The use of ICT at Kenyatta University

Kenyatta University (KU), the second largest public university in Kenya, is situated about 23 kilometres from Nairobi, Kenya's bustling capital city. The university has a student population of 23,000, with 14 departments and schools, six campuses, and eight regional centres offering support to distance education students. Using Information and Communication Technologies (ICT), the university has embarked on a rapid expansion strategy aimed at making it a world-class university and expanding its course offerings.

Visionary Vice Chancellor Professor Olive Mugenda is a major driving force behind ICT rollout at KU. An event in South Africa in 2006 sponsored by the

'You must have a strategic plan and very specific outcomes. If you look at our strategic plan, there is a whole chapter on ICT. So we know exactly where we need to be every year for the next ten years.'

(Olive Mugenda, KU Vice Chancellor)

Partnership for Higher Education (PHEA) provided Prof. Mugenda an opportunity to engage with the ICT initiatives of other vice chancellors, and she was particularly intrigued by discussion around fibre-optic cables. It was at this point that she began to explore what this technology could mean for her university. She successfully convinced the university council and university management of her vision, paving the way for recognition of the strategic importance of ICT, as well as the necessity of allocating requisite funding. The appointment of a highly committed Directorate of ICT staff in 2007, an annually reviewed ICT strategic plan containing clearly articulated strategies and timeframes and supportive management style, has resulted in KU implementing a number of ICT initiatives to enhance its management, teaching, learning, and research environment. The university has since developed a multi-pronged approach to ICT, with the initial focus of enhancing ICT infrastructure, hardware and administration systems of the university evolving into a broader focus on using technology for e-learning.

- Over 1,000kms of fibre optic cabling have been laid since 2006.
- There are 96 LANs, with an aggregate of 1,964 data access points.
- In 2004, the bandwidth capacity was 138kbps. In 2009, it is 20Mbps.

ICT Infrastructure and Internet Services

KU has created a solid fibre-optic support structure at its main campus, interconnecting 54 buildings via single-mode fibre cabling and supporting speeds of 1,000Mbps. The network handles data, voice, and video formats. A similar network, with 120 data access points, has been developed at the Mombasa Campus. The university is implementing Voice-Over Internet Protocol (VOIP), which allows a telephone extension to be installed at any data access point; which would enable free inter-campus calls. The Telkom-supported Corporate Reach Service enables staff members to communicate on mobile-phone handsets via telephone extensions regardless of the location of the staff member. The university has also implemented the KU Butterfly Lifestyle Service - the strategic installation of wireless hotspots which has enabled access to the Internet and Intranet from almost anywhere on campus at speeds of 54Mbps.

'I Google newspapers sometimes I teach communication. I have downloaded information that has helped me with my work. I can upgrade my notes and see modern trends.'

(Sheila Ali Ryanga, Senior Lecturer, Kiswahili and African Languages, Humanities and Social Science)

'Earlier on, we used to go to respective schools to know our results, and line up, about 800 of us. We come in the morning and go in the evening. Now, we can access over the Internet, it has become much easier.'

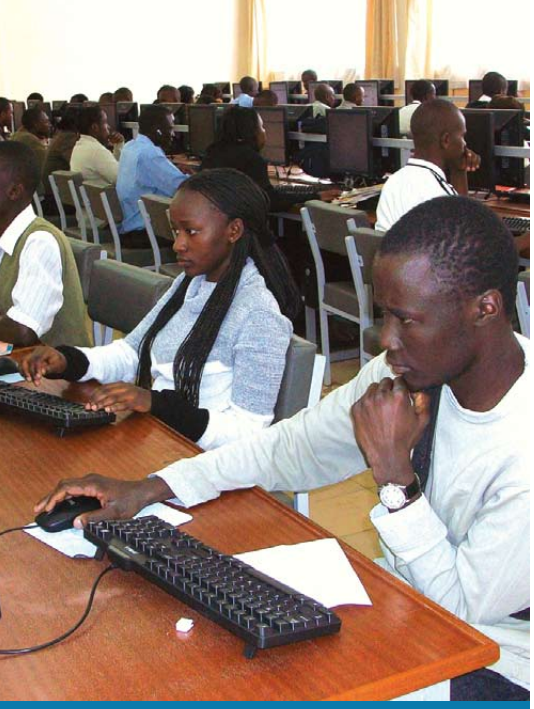
(Nelson Kemboi, third-year Bachelor of Commerce student, Actuarial Science)

The university has constructed an impressive three-floor building, consisting of six computer laboratories holding 600 PCs. There are presently over 3,000 PCs on campus, but the aim is to increase this number to 5,000; creating a 1:1 ratio of computers to staff and a 1:5 ratio for students. The university also has dedicated computer laboratories for the training of staff and students on e-technologies.

Management and Administration

KU has implemented multiple integrated Management Information Systems (MIS), which include:

- UNIPLUS for registration (allowing students to register online), student finance (allowing students to check their fee balance online), and examinations (allowing students to check their results online).



FEES RECEIVED (2007) = US$8 million

FEES RECEIVED (2008) = US$12 million

2007 = 2,500 graduates

2008 = 6,000 graduates

'It is very efficient, because you can plan your money. You can get your money or your fees ready by the beginning of the semester.'

(Lucy Ndungu, third-year Sports Science student)

- The Sage Accpac Enterprise Resource Planning (ERP) system, which integrates all financial data and processes of KU into a consolidated system.
- The Health Services MIS, which processes staff and student patient records, automates doctor, laboratory and pharmacy operations, and controls health-related expenditure.
- The Human Resource MIS, which captures staff records and staff-related processes.
- The Corporate SMS service, which allows students to communicate with the university to obtain fee balances, fee statements, examination results, important dates and emergency alerts, and provides an efficient, effective, and convenient means of communication between students and the university.

IMPACT OF THE MIS ON KU

With an initial investment of $198,000 (the cost of management and administration software), KU has accomplished the following:

- Financial gain of $4 million a year as a result of being able to track student non-payment of fees;
- An increase in the number of graduates, as administration systems now contain less room for human error, prevent against loss of student records, and enable quicker processing of marks;
- Improved efficiency for lecturers who are able to enter examination marks electronically as soon as they are available; and
- Improved institutional expansion strategy enabled by increased fee collection.

'Before we got the software, the fee collection was about 64% or 65%, which means 35% of students were not paying their fees, or they were paying maybe when they leave. We were losing a lot of revenue. So, with the introduction of the software, you cannot register without paying fees. That alone increased the fee collection to about 90%. That's a big revenue income.'

(Olive Mugenda, KU Vice Chancellor)

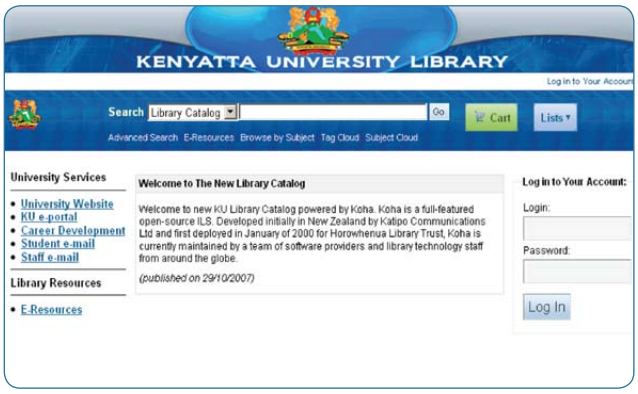
‘Learning has become easier because, if you can access the notes in advance, then you can learn even before the teacher comes. Sometimes we have a question. You post a question and [the lecturer] responds without having to go to him personally.’

(Emmanuel Bett, fourth-year Bachelor of Commerce student, Management Science)

Improving Learning

While the focus was initially on enhancing the ICT infrastructure, hardware, and administration systems, the university has progressed to using technology for e-learning and has recently introduced video-conferencing facilities to link its main campus to the Mombasa campus (made possible by the fibre-optic connection).

KU has introduced e-learning using the Moodle platform. Over 530 lecturers have been trained to use the Moodle e-platform, and all new students are trained in computer literacy, Internet technology, and the Moodle platform.



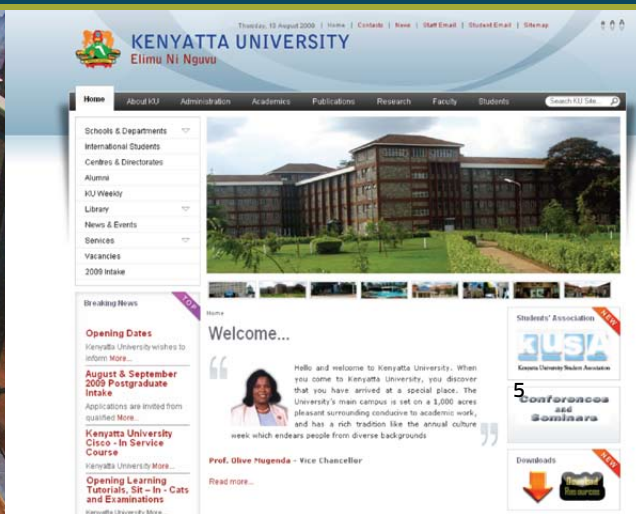
The library has subscriptions to a number of digital libraries, allowing users access to over 23,000 e-books and e-journals.

The university has held several meetings and seminars, as well as a regional conference to raise awareness of e-learning among lecturers; and it has purchased several servers to host course materials that are developed.

KU is implementing its first open source Integrated Library System (ILS), KOHA, which will support acquisitions, cataloguing, circulations, the Online Public Access Catalogue (OPAC), and the hosting of electronic academic content. The aim is to automate library services and systems in order to increase efficiency and expand the accessibility of resources, with the digitisation of

‘Most of the students, when they come here, are not familiar with computers. It [e-learning] forces us to learn how to use the net, how to use computers. In that way you are learning practically.’

(Henry Monyancha, third-year Bachelor of Commerce student, Management Science)



'We realised that the students needed to use online resources that we are subscribing to, and we did not have enough PCs for them to access (the resources). We introduced the wireless network so that students who could afford laptops can access online journals'

(John Kiiru Thuku, Head Librarian (ICT), Library Department)

examination papers being one of the primary current projects. The library also subscribes to numerous journals through the Kenya Library and Information Services Consortium (KLISC) Programme for Enhancement of Research Information (PERI).

Lessons learned from the KU experience

'You cannot compete internationally without ICT infrastructure in your university, and you can't have a good ICT infrastructure without resources [funding].'

(Olive Mugenda, KU Vice Chancellor)

Some of the key success factors that stand out when looking at KU's multi-pronged approach to ICT include:

- The university has strong leadership that is driving the ICT process, and focus is placed on recruiting and developing ICT professionals into a functional ICT structure.
- KU took simple and achievable steps to solve the fundamental problem of tracking non-payment of fees, which has helped improve service delivery.
- Funding for ICT has been allocated from the university council, and KU has aggressively submitted proposals to potential funding partners. In 2009, KU introduced an ICT fee as part of its annual student fees.
- KU has created an evolutionary ICT strategic plan, policy, standards, operational plan, and a budget sensitive to emerging technologies and responding to changing needs and practices as they arise.
- The university is involved in innovative partnerships, which provide outsourced and automated printing and copy services.

'Since the software was created, we could follow up the studies of students easily. Previously this was very difficult because of manual recording of marks resulting in a lot of missing marks.'

(Felix Wasike, Acting Manager, MIS, Directorate of ICT)

'We are 800 staff members and some of them are very conservative so they don't get the whole benefit of ICT. So I would like to see us do more capacity building.'

(Olive Mugenda, KU Vice Chancellor)

Key Challenges

The university is not without its challenges. For example:

- There is still need to work on changing the mindset of staff members to use ICT. The e-learning unit provides continued training on basic and intermediary skills for all staff and students.
- The university faces the challenge of reducing the student : computer ratio. It has already initiated the process of purchasing computers for staff, and has plans to purchase more computers for the nine open, distance, and e-learning regional centres across the country.

Moving Forward

KU continues to address its challenges, and optimise the development of ICT at the university:

- As more buildings are erected and KU expands, the university intends to continue laying fibre optic cables for all new buildings, and is increasing the number of data access points in existing buildings.
- The university is aiming for all of its campuses to be interconnected into a single Wide Area Network (WAN). Currently the Mombasa, Parklands, and Ruiru campuses are interconnected.
- The university is constructing a new library, which is scheduled for completion in 2011. KU recognises that it needs to begin planning the ICT infrastructure for this new 'ICT-intensive' digital library, which will be the largest library in East Africa.
- KU has also embarked on a 'smart-card initiative', which is expected to address challenges with regard to security, adequate identification, access control to the library and computer laboratory, observance of office hours, and efficient provision and control of university services such as printing services and cafeteria meals. These services are currently being implemented in the Parklands Campus, and will be rolled out at Ruiru, Mombasa and the Main campuses in the near future.

This brochure is one of a series that aims to showcase good practice in African higher education. It is intended for higher education decision-makers on the Continent and overseas. Each institution in this series has taken simple steps to solve basic fundamental problems and improve the level of education and service delivery in a context of limited resources. This series is produced by the South African Institute for Distance Education (SAIDE), with the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) and the Partnership for Higher Education in Africa (PHEA) providing funding for the production of this brochure.

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We would like to acknowledge all at Kenyatta University who provided support in compiling this brochure, particularly:
Speranza Ndege, Olive Mugenda, Felix Wasike and Nelson Nganga