and Web Authoring Workshop (Kinengyere, 2007).

In 2007 thirteen journal databases were provided free through INASP: African Journals OnLine (AJOL), American Physical Society, Annual Reviews,

[2] OVID is an aggregating service and Maklib accesses the resources provided through OVID courtesy of MacMaster and St Joseph's Universities in Canada.

[3] Cumulative Index to Nursing & Allied Health Literature.

[4] <http://www.afro.who.int/library/about_en>.

[5] <http://www.netlibrary.com>. The use of e-books is summarized in Appendix 2 of this chapter.

[6] <http://mulib.mak.ac.ug/col-link/e-resources.html>.

Beech Tree Publishing, Geological Society – Lyell Collection, Institution of Chemical Engineers, JSTOR, Mary Ann Liebert, National Academy Press, Oxford University Press, Royal Society of Chemistry – Journal Archives, University of Chicago Press and University of California Press.

The fee-based full-text resources accessible through INASP/PERI in 2007 include: Blackwell Publishing – Synergy, British Library Document Supply Centre (BLDSC), Cambridge University Press, Cochrane Medical Library, EBSCOhost (paid for by the Consortium of Uganda University Libraries since 2006), Emerald, Gale, International Forestry Review, Institute of Physics, Springer – only 50 titles paid for, Mineralogical Society, Palgrave Macmillan, NRC Research Press, IEEE, and Sage.

The Consortium of Uganda University Libraries (CUUL)

To be able to strengthen the network of librarians, researchers and academics, INASP encouraged librarians to form a national consortium. Maklib, as the Uganda country co-ordinator for PERI, mobilized other universities in Uganda, which realized the need to co-operate during a workshop held at Makerere University from 28 to 29 August 2001.

The theme of the workshop, Library Co-operation for Effective Provision of Information in Uganda and Beyond, paved the way for establishing CUUL. Eligible members are the university libraries in Uganda, both public and private, as well as research institutions. Areas of co-operation include resource mobilization and sharing, training, and marketing for member libraries (Kinengyere, 2007). As indicated above, INASP has worked with CUUL and Makerere University to organize training programmes to impart, among other things, negotiation skills to enable member institutions to be able to negotiate with publishers when the INASP project comes to an end.

One of the challenges being addressed by CUUL is the sustainability of e-journal subscriptions at the end of the donor-funding period. CUUL held several meetings until a decision was finally made in November 2005 on a mechanism for sharing the cost of the e-resources, starting in 2006. It was planned that, for a start, one or two of the most popular and broad databases would be subscribed to, and the cost shared equally by participating institutions. This year (2007), one database (EBSCOhost) was subscribed to by CUUL, with contributions from eleven institutions.[7]

[7] Bugema University, Gulu University, Kyambogo University, Makerere University Business School, Makerere University Library, Mbarara University of Science & Technology, Ndejje University, Nkumba University, Uganda Christian University, Uganda Management Institute and Uganda Martyrs University.

A call for participation in the pooling of funds towards subscriptions to e-resources was made to all the PERI-Uganda-registered institutions, with the proposition that CUUL make provision for the accommodation of other institutions or organizations that were not yet members according to its constitution. Out of the 43 registered PERI-Uganda institutions in 2006, only eleven responded to this initiative in time for the 2007 subscriptions. The funds generated could purchase only one database, and that is what was achieved. In preparation for the 2008 subscription renewals, a reminder about the submission deadline was sent to the CUUL executive to mobilize resources. With contributions from member institutions, it is hoped that more databases will be subscribed to and sustained in future.

Studies carried out in Makerere University Library

Several formal and informal studies relating to e-resource usage have been carried out by the staff of Maklib. Formal studies include those carried out as part of masters' degree work (Agaba, 2003; Kakai, 2003) and the ongoing Ph.D. research work by Kinengyere on the use of e-resources in selected medical schools in Uganda. The informal studies and reports include feedback from users by e-mail, the suggestion box, user statistics and reports compiled from the evaluation of information literacy sessions. These have been included in articles published by members of staff – for example, Tibenderana (2005), Musoke (2007), Kinengyere (2007) – and annual project progress reports to development partners.

In his study on the use of electronic resources at Makerere University, Agaba (2003) traces the first electronic information resources, mainly the CD-ROM and the various stages of e-mail, as having been a key method of online information delivery. He further points out that Uganda was among the first countries in sub-Saharan Africa to obtain online resources. The use of e-mail was later boosted by the introduction of Web-based e-resources, such as PERI. To improve the use of e-resources, Agaba recommended the increase of bandwidth and other ICT infrastructure, increased awareness, training, and funding to increase subscriptions and sustainability.

Master's degree research work was also carried out, in the same year, by Kakai (2003) and focused on the information-seeking behaviour of Makerere University undergraduate students. The study highlighted the underutilization of library resources and recommended more user-instruction programmes and continuous awareness-raising for all library users.

A preliminary Knowledge, Attitude and Practice (KAP) study carried out by Kinengyere in 2006 on the use of electronic information resources by Makerere University Faculty of Medicine students and staff revealed that information

literacy increased the use of e-resources;[8] As indicated above, a major study on this topic is under way. Completion is expected by 2009 and the findings will be disseminated widely.

The findings and recommendations of the above studies have greatly informed Maklib and have been the main basis for changing the strategies to ensure optimum utilization. It is noted, however, that most of the studies carried out so far have focused on identifying factors hindering optimum usage. None of the studies has focused specifically on monitoring and evaluating usage based on data such as that produced by COUNTER.[9] Kinengyere's ongoing Ph.D. study will attempt to bridge that gap.

Factors affecting the use of e-resources

This section highlights usage trends and the factors that have led to increased usage. It also highlights persistent challenges to the use of e-resources.

Increased usage

As indicated earlier, Maklib has acquired various e-resources. Although optimum usage has not yet been achieved, there has been a steady increase in use as the vendor-provided statistics in Appendix 1 show. The registered increase has been as a result of several factors.

The electronic information environment has provided new opportunities for information professionals to tap and make information accessible to library users. One example is the use of e-mail alerts instead of SDI through print methods.

Increased literacy and awareness of e-content by library users has enhanced the use of e-resources at Makerere University, as new students are more IT literate than those admitted ten years ago. This agrees with the sense-making theory of Dervin (1992) and with Asemi and Riyahiniya's (2007) study carried out at the Isfahan University of Medical Sciences library and which reported that when a user is aware of a useful resource, it will usually lead to greater use of that resource.

Reports compiled from the evaluation forms from information literacy sessions show that Makerere University students, academics and researchers have indicated their need to be able to continuously access the latest research articles, scientific breakthroughs and other new knowledge, which is only available electronically. Hence, the urge to keep up to date is another reason for the increased use of e-resources. It is evident that e-journals are more current

[8] <http://www.ahila.org/ahila10_docs/Kinengyere%20ahila10%20alison.ppt>.

[9] See page 87.

than the traditional hard copies of books. This agrees with a study carried out at Kuwait University which showed that 79% of the respondents marked staying current as one of the reasons for their increased use of e-resources (Rehman & Ramzy, 2004). Databases such as HINARI and AGORA provide access to full-text articles as current as the previous month.

The changing needs of university library users has resulted from the changing methods of teaching, learning and research as well as the growing information technologies and the library users' active engagement and participation in the information chain (Musoke, 2007). The Internet, for example, has expanded the sources of information and created a new environment, which has increased the expectations of university library users and led to increased usage of e-resources.

One of the examples cited concerning a new curriculum is the Makerere University Medical School, which changed from the traditional delivery of lectures to problem-based learning (PBL) since 2003. PBL, among other things, involves group learning through real-life problems as a stimulus for students to learn problem-solving skills and to acquire knowledge. Lecturers act as facilitators to encourage the acquisition of knowledge more effectively.[10] The PBL timetable has specific times for library work, which was not the case in the traditional medical school timetable.

The change to PBL has made a lot of demands on the library in the provision both of information resources and of space for library users. Consequently, the medical library started conducting periodic lunchtime information literacy sessions to be able to cope with the demand. This has resulted in the increased use of e-resources by students.

An improved document-delivery service has also played an important role. When users search and obtain abstracts, they request document-delivery of the full text of articles. This has greatly encouraged users and increased the use of e-resources.

Support from development partners has resulted into an increased number of e-resources and improved ICT infrastructure, which have facilitated use of e-resources.

Electricity supply, which had in the past adversely affected the use e-resources, was addressed when Maklib acquired a 365KVA generator, which automatically switches on whenever mains electricity goes off. This has made a difference not only in the use of e-resources but also in the general use of other library resources.

[10] <http://med.mak.ac.ug/3/study.htm>.

Challenges

Some persistent challenges, namely bandwidth and funding, continue to affect e-resources usage.

The high cost of bandwidth remains a major challenge that still hampers the full utilization of e-resources. When users do literature searches and/or try to download articles but find the Internet slow, some of them give up, and this affects usage.

The sustainability of e-resources is also a challenge. Through CUUL, member institutions were able to subscribe to one database, as already reported. It is not clear whether this will be sustained in future, especially by new member universities, whose limited funding and poor ICT infrastructure prevents them from benefiting fully from the vast opportunities created by e-resources.

Strategies for improving usage

A number of strategies have been put in place to improve the use of e-resources further so that optimum usage levels can be achieved.

Monitoring and evaluation

Maklib has been monitoring and evaluating the use of e-resources to enable it to plan meaningfully and to make informed decisions (e.g. concerning information literacy, which resources to subscribe to or to cancel), write funding proposals, produce annual project reports for development partners to justify expenditure and continued funding, etc. All these require usage statistics. The critical need to monitor usage was highlighted by Boruhuis (2006: 13) who quotes a respondent as saying:

> A low usage is [a] kind of red light. We will look into why the usage is so low. Next, all kind of actions will be taken in order to increase the usage. If – after a few years – the usage does not increase, then the file will be cancelled.

He concludes:

> The interviews showed librarians are using Elsevier-provided usage statistics to:
> • Evaluate collections.
> • Help make decisions on what to buy or cancel.
> • Produce cost-benefit assessments to justify expenditures.
> • Produce annual reports.

Furthermore, Kiondo (2005) pointed out that monitoring and evaluating e-resource usage is important for continuity and sustainability. The provision of usage statistics for e-resources is potentially revolutionizing collection-management practices in libraries worldwide.

E-resource usage statistics are, therefore, a major concern for librarians, development partners, policy-makers and publishers throughout the world. In addition to what has already been outlined, these statistics are used to do cost–benefit assessments.[11] Given the high cost of e-resources, there is a need to show value for the money spent on them. Monitoring and evaluation, therefore, become crucial.

Furthermore, monitoring and evaluating usage enable publishers to improve both the content and functionality of online products. Examples of functionality include: assessing publications by comparing usage data; using data to inform marketing; and product development, i.e. ensuring that users easily find what they need without having to click through too many pages. The more user-friendly the resource, the more it is used. Publishers have recently developed a standardized code of practice for journals and databases, COUNTER (Counting Online Usage of Networked Electronic Resources).[12] All vendors registered with COUNTER must follow standard guidelines in providing usage statistics to their clientele (Boruhuis, 2006).

Document-delivery services (DDS)

In the past, users had been discouraged by lack of full-text articles. The library changed its strategy by making DDS part of the e-resources budget. Furthermore, the service was advertised, a form was put on Maklib Website, and it became an integral part of the information literacy sessions, and a librarian and one assistant were assigned the responsibility for DDS. In 2006, the Main Library received the DDS requests shown in Table 1.

Currently, Maklib handles both Electronic Document Delivery Services (EDDS) and non-electronic services, using four major suppliers after thoroughly checking the subscribed databases and ensuring that the required articles/ documents are not already available. The fifth and sixth sources serve the medical library users. The EDDS sources are the University of Tennessee, the University of Bergen, Case Western Reserve University, the Kent, Surrey and Sussex Health Authority (for medical library users), and Subito, while the DDS service from the British Library is used for print documents.

Maklib has both a commercial (paid for) and a non-commercial DDS. The non-commercial service is provided through partnerships with other universities. This type of DDS is important as it strengthens the collaboration between the libraries and it is one of the strategies for sustaining DDS. The suppliers of non-commercial EDDS are:

[11] <http://libraryconnect.elsevier.com/lcp/0701/LCP0701.pdf>.
[12] <http://www.projectcounter.org>.

Table 1. Document-delivery services requests, 2006

	Faculty/School/Unit	*No. of articles requested*
1	Agriculture	125
2	Science	46
3	University library staff	13
4	Technology	44
5	Food Science**	45
6	Environment	4
7	Veterinary Medicine**	8
8	Statistics	11
9	Social Sciences	29
10	Law**	4
11	East African School of Library and Information Science	10
12	Medicine*	14
13	Education**	1
14	Graduate Studies	1
15	Music Dance and Drama**	3
16	Computing and Information Technology**	4
Total		362

*These indicate the few requests sent by the medical library, or made directly by medical students, to the Main Library; the bulk of the Faculty of Medicine requests are not listed here as DDS is handled by the medical library.
**The low numbers of requests in some faculties is a result of the increasing number full-text articles becoming available.

The University of Tennessee Library

In a Memorandum of Co-operation set up by Maklib and the University of Tennessee Library (UTL), Knoxville, USA, in May 2002 and renewed in March 2007, UTL agreed to develop and support Maklib's EDDS. The services between UTL and Maklib are governed by IFLA's International Lending and Document Delivery: Principles and Guidelines for Procedures and mutually agreed upon revision to the IFLA guidelines.[13] The service was launched in September 2002.

A separate e-mail account was established for the service,[14] after which Maklib staff used Web tools, UTL's Catalogue and the system created to place

[13] <http://www.ifla.org/VI/2/p3/ildd.htm>.
[14] <eddsutmul@mulib.mak.ac.ug>.

and track orders.[15] In June 2003, the library stopped using Prospero software for selecting documents from UTL and began receiving articles as e-mail attachments via the UTL's Ariel e-mail feature, which was a faster method. The use of e-mail was indicative of the modernization of DDS. Between September 2002 and September 2005, 414 articles were requested and received. There was a remarkable increase in 2006, when 222 articles were requested and received compared to only 79 articles received in 2005.

University of Bergen

In October 2001, Maklib and the University of Bergen Library (UoBL) signed a memorandum of understanding in which both libraries identified areas for collaboration. One of the objectives was to facilitate interlibrary lending between UoBL Science Library and Maklib following a framework of international guidelines. This facilitated access to UoBL through its online database BIBSYS. Maklib was registered as an official user of UoBL and was given an account to access the library's holdings free through BIBSYS. In January 2002, during a workshop on accessing electronic journals, library users were introduced to the BIBYS database. This was specifically for academic staff in the science-based departments. On average, forty requests for DDS are received from each of the science departments in a year. The documents are delivered from the UoBL by fax. Maklib receives, on average, five requests for articles from the Africana collection, which are scanned and sent as e-mail attachments to UoBL.

Case Western Reserve University (Cleveland, Ohio, USA), and Kent, Surrey and Sussex (KSS) Health Authority (UK)

These services are specifically for the Medical School Library, which serves about 1,000 medical students and staff. It also extends a service to health workers in Uganda, but their DDS has not been included in the statistics below.

At the medical library, the majority of the DDS requests come from graduate students and academic staff. The library obtains most of the documents from Case Western Reserve University (CWRU) Library, supported by the Fogarty Foundation. The electronic DDS started in 1994 when requests were sent by e-mail to CWRU Library and the articles faxed to the medical library. When faxing became expensive, documents were sent by post, which took between ten and twenty days. This was too long, and a solution to the 'snail mail' postage method had to be found. From October 2004 to date, a modification was made to receive the articles by e-mail. However, this also became problematic because e-mail accounts had limited space/quotas. A database was then designed by

[15] <http://jethro.lib.utk.edu/makerere.html>.

CWRU Library controlled by a username and password;[16] this is a fast method as the library can get the articles within a day or two only.

Table 2. Albert Cook Medical Library document delivery in 2004

Month	*Number of articles received*			*Total*
	By post	*By e-mail/Website*	*By fax from KSS*	
January	26			26
February	68			68
March	77		3	80
April	68			68
May	72			72
June	44			44
July	15			15
August	27			27
September	99			99
October	120	33		153
November	34	63		97
December		107		107
Total	650	203	3	856

The KSS document-delivery service is limited in scope because the requests are often not found on the Union List of Serials on the CD-ROM that shows the holdings in the KSS library network. Otherwise, the service has a dedicated fax machine and the KSS partners meet the cost of faxing articles. The medical library sends requests by email.

The commercial document-delivery services include those of the British Library (print) and Subito (electronic).[17] Table 3 shows the articles ordered from the British Library between 2002 and 2004 for Makerere and other universities. EDDS from Subito is a newer service. In 2004, when it started, 102 articles were ordered for Makerere University, while ten articles were ordered by non-Makerere institutions.

As a strategy to boost e-resources usage, DDS has been growing steadily. The service will continue to be advertised to maximize its benefits. However, as the library gets access to more full-text journals, the demand for DDS will gradually diminish.

[16] <http://129.22.120.23/Illiad/illiad.dll>.

[17] <http://www.bl.uk/services/bsds/dsc/delivery.html>; <http://www.subito-doc.de/?lang=en>.

Table 3. Documents ordered from the British Library, 2002–2004

Months	*Ordered 2002*	*Ordered 2003*	*Ordered 2004*
Documents ordered for Makerere University			
January	40	106	174
February	62	21	239
March	125	118	162
April	93	69	94
May	56	140	103
June	90	134	74
July	76	96	84
August	34	98	118
September	89	62	123
October	102	58	89
November	84	74	46
December	24	50	17
Total	875	1032	2323
*Documents ordered for other universities and institutions in Uganda**			
January	04	14	–
February	13	21	–
March	31	54	10
April	–	24	46
May	06	19	12
June	17	41	09
July	24	07	04
August	08	10	18
September	11	09	11
October	17	06	–
November	29	02	07
December	12	–	–
Total	172	207	117

*The other universities and institutions are: Uganda Martyrs University; Kyambogo University; Mbarara University of Science and Technology; Bugema University; Nkumba University; Uganda Christian University; Uganda Human Rights Commission; National Fisheries Resource Research Institute (NAFIRRI); Uganda National Health Consumers Organization (UNHCO).

Training of e-resource users

As the national co-ordinator of PERI e-resources in Uganda, Maklib has conducted training of users both at Makerere University and in other participating institutions in Uganda. Between 2000 and 2004, Maklib conducted various e-resource training sessions in the main library and medical library at Makerere. The evaluation at the end of the sessions indicated that the training was timely, relevant and useful. However, usage statistics did not improve significantly.

In 2005, Maklib changed its strategy and started to 'move out of the library and go to the people'. Training sessions were conducted in faculties, institutes and schools, which was greatly appreciated by both students and academics. This is illustrated by the number of participants, which more than doubled in comparison to the number of those who attended the sessions previously conducted in the main library. This move may partly explain the shooting up of usage statistics since this 'going to the people' strategy was started, as Appendix 1 shows. In addition, the library left it open for students and/or staff to request specific training, either in the library or in their respective faculty, institute or school.

To intensify training and avoid disruption in the main library's graduate and undergraduate computer laboratories, Maklib set up, in 2005, a dedicated computer laboratory for training and named it the 'Training Lab'. This made it possible to conduct training on any day, at any time. The Training Lab can accommodate up to twenty users, and it is equipped with computers and other IT hardware and software. Professors and other senior academics have found it very useful as they frequent it either individually to get a one-to-one training session, or when they bring groups of students, mainly graduate students.

Information literacy skills training

Maklib trains its new users at the beginning of every academic year, as part of its user-education programme. Thereafter, training is conducted continuously throughout the year in the form of information literacy sessions, workshops and academic fairs.

Information literacy is not generally integrated into Makerere University's curricula. An exception is the problem-based learning curriculum at the Faculty of Medicine (outlined above), where there is a slot in the timetable for library skills; even so, it is not examinable. A second exception is the recently introduced cross-cutting course in Information Competence and Management, run by Maklib for graduate students and researchers, which is examinable.

The rest of information literacy training is carried out as routine library work by Maklib and according to demand from faculties, institutes and schools. In the last twelve months, for example, the highest demand has been from:

- *The School of Graduate Studies*, where the library is regarded as an important part of research training, and a whole day is devoted to information-literacy skills during the five-day Research Management workshops.
- *Medical students and staff*, who preferred lunchtime hands-on sessions to introduce them to current sources of information and to equip them with skills to retrieve relevant information. This greatly improved the use of the medical library's resources.
- *East African School of Library and Information Science students*, who are regularly brought to the library for various demonstrations and information-literacy skills training.

Maklib, therefore, continuously conducts information-literacy sessions for library users, regardless of the number of trainees. Sessions are conducted for various categories of users (e.g. researchers, students with disabilities) and on various modules (e.g. the online public access catalogue and circulation, and Uganda Scholarly Digital Library) (the institutional repository of Makerere University) and updates in e-resources e.g. ELIN.[18]

An ordinary information-literacy session focuses on the following:

- Brief descriptions of ICT-related library resources, namely, the Electronic Library Information Navigator (ELIN) and the major databases (e.g. PERI, AGORA, HINARI); e-books; the Maklib library catalogue; DDS; the Uganda Scholarly Digital Library; and an introduction to reference management using Endnote.[19]
- An outline of how these resources are provided.
- Who is eligible to use the resources.
- Procedures that Makerere University staff and students need to follow to be able to access the resources.
- Participation in awareness-raising and dissemination of information about the resources.
- The sustainability of e-resources after donor funding expires.

Workshops

To improve the use of the resources, seminars and workshops were conducted at institutional, national and sub-regional levels. Some workshops were organized in collaboration with INASP, while others were organized by Maklib with other partners e.g. TEEAL,[20] WHO and FAO for HINARI, AGORA and OARE; KSS

[18] <http://elin.lub.lu.se/elinInfo>. A summary of the review of ELIN@PERI can be found at <http://www.inasp.info/uploaded/documents/Elin-review-summary-publication.pdf>.

[19] <http://www.endnote.com>.

[20] <http://www.teeal.org>.

for medical library users. The Research Management workshops organized in collaboration with Makerere University School of Graduate Studies are not included in the examples given in Table 4.

Table 4. Examples of workshops conducted between 2005 and June 2007

Dates	*Workshop title*	*Purpose/Focus*
9–11 March 2005; 24–27 April 2007	HINARI/AGORA; HINARI/AGORA/ OARE	The workshop provided researchers, librarians, academics, etc., with the tools to access high-quality, relevant and timely information on agriculture, health and the environment, which can contribute to toward strengthening research and education in agriculture, health and the environment in Uganda.
1–3 August 2005; follow-up 9–11 March 2006	Working Together to Support Research: Optimizing the Use of E–Resources	The workshops brought together researchers and librarians from organizations that have access to PERI resources in order to improve and increase the use made of e-resources in line with the objectives of INASP/PERI.
12–16 September 2005	Reference Management 'Training of Trainers' workshop	To impart skills to Maklib staff currently running the Information Competence and Management course, which has a module on Reference Management using Endnote; some researchers and academics also attended.
25–27 April 2006	Licensing and Negotiation Skills	To impart skills to librarians to be able to negotiate directly with publishers for e-resources.
3–5 July 2006	Monitoring and Evaluation of Electronic Resource Usage (MEERU)	To impart skills to librarians to enable them to monitor and evaluate the use of e-resources in their respective institutions.
14–15 June 2007	Scholarly Publishing	To impart online publishing skills to academic researchers in Ugandan institutions, librarians, printers and publishers.

The use of e-resources increased after the training and workshops, which shows that training is important. To increase their usage, training will continue as new students and staff join the university and as new resources are acquired.

Information Competence and Management (ICM) cross-cutting course

In 2005, the ICM course for graduate students and researchers was introduced by Maria Musoke (Musoke, 2007) based on her graduate experience at the University of Sheffield. This was in recognition of the fact that information

handling is at the heart of the research process across all disciplines, and that there was a critical need for researchers to acquire the necessary information skills. Four Maklib librarians conduct the bulk of the course, while two lecturers each run a session in the course.

The course focuses on the identification and use of reliable information sources and the management and presentation of the research results. Students and other participants are introduced to a range of facilities available within Makerere University and beyond that can support their research. Topics include:

- Introduction to the research process.
- Qualities of a good research article.
- Introduction to bibliographic searches for literature review (using students' research topics).
- Sources of information and document delivery.
- Searching the Internet search engines and specific databases (the major databases being. Blackwell Publishing, EBSCOhost, Emerald, HINARI/ PubMed, AGORA, ELIN).
- Management of multiple electronic files and word-processing.
- Professional citing and quotation.
- Reference management using Endnote.
- Presentation of research work: by the end of the course, students are able to import references specific to their research topics, and organize and update records in their personal databases.

The ICM course was piloted twice in November/December 2005 and July/ August 2007, and an examination was given at the end. The demand for the course was very high, as illustrated by the number of students attending, which more than doubled in the 2007 course. In total, 97% of the Ph.D. students and 3% of the Masters students attended. Each topic in the course was evaluated separately by all the students, who rated them highly; and finally there was an overall evaluation in which students indicated that the course was very relevant and a must for all researchers regardless of their areas of study.

At the moment, being a pilot, the course is not compulsory and the examination results are not included in the overall degree assessment. Once the pilot period is over, it will be presented to Senate for formalization and incorporation into the official degree structure. It is proposed that the course will contribute 3+ credits.

Among other outcomes of the course, students are introduced to new e-resources and given hands-on training in how to identify and search databases relevant to their research topics. This automatically improves the use of e-resources and enables Maklib to evaluate this usage and make informed decisions regarding new acquisitions.

Increased ICT facilities: computer laboratories and Internet kiosks

In an effort to increase ICT facilities and the use of e-resources at Makerere, all faculties have computer laboratories (labs) of varying sizes, while some have Internet kiosks to enable students in particular to utilize the resources. Students are encouraged to open e-mail accounts and to use the ICT resources. The computer labs in faculties have been used by Maklib librarians to conduct training in e-resources.

In addition to the ICT facilities in faculties, institutes and schools, the Main Library has four computer labs, which remain open when the ones in faculties close after official working hours. The four Maklib labs are dedicated to use as follows:

- by graduate students and staff of the university
- by undergraduate students
- by library users with disabilities and equipped with relevant software packages
- as a training lab (as already reported)

The increased ICT facilities have improved the use of e-resources.

Promotional materials

Promotional materials increase awareness and usage of e-resources. When asked how users got to know about e-resources, some referred to the flyer/brochure from Maklib. Examples of materials used by Maklib are flyers/brochures, posters, calendars, newsletters, and the library's Website.[21] The materials are distributed widely, and are also publicized during exhibitions, students' and other academic fairs and events, graduation ceremonies, conferences, etc. The Maklib Website has become a starting point for researchers and scholars. One page has been dedicated to e-resources and this has made it a one-stop centre for all information users, hence increasing usage.

Publicity of e-resources at conferences and meetings

Maklib has been sharing experiences at conferences and meetings as one of the strategies used to publicize e-resources in Uganda. For example, during the Sub-Regional Conference organized by Maklib and held at Makerere University in June 2005, presentations about and demonstrations of e-resources available to Uganda were made. In addition, other issues relevant to the use of e-resources – e.g. bandwidth, ICT policy and the sustainability of e-resources – were discussed (Musoke, Kakai & Akiteng, 2005). The conference was attended by Makerere University academics and representatives from all the universities

[21] <http://mulib.mak.ac.ug>.

in Uganda, which gave Maklib a chance to raise awareness of e-resources to the participants. During meetings in and outside Makerere, Maklib distributes promotional materials and announces new resources.

Reliable usage statistics from vendors using COUNTER

For some time, librarians have monitored the use of e-resources based on locally produced library statistics. These were later complemented by vendor-provided usage reports. As already mentioned, vendors have recently set up a system known as COUNTER that can handle detailed usage data from various publishers. The advent of the COUNTER project has reduced the inconsistencies among usage reports produced by vendors and will greatly assist Maklib in monitoring the usage of e-resources.

Planned strategies

Maklib has dedicated a floor to Information Commons in its new building extension to increase access to e-resources.[22] The Commons will be equipped with modern equipment and software. Bandwidth optimization and management is top on the agenda for the operationalization of the Commons, which is planned to be fully implemented in two years. After successfully competing for an automation grant from the Carnegie Corporation of New York, Maklib will add some three hundred computers, multimedia, Wireless Internet access, etc. The increased facilities will inevitably increase usage of e-resources.

Linking to or integrating information literacy into the Makerere University curriculum as one of the examinable cross-cutting courses for all students is another planned strategy. This will not only enhance usage of e-resources but will build capacity by imparting employable and lifelong skills to Makerere University graduates.

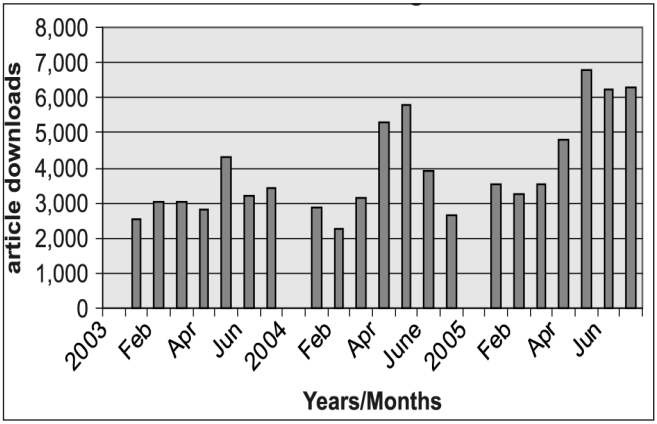
Conclusion

Previous study findings, feedback from users, evaluation of e-resources, usage data, adapting best practices and benchmarking have enabled Maklib to put in place strategies that have not only increased the usage of e-resources but have generally improved the services to library users. However, the usage statistics appended to this chapter show that more needs to be done to achieve optimum utilization. The high cost of bandwidth, which is beyond the control of librarians, needs joint effort from various stakeholders.

[22] A centralized location where the main common activities are to find, use and create information and which provides a common access point for the delivery of electronic resources and services. Used interchangeably with the term 'research commons'. See also <http://en.wikipedia.org/wiki/Information_Commons>.

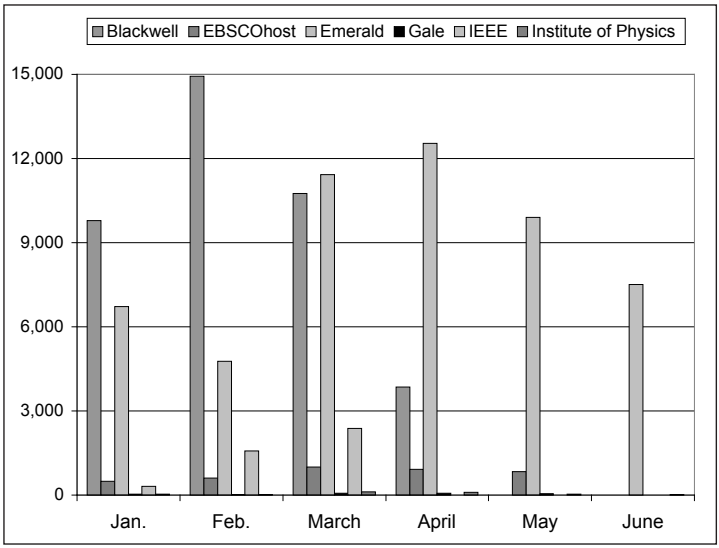
Appendix 1. Ventor-provided usage statistics

Article Downloads from PERI Resources in Uganda, January to June, 2003-2005.



Source: INASP

Article Downloads from Named PERI Resources in Uganda, January to June 2007.



Source: Library/Sida SAREC Report 2006-2007. Statistics for other databases were not provided.

Appendix 2. Example of E-Books Usage in Maklib, September 2005 to May 2007

These three tables summarize the usage of e-books, while a summary of non-use is given at the end. The statistics were generated from the NetLibrary database.

Table 1. The use of e–books between September 2005 and May 2006

Faculty, School, Institute	*Titles*	*Accesses/hits made by users*									
		2005				*2006*					
		Sept	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Total*
Agriculture	7	–	–	–	–	–	1	1	2	1	5
Computing & IT	22	3	38	12	6	3	3	9	8	13	95
Economics & Management	23		32	12	8	11	6	5	9	10	93
Medicine	25		8	8	2	2	19	4	–	10	53
Science	13	2	18	5	4	4	1	3	5	7	49
Technolgy	22	–	3	2	1	1	–	–	1	2	10
Total	114	5	99	39	21	22	29	22	25	43	305

NB. In the first year, only 114 titles had been acquired.

Table 2. E-books usage between June and September, 2006

Faculty, School, Institute	*Titles*	*Accesses/hits made by users*				*Total*
		June–Sept 2006				
		June	*July*	*Aug*	*Sept*	
Agriculture		–	1	–	9	10
Computing & IT		101	43	17	32	193
Economics & Management		15	27	11	36	89
Medicine		7	33	15	48	103
Science		6	36	21	43	106
Technology		8	13	11	13	45
Total	281	137	153	75	181	546

NB. In the second year, more titles were acquired to make a total of 281.

Table 3 shows that e-books usage statistics were high in the month of October 2006. This is attributed to the fact that the library conducted information literacy training from August to October 2006. Continued sensitization and awareness are therefore crucial. However, usage declined in the following months due the fact that the university was closed in November and December 2006, and thereafter the e-books database was on and off, which affected usage.

Table 3. E-books usage between October 2006 and May 2007

Faculty, School, Institute	*Titles*	*Accesses/hits made by users in*								*Total*
		2006			*2007*					
		Oct	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	
Medicine	72	49	18	6	3	1	5	6	5	88
Econ & Mgt. & Business	35	44	12	4	8	1	7	4	3	77
Soc. sciences (Gender, etc)	43	29	11	3	4	3	2	–	–	52
Computing & IT	32	32	9	2	3	8	12	1	1	68
Education	36	22	4	–	2	–	4	–	3	35
Statistics	12	8	1	–	10	–	–	–		19
Library science and Publishing	8	10	2	–	–	–	2	–	1	14
Agriculture	4	2	1	–	10	–	–	–		13
Psychology	4	6	–	1	–	–	–	–		7
Technology/ Engineering	14	2	1	3	1	–	–	–		7
Law	4	5	–	–	–	–	–	–		5
Science	10	1	1	–	4	2	–	3		11
Languages	1	–	–	–	–	–	–	–		–
Arts	6	1	–	–	–	–	2	–		3
Total	281	211	60	19	45	15	34	14	13	394

Summary of e-book titles, which had not been used between September 2005 and May 2007

By May 2007, out of the 114 e-books acquired in 2005, and accessed from September 2005, and the new books acquired in 2006, there was 79% usage and 21% non-use.

Chapter 7

How Pakistan's Digital Library Monitors and Evaluates the Use of E-Resources

Muhammad Furqan

The Digital Library programme of the Higher Education Commission (HEC) of Pakistan is part of its strategy to address the information needs of researchers and students in institutions throughout the country by enabling the electronic delivery of high-quality international academic journals. In 2003, when HEC took this revolutionary initiative in Pakistan – where people were not very aware of ICT and the participation of Pakistani institutions in the global knowledge-based economy was very poor – it was extremely important to address the knowledge gap or 'digital divide' between Pakistan and developed countries.

One of the main objectives of HEC is to strengthen the research culture in Pakistan. To accomplish this goal, HEC has undertaken a variety of initiatives to respond to the wide-ranging demands on resources and the many alternative technologies. During the early days of the Digital Library, HEC acquired multidisciplinary resources to cater for the basic needs of a large group of users in a collaborative project with INASP, through its PERI programme. After sufficient awareness-building and training, and the successful implementation of this project, HEC acquired several specialized resources, containing more advanced materials. The Digital Library secretariat negotiated directly with a few prominent names in the electronic-information world and acquired their services, e.g. IEEE, ISI Web of Knowledge, JSTOR, Science Direct, etc.

In 2005 through the Pak–US Co-operation in Science and Technology fund, a joint enterprise of the Ministry of Science and Technology (Pakistan) and the State Department (USA), access to journal content from leading American scientific societies and US-based academic publishers was also purchased and made available to selected universities.[1] All disciplines are covered, including life sciences, physical sciences, engineering, IT, biomedicine, social sciences, management, economics, literature, arts and humanities.

[1] Examples are the American Society of Civil Engineering, American Society of Mechanical Engineering, Association of Computing Machinery, American Chemical Society and American Physical Society.

Until 2006 HEC focused on advanced research material, journal articles and reference guides, acquired from the world's leading publishers, to satisfy the needs of Pakistani researchers. But during 2006, the Digital Library began negotiations for the acquisition of e-books and finalized access for 2006/07. The e-books support programme allows researchers to access most of the important textbooks and reference books electronically in a variety of subject areas. The main objective of this effort is to support and strengthen the learning activities of students in Pakistan.

Over 220 leading international publishers were identified covering a variety of disciplines, such as business and management, information technology, engineering, health and biomedical, life and physical sciences, social sciences.[2] E-books of Taylor & Francis and Oxford University Press have been acquired through INASP, and other publishers are providing access through the Ebrary platform;[3] 40,000 online books in addition to 23,000 journals are now available through the Digital Library programme.

Initially the Digital Library prioritized public-sector universities, as this sector was distressed owing to a lack of resources. HEC policy allows public universities to access all the resources of the Digital Library, while private universities and R&D organizations can access only those acquired through PERI. HEC is now trying to accommodate a few of the larger private universities and some R&D organizations with access to specialized resources and e-books, but only if they meet the HEC eligibility criteria relating to faculty requirements, laboratory facilities, research output, usage statistics, etc.

Usage

Initially the usage and output of the programme was not satisfactory, so the Digital Library team conducted a series of workshops across Pakistan, attended by potential users, to ensure that they had the requisite skills and knowledge to use the resources available. Since then, HEC has focused on user training and awareness schemes. To assess the performance of participating institutions, HEC continuously monitors their output in terms of usage statistics and research publications, especially research articles published in journals indexed by ISI Web of Knowledge (WOK).

By 2004 the usage was still not very satisfactory and the total number of full-text article downloads was around 100,000, but in 2005 this number topped

[2] Publishers included Oxford University Press, Taylor & Francis, Blackwell Synergy, BMJ Publishing Group, Cambridge University Press, Emerald, John Wiley & Sons, McGraw Hill Book Company, MIT Press, Springer Publishing Company, Stanford University Press, Sybex Inc, United Nations University Press, etc.

[3] <http://www.ebrary.com>.

1 million. The change between 2004 and 2005 clearly shows the eagerness of every institution to utilize the Digital Library's resources to the full.

Usage statistics in 2006 depict a complete change in the research culture of Pakistan, clearly mirroring the excitement and enthusiasm of the research community. The total number of downloaded articles was more than 2.36 million, meaning that the use of digital resources had gone up by more than 130% from 2005. The cost per article also went down, from US$2.30 in 2005 to US$1.65 in 2006 – and this was in spite of the fact that funding for the Digital Library programme had gone up by approximately 54%, as a result of an increase in the number of resources made available.

Table 1. Summary of full-text article downloads

Year	*No. of article downloads*
2004	0.1 million
2005	1.0 million
2006	2.4 million

There were two main differences between the usage statistics of 2005 and 2006:

- There was a huge increase in the total number of downloads.
- The participation of every single institution, whether from the public, private or R&D sectors.

In 2005, usage by those outside the top six universities varied between 1,000 and 20,000 downloads.

Public universities

During 2006 the total number of full-text downloads by public-sector universities was 2,046,122 (Table 2), the three leading public universities being Quaid-e-Azam University, Islamabad, the University of Karachi, and the University of Punjab, Lahore. In 2005, these same three universities acquired the top three positions except that Quaid-e-Azam University exchanged its position with the University of Karachi. Figure 1 compares the total downloads in 2004, 2005 and 2006.

Table 2. Public-sector universities: Full-text downloads, Jan.–Dec. 2006

Rank	*Institution*	*Downloads*
1	Quaid-e-Azam University, Islamabad	175,735
2	University of Karachi, Karachi	159,063
3	University of the Punjab, Lahore	142,539
4	University of Agriculture, Faisalabad	138,511
5	Bahauddin Zakariya University, Multan	94,054
6	COMSATS Institute of Information Technology	85,980
7	National University of Sciences & Technology, Rawalpindi	78,586
8	Government College University, Lahore	72,080
9	Pakistan Institute of Engineering & Applied Sciences, Islamabad	56,419
10	University of Peshawar, Peshawar	56,235
11	Fatima Jinnah Women University ,Rawalpindi	52,380
12	University of Engineering & Technology, Lahore	48,714
13	University of Sindh, Jamshoro	39,805
14	International Islamic University, Islamabad	37,476
15	University of Arid Agriculture	36,466
16	Air University, Islamabad	33,971
17	Institute of Business Administration, Karachi	32,971
18	Liaquat University of Medical and Health Sciences, Jamshoro	32,278
19	Bahria University, Islamabad	31,802
20	Islamia University, Bahawalpur	31,671
21	Mehran University of Engineering & Technology, Jamshoro	30,195
22	University of Balochistan, Quetta	27,135
23	NED University of Engineering & Technology, Karachi	26,622
24	University of Health Sciences, Lahore	26,199
25	Allama Iqbal Open University, Islamabad	25,957
26	University of Engineering & Technology, Taxila	25,427
27	University of Sargodha, Sargodha	25,295
28	NWFP University of Engineering and Technology, Peshawar	23,559

29	Balochistan University of IT & Management Sciences, Quetta	21,961
30	University of Veterinary&Animal Sciences, Lahore	21,792
31	Sindh Agriculture University, Tandojam	21,386
32	National University of Modern Languages, Islamabad	21,321
33	Lahore College for Women University, Lahore	19,939
34	Federal Urdu University of Arts, Science & Technology, Islamabad	19,389
35	Shah Abdul Latif University, Khairpur	18,116
36	Gomal University, D.I. Khan	18,037
37	Quaid-e-Awam University of Engineering, Science & Technology	17,644
38	Pakistan Institute of Development Economics, Islamabad	17,314
39	Government College University, Faisalabad	17,030
40	Institute of Business Administration, Sukkur	16,940
41	Virtual University of Pakistan, Lahore	16,790
42	Institute of Space Technology, Islamabad	16,170
43	Dow University of Health Sciences, Karachi	16,054
44	University of Azad Jammu and Kashmir, Muzaffarabad	15,939
45	University of Education, Lahore	15,788
46	National College of Arts, Lahore	15,763
47	University of Malakand, Chakdara	15,722
48	Hazara University, Dodhial, Mansehra	15,706
49	University of Science & Technology, Bannu	15,688
50	NWFP Agriculture University, Peshawar	15,220
51	Institute of Management Sciences, Peshawar	7,637
52	Balochistan University of Engineering & Technology, Khuzdar	1,093
53	Kohat University of Science and Technology, Kohat	338
54	Pakistan Naval Academy, Karachi	126
55	Karakuram International University, Gilgit	94

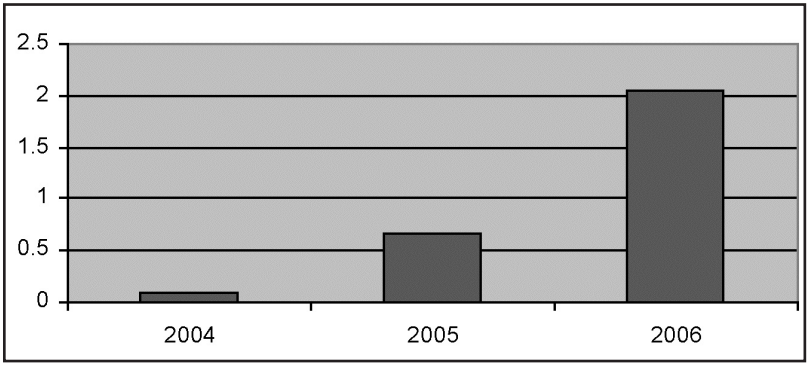


Figure 1. Usage by public-sector universities, 2004–2006

Private universities

The total number of full-text downloads by private-sector universities was 252,433 (Table 3), the three leading universities being Lahore University of Management Sciences, GIK Institute of Engineering Sciences & Technology, Swabi, and Aga Khan University, Karachi. Compared to 2005, GIK Institute jumped to second from sixth position and Isra University went down from second position to fifth.

Table 3. Private-sector universities: Full-text downloads, Jan.–Dec. 2006

Rank	*Institution*	*Downloads*
1	Lahore University of Management Sciences, Lahore	122,956
2	GIK Institute of Engineering Sciences & Technology, Swabi	39,648
3	Aga Khan University, Karachi	22,827
4	Iqra University	9,424
5	Isra University, Hyderabad	8,760
6	Mohammad Ali Jinnah University, Islamabad	7,644
7	The University of Management & Technology, Lahore	6,357
8	Hamdard University, Karachi	5,518
9	Greenwich University	4,430

10	National University of Computer and Emerging Sciences	3,701
11	Forman Christian College, Lahore	3,104
12	National College of Business Administration & Economics	2,883
13	GIFT University, Gujranwala	1,871
14	Baqai Medical University, Karachi	1,817
15	Wah Medical College	1,734
16	National Textile University, Faisalabad	1,360
17	University of Lahore, Lahore	987
18	Institute of Business Management, Karachi	967
19	Beaconhouse National University, Lahore	877
20	Foundation University, Islamabad	767
21	University of Central Punjab, Lahore	729
22	SZABIST	724
23	City University of Science & IT, Peshawar	718
24	Lahore School of Economics, Lahore	494
25	Riphah International University, Islamabad	457
26	Imperial College of Business Studies, Lahore	439
27	Institute of Communication and Technologies	298
28	Zia-ud-Din Medical University, Karachi	257
29	Sarhad University of Science and IT, Peshawar	198
30	Women Institute of Science & Humanities	173
31	Dadabhoy Institute of Higher Education, Karachi	172
32	Khyber Medical College, Peshawar	64
33	Punjab Law College, Lahore	61
34	Gandhara University, Peshawar	17

As shown in Figure 2, private universities had very low usage during 2004, the main reason being that, as explained previously, during the early days of the Digital Library programme, only a few of the major the private universities were allowed access.

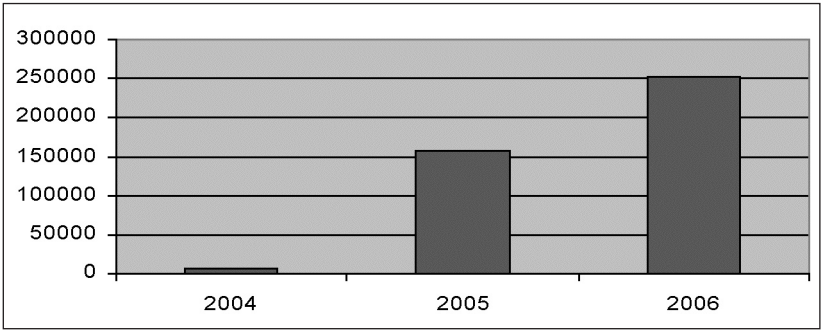


Figure 2. Usage by private-sector universities, 2004–2006

R&D organizations

The total number of full-text downloads by the various R&D institutions was 62,525 (Table 4), the three leading institutions being CASE (Centre of Advance Studies in Engineering), Islamabad, the National Institute of Biotechnology, Faisalabad, and the College of Physicians and Surgeons, Karachi. The comparisons between 2004, 2005 and 2006 (Figure 3) show similar characteristics to those in Figure 2.

Table 4. Research and Development Institutions: Full-text downloads, January–December 2006

Rank	*Institution*	*Downloads*
1	CASE, Islamabad	14,201
2	National Institute of Biotechnology & Genetic Engineering	9,469
3	College of Physicians and Surgeons, Karachi	8,433
4	Shaukat Khanam Research Laboratories, Lahore	5,286
5	A Q Khan Biomedical and Genetic Engineering Lab	2,368
6	FMH College of Medicine & Dentistry , Lahore	1,982
7	National Center of Excellence In Molecular Biology	1,934
8	State Bank of Pakistan	1,898
9	Quaid e Azam Library, Lahore	1,724
10	Centre of Biomedical Ethics and Culture, Karachi	1,505
11	Islamabad Policy Research Institute, Islamabad	1,490

12	National Institute of Management	1,347
13	Federal Judicial Academy, Islamabad	941
14	Beaconhouse Informatics, Islamabad	877
15	Barani Agricultural Research Institute, Chakwal	782
16	Hydrocarbon Development Institute of Pakistan,Islamabad	564
17	Children's Hospital and Institute of Child Health, Lahore	541
18	Foreign Service Academy, Islamabad	482
19	Applied Economic Research Centre	445
20	COMSTECH	428
21	Pakistan Institute of Legislative Development & Transparency	412
22	Federal Government Services Hospital, Islamabad	396
23	Civil Services Academy, Lahore	380
24	Fatima Jinnah Medical College & Sir Ganga Ram Hospital, Lahore	376
25	Electronic Government Directorate, Islamabad	346
26	Federal Bureau of Statistics Training Wing, Islamabad	285
27	Global Change Impact Studies Centre, Islamabad	255
28	Prime Minister's Secretariat, Islamabad	253
29	Engineering Development Board, Islamabad	251
30	National Library of Pakistan, Islamabad	247
31	Lady Willingdon Hospital Lahore	247
32	Pakistan Council of Scientific and Industrial Research. Islamabad	225
33	Planning Commission, Islamabad	209
34	Shifa College of Medicine, Islamabad	198
35	National Tariff Commission, Islamabad	170
36	Geoscience Advance Research Laboratories, Islamabad	126
37	Tabba Heart Institute, Karachi	125
38	SMEDA	123
39	National Library of Biological Sciences, Faisalabad	111
40	National Institute of Management	102
41	Ministry of Foreign Affairs, Islamabad	95

42	Pakistan Space and Upper Atmosphere Research Commission	83
43	National AIDS Control Program, Islamabad	76
44	Ministry of Commerce. National Tariff Commission	64
45	National Library of Engineering Sciences	61
46	Institute of Cost and Management Accountants of Pakistan	50
47	National Education Assessment System, Islamabad	39
48	Health Services Academy, Islamabad	36
49	Faisalabad Institute of Textile & Fashion Design, Faisalabad	36
50	Pakistan Institute of Management, Karachi	36
51	Pakistan Scientific & Technological Information Resource Centre	33
52	Pakistan Scientific and Technological Information Centre	33
53	Securities and Exchange Commission	31
54	Academy of Educational Planning & Management, Islamabad	28
55	Karachi Institute of Information Technology, Karachi	28
56	Gandhara Institute of Science and Technology, Peshawar	27
57	Pakistan Council of Renewable Energy Technologies, Islamabad	26
58	Planning and Development Department, Govt of Punjab, Lahore	24
59	Parliamentarians Resource Centre, Islamabad	22
60	National Centre for Physics, Islamabad	21
61	Institute of Clinical Psychology, Karachi	17
62	Institute of Finance, Islamabad	16
63	Fatima Jinnah Dental College, Karachi	16
64	National Agricultural Research Centre, Islamabad	14
65	Institute of Policy Studies, Islamabad	12
66	Simorgh Women's Resource & Publication Centre, Lahore	9
67	Institute of Strategic Studies, Islamabad	8
68	Pakistan Poverty Alleviation Fund, Islamabad	8
69	The Institute of Chartered Accountant of Pakistan, Lahore	8
70	National Institute of Heart Diseases, Rawalpindi	6
71	Institute of Regional Studies, Islamabad	5

72	Pakistan Engineering Council, Islamabad	4
73	Institute of Bankers, Karachi	4
74	Defence Central Library, Karachi	3
75	Government College of Home Economics Rana Liaquate Ali Khan	3
76	Mahbub ul Haq Human Development Centre, Islamabad	2
77	National Institute of Science and Technical Education, Islamabad	2
78	Government Degree College, Larkana	2
79	National Library of Physical Sciences, Islamabad	1
80	Pakistan Meteorological Department, Islamabad	1
81	Alvi Dental Hospital, Karachi	1
82	Margalla Institute of Health Sciences, Rawalpindi	0
83	National Institute Of Development Economics	0
84	National Veterinary Laboratories, Islamabad	0
85	Kashmir Council. AJK Council Library	0
86	Livestock Development Research Centre, Muzaffarabad	0
87	Pakistan Administrative Staff College, Lahore	0
88	Griffith College, Karachi	0

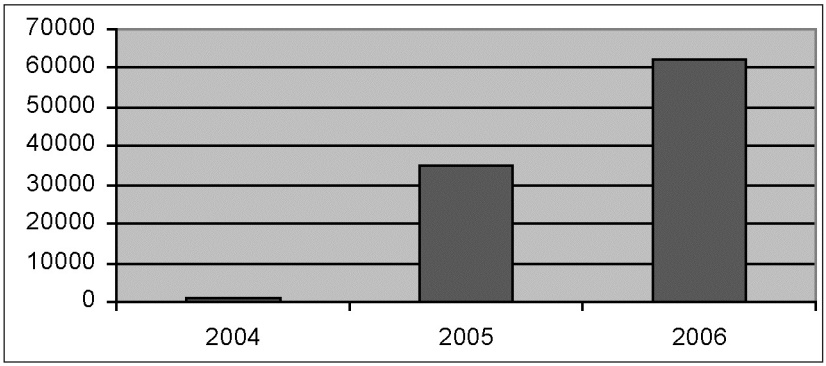


Figure 3. Research and development institutions: total number of full-text downloads, 2004–2006

Output

In approaching its response to the monitoring and evaluation of usage, HEC aimed to target greater usage. After achieving these targets, the focus is now on the quality of the output. During 2004 HEC provided several quality e-resources to Pakistan users, free of cost, and tried hard to convince them of the value of modern technologies. In the early days, usage was quite low because users were not familiar with the technology, and librarians in particular were not ready to move away from their traditional modes of delivery. But in 2005 HEC had achieved its target of greater usage as people came to recognize the value of the material available, and, by the end of 2005, the usage and awareness levels of Pakistani users was quite satisfactory.

Therefore, in early 2006, HEC focused on quality and tried to achieve a target of effective usage and provided quality resources to the researchers based on their own recommendations. HEC is struggling to pull the universities towards publishing quality research in internationally recognized journals. Initially all the attention was on the volume of usage but now the spotlight is on research articles published as an output indicator of the usage. The universities that are focusing on both research and usage are receiving more resources.

In this regard HEC ranked the Pakistani universities according to their research output in year 2006 (Table 5). This table shows only the research articles indexed by ISI WOK; the total research output of Pakistani institutions in national and international journals was very much larger. For example, the National University of Sciences & Technology, Rawalpindi, published only 21 articles indexed by WOK, but its overall research output in 2006 in national and international journals amounted to 300 articles.

Table 5. Pakistani universities research output, January–December 2006

Rank	*Institution*	*Publications*
1	Quaid-i-Azam University, Islamabad	312
2	University of Karachi, Karachi	226
3	Aga Khan University, Karachi	189
4	University of Agriculture, Faisalabad	137
5	University of the Punjab, Lahore	94
6	Government College University, Lahore	67
7	COMSATS Institute of Information Technology, Islamabad	60
8	University of Peshawar, Peshawar	58
9	Bahauddin Zakariya University, Multan	45

10	University of Sindh, Jamshoro	39
11	Pakistan Institute of Engineering & Applied Sciences, Islamabad	31
12	Gomal University, D.I. Khan	23
13	University of Balochistan, Quetta	22
14	Islamia University, Bahawalpur	21
15	National University of Sciences & Technology, Rawalpindi	21
16	GIK Institute of Engineering Sciences & Technology, Swabi	19
17	University of Arid Agriculture, Rawalpindi	19
18	University of Engineering & Technology, Lahore	17
19	Lahore University of Management Sciences, Lahore	15
20	Shah Abdul Latif University, Khairpur	13
21	NWFP Agriculture University, Peshawar	12
22	University of Sargodha, Sargodha	12
23	Federal Urdu University of Arts, Sciences & Technology	9
24	Dow University of Health Sciences, Karachi	8
25	University of Azad Jammu & Kashmir, Muzaffarabad	8
26	Allama Iqbal Open University, Islamabad	8
27	Baqai Medical University, Karachi	7
28	Mohammad Ali Jinnah University, Karachi	5
29	Ziauddin Medical University	5
30	King Edward Medical University	5
31	NWFP University of Engineering & Technology, Peshawar	5
32	Liaquat University of Medical & Health Sciences, Jamshoro	4
33	Fatima Jinnah Women University, Rawalpindi	4
34	University of Lahore	4
35	University of Management & Technology	4
36	National University of Computing & Emerging Sciences, Islamabad	4
37	Hamdard University, Karachi	3
38	University of Veterinary & Animal Sciences	3
39	University of Engineering & Technology, Taxila	3

40	Kohat University of Science & Technology	2
41	BUITMS	1
42	NED University of Engineering & Technology, Karachi	0
43	Sindh Agriculture University, Tandojam	0
44	University of Health Sciences, Lahore	0
45	International Islamic University, Islamabad	0
46	Mehran University of Engineering & Technology, Jamshoro	0
47	ISRA University, Hyderabad	0
48	Lahore College for Women University, Lahore	0
49	University of Malakand, Chakdara	0

In this list HEC included those universities and degree-awarding institutions that focus mainly on computer sciences, science and technology, and engineering. According to ISI WOK, the total research output of Pakistan in 2006 was 1,668 articles, of which 1,544 were published by universities in the field of science and technology, 32 in the disciplines of the social sciences, and 92 were published by other organizations, which means that the published output of the universities was 94.5% and that other organizations in Pakistan was only 5.5%.

Research output is continuously increasing, and the number of quality research papers published in leading international journals has also shown a significant increase, as revealed in Figures 4 and 5. Both graphs provide evidence of significant growth in research output since 2002.

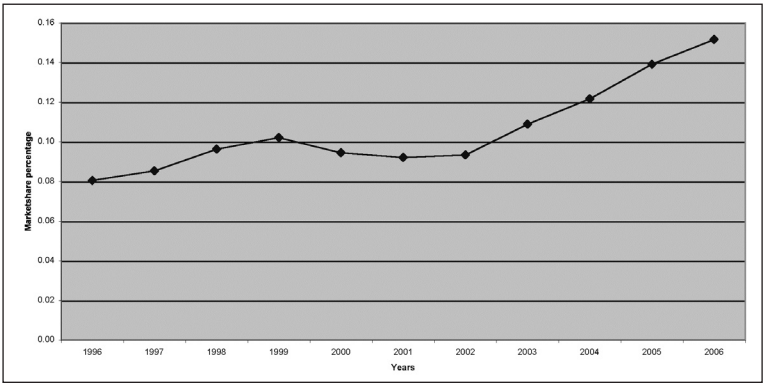


Figure 4. Pakistan's world market share of articles, 1996–2006.

Source: SCOPUS analysis by Pardeep Kumar (http://www.scopus.com)

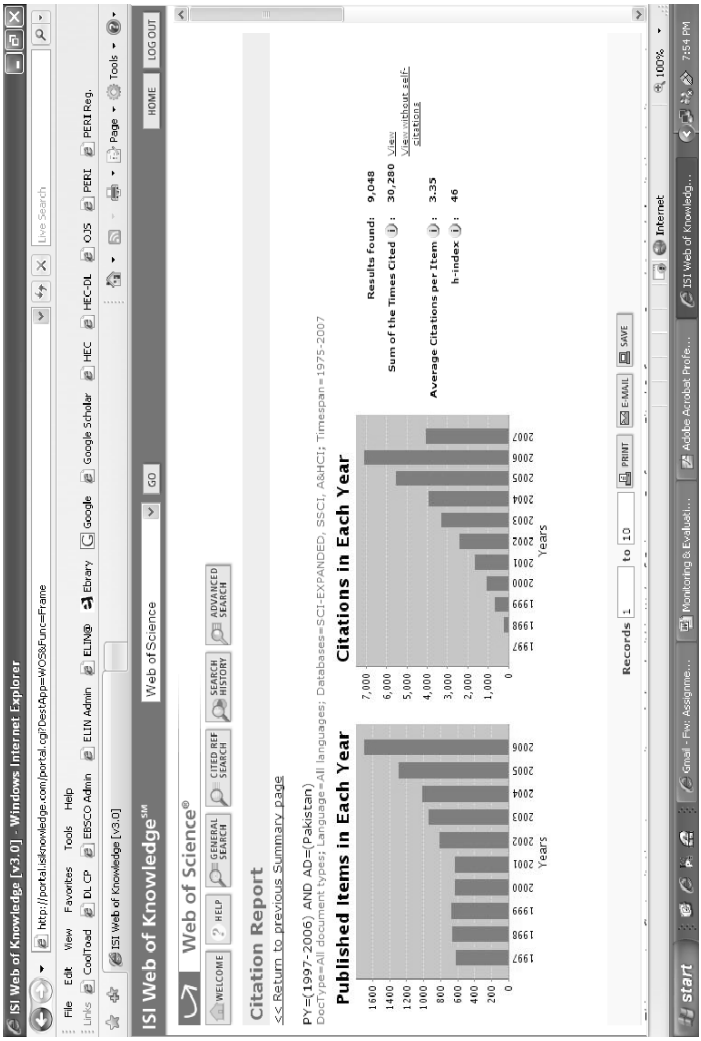


Figure 5. Published research by Pakistani authors, in journals indexed by ISI WOK

Source: Screenshot of ISI Web Of Knowledge Analysis

Conclusion

Pakistan's Digital Library initially focused on the number of full-text downloads of articles as the chief way of evaluating the use made of its various e-resources. Once these figures were deemed satisfactory, it has moved towards using the number of research articles published as an output indicator of usage. In January 2007, universities were ranked according to the number of publications indexed by ISI in 2006. Previously few universities in Pakistan were involved in research, but that picture is rapidly changing, perhaps as a result of the wealth of resources provided through the Digital Library and the use made of them.

The Digital Library is aware of the need to adopt another benchmark to evaluate the work done in the areas of the social sciences. In the middle of 2007, HEC purchased a software (i-thenticate) to help prevent plagiarism and to monitor the research work produced by Pakistani authors.

Chapter 8

Publication, Dissemination and Utilization of Health Research Results in Sudan: Impact on Health Problems of Poor Communities

A. M. El Hassan*

Sudan is the largest country in Africa, with an area of one million square miles and a population of 32 million. The country has scarce and inconsistent information on health – health problems are diverse and differ from one geographic area to another. The major health problems are infectious diseases and, in urban areas, the so-called diseases of civilization, such as diabetes, hypertension, cancer and ischemic heart disease, which are on the increase. Thus the country is in transition regarding the pattern of disease, but infectious diseases are still the major cause of morbidity and mortality in many parts of the country. The prevalence of malaria, tuberculosis, visceral leishmaniasis and schistosomiasis is high. Recent data show that HIV/AIDS is on the increase. The health situation is aggravated by civil conflicts, internal displacement, poverty and famine.

The history of health research in Sudan goes back to the beginning of the last century. The main themes of research are tropical diseases and public health. Currently, a wider range of health research in the areas of infectious disease, environmental health, genetics and health-system research is being carried out by the universities and research institutes. It is clear that there is a need to address the issue of health research, and to find out if research is responding to community needs and if the results are being used to improve the health status of the population.

Methodology

In 2003 the Sudanese Federal Ministry of Health, with the help of a group of senior researchers in Sudan, carried out a situation analysis of research in the

* The author would like to acknowledge his debt to the members of the Task Force who executed the Priority Setting on Health Research in Sudan project, particularly Professor M. A. Awad El Kareem, who co-edited the final report with him; and to Dr Lamyaa A. M. El Hassan, for valuable help in preparing the manuscript.

country. The main objective of the study was to assess the current situation of health research and to develop appropriate mechanisms for enhancing and improving the quality of health research in the Sudan, as well as its use. The study was funded by a grant from the WHO and government of Sudan.

The study consisted of three sub-studies:

- Evaluation of institutions involved in health research.
- Publication, dissemination and utilization of research results.
- Impact of health research directed towards solving the health problems of the least-developed communities in the Sudan.

This chapter deals with the findings of the last sub-study.

For this sub-study, the major publications on selected health problems of the poor communities in Sudan were assessed for the extent to which the research results were used by practising physicians, other health workers and policy-makers. A questionnaire was distributed to collect information from individuals involved in the diagnosis, management or prevention of five diseases. Policy-makers were interviewed and asked if they had used the results of research in making decisions on preventive and curative strategies.

All publications on health in Sudan were reviewed to identify those directed towards solving the health problems of the poor and marginalized communities. The use of research results on selected important health diseases affecting those communities was assessed. The diseases were selected according to the following criteria:

- The disease was considered a health priority in the National List of Health Priorities of the Federal Ministry of Health.
- The disease was researched and results were published.

Accordingly five diseases were selected. These were malaria, visceral leishmaniasis (kala-azar), Mycetoma (Madura), tuberculosis and endemic goitre. The respondents were given an abstract of the paper and information about where it had been published. They were asked the following questions:

- Did you read this paper? If not, why not?
- If you read it, did you critique it? Did you accept the results or not? Why?
- If you accepted the results, did you apply them in your practice?

Since the results were similar in all five diseases investigated, only two diseases, visceral leishmaniasis and mycetoma, are given as examples in this chapter.

Two papers on visceral leishmaniasis were selected. The first dealt with its treatment.[1] Based on evidence, the authors recommend the treatment of patients

[1] E. A. Khalil, A. M. el Hassan, E. E. Zijlstra, F. A. Hashim, M. E. Ibrahim, H. W. Ghalib, M. S. Ali, 'Treatment of visceral leishmaniasis with sodium stibogluconate in Sudan: Management of those who do not respond', *Annals of Tropical Medicine and Parasitology* (1998), 92(2): 151–8.

with stibogluconate at a dose of 20 mg/kg body weight/day for 30 days. They also recommended that the drug should be given in the full recommended dose from the first day and not in gradually increasing doses and attaining the full dose on the sixth day. A total of 109 individuals were included in the assessment of the use of the results of this study. They included 15 consultants, 17 medical registrars, 24 medical officers, 53 house officers and 15 final-year medical students.

The second paper on leishmaniasis dealt with the use of the direct agglutination test (DAT) as a diagnostic tool in Leishmania infection.[2] The main findings were that DAT was positive at a titre of 1:6400 in patients with visceral leishmaniasis. The test was found to be useful in surveys and in supporting the diagnosis in a suspected case of visceral leishmaniasis. DAT did not distinguish between past leishmania infection, active visceral leishmaniasis, subclinical infection and post-kala-azar dermal leishmaniasis. A total of 54 medical laboratory technicians were asked if they had theoretical and practical training in performing DAT as undergraduate students and if they were currently performing the test in their practice.

A total of 64 medical practitioners – 10 consultants, 10 registrars, 20 medical officers and 24 house officers – were asked about the recent treatment of Mycetoma.[3] The article stated that the treatment of Mycetoma needed a combined medical and surgical approach, which reduced the cost and duration of treatment. The treatment of actinomycetoma used a combination of streptomycin and cotrimoxazole; for Madurella mycetomatis, the commonest cause of Mycetoma in Sudan, the drug to be used was Ketoconazole.

Senior health policy-makers and managers of control programmes in the Federal Ministry of Health, the main users of research results, were interviewed through a pre-coded questionnaire. They were asked if their departments or units were involved in research and if they used research results generated by them or others to formulate policies or take action.

Results

Of the 109 respondents who were asked about the paper on the treatment of visceral leishmaniasis, 103 (94.4%) had not read the paper. The main reason given was that it was not available in hard copy, and they did not have the facility to obtain it from the Internet. Twenty-four of 54 technicians (44.4%) had been given lectures, though no practical training, in performing DAT

[2] Zijlstra, E.E., Ali, M.S., el-Hassan, A.M., el-Toum, I.A., Satti, M., Ghalib, H.W., Kager, P.A. 'Direct agglutination test for diagnosis and sero-epidemiological survey of kala-azar in Sudan', *Transactions of the Royal Society of Tropical Medicine and Hygiene* (1991), 85(4): 474–6.

[3] Mahgoub, E. S. 'Medical treatment of mycetoma', *Sudan Medical Journal* (1994), 32, 88–97.

in their undergraduate courses. Only six (11%) were performing the test in their routine practice. The reason given for not performing the test was the unavailability of reagents and equipment, even in the leishmaniasis referral hospital of Gedaref, which is in the main area where visceral leishmaniasis is endemic in the Sudan.

Fifty-one per cent of respondents had not read the article on the treatment of Mycetoma, the reason given by 86% of those questioned being the unavailability of the journal.

Key people interviewed in the different health directorates and control programmes in the Federal Ministry of Health stated that the majority of research conducted by the ministry was initiated or commissioned by staff. The results of research were used to help in decision-making. Table 1 gives some examples of how the results of research done by the Federal Ministry of Health had led to action.

With regard to the extent to which researchers outside the Ministry of Health involved ministry staff in the research process, the health programme managers stated that, with few exceptions, researchers in research institutions worked in isolation from the ministry. Furthermore, the ministry rarely received research results from academic institutions.

Table 1. Examples of projects implemented by the Sudanese Federal Ministry of Health that resulted in action taken based on the findings of research

Project	*Action*
Prevalence of hepatitis and schistosomiasis in El Gamouiya village, Khartoum State.	Establishment of a schistosomiasis control project in El Gomouiya.
Prevalence of communicable diseases in El Kamleen, Khartoum State, Matama and Atbara towns, Nile State.	Rehabilitation and staffing of health centres in the towns. Provision of safe water supply.
Feasibility of utilizing of farmers' schools for training farmers in safe use of insecticides.	Training of farmers in safe use of insecticides in farmers' schools.

Discussion

It is clear that important local health problems are being investigated by researchers in the Sudan. The majority of research is in the area of infectious diseases and deals with problems of the marginalized and poor sectors of the community. However, the results of research were rarely used for the better diagnosis, management or prevention of these health problems. The main reason for this was that the research was published in foreign journals, to which most

practitioners and other health workers do not have access. Lack of Internet facilities, largely because of the costs involved, is another problem. Currently there is good Internet coverage throughout Sudan, but it would appear that only researchers working in research institutes and in the universities in Khartoum and Gezira use services like HINARI. This needs to be pursued, as it could be lack of awareness of such services that is preventing increased use of them.

There was poor communication between policy-makers and managers of control programmes in the Federal Ministry of Health, on the one hand, and researchers in universities and other research institutes, on the other. As a result users of research are not aware of some of the research being done outside the ministry. If the research is undertaken by the staff of the ministry, it is more likely to be used, as it is demand-driven research. In this chapter examples of research that led to action in the Federal Ministry of Health have been given. Collaboration between universities and the federal and state ministries of health would ensure that research is relevant to health needs and is more likely to be used.

Publishing in local journals will go a long way towards making research results available to health workers, even in remote areas of Sudan. The *Sudan Medical Journal* that was established in the 1950s has appeared irregularly over the last decades. With a new editorial board formed in 2007 and funds being made available through the Sudanese Medical Association, it is hoped that the journal will be revived. It is encouraging to note that in the last three or four years several local journals have appeared, and older journals, like the *Gezira Journal of Health Sciences* (started in 2003) and *Juba Medical Journal* (started in 2001) are appearing more regularly. New journals include: The *Sudanese Journal of Dermatology, University of Khartoum Medical Journal, Sudanese Journal of Public Health, Sudanese Journal of Medical Sciences* and the *Sudan Medical Monitor*. Some of these journals, such as the *Sudanese Journal of Dermatology*, are available online.

The World Health Organization's Regional Office for the Eastern Mediterranean Region (EMRO) has an index of the medical journals in the countries of the region.[4] But two of the older journals in Sudan, the *Juba Medical Journal* and the *Gezira Journal of Health Sciences*, are not included in this list. Most of the Sudanese journals are published and funded by universities and some by professional societies. One hopes that these journals will publish good-quality science and that they will appear regularly; at present, they vary in their quality. The main problems facing the journals are funds and the absence of trained personnel. Many of the editors are senior academics, who are already

[4] <http://www.emro.who.int/index.asp>.

overcommitted in their own specialties and are not really trained for the job. EMRO held a training workshop for editors of journals in the region in 2003. There is a need to train young scientists as editors, who could then devote most of their time to the job. Provided there are good career prospects, some of the good young scientists might opt to take this up as a profession.

Researchers in the universities are reluctant to publish in local journals for two reasons: it is more prestigious to publish in international journals, and the universities give more weight to research published in foreign journals when they consider promotion of their staff. There is always research of great local value that may not be publishable in international journals, not because of its quality but because of the strictly local nature of the problem researched. Universities should reward and not penalize academics who engage in this type of research. The current criteria for the promotion of researchers should be changed so that a candidate can be evaluated on good work published locally or internationally. If the local journals are published regularly and are indexed, more and more Sudanese researchers will publish in them. The University of Khartoum, the oldest in the country, is taking the lead in this matter. Good-quality research published in local journals is now being given more weight than previously in the consideration of staff promotions.

It would be worthwhile to study further the impact of local journals. It is also necessary to identify the problems they face, and subsequently the Sudanese National Academy of Sciences might be able to arrange a meeting to discuss ways and means of solving them.

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