

THE VIRTUAL UNIVERSITY

Models &
Messages

Lessons from
Case Studies

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Kenya

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An evolution of an existing institution



United Nations
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List of abbreviations

AVU	African Virtual University
ICT	Information and Communication Technology
IP	Internet Protocol
RMIT	Royal Melbourne Institute of Technology
VSAT	Very Small Aperture Terminal

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1. The African Virtual University at Kenyatta University and its context

The case describes the experience of Kenyatta University as a participating institution in the World Bank-initiated project, The African Virtual University. Although the focus of the case is on Kenyatta African Virtual University (AVU), a certain amount of information has been provided on the AVU project itself, information that describes the project context and its evolution.

1.1 International context – the African Virtual University

The African Virtual University was established in 1996 as a project of the World Bank. The official launch of the project in Africa took place in Addis-Ababa in February 1997. During the launch, there were representatives from six universities in six African countries, Ethiopia, Ghana, Kenya, Tanzania, Uganda and Zimbabwe, and subsequently the ministers of finance of participating countries, World Bank country representatives, and representatives of interested institutions signed the World Bank contract. Its operational headquarters were based in Washington DC.

AVU was originally conceptualized as a technology-based distance education network to bridge the digital divide in Africa, especially by building capabilities in science and engineering. The delivery model integrated satellite and Internet technologies, allowing the provision of quality content from all over the world, while taking into account the technological and infrastructure limitations prevailing in Africa.

Grants of close to US\$200,000 were provided by the World Bank to each of the six participating countries for the implementation stage. The grants were used to purchase AVU satellite receive terminals and basic equipment to start up the AVU project in twelve universities. Universities that joined subsequently did not all receive grants, which resulted in diverse development among sites.

Objectives

The original objectives of the AVU were to complement and strengthen the ongoing efforts to:

- increase access to tertiary and continuing education in Africa by reaching large numbers of students and professionals in multiple sites simultaneously;
- improve the quality of education by tapping the best African and global academic resources, and by offering training to academics in African universities to prepare teaching materials for delivery through the AVU network;
- contribute to bridging the digital divide by improving connectivity in AVU learning centres and host universities, and by providing training in engineering, computer science, IT and business;
- serve as a catalyst for new investments and economic development by offering skills training and upgrading for professionals, and contributing to improving skills of the labour force;

- build the capacity of African tertiary education institutions and their faculty for better management, financial sustainability and extension of their reach through delivery of distance education.

Development strategy

The development of AVU was foreseen in three phases.

Phase one (1997–1999)

The ‘proof-of-concept’ or feasibility stage using courses provided by institutions in the USA, Ireland, and Canada, and facilities of the World Bank, with the support of vice-chancellors from various African universities.

Phase two (1999–2002)

The establishment of thirty-one AVU learning centres in partner universities in seventeen African countries (nine anglophone, seven francophone, and one lusophone), aiming to create more partnerships, train 23,000 Africans in journalism, business studies, computer science, languages, accounting, etc., and assess AVU’s needs for providing sustained access to affordable quality education at tertiary level for Africans.

Phase three (2002-2007)

In 2002, AVU was established as an independent non-profit organization with headquarters in Nairobi. The objectives of this phase include:

- expanding to 150 learning centres in 50 African countries;
- introducing four-year degree programmes in computer science and business studies, both in French and English; and
- establishing AVU’s own communications infrastructure: a hub, studio and VSAT¹ at its headquarters in Nairobi, Kenya.

At the beginning, the AVU management team at the World Bank consisted of the AVU founder (a World Bank manager), technical coordinators, a chief academic officer and an administrator. In most cases, consultants were deployed to develop various AVU products, such as the digital library resources, evaluation strategy and many other services.

As a project of the World Bank, all funding for the AVU was channelled through World Bank trust funds by donors such as the World Bank, the Canadian International Development Agency, Norwegian Agency for Development Cooperation, Irish Development Agency, and the European Union. All of these funds were managed by the World Bank.

1.2 National context – Kenyatta AVU

The situation of tertiary institutions in Kenya is similar to that of higher education in the rest of sub-Saharan Africa. While Kenya placed much importance on the role of education in promoting economic and social development after independence in 1963, the persistent sour relations between the government and universities have not augured well for the latter’s financial support. This has been demonstrated increasingly through budgetary cutbacks and general neglect of problems facing the universities. In 1980 Kenya spent around

¹ The VSAT, or Very Small Aperture Terminal, is a satellite communications system that handles data, voice and video signals.

US\$3,402 per student; in 1983 this amount dropped to US\$1,521, and by 1988 it had dropped to around US\$1,000 in recurrent expenditure (World Bank, 1988).

Moreover, the World Bank and International Monetary Fund Structural Adjustment programmes have reduced the level of government funding of universities, and so-called rationalization programmes have been carried out on an ad hoc basis without any meaningful justification. The imposition of student fees, reduction or cancellation of student subsidies, and the privatization and commercialization of universities are recommendations that, though well intentioned, have not been suitable for the fragile economy of the country. A major problem that has further worsened the funding of public universities is the government's failure to rationalize the mechanisms for determining and allocating budgetary resources for universities.

In spite of these problems, public universities in Kenya have expanded very rapidly within the past decade or so. However, the high number of student admissions has not been matched with the provision of teaching facilities and resources, especially lecture halls and student housing, and tutorials are quite rare. Furthermore, following frequent closures of universities, a backlog of students has emerged since the mid-1980s that has necessitated a double intake. Since the facilities cannot accommodate regular intakes, let alone the extra intakes, this has meant that various groups of students have been forced to complete their semesters at different times within a given academic year.

The rapid expansion of the universities has also had a far-reaching effect on the quality of the teaching staff. To recruit academic staff for the public universities, the tendency has been towards relaxing the recruitment and promotion criteria. In practically all of the universities, a Ph.D. degree is no longer a requirement for tenure, and publication is a less important criterion for judging who should be promoted. Moreover, under these conditions, it is no longer possible to attract competent staff from abroad to teach in public universities.

The government has attempted to implement some measures to provide greater access to education. Unfortunately, they have been insufficient and the demand remains much greater than the available opportunities. For instance, in the 1999/2000 academic year, out of 30,243 school leavers (with a Kenya Certificate Secondary Examination) who obtained grade C+ and above, only 9,017 were admitted to public universities; and in 2000/2001, out of 40,498, only 11,147 were admitted. Of those left out, some were expected to enrol in private universities or polytechnics. Also, it should be noted that more and more students are studying abroad; in 2002 some 5,000 Kenyan students enrolled in US universities, while others have gone mainly to the UK, France and Russia.

Tertiary institutions in their present form – overwhelmed with problems related to access, finance, internal and external efficiency – are not able to provide quality education in sub-Saharan Africa. Enrolment levels are low. Limited space and declining budgetary levels prevent universities from servicing the growing demand for higher education. As a result, universities in sub-Saharan Africa suffer from low numbers of trained faculty, practically non-existent levels of research, outmoded programmes and poor quality of educational materials (e.g. African libraries have suffered immensely as collections have become out of date, and laboratory equipment is old, in disrepair or obsolete). Moreover, universities often do not foster critical thinking, problem solving and creativity, all essential skills for promoting entrepreneurship.

These constraints have prevented institutions of higher education in Africa from being able to produce graduates with skills that relate to the needs of the country. The profile of graduates is inconsistent with labour-market needs. To a large extent, many African universities have failed to remain relevant in a rapidly changing world, as a disproportionate number of their students graduate in the humanities rather than in the fields of science and engineering. It is thus highly questionable whether tertiary institutions can afford to continue to develop under this traditional model of higher education, particularly if the countries of sub-Saharan Africa wish to expand access to higher education while maintaining quality. On the other hand, the alternative of sending African students abroad for study is not a realistic option for meeting the needs of sub-Saharan Africa. Hence, the basic paradigm under which the system of higher education operates needs to be reassessed. At the same time, a technological revolution is taking place in the world, which makes the introduction of the needed changes possible.

As countries of sub-Saharan Africa enter the new millennium, the greatest challenge is to provide quality tertiary education to a majority of the population. However, bold steps have to be considered by governments if they are to provide their people with affordable access to education using methods of mass education. Even by using these methods, not all aspirations will be met. One solution available to governments is to use new technologies as the means to deliver a variety of educational opportunities to individuals in their respective countries. Creating virtual learning systems like the African Virtual University is potentially such a solution.

1.3 Institutional context – Kenyatta University

Kenyatta University is situated about 16 kilometres from Nairobi on the Nairobi-Thika dual carriageway on 1,000 acres of land. The long journey to university status started in 1965, when the British Government handed over the Templar Barracks to the Kenyan Government which were converted to Kenyatta College for training secondary school teachers. Following an Act of Parliament in 1970, Kenyatta College became a constituent College of the University of Nairobi. University status was achieved on 23 August 1985, and Kenyatta University immediately started establishing new faculties and constituent colleges. The main mission of the university is to:

- provide directly, and in collaboration with other institutions of higher learning, facilities for university education, including technological and professional education and research;
- provide advanced university education and training to appropriately qualified candidates, with the award of degrees, diplomas and certificates;
- conduct examinations for granting such academic awards;
- determine who may teach, what may be taught and how in the university;
- play an effective role in the development and expansion of opportunities for Kenyans wishing to continue with their education (Kenyatta University Calendar, 2000).

Kenyatta University currently offers Bachelor's degree programmes in five areas: arts, commerce, education, science, and environmental studies, and offers postgraduate work up to doctoral level in the fields of education, arts and science.

Like other public universities, Kenyatta University obtains the bulk of its funding from the government treasury, and this covers around 85 per cent of its expenditures, both recurrent and for development. Other sources include student fees, income-generating activities and some external grants.

With regard to the academic staff situation, the overall staff-student ratio is around 1 to 27, but this is a generally deceptive figure with regard to individual disciplines, where the ratio may be much higher.

2. Creation, organization and current programme of the Kenyatta AVU

There have been innovative responses to the challenges facing higher education in Africa. The African Virtual University is clearly one of these. This section outlines how the project was implemented and developed from 1997 to 2001 at Kenyatta University, one of the participating institutions.

2.1 Creation of the Kenyatta AVU

The AVU inaugural workshop held in Addis Ababa in February 1997 was attended by a contingent of five people from Kenyatta University. After the conference, a contract was signed between the Kenyan Government and the World Bank and the supplier of the Satellite equipment COMSAT. Preparations, such as installations and renovations, were completed, and the Satellite Receiver Terminal was installed in June 1997. For Kenyatta University, participation in the AVU was seen to come at an opportune moment to revitalize and supplement existing academic provision in the following ways.

Increase provision

The six public universities and five private universities in Kenya cannot meet the demand for higher education. Admission to public universities is pegged on resources, and private universities are expensive and many of them offer mostly humanities courses. AVU can thus provide more university and training opportunities to qualified students.

Increase opportunities in science studies

AVU programmes will increase enrolment in science courses, such as computer science, computer engineering, information technology and electrical engineering. Demand is high but university departments offering such courses admit only between twenty and sixty students per year only (Joint Admissions Board, 2000).

Increase opportunities in continuing distance education

Distance education programmes that provide degree courses in Kenya are very few, and many of these focus on humanities courses. In addition, employers from the private sector and from non-governmental organizations are faced with a huge need to train their employees.

Build capacity

AVU can play a pivotal role in capacity building for different kinds of people in different occupations. It provides an opportunity for professors, lecturers, students and other university employees to access knowledge, skills and positive attitudes towards information technology. In Kenyatta University, the demand for AVU courses has been so great that for the past three years only 5 per cent of the demand could be fulfilled. In the public and private sectors, demand for AVU courses has come from government agencies (i.e. armed forces, police, various ministries), primary and secondary school teachers, lawyers, insurance and accounting firms, as well as from hotels, tourism boards, the sugar industry, breweries and banks.

Increase teaching/learning resources to the university

AVU helps to provide essential resources to universities. Access to digital library resources will improve research and learning at universities. Students, medical practitioners, lawyers, professors, etc. can have access to high-quality and current information.

Provide computers and Internet connectivity

AVU functions as a technology hub in some of the host universities, and its enhancement of Internet connectivity contributes towards revitalizing the technological capacity of these institutions. Resources such as computers, satellite transmitted lectures, tapes, course notes, textbooks, CD-ROMs, etc. can be shared by teaching staff and students, particularly in the faculty of science.

Contribute to bridging the digital divide

AVU contributes to connecting the participating institutions and to training knowledge workers with essential skills for the job market.

Increase participation of women in science and engineering

AVU is well positioned to provide alternative educational avenues using an IT learning environment and can enhance women's ability to enrol in computer science, computer engineering and electrical engineering courses.

2.2 Organizational structure

Kenyatta AVU has a director/campus coordinator, a technical coordinator, a programme coordinator/course coordinator, an administrative assistant, one clerk, one accountant, six technicians, one messenger, two secretaries, one gardener and two cleaners (see Figure 1).

All of these nineteen people are employees of Kenyatta University and can be transferred to other departments. Kenyatta AVU hires part-time staff to facilitate course delivery. These are either members of Kenyatta University, or of other universities and institutions in the country. The teaching staff is made up of eight lecturers, who are paid by AVU at the rate of US\$9.30 per hour. Most of the course facilitators have the minimum of a Masters degree in relevant fields.

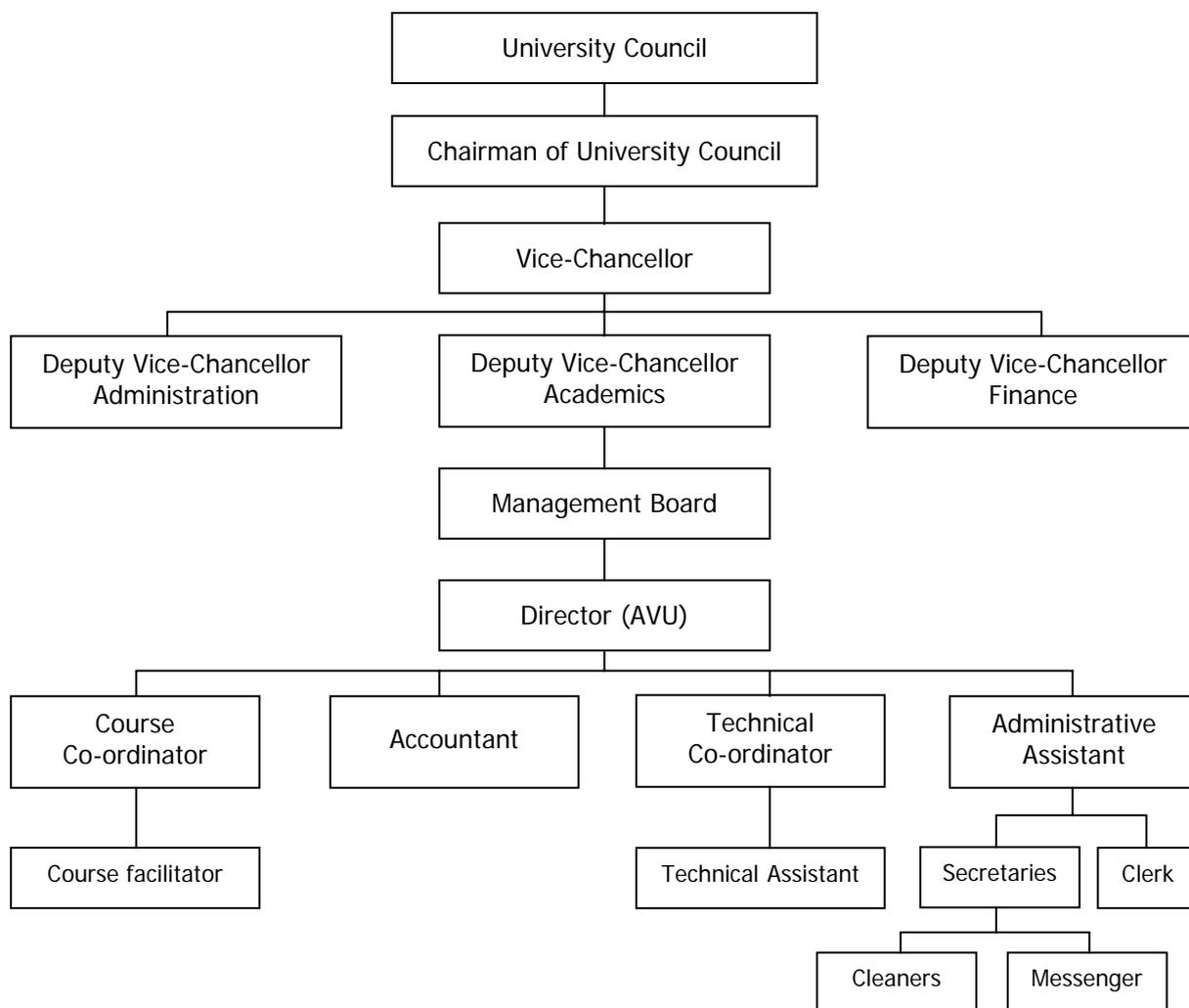
In some of the participating universities, as was the case at Kenyatta University, AVU was accorded special status as a centre within the Institute of Distance Education, and acted as the main technology hub within the university. However, in most other participating universities, AVU learning centres are not recognized within the general framework of the university, and they remain small, separate units. Such an arrangement is not ideal as AVU is not included in general university budgetary allocations, management planning and administration, which means that AVU learning centres function outside the mainstream activities of the university.

2.3 Current programmes

Enrolment in AVU courses

The first students at Kenyatta AVU were regular Kenyatta university students from the department of mathematics. Thirty-seven students opted for a Calculus One course offered during an AVU summer semester (14 July – 6 September 1997), which was transmitted from

Figure 1 Organization of Kenyatta AVU



the University of New Jersey, USA, via satellite. The course credits the students obtained from the AVU were taken into account for their degree programme in mathematics. Later, about 100 Kenyatta students from the departments of physics, chemistry, mathematics and appropriate technology enrolled in AVU courses; credits from this coursework were also counted towards their final degrees. The courses that the AVU offered to regular Kenyatta University students were essentially science (i.e. physics, mathematics, chemistry) and engineering courses, including computer science courses.

At about the same time, the AVU also began offering courses to students who were not full-time Kenyatta University students, namely, the general public and primary and secondary school teachers. These courses, which were mostly for learning how to use computers and various Microsoft programmes (i.e. Windows, Word, Excel, Access, PowerPoint, etc.), as well as the Internet, provided learners with a certificate.

From 1997 to 2001, AVU increasingly focused its course offer on computer certificate courses and executive seminars. This is reflected in Kenyatta AVU enrolment trends, where enrolments in certificate courses increased from 993 students in 1998, to 2,594 in 1999 and 3,324 in 2000. During 1997–2001, 45.6 per cent of all students enrolled in AVU courses took

certificate courses (mostly computer courses), 17.4 per cent took university preparatory courses, 16.9 per cent took teacher-training courses, 15.9 per cent took seminars, but only 4.2 per cent were regular Kenyatta University students taking AVU courses for their degree programmes.

The certificate courses have been popular because of the quality of training, recognition of certificates and availability of facilities they offer. It is worth noting that the high enrolment in Microsoft Office courses, for example, is largely due to their relevancy to computer users, especially those who are working. It is also worthy of note that enrolment decreases as courses become more advanced. This being said, students nonetheless feel that AVU-Kenyatta should offer courses besides the current certificate courses, especially degree programmes in computer science and engineering. As of January 2003 the AVU network started offering a degree programme in computer science at various sites in Africa, including at the AVU centre of Egerton University in Njoro, Kenya. The four-year programme, transmitted from the Royal Melbourne Institute of Technology (RMIT) in Australia, will be available in its entirety or only partially, as a two-year diploma course.

Since Kenyatta AVU started, at least 2,417 people with various backgrounds have participated in AVU seminars, which can be on topics ranging from cyber rights and investigative journalism to economic growth and writing CVs. For example, 1,743 people have taken the seminar on writing a winning CV. The attendance at the seminars has been good so far, and is increasing each year.

Kenyatta AVU students

Most Kenyatta AVU students come from districts surrounding the capital city Nairobi; the Nyeri district, which is endowed with agricultural potential (coffee and tea), has the highest number of AVU students. The ability and willingness to pay for AVU courses is largely due to the socio-economic level of the district's inhabitants and an increased demand for education, especially for the computer skills now required for most jobs.

An analysis of the educational background of Kenyatta AVU students indicates that approximately 62 per cent of the students have an O-level education, 10 per cent an A-level education, 13 per cent are university graduates and 1 per cent are postgraduates, with 'others' (i.e. other diploma holders) representing 14 per cent.

With regard to occupation, 62 per cent of Kenyatta AVU students are actually full-time students of other institutions, 25 per cent do not have a particular occupation, and the remainder represent a diversified group of teachers, farmers, homemakers, accountants, computer technicians, artisans, business people, etc. For example, most of the teachers who have been trained at Kenyatta AVU are primary school teachers. About 55 per cent are men, while 44 per cent are women. Kenyatta AVU students tend to be young, with many being under 25 years old and few over 35 years. In 2000, student enrolment at Kenyatta University declined by 7.2 per cent, from 7,758 in 1998/99 to 7,196 in the 1999/2000 academic year. Female students constituted 19.8 per cent of the total enrolment (Republic of Kenya, 2000a).

3. Administrative issues

The Kenyatta AVU administrative model is influenced by two different types of organization. First and foremost, AVU Central in Nairobi – the AVU headquarters and technology hub in Africa – provides courses, learner-support systems, delivery technology, quality assurance and evaluation systems for AVU participating institutions throughout Africa. Second, Kenyatta University, like any other AVU partner university, provides physical infrastructure, equipment, personnel and support so that AVU can function through its learning centre at the Kenyatta University site. Kenyatta AVU administrative processes are mainstreamed in Kenyatta University procedures, but the administrative structure can sometimes create challenges for Kenyatta AVU to function effectively as an AVU learning centre.

3.1 Administration

There are important differences in the organization and administration of short courses and degree programmes. For example, the short courses offered by Kenyatta AVU include computer courses and seminars which can last from two weeks to six months. Students who take short courses are part-time, while those enrolled in degree programmes are full-time. All AVU courses at all African sites are offered in learning centres. Students must present themselves at the learning centre to follow their courses, which may be transmitted from anywhere in the world.

The management of Kenyatta AVU is facilitated through regular meetings of the AVU Management Board, monthly AVU staff meetings and weekly plenary meetings with students. Virtual meetings are also held once per semester by AVU Central in Nairobi with all thirty-four learning centres in Africa, including Kenyatta AVU. The management of students includes student social counselling provided by the university, and academic counselling provided by the learning centre manager and course facilitators. Students are encouraged to participate in decision-making through the AVU student club, AVUNET, at Kenyatta University. This acts as a ‘student council’ which meets once a week to articulate student problems and ways and means of solving them.

Even though administration and management of Kenyatta AVU has worked well since 1997, there have been some challenges that have hindered the progress of the learning centre. Since Kenyatta AVU is part of Kenyatta University, its organization management and administration policies, structures and processes are in line with those of Kenyatta University. This kind of arrangement is not conducive to managing a virtual learning environment, which requires quick decision-making processes. For example, the Kenyatta AVU Director has no authority to purchase equipment, software or recruit staff. The Kenyatta AVU management team reports to the Board of Distance Education of Kenyatta University, which oversees the management of the AVU learning centre. Other issues pertaining to financing and academic programmes are also presented to the Board, which channels all matters to relevant university committees, including the Senate, for decision-making. There are important delays in this kind of administration system, which is appropriate for a face-to-face teaching environment but not a virtual learning environment. AVU academic programmes are another domain that requires the developing and implementing of new structures and procedures that are different from the face-to-face education model. An AVU learning centre, for example, requires designated satellite transmission viewing rooms, adequate computers, Local Area Network

servers, good Internet connections, learner-support systems, printers and relevant software. All these teaching and learning resources must be procured in good time and managed so as to facilitate provision of quality education. However, delays in decision-making and a slow bureaucratic system pose a major challenge to effective delivery of AVU academic programmes. Another impediment to the AVU mode of learning is the difficulty of attracting and retaining qualified computer scientists. Computer technology is a lucrative profession in terms of salaries, and yet universities remunerate computer specialists at the same level as university lecturers or senior lecturers. Computer specialists tend to leave for greener pastures in the private sector; Kenyatta AVU therefore suffers from a high turnover of these specialists. This poses a threat to the supply of part-time, qualified facilitators for the computer-based courses.

3.2 Costs and financing

Although the World Bank gave an initial grant of US\$194,000 to Kenya, it was difficult for the Kenyatta AVU to obtain the funds from the Ministry of Finance due to bureaucracy and stringent financial policies. In response, the Director of Kenyatta AVU implemented a comprehensive marketing strategy, which resulted in many people with different backgrounds (i.e. students at other institutions, teachers, private-sector employees, etc.) enrolling in AVU courses.

The Kenyatta AVU learning centre became the highest income-generating unit of Kenyatta University. Kenyatta AVU managed to generate a profit, mostly from its computer short-courses. The learning centre was thus able to purchase computers, pay for course facilitators and Internet connections, and meet other operating costs.

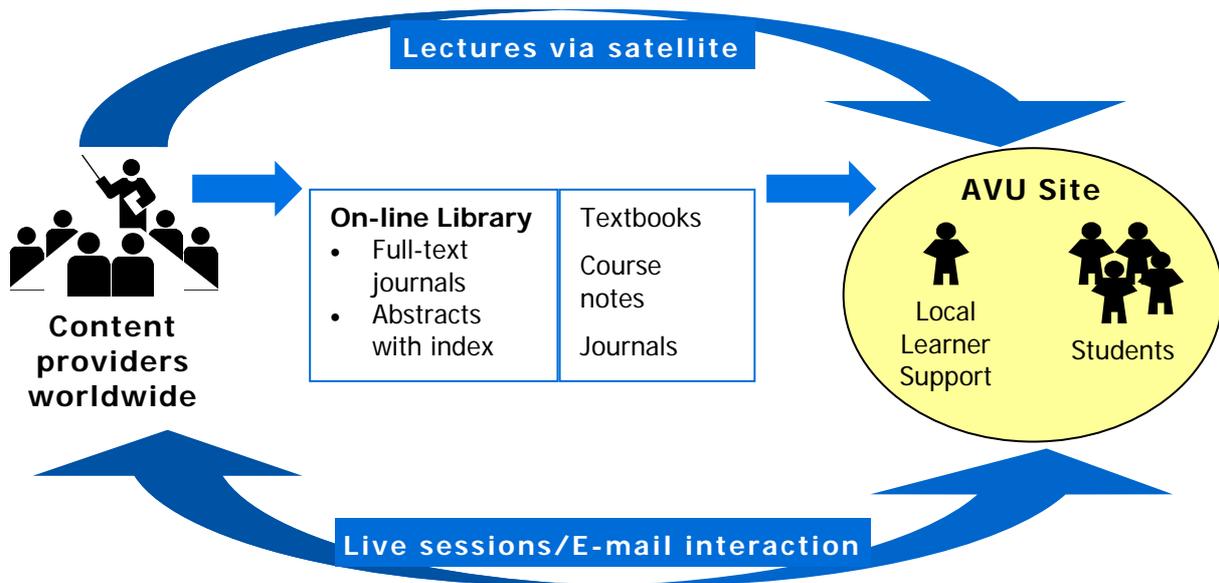
3.3 Technological infrastructure

AVU uses a technical infrastructure that integrates satellite and web-based technologies to transmit video and data resources from anywhere in the world to the participating institutions in Africa. It also provides the flexibility to incorporate proven and emerging interactive tools and multimedia resources to support student learning and network operations. A combination of live and videotaped instruction, supported by textbooks, a digital library and course notes, are provided by the participating universities and content providers. Students interact with their instructors and other students via phone, e-mail, discussion forums or fax. AVU transmits courses and seminars via NSS803, a C-band international satellite whose footprint covers the entire African continent, Western Europe and the East Coast of the USA and Canada. Programmes are transmitted through AVU's American hub located at COMSAT Digital Teleport in Maryland, USA.

3.4 Intellectual property

The delivery of academic programmes is the core activity of AVU (see Figure 2). All partner institutions, including AVU-Kenyatta, participate in AVU-delivered courses. AVU Central in Nairobi uses three types of 'licences'. Since AVU Central does not develop and design course content itself, it procures courses from around the world. For example, AVU is currently transmitting computer courses from the Massachusetts Institute of Technology in the USA.

Figure 2 AVU delivery model



For this kind of short computer course, the Institute owns the copyright and AVU purchases the course and is given a licence to broadcast course content to a specified number of learning centres and a specific number of students. This kind of licence is ‘single use’, which means that AVU is authorized to use the materials only once. The second type of licence is ‘multiple use’. This permits unlimited transmission of course content to as many sites and students as possible, but for a specific period. The third type of licence, a ‘one-time licence’, is applicable to degree courses. In this case, AVU pays a fee to buy and own the licence. For example, AVU has paid for the licence for the four-year computer science degree course from the RMIT in Australia, which started transmitting the course to AVU sites in Africa in January 2003. After the four years, the licence reverts to the Institute.

Lessons learned

- The administration and management of virtual universities is different from that of conventional ‘face-to-face’ universities.
- Learning centres within a university need to be autonomous for effective management.
- Flexibility in management processes and delivery systems will enhance business operations of an AVU learning centre.
- New learning needs emerge from a virtual learning system where students/clients want ‘just-in-time’ and personalized services.
- Delivery of quality education at an affordable price is the strong point of AVU courses.

4. Academic issues

Kenyatta University is basically a single-mode conventional university offering some distance education programmes. The AVU Learning Centre is situated within its Institute of Distance Education. Due to the conventional orientation of Kenyatta University, academic and administrative responsibilities rest with the governing council, Senate, faculties, institutes and departments. The University Council is the highest governing body of the university, whose membership consists of distinguished Kenyan scholars and representatives from the Senate.

The AVU headquarters in Nairobi determine the academic programme for the entire AVU network in sub-Saharan Africa, including Kenyatta AVU.

4.1 Programme development

The AVU has attempted to address the issue of capacity building by partnering with universities in sub-Saharan Africa and content providers in countries such as the USA, Canada, France, and Ireland for the provision of courses.

Management of AVU learning resources

During the pilot phase of the AVU, all teaching and learning resources for the project were managed from the AVU unit of the World Bank in Washington DC. The Chief Academic Officer procured, coordinated and managed the delivery of courses to AVU institutions in Africa. INTELSAT provided satellite capacity, and instructors who taught and delivered courses via satellite were paid by AVU management. Textbooks, course notes etc. were sent free of charge to AVU learning centres. During this initial phase, the AVU team in Washington together with local staff, including facilitators at the AVU sites in Africa, supervised and evaluated the AVU programmes. However, with the transfer of AVU headquarters to Nairobi in Kenya in 2002, the management of AVU learning resources is now coordinated from Nairobi.

4.2 Teaching

Although course-content production and delivery during the pilot phase of the AVU project was from the developed world to African universities, there was much input from students, lecturers and managers of AVU learning centres in Africa on what they wanted, which was important for contextualizing content to their local needs. For course-content planning, preparation and delivery, AVU relies on expertise from around the world to deliver knowledge. With satellite transmission and appropriate information and communication technologies, one expert is able to teach many people in different locations.

Pedagogical approach

In recognition of the learner environment in which AVU operates, a flexible mixed-mode delivery approach has been adopted. The approach uses a careful combination of synchronous video broadcasting, online learning materials, and pre-packaged learning materials on CD-ROMs and DVD, as well as synchronous chat sessions.

Interaction between the learner and the lecturer is primarily by e-mail and chat sessions. A team of teaching assistants prescreens questions asked by learners and prepares them for response by the lecturer during synchronous (real time) sessions. The teaching assistants are also responsible for synchronous chat and tutorial sessions with the students.

AVU is based on a Learning Centre approach. All students are expected to register at an AVU learning centre where they will attend specifically scheduled synchronous sessions. This is done in order to ensure that every learner receives an effective learning experience. It is particularly important for young African learners who need to be gradually exposed to Information and Communication Technology (ICT) -enhanced learning.

Well-trained facilitators, familiar with the subject matter, support and supervise the students. The AVU digital library is being enhanced to include more journals and e-books necessary to support the degree programmes.

Academic strategy

The underlying principles guiding AVU's strategy are to provide a high-quality product, the transfer of skills and to maximize access. Implementing this strategy has involved the following steps.

Initially, an international institution provides the educational programmes, while the participating African institutions enrol students and provide local facilitation and support. AVU provides the underlying technology architecture, digital library, network management expertise and negotiates a cost-effective arrangement for the African institutions. AVU also provides expertise to the African institutions in the areas of instructional design and delivery so that they can convert their own programmes into an ICT-enhanced format for easy dissemination and marketing. A lead African partner university works closely with the originating international institution to take over the accreditation and running of the programme once the skill-transfer process is complete.

This approach ensures that:

- the quality of education is improved because global education resources are being utilized and African academics are being trained;
- the 'digital divide' is bridged because of the improved connectivity at African institutions;
- the brain drain is reduced because Africans can have access to international educational resources within Africa;
- economic investments and development in Africa increase because a skilled and entrepreneurial labour force is available;
- there is continuous capacity building at African institutions to offer ICT-enhanced programmes.

Lessons learned

- The AVU initiative is revolutionizing the delivery of academic programmes within conventional universities.
- ICT-enhanced learning requires that academics are favourably disposed to recognizing and appreciating its potential.
- Virtual learning systems encourage resource mobilization and sharing.
- mixed modes of delivery are pivotal in virtual learning;
- Efficient technology enhances teaching and learning.

5. Cooperation

Kenyatta AVU does not have any partnerships with other institutions. AVU itself, of course, is based on a concept of cooperation through the partnership with thirty-one African institutions. AVU also cooperates with various organizations throughout the world, including the following.

Africa America Institute

AVU entered into a partnership with the Africa America Institute to seek joint funding, mostly from the US Government. The partnership, named African Technology for Education and Workforce Development, has been approved by the AVU Board of Directors.

Australian Agency for International Development

At the initiative of the World Bank, AVU will benefit from a new learning partnership between the World Bank and the Australian Government through the Virtual Colombo Plan administered by the Australian Agency for International Development. Under this initiative, AVU is expected to receive support of about US\$3 million over a 3-year period, which will be used directly for the payment of course content. AVU has partnered with the RMIT of Australia to deliver degree courses in computer science and with Curtin University for business studies. The Australian universities will accredit these courses. AVU will receive US\$300,000 to assist it with administrative costs.

Association of Canadian Universities and Colleges

The Association of Canadian Universities and Colleges, in collaboration with AVU, has developed a project to provide a computer science diploma and degree programme to francophone AVU learning centres. Through competitive selection, Laval University in Quebec was selected to provide content, delivery and accredit the programme.

Lessons learned

- Partnerships that involve many universities are difficult to formalize due to the bureaucratic procedures in the decision-making of conventional universities.
- Bilateral partnerships depend on the policies of the participating organizations.
- Partnerships with AVU member organizations are an effective pillar for recognition and 'branding'.

6. Future development and a transition to African ownership of AVU

Looking backwards first, the pilot phase of the AVU project:

- created a network of partner institutions in seventeen francophone, anglophone, and lusophone African countries, with learning centres hosted mainly in public universities;
- affiliated to a global network of leading universities;
- delivered in excess of 3,000 hours of instructional short-course programmes sourced from leading universities globally;
- registered over 23,000 students in semester-long courses;
- enrolled close to 2,500 professionals in executive business seminars;
- set up a network of 45,000 e-mail accounts and a digital library of more than 1,000 journals, with over 1 million hits per month on the website; and
- witnessed a large enrolment by African women in specialist programmes.

The pilot phase demonstrated that the concept of a virtual university to serve education and development in sub-Saharan Africa is feasible. In November 1999, vice-chancellors and rectors of participating African institutions met in Nairobi and drew the following conclusions:

- The AVU model of using technology to deliver education is one of the most practical solutions for increasing access to education and information; everything possible should be done to maintain it.
- The pilot phase has created high expectations and hope among students, corporations, parents, institutions and governments.
- There is a willingness to pay for AVU programmes, and partner institutions in Africa are committed to investing their own funds as well as funds from their governments to support the AVU.
- The African partners have assumed leadership of the AVU and there is a clear plan towards becoming self-sustaining.
- Even though sub-Saharan Africa represents a virtually untapped market for world-class degree programmes and associated resources and services in science and technology fields, the educational products that are developed must be sensitive to the social-cultural reality of Africa; there must be a strong organizational infrastructure to support the products in the market and to maintain quality control; AVU must establish an efficient, affordable, and flexible system of distribution, and use interactive technologies that make it possible to distribute the educational products and support the learner.
- Due to distance, academic, cultural and other barriers, and to differences between the USA, Europe and Africa, the programmes, policies, procedures and technology models to be implemented by the AVU should be developed, tested and proven in a time-limited operational phase in close collaboration with partner institutions, and then refined as needed before full-scale implementation.
- AVU's success is predicated on partnering with existing institutions in sub-Saharan Africa.
- The experience of some successful distance learning organizations that have provided a viable alternative for meeting market demand for access to academic programmes and

services over the past thirty years, and how these initiatives were received in sub-Saharan Africa, should be assessed.

AVU was subsequently spun off from the World Bank, and in May 2000 it was registered as a non-profit organization with headquarters in Nairobi. It has a Board of Trustees and a Board of Directors. The Board of Trustees has fiduciary responsibility and appoints the Board of Directors. The Board of Directors is responsible for policy-making and management oversight. It has nine members, of which four are representatives of African vice-chancellors and rectors. The others are selected from among AVU's strategic partners and individuals who, in their own right, have been identified as having unique capacities for contributing to AVU's development.

Since the adoption of the 2000 business plan, many new and unforeseen challenges regarding the successful delivery of high-quality degree programmes on a large scale to the African continent have become evident. These challenges have arisen from the macro-environmental context of AVU operations, where the organization was struggling to deliver its promise of providing access to high-quality tertiary education on time to as many qualified African students as possible. Some of the major challenges that arose include the following:

- The process for AVU to secure international accreditation of its curriculum, teaching methods and delivery modes is cumbersome, and has taken years. In addition, African universities are unwilling to enrol students without a clear pathway for obtaining accreditation of coursework.
- The African partner universities participating in the AVU network perceived AVU as a competitor rather than a partner for increasing access, gender equity and building capacity in higher education. They generally did not demonstrate the required levels of commitment to AVU goals because they were concerned that AVU would not evolve into an independent university within their campuses without a clear legal framework defining the relationship.
- The cost of delivering degree programmes via satellite-broadcast technologies became prohibitive despite its advantages. For example, it costs approximately US\$12,000 to deliver the required twelve hours of instruction per week per course.
- The rapid advances in the development of the IP (Internet Protocol) standards during the 1998–2001 period accelerated the migration of educational courseware to the Internet via online-learning management platforms. AVU's 100 per cent satellite-based approach was, therefore, threatened.
- AVU's evolution from a project supported by the World Bank into a non-governmental organization made it extremely difficult for AVU to collect fees from partner universities because the legal and operational framework stipulating how partner universities would pay AVU (as a non-governmental organization) had not been created.
- The emergence of pan-African initiatives, like the New Partnership for Africa's Development, and their focus on education as a foundation for development, reinforced the need for an African virtual university that could offer an internationally accepted curriculum, would be pan-African in outlook, and have the flexibility to adapt to the different contextual circumstances of African countries. This reinforced the need for AVU to take a second look at its operational model.

6.1 The strategic review

To guide its future operations, AVU decided to redefine its priorities and strategic approach for the provision of degree programmes and building capacity in African institutions. AVU had to rethink its strategies, priorities and operational model, and determine how to deliver high-quality tertiary education to an entire continent without undermining the higher education infrastructure that already existed. AVU had to do this within a reasonable time frame because it did not wish to become yet another failed ‘African dream’.

Due to the complexities of the issues involved and in order to ensure maximum objectivity, the AVU commissioned an external professional organization to conduct a strategic review of its operations and plans.

The major objectives of the review were to establish:

- a new strategic direction and role from which it could deliver degree programmes immediately and scale up its operations in the future;
- the required capital investments and funding models to ensure sustainability, particularly to enable the right balance between educational mission and business requirements;
- the proposed products, technical infrastructure required, and implementation schedule for their delivery;
- the organizational and management structure, as well as location(s) of activities.

The main conclusion of the review was that to increase access to high-quality tertiary education on the scale needed by Africa and desired by Africa, AVU should reposition itself as the architect of an education network that connects universities with needed curricular content and creates a self-sustaining community of students, universities and educators. By enhancing connectivity among participants – universities, technical providers, donors, students, faculty, and content providers – and by facilitating interaction and transactions, AVU can help to enhance and expand higher education in sub-Saharan Africa.

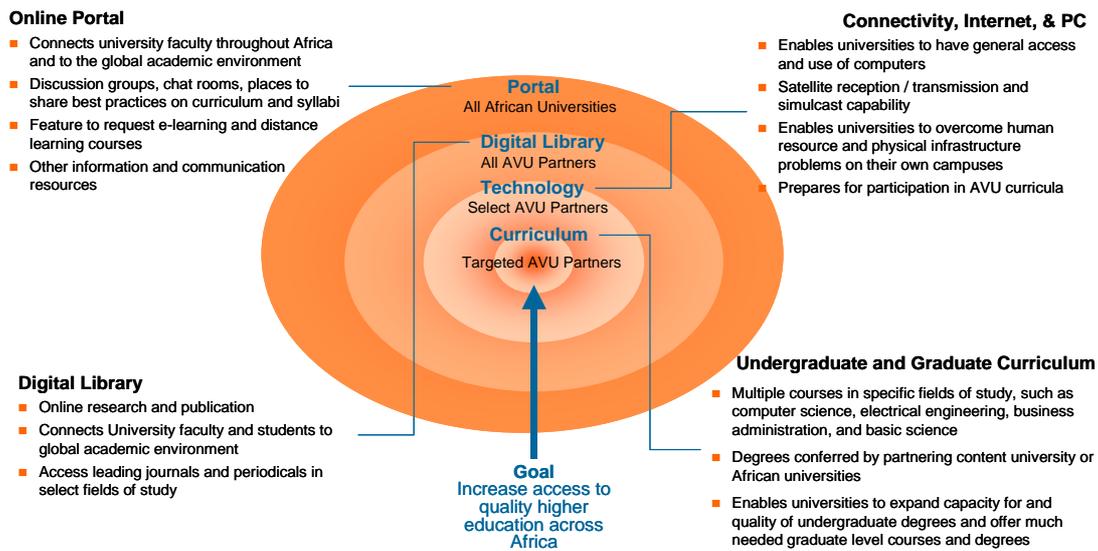
The recommendations resulting from the strategic review were largely accepted by the AVU Board of Directors, management and funding partners because the plan proposed would enable AVU to offer accredited degree/diploma programmes, which would immediately increase access to higher education in Africa.

The new operating model

AVU has decided in the short term to redirect its role from direct service provider of accredited educational programmes to architect, facilitator and integrator of an education network that matches student needs to university supply. African institutions are to be linked to their counterparts on the continent, and elsewhere, while allowing the primary market players (i.e. the partner institutions) to maintain their own roles and incentives.

AVU will continue to assist universities by identifying educational programme needs, sourcing appropriate content, implementing the necessary technical infrastructure, aggregating demand to improve purchasing terms, and facilitating – not replacing or owning – the contracting and fulfilment process.

Figure 3 Proposed AVU products and targets



Under the new operating model, AVU will deliver the following products (Figure 3):

- accredited degree, diploma and certificate programmes in areas critical to sustainable development, but not adequately catered in existing institutions;
- an enhanced digital library with more journal titles and e-books to support the educational programmes to be offered;
- a portal to support outreach to the broader educational community;
- technical support services to African universities to enhance their capacity to access educational resources and to share knowledge generated at their universities globally.

A total of sixty-eight universities across Africa are expected to join AVU programmes by 2007, with some taking more than one programme. A slower uptake is anticipated in francophone-partner countries because distance learning has yet to be widely embraced in these countries as compared to anglophone countries.

7. Kenyatta AVU: most important lessons learned

Turning back to the specific case of Kenyatta AVU, it is to be noted that it was deemed one of the best sites during the AVU start-up phase in terms of student enrolment, teaching/learning management, performance, and financial sustainability. As such, it is in a position to articulate a number of significant lessons learned from the experience to date.

- *University ownership of AVU.* Awareness and sensitization campaigns to make the project known among deans of faculties, chairmen of departments, lecturers, students, university managers, and subordinate staff are necessary for the success of the project.
- *Community awareness campaigns.* Public and private sectors of the country should be aware of the benefits of the project. Communities, particularly potential clients such as graduates, parents and university students, should be aware of the project.
- *Adequate learner support materials and equipment.* It is imperative to have enough computers, fast Internet connections, printers, television monitors, telephones, LCD projectors, screens and other resources, such as textbooks, workbooks and relevant manuals.
- *Manpower capability.* Adequate and skilled staff are necessary for the success of AVU.
- *Committed leadership.* AVU requires committed leadership, both for the project and partner university. The person in charge of AVU should be an academic with a minimum qualification of Doctor of Philosophy (Ph.D.), who has integrity and entrepreneurial acumen.
- *Capacity building.* AVU staff should continuously update skills in computer technology and management.
- *Delivery of quality academic programmes.* The delivery of quality programmes is a prerequisite for a high enrolment of students in AVU. Parents are ready to pay for quality education. In order to maintain quality education, the following quality assurance strategies should be put in place:
 - adequate marketing strategies to attract students;
 - high enrolment rates to generate reasonable income in order to sustain AVU;
 - efficient admission criteria and registration system;
 - efficient student induction programme for proper understanding of technology and mode of delivery;
 - efficient system of selecting qualified local facilitators;
 - induction programme for course facilitators;
 - adequate remuneration for course facilitators;
 - student database;
 - guidance and counselling of students;
 - well-designed evaluation system of students' performance;
 - supervision and monitoring system;
 - moderation of examinations;
 - adequate supervisors of examinations;
 - efficient system of grading and certification of courses.
- *Sustainability.* It is imperative for an AVU learning centre to be able to generate income and sustain itself. Financial procedures must be put in place. For example, an AVU centre should have a bank account with two signatories for proper control and management. A qualified accountant and an accounts clerk should manage the accounts. In addition, the director of the learning centre should also be its chief accounting officer. Procurement

policies and procedures of the partner university should be followed in processing payments. Although the AVU centre may be autonomous, important accounting procedures, such as yearly accounts and auditing, should be undertaken in connection with overall university auditing.

- *AVU student leadership.* Student leadership creates a sense of ownership and ‘belonging’.
- *AVU student association.* This is a good way to foster student discipline and maturity.
- *Plenary meetings.* As an indication of good leadership, supervision and monitoring, it is important for the Director of AVU, course directors, facilitators, and administrators to have joint meetings with students at least twice a month.

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