

UNIVERSITY ROLES IN MEETING ASPIRATIONS FOR ICT AND ECONOMIC DEVELOPMENT

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This paper focuses on:

- A broad take on issues and opportunities facing Makerere University in this area of ICT
- What are the key opportunities and challenges facing Makerere University over the next decade, and how it can best contribute through use of ICT to the objectives of economic and social development in sub-Saharan Africa?

1. INTRODUCTION

Universities should provide a vision, strategy and an enabling environment that promotes the use of information and communication technologies (ICTs) in universities in particular and society in general. Through access to information and freedom of expression, citizens are able to gain civic competence, air their views, engage in discussions and deliberations, and learn from one another, all of which provides the citizen with an enlightened understanding of government action.

ICTs can support transparency, create a public space for citizens as well as offer a readily available consultation mechanism.

Governance is the way power is exercised in managing a country's economic and social resources for development. ICTs present opportunities for African countries to implement e-governance/ e-government.

The Internet, distance-learning opportunities, online (electronic) learning, computerized library packages and strategic databases must be brought nearer to the isolated and poor African nations unable to integrate their economies and intellects with the powerful and respected community of states.

Challenges affecting ICT penetration in Africa include language, illiteracy, internal digital divide within the African continent, restrictive regulatory framework, poverty and the lack of infrastructure.

2. KEY OPPORTUNITIES AND CHALLENGES FACING MAKERERE UNIVERSITY OVER THE NEXT DECADE

2.1. KEY CHALLENGES FACING MAKERERE UNIVERSITY OVER THE NEXT DECADE

2.1.1 Infrastructure.

The African continent lacks a continent wide-wide broadband optical fibre network and Uganda is not yet connected to the submarine cable system. However, under NEPAD, there are plans to establish the broadband ICT network for Africa, which includes Eastern Africa Submarine Cable System (EASSy). Makerere University has an optical fibre backbone, which needs to be linked to the national broad bank ICT network, which is nonexistent at the moment.

The old buildings at Makerere University were not designed to cater for large numbers of students in case of computer laboratories for example. This is still a major challenge. On a good note, Makerere University is currently constructing the largest computing centre on the African continent. This computing centre among other facilities will contain 6 large computer laboratories each accommodating 1000 persons.

Makerere University still lacks sufficient computing facilities and specialized facilities like multimedia laboratories to enable e-content generation.

2.1.2 Bandwidth.

This is a common challenge for almost all African Universities and a common solution must be thought. The high cost of bandwidth, inadequate and unreliable telecommunication services and applications still remains a major challenge.

2.1.3 Staff Retention.

Growing and retaining ICT/ Science and Technology human capital still remains a major challenge for the African Continent in general and African Universities in particular. This is mainly attributed to low salaries and unfavorable terms and conditions of service. Recently the participants of the 1st African Union Congress of African Scientists and Policy Makers committed themselves to increase the number of scientists, engineers and technicians in their institutions by intensifying the efforts of training and mentoring. No country in the world has ever developed with out a sound science and technology human capital. Therefore there is need to encourage a stronger partnership with the African Diaspora in order to contribute to the advancement of Science and Technology and Innovations on the African continent.

2.1.4 Computer illiteracy among students and staff.

Most Universities including Makerere University are still unable to have all their staff and students undertake the International Computer Driving license (ICDL) due to lack of suitable computing facilities. Makerere University is planning to address this challenge through construction of large computing centres, one of which is already under construction.

2.1.5 Restrictive regulatory framework.

The regulatory frameworks for the telecommunications, ICT and intellectual property rights are still restrictive in most countries including Uganda.

2.1.6 Political Instability.

Africa is the most unstable continent and its countries including Uganda are still young democracies. Political unrest is a major threat to staff retention and institutional stability.

2.2 KEY OPPORTUNITIES FACING MAKERERE UNIVERSITY OVER THE NEXT DECADE

2.2.1 Contribute towards a literate community.

Most of the rural communities have a wealth of indigenous knowledge but because they cannot read and write they are normally termed as illiterate. Makerere University will work towards a literate society especially in ICT by customizing search engines and operating systems in local languages and designing user-friendly computer interfaces. This will strengthen the community outreach function of the university.

2.2.2 Local content development.

The area of generation of local content in most African countries is still untapped. There is need to generate local content that can be put on the web and also used in e-learning.

2.2.3 Expand University Education

ICTs should enable universities to operate 24-7 via online tutors who could operate from their homes, thus providing employment from home. Many universities across the globe provide education to thousands of students off campus (online) for several awards ranging from certificates to degrees in different disciplines. Phoenix University (www.phoenix.edu) is one example of a University that offers online diploma and degree programmes. ICTs present opportunities for lifelong learning in Africa. ICTs present students with an opportunity to register and receive information online. The largest repository of information is the Internet and as of today thousands of journals and books are available online. Governments are looking at education as an industry and many universities are aggressively recruiting international students on the online degree/diploma programmes. Makerere University will take advantage of ICTs to run online academic (diploma and degree) programmes and expand distance education by introducing tele-education (tele-education is the application of telecommunication systems (the use of ICTs) to provide distance education). Makerere University will rollout tele-education in Eastern Africa under the auspices of the African Union.

2.2.4 Telemedicine

Telemedicine means using various forms of telecommunications/ ICTs to deliver health services across a distance, re-creating a clinical environment to provide patients with basic information and specialists with clinical advice enabling them to operate on the patient.

Makerere University in liaison with Mulago National Referral Hospital in Uganda will undertake telemedicine rollout in Eastern Africa under the auspices of the African Union.

2.2.5 University Management

Makerere University sees information systems offering an opportunity to down size administrative staff and make the administrative services faster and more efficient. Makerere University is currently implementing an integrated information system comprising of the Academic Records Information System, Finance Information System, Human Records Information System and the Library Information System.

2.2.6 Midnight University

In a bid to provide education for all especially in ICT, Makerere University Faculty of Computing and IT started midnight classes in professional courses like Cisco Certified Network Associate (CCNA), International Computer Driving License (ICDL) and Certificate in Computer Applications (CCA). All these courses are available online. With the growing emphasis of tele-education and e-learning Makerere University is exploring the opportunity of becoming a 24/7 University and open its doors to thousands of people across the globe. In light of this Makerere University is currently training several online tutors in all the disciplines offered at Makerere University. Makerere University Faculty of Computing and IT is involved in setting up government owned e-learning centres countrywide.

2.2.7 National/ Regional ICT Incubation Centre

Makerere University Faculty of Computing and IT is one of the largest computing faculties in Africa and its current student enrollment stands at 5,000 on undergraduate and 500 (including 60 PhD students) at postgraduate programmes. The Faculty of Computing and IT also has students on professional programmes like Cisco Certified network Associate (CCNA), Microsoft Certified System Engineer (MCSE) and Oracle Certified Associate (OCA). Makerere University in partnership with the Government of Uganda is taking advantage of the graduates from this faculty and other faculties to incubate and rollout ICT outsourcing in areas like data and call centres, software development and customization, and e-service delivery.

2.2.8 Engage in Data Centre/ Call Centre Business

The other opportunity for universities is in the area of outsourcing in the area of data and call centres, software development and customization, customer care and support. The Government of Uganda has approved Makerere University Faculty of Computing and IT as the lead institution in incubating and rolling out data and call centres in Uganda. Makerere University in partnership with the Government of Uganda and the private sector is going to set up commercial data centres and call centres at Makerere University and across the country. The data and call centres at Makerere University will benefit from the computing facilities and bandwidth at night when most of the students are not utilizing the resources. This may lead to optimal utilization of resources.

2.2.9 Engage the African Diaspora

More than 10,000 Africans are senior experts in Science and Technology and innovations in developed countries. There is need for Makerere University in particular and African Universities in general to tap into this skilled human resource with the aim of transferring high-end skills and knowledge to the local experts on the African continent. With ICTs it is possible to turn brain drain into brain gain and in the end have brain circulation. The African Diaspora in the area of Science and Technology hold key to Africa's development and should team up with the local scientists in the area of innovations, e-supervision of graduate students, e-tutoring, e-learning, tele-education and tele-medicine. Thus African governments must put incentives such as dual citizenship, centres of excellence and attractive salary packages in place so as to attract the Africa's best brains just like China and India did and continue to do.

3 MAKERERE UNIVERSITY CONTRIBUTION THROUGH USE OF ICT TO THE OBJECTIVES OF ECONOMIC AND SOCIAL DEVELOPMENT IN SUB-SAHARAN AFRICA

3.1 Human resource development.

High Science and Technology human capital is a precondition for any country's development or sustained development. Also people with ICT skills and knowledge now drive the service industry world over. Makerere University is spearheading training in the area of Computing and ICT and by 2008 it will have about 10,000 diploma and degree students in this area alone. In preparation for high student enrollment in this area, Makerere University is currently putting up the largest computing centre in Africa. Once completed it will accommodate over 12,000 students at any one time.

3.2 Private-University partnerships.

ICTs provide opportunities for Universities to engage in business with the private sector and increase on the tax base. Makerere University has already put in place an investment policy to enable such partnerships and joint ventures.

3.3 Incubation centres.

Universities have and will always serve as the best and cheapest incubation centres for many products. Makerere University has already taken a key role in this area and is working with the Government of Uganda and the private sector to develop the ICT industry.

3.4 Policy development

In most African countries including Uganda, enabling policies in the ICT sector, telecommunications sector and other related sectors are still lacking or restrictive. Makerere University has developed a knowledge base in this area and is ready to provide these services to the Government of Uganda and the region through consultancy and research.