Innovation and knowledge management in Africa

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Abstract: In recent years, mainstreaming Knowledge Management (KM) practices in government processes has assumed increasing importance. How have governments in Africa, if at all, incorporated KM in governance and how inclusive has this process been? This chapter will attempt to answer these key questions by examining the experiences and lessons learned in efforts to build the KM capacity across Africa. In doing so, the chapter will provide a critical review of the key presentations of the latest major conference on *Knowledge Management as an Enabler of Change and Innovation in Africa* held in Cairo, Egypt (11–13 June 2007). Central to the discussions was the need to create an enabling environment encouraging the adoption of KM practices in Africa and the utilisation of indigenous knowledge assets as an important input in poverty alleviation strategies. More importantly, the chapter will outline the challenges that can be observed and what opportunities for building Africa's knowledge system are available. Finally, the chapter concludes with a discussion of the strategic and policy implications of these findings for achieving sustainable development in Africa.

1 Introduction

As part of its efforts to share policy-relevant knowledge, in 2007 Global Development Network (GDN)[1] organised a major conference in Cairo, Egypt (11–13 June 2007) to strengthen Knowledge Management (KM) capacity and research dissemination skills in research institutes and networks in Africa. The conference organised in partnership with the African Capacity Building Foundation and The World Bank Institute, the two-day

conference on *Knowledge Management as an Enabler of Change and Innovation: A Conference for Policymakers and Practitioners* sought to bring together the experiences and lessons learned in efforts to build KM capacity across the African continent. Central to discussions was the need to create an enabling environment encouraging the adoption of KM practices in Africa and the utilisation of indigenous knowledge assets as an important input in poverty alleviation strategies. Presentations at the conference focused on initiatives in the role of KM as vital in its impact on furthering human development.

Many scholars such as Danofsky (2005), Hamel (2005) and Mansell and When (1998) argue that information can lead to knowledge and knowledge is a prerequisite for development (also see Ahmed, 2004; 2005; 2007). United Nations Educational, Scientific and Cultural Organization's 32nd General Conference in 2003 focused on 'Building knowledge societies and advancement of knowledge-based practices' as an essential component of globalisation and sustainable economic growth particularly in Developing Countries (DCs).

1.1 So what does the terms 'knowledge' and 'knowledge management' really mean?

Defining knowledge is a very complex task. Purvis *et al.* (2001) argue that the nature of knowledge and defining knowledge is not a simple undertaking. Whilst there are various typologies, in its simplest from there are two main types of knowledge – tacit and explicit (Nonaka and Takeuchi, 1995). Explicit knowledge may be expressed and communicated relatively easily; tacit knowledge tends to be personal, subjective and difficult to transmit (or sometimes even to recognise). Thus, while some explicit knowledge may lend itself to codification and commodification in Knowledge Management Systems (KMS), tacit knowledge is very strongly embedded in the mind of the individual and highly context-sensitive (Barnes, 2002). A key challenge of KMS therefore, has been to make appropriate tacit knowledge explicit and portable (Swan, 2001).

Moreover Drucker (1998) defined knowledge as information that changes something or somebody – either by becoming grounds for actions or by making an individual (or an institution) capable of different or more effective action. This definition addresses both the individual and corporate aspects of knowledge. However Nonaka and Takeuchi (1995) argue that, from a management perspective the key difference between information and knowledge is that information is much more easily identified, organised and distributed. Knowledge, on the other hand, can not really be managed because it resides in one's mind.

KM on the other hand is defined by Snowden (2000) as the identification, optimisation, and active management of intellectual assets, either in the form of explicit knowledge held in artefacts or as tacit knowledge possessed by individuals or communities. The different aspects of KM include adequate access to appropriate resources, IT and communication mechanisms; capture and management of tacit knowledge; enabling organisational culture, individual attitudes, physical environment and records management and training and development (Tran, 2005). However Leonard and Sensiper (1998) criticised the definition of KM as broad and vague as to have little meaning and implies that knowledge can be managed.

Allam Ahmed[2] started his presentation explaining that the term 'Knowledge Management' is both about 'knowledge' and 'management'. Far from focusing simply on the processes of sharing and disseminating knowledge, conference participants emphasised the importance of generating home-grown knowledge as a potentially powerful tool in development strategies. Sharing experiences among practitioners, putting into practice, the latest research and techniques, learning from the latest life-saving techniques, combining local and global practices – these are powerful reminders of how KM is having a major impact on health. Moreover, *Ahmed* cited the case of Severe Acute Respiratory Syndrome (SARS) epidemic as a good example of how knowledge sharing can accelerate development in science and benefit people when the Human Genome Project data was made available to scientists to turn a collection of individual sequences into an incomparably richer resource (see PLoS for more details). Information timely availability, reliability and usability not only averts epidemic diseases, but also leads to prevention that improves people's health.

Moreover, knowledge or evidence-based policy making is indispensable if gaps in living standards are to be narrowed. This view of the importance of KM as articulated by *Mike Obadan*[3] finds reflection in organisation strategies at various levels among stakeholders in the development process.

2   Africa and the global knowledge society

Speakers at the conference highlighted the importance of KM based on indigenous knowledge systems as a tremendous resource on environmental issues and sustainable livelihoods. According to *Marc Steinlin*,[4] the potential for indigenous knowledge to help a broader group of people is largely untapped. Yet, there exist significant overlaps between indigenous and scientific knowledge. This knowledge which is dynamic and constantly evolving needs to be controlled by communities rather than simply collected and documented.

Research institutes face multiple challenges in efforts to generate high quality data and hence the element of capacity building needs to be inbuilt in KM strategies. Building this capacity is a two pronged approach – building both data collection and analysis techniques, and sharing techniques. In Africa, this is a daunting task as figures set towards achieving certain goals/targets are often likely to be underestimates in themselves due to weaknesses in birth and death registration systems. In addition this drawback of existing research, much of the data for the region is not available for every country and if available, in some cases, is not complete.

Moreover, there are gaps between haves and the have nots in the knowledge creation process. Many journals ostensibly focusing on issues relating to the African continent are often prohibitively expensive and involve little or no input from researchers/academia from the region of investigation itself. The average African university pays close to 50 times more than average residence in Europe (ATICS, 2005).

The latest World Summit on the Information Society (WSIS) held in Tunis (November 2005) highlights the importance and potential of ICTs in improving the socio-economic development of all human beings and that ICTs should not only be seen as a medium of communication, but also as a development enabler to achieve Millennium Development Goals (MDGs).[5] And although there is a growing body of evidence that

ICTs have a significant macroeconomic impact, it is not clear to what extent ICTs have helped to directly reduce major development concerns reflected in the MDGs such as poverty, hunger or sickness. Table 1 outlines some possible impacts of ICTs on the different MDGs identified by researchers.

Table 1   Impact of ICTs on the MDGs

MDGs	Impact of ICTs
1	Increase access to market information and reduce transaction costs for poor farmers and traders.
2	Increase supply of trained teachers through ICT-enhanced distance training.
3	Deliver educational and literacy programmes specifically targeted to poor girls and women using appropriate technologies.
4, 5 and 6	• Increase access of rural care-givers to specialist support and remote diagnosis.
	• Enhance delivery of basic and in-service training for health workers.
	• Increase monitoring and information-sharing on disease and famine.
7	Remote sensing technologies and communications networks permit more effective monitoring, resource management, mitigation of environmental risks.
8	Increase the number of IT graduates and reduce youth unemployment.

Sources: World Telecommunication/ICT Development Report (2006) and
World Telecommunication Development Report (2003)

Yet, according to Danofsky (2005), millions of people in Africa have never made a telephone call and without the ability to communicate Africa will remain poor and isolated, lacking the basic means to participate in the global society. For Africa, keeping up with these changes, and involvement in research, are both vital and Africa can be said to be suffering from scientific information famine. Table 2 shows the digital divide between the different parts of the world and Africa.

Table 2   The digital divide between developed and developing countries (times more)*

Regions	Fixed telephone*		Mobile telephone**		Internet users***	
	1994	2004	1994	2004	1994	2004
Developed	48.80	53.5	5.20	76.8	2.18	53.8
World	11.54	18.8	1.00	27.4	0.46	13.8
DCs	04.40	12.8	0.19	18.8	0.03	6.70
Africa	01.70	03.1	0.06	08.8	0.01	2.62

Notes: * Fixed telephone lines per 100 inhabitants.

 ** Mobile telephone subscription per 100 inhabitants.

*** Internet users per 100 inhabitants.

Sources: African Telecommunication Indicators (2004); World
Telecommunication/ICT Development Report (2006); World
Telecommunication Indicators Database (2005)

The ICT revolution is also not without challenges. ICT products and their applications need to be designed in a manner which allows for addressing the needs of disadvantaged communities. Open access alone will not generate local research. Therefore a special session at the conference examined issues relating to widening the scope and impact of ICTs in Africa and the challenges of connectivity, expansion of infrastructure and reducing disparities in the use of ICT as an enabling tool in rural and urban areas.

In his keynote address, *Ismail Serageldin*[6] highlighted the speed of change in knowledge creation and the resulting urgency for DCs to engage with this process of change and not be left behind. Knowledge accumulates at a pace which doubles every 18 months. This has brought with it new fears of how to cope with this speed and manage knowledge effectively. Gaps between the haves and have-nots in the knowledge creation process is ever increasing. Serageldin pointed out that rich countries spend 220 times per capita income on research and the ICT revolution has carried information to every corner of our lives. The changes have made real time collaboration across regions, time zones and cultures possible. Such networks have phenomenal strength. This new world has enriched us and increased the number of channels. The internet allows billions to express themselves. The value of networks increases exponentially as the number of participants increases. Communications has allowed us to be more persistent and flexible while creating a new sense of participation. Remote sensing allows us to map both human activities and national activities on the same dataset.

However as *Serageldin* pointed out, these new knowledge networks are not without their pitfalls and create governance concerns. In such a scenario, who has oversight over ethics and privacy? The variable uptake of technology raises issues of equality. Monopolistic tendencies of the ICT process is crushing rather than encouraging competition. The birth of biotechnology and nanotechnology promise new revolutions. Focusing on the Africa contest, Serageldin argued that incentives to learn and master these technologies to apply to various contexts are limited and that educational training does not nurture innovation. Innovation itself does not translate into technology; many other enabling factors play a role. There is a need to change the scientific paradigm of pursuit – science and technology are critical to Africa's growth. "Building capacity is not a luxury, it is a necessary" according to *Serageldin* with universities playing an important role in these efforts. Regional cooperation will serve to strengthen capacity building initiatives.

3   Regional networks

3.1   STATNET

E.M. Koffi-Tessio[7] provided an overview of the experience of STATNET, a global network of African and non-African professionals with the aim of strengthening and monitoring national statistics compilation and building statistical capacity on the continent. Successful development policy requires high quality, reliable statistical data generated by financially sustainable institutions capable of delivering on a long term basis. Some of the dilemmas for knowledge creation highlighted by *Koffi-Tessio* included:

- Managing investments while consumers and funders are almost always only interested in end results in the form of additional statistics

- Making long term commitments through an annual planning and budgeting process which recognises yearly commitments only

- The main uses to which statistics are put are not those of all the main users

- Need to develop integrated systems against the tendency of funding to be tied to performance of single projects.

- Ability to ensure resource savings through maximising the application of infrastructure to spread benefits widely.

3.2   The UbuntuNet Alliance

A third challenge highlighted by *Albert Nsengiyuma*[8] was the high cost of bandwith and unreliability of service. The UbuntuNet Alliance seeks to increase bandwith access in 11 internal and 8 coastal countries in central Africa, primarily focused on research and academic institutions. In the 1990s with the IT boom, expectations for the role of IT in furthering the development process were tremendous. The fact that this has not happened according to *Peter Greenwood*[9] can be attributed to two 'consecutive generations of information management'. While the first generation focused on database-level technologies, the second generation emphasised people or users and sharing knowledge. It is this new generation that understands according to *Greenwood*, that data cannot simply be digitalised but requires a more creative approach. In *Greenwood*'s view, "innovation is a paradigm for systemic thinking and action, with ICTs as an enabler". ICTs and KM opportunities for the developing world can be advanced if a systemic paradigm is applied.

3.3   East Mediterranean Knowledge Network warehouse

According to *A. Najeeb Al-Shorbaji*,[10] WHO has set up the East Mediterranean Knowledge Network to ensure the flow of high quality reliable information among professionals and institutions, and serve as a forum for networking and communities of practice and creation of virtual teams in the region. The main activities of the network are:

- mapping and identifying health and biomedical literature

- mapping, profiling and finding public health institutions

- locating expertise and sources of tacit knowledge within the region

- developing networks and communities of practice in the Region

- identifying best practices and opportunities for exchange of experiential knowledge and collaboration.

The network maintains a warehouse of information on health related knowledge. *Al-Shorbaji* pointed out, unlike in other sectors, KM in health is different because it is a public good. Some of the challenges in KM include low literacy levels, low

levels of available health information and capacity to manage health information; lack of information on national information policies, legal frameworks and regulations, and the absence of specialised educational and training institutions in health information management.

4 Country-specific perspectives

4.1 Tanzania

In outlining the experience of Tanzania in KM, *Gelase Mutahaba*[11] explained several barriers to effectively harnessing KM as an enabler towards change in government:

- There is little understanding of KM at the policymaking level of government.

- KM is often equated simply with computerisation and hence there is a misapprehension that by adopting an ICT policy, KM is automatically covered.

- Limited emphasis on research and development in the public sector.

- Research and development is not linked to development work.

- KM circles are 'islands', *i.e.*, limited to academic or think tanks.

A lack of a coherent and coordinated approach to KM has meant that public institutions often duplicate efforts, initiatives become expensive and unsustainable and are mostly donor driven. It was this frustration that led to the creation of the Public Service Knowledge Management Secretariat. However this institution does not have any mandate to sanction transgressors and while the Agency for Registration Insolvency and Trusteeship (RITA) is well positioned as a hub for coordinating knowledge transfers to citizens, implementation of actions has been more difficult owing to the 'silo culture' in public institutions.

Reinie Beisenbach[12] outlined a pilot project in Tanzania where thousands of people afflicted with HIV were treated with a herbal medicine. Initially administered in the form of tea, the study showed excellent results in reducing appetite and weight losses. More studies were conducted on learning more about the herb and inexpensive ways to administer it to people. African storytelling is important in preserving indigenous knowledge on medicaments. Thus, it is crucial to find ways to link doers and donors to encourage this sort of knowledge sharing in other intervention areas.

4.2 Uganda

John Nsambu[13] outlines the experience of Uganda where the Ministry of ICT was set up only ten months ago. He demonstrated the use of a computer from US based Inveneo company which is focused on building and expanding the use of personal computers in DCs and rural environments where connectivity and access to electricity remain limited. By utilising a low-energy model which has a solar panel add-on used to charge batteries, the computer is powered through a small car battery. This is one response to unreliable electricity supply. *Nsambu* contrasted two problems in urban and rural areas – while in many government organisations and companies stocked with top-of-the line PCs, many employees can do no more than basic word processing or play games. At the other

end of the spectrum in rural areas – fundamental infrastructure limits access to all computer-based technologies. So this implies two problems – lack of skills and lack of access.

Detailing the experience of Uganda, *Constantine Bitwayiki*[14] discussed recent reforms in KM in Uganda. In 2005, through the National Planning Authority set up the Inter-Agency Planning Team with membership from public, private and civil society organisations which recommended an integrated and harmonised approach of harnessing ICT as an enabler of national development. The government has developed and implemented an E-Government Strategy Framework for Uganda to promote access to information on various public services. Other measures taken by the government include the development of a nationwide community information system to empower local leaders, technocrats and the general public with data and information on planning and monitoring various development interventions to eradicate poverty at the household level, promotion of science and technology in schools and developing affordable technologies such as solar powered computers.

4.3   Ethiopia

Gashaw Mengistu's[15] focuses on providing policymakers and health professionals locally and internationally relevant information on HIV/AIDS. Inadequate access to accurate and updated information on these health crises has fostered secrecy and misinformation on the disease contributing to high levels of stigma and discrimination. The organisation maintains a national AIDS hotline, a walk-in centre in Addis Ababa, virtual centre online[16] and develops innovative radio and TV programmes on the virus. ARC aims to fill a public information gap in Ethiopia by developing culturally appropriate and research based materials on HIV/AIDS by reaching out to journalists.

Discussing the role of knowledge sharing in facilitating innovations in small holder farming in Ethiopia, *Kristen Davis*[17] focused on the importance of networks in smallholder innovation processes. Knowledge comes from many sources and is in part, a result of interaction between different actors. Thus, smallholders do not innovation alone, they are embedded in networks. While networks are important for innovation, there is a need for new actors and a greater diversification of roles and responsibilities as well as forward looking policies to promote the entry of private agents and diversification of public roles.

4.4   South Africa

Leila Beiko[18] discussed the 'Open Sourcing Social Solutions' initiative which is the world's first transparent online community that 'open sources' the most innovative solutions to social problems worldwide. The goal is to accelerate the rate at which social innovations go to scale. This is a techno-centric approach to KM in that the internet is forum for collaborative competitions to 'create, structure and share knowledge of solutions to society's most pressing problems'. There are three main benefits of 'open source as a KM tool' – online platforms provide broad reach and access to innovation; 'mosaics' are shared intellectual frameworks to expand avenues of creating, sharing and disseminating best practices; builds a 'living' bank of solutions and creates international knowledge networks.

Josephilda Nhlapo-Hlope[19] outlined some of the challenges faced by the Development Bank of Southern Africa (DBSA) in its quest to become a knowledge based institution. Knowledge is as much a factor of production as is labour and sustainable socio-economic development is as much about commitment of resources as it is about imparting knowledge. She outlined some of the challenges DBSA faces. This includes the trade-offs between financial sustainability and the quest for knowledge; the ability to ensure effective knowledge transfer between experienced development activities on one hand and young employees straight out of college; to create conditions conducive to a seamless knowledge flow across different sectors of the bank; keeping research relevance and demand driven and building a strong reputation and ensuring that all knowledge is of the highest quality and can withstand scrutiny.

5 Learning from others

Tolulope Monisala Ola[20] highlighted the importance of 'benchmarking in KM', *i.e.*, learning from others by accessing on already existing pool of tacit and explicit knowledge, so that the collective learning experience of others could be used by those who wish to improve their own organisations. This is of two types: competitive (collecting specific information about competitors, products, services, processes, strategies, and business results and comparing these to those of the benchmarking firm) and cooperative benchmarking – sharing experiences with cooperation organisations.

The conference provided a venue for understanding the experiences not just of African nations but exchanging ideas and experiences with international organisations and partners in the rest of the world was also very much on the agenda.

5.1 Food and Agriculture Organization (FAO)

Anton Mangstl[21] outlined the experiences of Food and Agriculture Organization (FAO) in KM. FAO differentiates between two types of knowledge – explicit (captured through documents, databases, websites) and tacit (exists in people's heads and is reflected as insight, judgement, craftsmanship and creativity). 'Eighty percent of an organisations' knowledge is tacit and effective KM taps into tacit knowledge by supporting communication between people.' Staff are seen as representing an organisation's primary knowledge asset. The FAO website is a large explicit knowledge base with over 3 million web pages indexed in corporate search engines; 36 000 documents and 100 major databases. *Mangstl* discussed several features of FAO's approach to KM. 'Ask FAO' allows visitors the website to write in to FAO with questions. Since information services are mainly supply oriented, and user needs do not always coincide with the way information is organised and available on the website, this feature of the website allows for the organisation to bridge knowledge gaps in this regard. It is also seen as a means to tap into the tacit knowledge of staff. The popularity of FAOs service does provide organisational problems of how to cope with the numbers. Best practices are provided in a summary format and guided by several considerations – grouped by theme; adopted successfully in more than one region interdisciplinary in nature, reflecting the complex nature of the problems addressed emerged from consultation with staff in field and the

headquarters. Knowledge networks allow geographically dispersed individuals can work together without physical meetings. FAO has recently branched out into e-conferences on areas of concern such as agriculture.

5.2   *Consultative Group on International Agricultural Research (CGIAR)*

Enrica Porcari[22] indicated that it was possible to bridge the gap between researchers and users in agriculture through the knowledge sharing research model, *i.e.*, a model which creates a virtuous loop between researchers and users from the very beginning of the process. End users of the search are engaged right from the start. While in a traditional approach to research, the researcher designs and carries out the research project in isolation with very little input from farmers themselves, the knowledge sharing approach which engages researchers and users allows for local innovations and conditions to be accounted for and hence has more chance of success. This can then be a mechanism to support and enable agricultural innovations systems. Local farmers and researchers work together in both discovering and developing local innovations. Thus, KM can be an important stimulus to the process of agricultural innovation.

5.3   *Singapore*

Thomas Menkhoff[23] outlined Singapore's development towards a knowledge based economy based on the recognition that intellectual capital is a vital asset and that knowledge can be viewed as a new factor of production. He sought to elaborate the importance of knowledge using the example of two countries – Ghana and the Republic of Korea who forty years ago had roughly the same income per capita. By 1990 however, Korea's income was six times higher than Ghana's. While part of the difference is due to more investment and more workers, half of the difference is attributed to Korea's greater success in organising and using knowledge. *Menkhoff* highlighted several features of knowledge based societies, this includes high standard of education; knowledge work or KM; investments in research and development and ICT; knowledge added value in products; digitalised expertise; adoption of e-governance strategies; multiple centres of expertise and polycentric production of knowledge. Knowledge production according to *Menkhoff*, invariably creates a 'knowledge trap', *i.e.*, more questions than answers and that many times, information and knowledge is incorporated into plans without taking into account unknowns. This can be avoided by 'nurturing and coordinating a complex and competitive system of knowledge-creation, utilisation, and dissemination with government institutions, scientific institutions and civil society organisations so as to structure local knowledge development successfully'. Insufficient localisation of imported knowledge and technological imports without maintenance of adequate know-how points to the importance of being able to convert global knowledge into local needs.

5.4   *Brazil*

Paulo Fresneda[24] outlined the role of the Brazilian Technical Committee on Knowledge Management and Strategic Information. According to Fresneda, the committee tries to identify and monitor best practices in KM within the federal administration and apply these in different contexts within the government. The coordinator is a selected KM

specialist from the government while members comprise different organisations within the administration. At the virtual community level, interested government employees and academics are encouraged to participate in discussions and brainstorming. More than 600 members are engaged in these virtual communities which promote a collaborative environment based on free software. Any federal public organisation can create a virtual community in this space. The next challenge is in adapting the Organization Knowledge Assessment Method (OKA) to help assess KM development strategies in federal public organisations. It was interesting to note that while the experiences shared by participants of strategies adopted at the government level were from different countries, there are some similarities in the challenges – these include the need to change mindsets of top and middle level management and address 'silo management' challenges. What incentives do officials have to share information? The culture of knowledge dissemination is not easily surmountable inside hierarchical organisations where emphasis is placed on quick fix methods. As *Fresneda* pointed out, there is a "need to transcend the culture of knowledge protection. Having knowledge does not make an individual powerful, it is the ability to share that does." On the technical side, countries need to devise multiple sets of enablers for multiple contexts.

5.5   India

Balaram Sahu[25] introduced the Indian Honeybee Network which was launched in 1989 to gather information on indigenous knowledge systems. The Network evolved as a mechanism to mentor small, scattered and disconnected innovators and knowledge holders without much access to education, banking or communication systems. There are two aspects to this – to stop the erosion of traditional knowledge systems while at the same time encouraging local innovation. The Honeybee Network adopts a multimade, multimedia and multilevel approach to KM. Knowledge pooled in from different sections is disseminated through newsletters printed in seven languages. This knowledge is then used to generate solutions to issues of sustainable development. Till date, the network has unearthed 60 000 innovations across India. Intellectual property rights protection is adopted to ensure that knowledge is sourced back to people. Patents are seen as means to overcome asymmetric knowledge. Every six months members including local knowledge experts and grassroots innovators walk from village to village on 'sodh yatra' to build awareness on local biodiversity, exchange knowledge and meet their counterparts from different regions and communities. Efforts are now underway to adopt the Honeybee model of networking to share knowledge on local innovations to other countries such as Brazil and China.

5.6   Thailand

Vicharn Panich[26] in his presentation on the Knowledge Management Institute, Thailand highlighted the need to add the dimension of 'demand pull' to KM processes instead of the generally accepted 'supply push' approach. This he argued was particularly effective in the Khao Kwan Foundation in Suphanburi which provided training to rice farmers and enhanced productivity and innovation while reducing instances of illness and other uncertainties.

6   Strategic and policy implications

Speakers highlighted several key challenges in efforts towards building effective communication strategies and building a 'knowledge friendly culture' in the continent:

- *Synergy*: There is synergy between KM as a technocratic process and the need to understand KM as a social practice, one which is crucially based on people to people contact.

- *Prioritising resources*: As governments in the region face increasingly daunting challenges such as high illiteracy rates, unemployment and poverty, in efforts to alleviate poverty and deliver economic growth, how can KM and related strategies of e-governance and ICT be positioned to assume roles of importance?

- *Ownership of the knowledge creation process*: An effective KM strategy highlights the importance of developing home grown solutions to development strategies. Thus, KM is closely linked to building capacities to generate knowledge which resonates of local realities and hence has more chance of policy success.

- *Sharing knowledge sharing experiences*: How do we synthesise the experiences of multiple stakeholders involved in the KM – government, corporate organisations, civil society networks, non-governmental organisations to name but a few. How can the experiences of other countries be used as an impetus to further KM practices in Africa?

- *Equity in knowledge*: Whose knowledge counts? How can both the processes of knowledge creation and utilisation for change be equitable?

- *Partnerships*: Sharing experiences and importance of cooperation in the quest for innovative and creative KM strategies.

Effective communication is essential if the impact of development is to be maximised. Several participants noted that 'knowledge is the missing link in the African development process'. The importance afforded to KM as a crucial input in both sectoral development strategies and overall development strategies towards alleviating poverty strategy and dealing with other challenges in the African continent cannot be overstated. Southern organisations can take the lead in building a knowledge friendly culture and communities of practice.

According to *Sherine Ghoneim*,[27] KM in Africa implies several challenges for research communication. The key organisational challenge facing institutes and networks is in getting the message out and making an impact. The role of research intermediaries is critical. Research organisations need to recognise that they are not working alone and that there are a range of knowledge intermediaries that can support their activities. These intermediaries can complement the role that individual research organisations play by amplifying research messages, reaching new audiences, adding credibility, putting researchers on the map, building partnerships to build capacity and skills. The key advantages of such intermediaries include specialist skills, critical mass and established trust and reputation. Thus, *building partnerships* across countries and regions is crucial. These partnerships should include all stakeholders – governments, private sector enterprises, non-governmental organisations and civil society groups.

There is an urgent need in Africa to democratise and *popularise science and technology* to build knowledge generation capacity. Using internationally agreed standards and methods, Africa needs to develop and implement better mechanisms to monitor science and technology development on the continent. At the same time, knowledge generated needs to be amenable to different contexts and different strategies need to be developed. As pointed out, the need to build financially sustainable research institutes driven by local needs as opposed to those of donors is of paramount importance. Local researchers bring with them exciting possibilities of informing our understanding of development and what needs to be done by capturing local knowledge; identifying projects or innovative actions at the grassroots level which can then become the focus of further support; providing the best prospects for deriving policies with broad based support and are therefore more likely to be effective. Indigenous knowledge can be integrated with other pieces of knowledge and hence a potential dichotomy between the 'old' and the 'modern' need not exist. Such potential partnerships in knowledge sharing can do much to enhance the range of solutions and innovations available to policymakers on the continent.

At an *organisational level* knowledge organisations should support the free flow and sharing of knowledge and information in all activities. KM tools have to be employed in all aspects of development work and embedded in budgeting and human resource processes. Organisations whether governmental or not need to expand ways in which information and data are disseminated, using explicit and tacit knowledge to solve practical problems. Communications needs much more attention at all levels in the organisation, particularly at the top and middle level range. Researchers and others engaged in the process of generating knowledge need to engage with all stakeholders. The ability to communicate effectively requires specialist skills and these may have to be contracted in. Organisations also need to allocate both time and resources to this activity and this often requires considerable investment. However, as several presenters pointed out, funding is available as donors or development partners are attaching increasing importance to KM as 'the knowledge engine that drives appropriate development solutions for Africa' as articulated by 'KM for Africa'.

Building *enabling environments* and a knowledge friendly culture is crucial to developing sound KM practices. Several policymakers at the conference highlighted their countries' experiences in mainstreaming KM. While measures have been taken in some countries, the challenge remains in orienting mindsets to one that is supporting of sharing knowledge through creating incentives to do so. The need to move away from a technocratic approach to incorporate KM in government strategies and policies to one that is more inclusive taking into account the multiple means though which knowledge is generated, tacit or explicit, indigenous or modern, was also pointed out. Sharing of experiences and best practices can go a long way in encouraging and promoting innovation in policy.

The degree to which KM is *technologically oriented* raises questions on state priorities. Should governments already fighting the poverty alleviation battle on several fronts, devote already scarce resources to technologically centred KM tools which have a limited number of users? In addition, many developing countries have 'imported ICT tools' from the developed world but have to reorient attitudes, work cultures to facilitate its effective deployment.

Emmie Wade[28] pointed out that UNDP believes that the only way for developing countries to start thinking about ICT as an enabler is by using it intensively. However, depending on country contexts, toolkits, CDS and user guidelines are available offline as well. While the use of technology is important, in Porcari's view, it should be used to facilitate the way people already work and 'support the process, not drive it'. Thus countries in Africa need to develop an appropriate set of tools which facilitate a people friendly KM approach while increasing investments in research and development in technology, education and infrastructure. The potential spillover effects of ICT as a broad based enabler, in numerous areas of industry should also be kept in mind. As *Nsambu* pointed out, many Ugandan voters are not benefiting significantly with the increased use of ICTs but changes towards more progressive and context friendly technological tools will make it possible to extend these enablers to a wider section of society.

By capturing local knowledge, innovations, ideas and experiences, and sharing them across regions, KM is a powerful tool which brings forth fresh and relevant perspectives to development policy. The conference and the series of workshops which preceded it highlight the importance of sharing local knowledge, sustaining communities of practice, building partnerships and developing and adapting a KM strategy in consultation with various stakeholders in response to local requirements. For Africa, effective and inclusive KM strategies and tools can provide an important impetus for change. Much will depend on the regions ability to enhance the capacity to adopt appropriate strategies and carve its own path in this regard.

Acknowledgements

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Notes

1   The GDN is an international network of research and policy networks across the developing and transition world dedicated to generating high quality research for the purposes of development. GDN's strategy is three pronged – to generate new knowledge in developing and transition countries; share this research and experiences across the world and apply this knowledge to policymaking. GDN's emphasis on building the capacity of researchers and research institutes to generate knowledge is based on the premise that knowledge plays a crucial role in the advancement of the development process and knowledge management can be used creatively to empower communities and allow them to assume ownership of the development process.

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5   Over the last ten years, the UN, World Bank, IMF and other world leading organisations and institutions have introduced a general approach to establish an agreed universal framework of international development goals and targets to be reached in the near future (2010 and 2015) by all countries in the world as a whole. In 2000, the OECD and UN's Copenhagen plus five Conference, endorsed and adopted eight development goals universally referred to as the UN Millennium Development Goals (MDG) (see UN, 2002).

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