

Income-Generating Activities in Higher Education: The Case of Kigali Institute of Science, Technology and Management (KIST)

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Abstract

The Kigali Institute of Science, Technology and Management (KIST), Rwanda's first higher education institution of technology, has taken the lead in entrepreneurial activities. In 2002 KIST generated 35 per cent of its budget from its various entrepreneurial activities. By 2008, this figure is projected to surpass 50 per cent. From its inception, it has combined conventional teaching with technology transfer initiatives. Particularly successful have been projects involving renewable energies, waste-water management and food-processing. Products developed have included, for example, low-cost hand- and foot-powered water pumps, rainwater-harvesting systems, a crop dryer that uses either sunshine or biomass (such as rice husks, sawdust or firewood), etc. Using feedback from its community development officers, many of whom are women, KIST has modified simple machines to make them easier for women, trained rural women's groups in business practices, and trains all of its students in basic business skills. KIST's Information and Communication Technology Centre has become the country's second biggest Internet service provider, as well as a major supplier of software and computer training. Another income source is providing paid part-time studies for working adults.

Résumé

Le *Kigali Institute of Science, Technology and Management* (KIST- Institut de science, technologie et de gestion de Kigali), première institution supérieure de technologie du Rwanda, a été la première à mener des activités entrepreneuriales. En 2002, 35% du budget du KIST provenait de ses diverses activités entrepreneuriales. En 2008, ce pourcentage devrait dépasser la barre des 50%. Dès

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le début, l'institut a combiné l'enseignement professionnel aux initiatives relatives au transfert de technologies. Les projets portant sur les énergies renouvelables, la gestion des eaux usées et la transformation de produits alimentaires ont connu un grand succès. Parmi les produits développés figuraient les pompes à eaux actionnées à la main ou par le pied, les systèmes de recueillement des eaux de pluie, un séchoir solaire ou fonctionnant avec l'énergie fournie par la biomasse (balles de riz, sciure ou bois à brûler), etc. Grâce aux rapports fournis par leurs agents de développement communautaire, dont la plupart sont des femmes, le KIST a pu modifier de simples machines en en facilitant l'usage pour les femmes ; l'institut a également formé des groupes de femmes des zones rurales à la gestion ; il dispense également à tous ses étudiants une formation de base en techniques de management. Le Centre de technologies de l'information et de la communication du KIST est devenu le second fournisseur de services Internet du pays ; il fournit également des logiciels et dispense parallèlement des cours d'informatique. L'institut dispose d'un programme de cours payant à temps partiel réservé aux professionnels adultes.

Introduction

Rwanda is a small land-locked country, with a land area of 26,000 square kilometres and a population of about 8 million. It is rated as one of the most densely populated countries in Africa, with the majority of the population living in rural areas (94 per cent). The annual population growth of Rwanda is estimated to be 3.6 per cent. The country's population is relatively young with a high proportion of the population (60 per cent) under the age of 20. Women constitute the majority (54 per cent) of the population and labour force, particularly in agriculture. The Rwandan economy is predominantly subsistence agriculture with 91.1 per cent of the working population (compared to 70 per cent for sub-Saharan Africa) actively involved in the agricultural sector. Only 1.7 per cent (7.5 per cent for sub-Saharan Africa) of the working population is in the industrial sector, while 7.2 per cent (22.5 per cent for sub-Saharan Africa) is in the service sector of the economy (Rwanda Development 2002).

KIST's Role within the Rwandan Perspective

The Kigali Institute of Science, Technology and Management (KIST) is the first technological Institution of Higher Learning to be established by the government of Rwanda. Prior to its establishment in 1997, the country had endured years of economic decline and in 1990–94, war and genocide which claimed many lives, including those of skilled personnel. Human resource gaps were left in both the public and private sectors of the economy.

The 1994 tragedy, coupled with a massive return of Rwandan refugees who had left the country in 1959 and 1973, posed new challenges for the government of Rwanda. With regard to the educational system, Rwandan returnees

had experienced many different socio-economic, socio-cultural, educational and linguistic systems. The government of Rwanda had to put in place new measures to consolidate a more diverse, multi-cultural and multi-lingual population. The government's bilingual policy is one of the measures established to meet this challenge. KIST was established to rebuild the country's human resources in the fields of science and technology for overall economic development.

Problems Associated with Financing Higher Education

General Trends of Financing Higher Education

Over the last decade, there has been continued decline of public funding in developing countries, while the demand for student enrolment continues to grow (KIST 2002–03). The greatest challenge faced by institutions of higher learning worldwide is maintaining and improving the quality of education and continuously expanding enrolment while actual resources available to these institutions are dwindling. For example, the average expenditure per student in a public university in North Africa and the Middle East has fallen from US\$3200 to US\$1900 in the past decade alone. Similarly, in sub-Saharan Africa, the average expenditure per student has declined from US\$6300 to US\$1500 (World Bank 1988:74). As a result, institutions of higher learning have been forced to reduce expenditure, seek new sources of funding and improve the utilization of existing resources. Subsequently, there is a need to change mechanisms, techniques and styles of institutional management to cope with emerging trends in funding systems worldwide.

Financing Higher Education in Rwanda

Problems associated with funding higher education in Rwanda manifest themselves in several areas, some of which are outlined below.

1. There are always competing interests in the national budget for the meagre and often borrowed resources. Rwanda is heavily dependent on donor funds, which very often do not meet the national budget sufficiently. Funding for the educational sector is 15 per cent of the national budget, of which 9.5 per cent is allotted to higher education. Fifty-five per cent of those funds go to student upkeep such as accommodation, food, transport, health and pocket money. Salaries range from \$200 (85,000 Frw) for an assistant lecturer to \$350 (140,000 Frw) for a professor, supplemented by allowances for transport, utilities and housing.

Rwanda has no national association of faculty; nor has concern for a more involved role for faculty been widely expressed. In the absence of an enabling

salary plus other attractive incentives, and considering that there are still undercurrents of instability in the area, brain drain or the vacating of posts by well-qualified Rwandan nationals is the more likely trend.

2. There has always been a tendency to lump general and technical education together, with a larger portion of the budget being allocated to general education at the expense of technical education. The budget allocation for KIST for the last four years has always been based on the average student unit cost (US\$1,310,000) per year.

This budget was calculated without taking into consideration either the student's academic discipline or the institutional orientation. A recent study carried out by the Ministry of Education and the World Bank has indicated that the student unit cost at KIST stands at US\$4,076 while a law and humanities student requires only about US\$1,385 (Sunday-Kayemba and Associates 2004).

Such a gap, which is substantial, can easily compromise the quality of teaching if no intervention measures are also undertaken.

3. Generally, education and training were traditionally considered to be a social service, with less recognition of the fact that sustainable development can be achieved only with substantial investment in human capital.

4. Historically, postcolonial Rwanda did not focus on the development of human resources. For example, until 1994, Rwanda had only one university, the National University of Rwanda. By 1994, when it had been in existence for thirty-one years, the university had graduated only two thousand Rwandans, most of them in the humanities.

Little appreciation for the need to focus on skills development has meant that, in the past, higher education in Rwanda was not prioritised and thus not proportionately funded. Consequently, the country has been largely dependent on foreign expertise to meet its human resource requirements.

Responding to the Funding Challenge: The Concept of Income Generation Employed at KIST

Since 1994, higher education has been on the top of Rwanda's political agenda and also the top priority on the national budget. By 2002, a total of thirteen institutions had been established in the country. Six are government owned while seven are private institutions. KIST is the first technological institute in Rwanda.

The government supports expatriate and local staff salaries, local staff training abroad and a humble investment in infrastructure. However, a budget deficit remains, which must be borne by the institute. Expenses borne by KIST are usually to meet basic requirements in order not to compromise the quality of education. Examples include buying computers, hiring laboratory facilities in

Kenyan universities and subscribing to Internet Satellite Connectivity at an average rate of US\$10,000 per month.

KIST is conscious of the government's limited resources and has undertaken several initiatives to generate income and diversify revenue. Diversification of study programs, introduction of distance learning and fostering closer links with the private sector are some of the efforts made by KIST to ensure that study programs remain relevant to the market. This measure, in return, attracts a diverse range of students.

Such initiatives, coupled with a policy of rewarding innovative staff, particularly those who initiate income-generating activities, has enabled the institute to diversify its revenue while retaining its vision of offering high-quality education. Following are some examples of income generation at KIST.

Information and Communication Technology (ICT) Centre

Driven by the desire to offer high quality IT education as well as to provide basic IT services to the Rwandan community, KIST established its ICT Centre in 1999. Through the centre, KIST has become one of the major Internet Service Providers (ISP) in Rwanda, second only to the national telecommunication company, Rwandatel. The centre provides Internet service for dial-up and wireless connections, sells Internet accessories for both wide and local area networks and operates an Internet cafe. In addition to providing Internet services, the ICT Centre also provides to the public other computing services and consultancies such as: Webpage design and hosting; networking; developing software packages, e-mail and Internet access; secretarial services, etc. The competitive prices offered by the institute make it the best choice for many customers.

The centre is also engaged in preventive maintenance by servicing computer hardware and other electronic equipment. Other major activities at the ICT Centre are: PC upgrading, computer assembling, training personnel and maintaining computers and associated electronic equipment. In a brief period, the centre has expanded to become self sustaining and capable of supporting an ever-increasing number of customers while making a reasonable profit. To further strengthen its competitiveness, the ICT Centre is negotiating a joint venture with Mediapost, an IT private company in Rwanda. The joint business plan includes establishing a private television company, the first ever in Rwanda.

Table 1: Income Generation by the ICT Service Centre in 2002 and Projections for 2003

Operation	Income, 2002 (US\$)	Projected Income, 2003 (US\$)
Internet subscriptions	99,350	145,300
Equipment sales	20,150	45,200
Internet café	24,385	16,800
Networking services	220,000	298,000
Total	363,885	505,300

The ICT Intermediate Skills Training Centre

Rwanda has a shortage of skilled technicians to maintain and repair the growing stock of ICT equipment and infrastructure in the country. KIST has established five state-of-the-art computer laboratories equipped with 170 Pentium IV Compaq computers. With support of the Department for International Development (DFID) in the United Kingdom, the institute initiated and is currently running an intensive training programme for ICT technicians to maintain computing hardware, software and networks. Through partnership with Glasgow Caledonian University (Scotland), specialists are brought in regularly to evaluate the ICT training programmes; and continuous improvements are made where necessary. This procedure translates into high-quality training programmes, which have attracted participants from government ministries, private companies, and the entire Rwandan community. This programme, which was officially launched in September 2002, has, as of May 2003, collected US\$45,608 in revenue.

Students' Portfolios***Fee-Paying Students in Full-time Programmes***

Since the establishment of the institute, there has been substantial growth of student numbers, from 209 students in November 1997 to current (May 2003) enrolment at slightly above 4,000 (Kelly et al. 1989). Growing demand from employers and employees for higher education that will provide professional upgrading, retraining and continuous learning has encouraged the further expansion of teaching facilities.

With an annual intake of 600 students, KIST reserves 100 places for full-time privately sponsored students. This policy has enabled the institute to generate income through tuition fees paid by students.

Table 2: Income Generation from Students' Portfolios

Item	Income 2002–03 (US\$)	Projected Income 2003–04 (US\$)
Registration fees	22,200	25,984
Tuition fees	680,350	715,140
Examination fees	20,210	22,920
Total	722,760	764,044

The Centre for Continuing Education

The Centre for Continuing Education consists of three departments: (a) The Part-Time Studies programme, (b) the African Virtual University (AVU) or Distance Learning Education, and (c) the In-Service Training Programme (see www.kist.ac.rw).

Part-Time Studies

Many employed Rwandans wish to pursue further studies to advance their professional careers but cannot have time off their jobs to engage in lengthy professional study programmes. In response to this need, KIST established the Department of Part-Time Studies, which has well over one thousand self-sponsored evening students pursuing degree and diploma courses under the Faculties of Management and Technology.

In addition, the institute occasionally offers on demand short courses such as basic computer courses, ACCA, CISCO and Microsoft certified programmes. Part-time study programmes have responded positively to community needs at no extra cost to the institute because they are priced at market rates and are therefore self-sustaining.

The In-Service Training (IST)

The main objective of the In-Service Training Department is to enhance human resources for various target groups through seminars, workshops and tailor-made short courses. These courses are provided upon demand and are largely focused on the fields of management, technology, computer skills, food science and entrepreneurship.

Income from the In-Service Training Department is a function of marketing strategies and the realisation of higher business volumes. The income for 2002 and projected income for 2003 are US\$7,744 and US\$41,556 respectively.

Table 3: Income Generation by AVU for 2002 and 2003

Course	Income, 2002 (US\$)	Projected Income, 2003 (US\$)
Short courses	–	6,240
Diploma/degree programmes	–	100,000
Total	–	106,240

The African Virtual University and Distance Learning Education

KIST utilises Internet resources to offer quality distance learning education through the African Virtual University (AVU). The cost effectiveness of this programme is due to its non-reliance on physical human resources. Students interact with instructors through Internet mailings, telephones and fax.

The centre offers short and long courses in the areas of management and technology, normally sourced by the AVU itself. Currently the centre offers degree and diploma courses in computer science offered by the Royal Melbourne Institute of Technology (RMIT) based in Australia and other short courses such as Web Design, JavaScript, TOEFL, etc.

More degree and diploma study programmes are planned for 2003 in collaboration with the Royal Melbourne Institute of Technology. The expected income is summarised in Table 3.

Outreach Programmes***The Promotion of Cottage Industries***

In addition to the academic programmes available to both full-time and part-time students, KIST continues to impart to Rwandan society entrepreneurship and innovation skills that exemplify different, appropriate and innovative technologies promoted by the institute through outreach programmes. The Department of Cottage Industry was established in 2000 with the following objectives:

1. To train and empower as many people as possible in entrepreneurship skills that will enable them develop viable businesses.
2. To serve as an income-generating unit from the sales of manufactured items.
3. To serve as a demonstration unit for students undertaking related technology courses.

The department installed the machinery to train and demonstrate to the community simple technologies to manufacture goods such as wire nails, chalks, candles, paper napkins, plastic conduit pipes, toilet papers, etc. This department is funded through fees collected from the students attending short entrepreneurship courses, normally between one month and one year long, as well as from the sales of items manufactured within the department. In addition, the department offers regular consultancy services to the community, ranging from providing vital information on cottage industries; sourcing equipment; and installing, commissioning and servicing machinery.

A modest income has been generated through the sales of such items and the provision of these services. In addition, the unit serves as an internal training unit in food-processing courses through a food-processing unit. Although the primary objective of this department was not income generating, it has still managed to generate US\$15,000 during the first two years of its existence.

The Centre for Innovations and Technology Transfer (CITT)

In Rwanda, there has never been a culture of income generation within the university undertakings. In 1998, one year after KIST's inception, it received permission from the Ministry of Education to sponsor its first income-generating activity, namely the establishment of a centre for continuing education. Four years later, the National University of Rwanda and the Kigali Institute of Education followed suit. However, since 1999, KIST had innovated other income-generating activities falling within its technological education focus. These include community-based outreach technologies such as waste management, energy supplies, water supply, etc. Such special features are distinctive elements of KIST's identity.

The Centre for Innovations and Technology Transfer (CITT) (see www.kist.ac.rw), which is slowly emerging to be a real centre for the people, is also something of a new experience for KIST. For instance, a group of women from a remote rural area found their way to CITT, explained that they had passion fruit, and requested food-processing technology that could add value to it. This assistance is paid for by the CITT-DFID training fund. Based on feedback from KIST's community development officers, many of whom are women, KIST has designed lighter vegetable oil presses, for example, that are easier for women to use. The officers also work with rural women's groups, helping them improve their businesses with the aid of simple technological improvements. As a result, some groups have started supplying restaurants with fruit juices, dried mushrooms, tomato concentrates, jams, and honey because the introduction of better food-processing devices and techniques have guaranteed more consistent quality.

With Rwanda's economy poorly developed, and few jobs available, the Institute's students also receive training in basic business skills so that they will be better equipped to start their own businesses. Such instruction has not been common in the culture of universities, yet we find it of vital importance in contributing to the nation's economic development.

Following the CITT mission that stresses contributing to the reduction of poverty in the country, the emphasis has been on rural-based technologies including supplying water for irrigation and household use; developing energy resources, waste management, food processing and storage; low-cost housing; and the maintenance of rural roads and bridges. Of these, the fastest growing technologies are those of energy development and community-based waste management.

As noted above, based on careful research to identify the socio-technological needs of rural communities, CITT focused its operations on the following areas:

1. Developing adequate water supplies for domestic and agricultural purposes. CITT has developed and adapted seesaw and treadle pumps that are low cost compared to traditional petrol and electricity primed pumps. Field trials have shown that the pumps are effective in moving water from low levels to uphill points within a head of 9.5 meters, a range that is sufficient for small-scale irrigation and for home use. Women and children can easily operate such pumps. Efforts are underway to introduce hydraulic ram technology for the same purpose.

Similarly, CITT has developed off-the-shelf designs of rainwater harvesting systems that are standardised and suited to household and community needs as an alternative to water piped from public mains. Available sizes of tanks range from 200 to 100,000 litres. Installation costs are incredibly low because the tanks are built mainly of brick with no metal reinforcement except for a few pieces of chicken wire. The institute raised US\$16,000 in 2002, and the projected income for 2003 is US\$30,000.

2. Agro-processing and food storage. KIST has developed a dual crop dryer that utilises sunshine or biomass (rice husks, saw dust, firewood) as a source of energy. The unit can process products like fruits, vegetables and meat, yielding value-added products with a longer shelf life. Another CITT innovation is grain storage bins, designed to improve food storage and enhance food security by ensuring that grain will be available both in season and also out of season when prices are much higher. Projections from these and other related agro-processing projects indicate good prospects for income generation in 2003–04.

3. Alternative energy supply systems (renewable energies). Solar photovoltaic systems have been set up on campus to demonstrate street lighting and other applications that normally utilise electricity. Radios and televisions have successfully been operated by this system. Several households have been fitted with solar lighting systems innovated by CITT.
4. Solar thermal systems. Standard solar water-heating systems have been developed and field tested. Users reported substantial savings in electricity bills and found such systems more convenient as a source of hot water. A double-glazed water heater has been installed in one of the provincial hospitals to provide hot water for the sick. Several other units have been installed in other places in the country. Reducing the cost of inputs to make solar technology more affordable and improving the marketing strategies are some of CITT's current efforts to attract more users.
5. Biogas technology. KIST has constructed several biogas plants in which the gas has replaced slightly more than 60 per cent of the wood normally consumed as fuel. In addition to direct construction works, CITT develops the skills of biogas technicians and artisans through various training courses in the planning, construction and servicing of biogas systems. Constant follow-up in the field is made in order to ensure continued technical support and maintenance of the units.
6. Waste water and solid waste management systems. CITT has developed and installed anaerobic treatment plants for the safe disposal of organic wastes, particularly toilet waste. It is essentially the biogas plant design with enhanced post-treatment and composting provisions. To date three anaerobic digesters of 60, 110, and 550 cubic metres have been installed. The fourth and the biggest digester, which measures 1000 cubic meters, is under construction as of this writing (May 2003).

It is worth noting that the government of Rwanda has been spending over US\$1 million every year to provide wood for fuel in provincial prisons. KIST is constructing bio latrines in those prisons to save government funds and protect the environment. In the process, KIST generates considerable income. Officials at KIST were greatly pleased when the head of state, President Paul Kagame, asked officials of schools and prisons: 'Why are you wasting money with expensive firewood? Why don't you talk to these people at KIST?'

Income generated through the treatment of wastes and the subsequent production of biogas totalled US\$210,000 in 2002 with significant increases expected in 2003, since several projects are underway at this writing.

Table 4: Income Generated by CITT

Product	Income, 2002 (US\$)	Projected Income, 2003 (US\$)
Biogas and waste management units	208,999	404,000
Cook stoves	39,464	661,920
Water solar heaters	3,000	8,000
Water tanks	16,000	29,596
Bread ovens	18,000	14,000
Others*	15,000	25,000
Grain storage/processing	—	86,800
Low-cost housing	—	140,000
Total	300,463	1,369,316

*These other projects include instant showers, training, agro-processing, rural road networks, irrigation water pumps, etc. KIST also has a standing order of supplying improved cookstoves to schools in the country.

7. Improved household and community cook stoves and bread baking ovens. CITT continues to refine the design and manufacturing techniques of cook stoves and bread ovens to attain higher performance and to sustain the quality of every unit thus produced. About 460 improved cook stoves and 20 improved bread ovens have been manufactured and installed in institutions such as schools, prisons, hospitals, orphanages, etc. This area has high potential for generating income, as illustrated in Table 4. KIST's popular bread oven won the first international award on renewable energies in London in October 2001. The stove uses only one piece of wood to bake about 4,000 scones in three hours. Currently, the entire KIST student and staff community is dependent on this oven for its bread supply. Income generated from the sale of bread ovens is about US\$20,000.
8. Animal traction for transport and cultivation. CITT is continuing work in the adaptation and field-testing of low-cost transportation systems in the form of pushcarts and ox-carts. The carts are made of locally available materials and can be fabricated in the villages. Some pushcarts are already

in the field and in operation, but wider popularisation demands hands-on courses plus equipping ex-trainees with basic equipment. This area is still under marketing and has not yet generated any income.

9. Labour-intensive rural roads and bridges. In 2002, three students from the Civil Engineering and Environmental Technology Department pioneered the design and installation of a suspended bridge spanning 45 metres that crosses the River Mbirurume and connects Kibuye and Gikongoro provinces. The previous route of five kilometres was reduced to only 45 metres. Following that, CITT provided consultancy services on improving the access road to Shyira Hospital in Ruhengeri, as well as other road networks in Kibungo Province, an activity that is ongoing. Only about US\$18,000 has so far been generated, but more income is anticipated, once KIST's expertise is better known and appreciated.
10. Low-cost housing. The housing unit has developed low-cost building techniques and methods that provide affordable houses to low- and medium-income earners. Contributing to this initiative's success are skills in the choice and use of stones, the use of stabilised blocks and fired tiles and the use of design optimisation techniques now employed worldwide in the building industry. A structure large enough to accommodate fifty families was set up in Kanombe Military Barracks on behalf of the Ministry of Defence. A total of US\$140,000 worth of work was invested in this cost-effective housing scheme, in exchange for land valued at that amount. KIST would have otherwise had to pay that amount of money to a contractor. More income is expected, since there is already significant appreciation for this technology.

To summarise: The total revenue generated by the Centre for Innovations and Technology Transfer was US\$300,463 in 2002, while an income of US\$1,369,316 is projected for 2003 (See Table 4). It should be noted that CITT did not have a specific budget when it began. It started with nominal funds under various departments. Currently, the centre has attracted funding from the British government through DFID, which has provided a total of US\$1.7 million to strengthen CITT infrastructure, expand production centres, and create more research and development initiatives.

Research, Consultancy and Collaboration with the Private Sector

Consultancy work conducted at KIST has been growing alongside KIST's growth. Major areas of focus include:

1. Cross-cutting studies ranging from commerce and trade, formal and informal sector business growth in the country, infrastructure, a social sector

including education, health (water supply and sanitation, HIV-related studies), etc.

2. Other consultancy projects have been undertaken in collaboration with the World Bank on rural-based water supplies and energy supplies. In these collaborations, KIST has played the role of local consultancy back-up, owing to its capacity in staff and also its ability to provide students trained as enumerators.

These services have served as major income generators. As a result, KIST has done well in partnering, not only with different organisations and local government (province-based) agencies, but also with organisations in the private sector.

In 2002, KIST generated income amounting to US\$132,000, which included research work for Kigali Economic Development Strategy, fees for providing document translations, and other small consultancies. However, much of the business was still in progress by the end of 2002 and would therefore be reflected in the statement for 2003, for which the projected income is US\$174,000.

Institutional Capacity Required to Meet Revenue Diversification Needs

In 2002, KIST's income-generating units (viz., CITT, consultancy work, In-Service Training, part-time studies, and ICT activities) produced total revenues of about US\$1.5 million (See Table 5). Revenues were far below the target, due to low volumes in sales and services. However, projected revenue for 2003 is about US\$3.0 million.

It should be noted that revenue figures are reported as gross. On the actual net level, revenues generated are around 35 per cent of the institute's total recurrent budget. Yet the rapid expansion of enrolment and the demand to ensure the development and maintenance of academic excellence have emphasized the need for more infrastructure and teaching facilities.

KIST is diversifying its financial base through a well-thought-out expansion of income-generating activities. The establishment of the Regional ICT Training and Research Centre, the strengthening and expansion of CITT, the commercialisation of activities, the diversification of programmes to attract private students from both within and outside of the country and the enhancement of consultancy activities are tops on KIST's agenda to enable the institute to generate 50–60 per cent of its total budget by 2008.

KIST's finance department is finalising the transformation process of all income-generating centres into independent cost centres. That way, the expenses of some elements like utilities (water, electricity, etc), which are cur

Table 5: Revenue from Major Income-Generating Areas

Unit	Income, 2002 (US\$)	Projected Income, 2003 (US\$)
CITT	300,643	1,369,316
Part-time studies	722,760	766,064
ICT	363,885	551,000
In-service training	7,744	40,000
African Virtual Uni.	—	106,240
Consultancy services	132,000	174,000
Total	1,527,032	3,006,620

rently borne by the central institute budget, will be transferred to the respective centres. Eventually, it will be easy for KIST to appraise the level of sustainability of such centres based on their real-income status.

In addition, KIST has initiated the ‘graduate employment scheme’ to ensure that KIST graduates start their own businesses and create self-employment opportunities. This scheme, coupled with the Centre for Business and Technology Incubation, which is still in its initial stages of development, will further strengthen the link between KIST and Rwanda’s private sector. This step will ensure the sustainable growth and development of an institute that is responding to the country’s needs.

Conclusions and Practical Advice

Several factors contribute to the establishment of a successful self-sustaining institute of higher education. A few of the most important aspects that KIST has identified are:

1. Developing a positive attitude towards income generation. The idea that pursuing aggressive income-generating activities in an academic setting will compromise the quality of education is not correct. It is actually a wrong conservative attitude. On the contrary, teaching and learning themes should be translated into market commodities and services in order to increase the relevance of the institute’s study programmes.

2. Teaching and research staff should be encouraged—actually, compelled—to relate their research and teaching to tangibles, which should be translated into transferable goods and service.
3. Entrepreneurial culture with subsequent entrepreneurial undertakings should be made a pertinent feature of the institutional set-up whether the university is oriented towards technology or towards the humanities.

There has always been a gap between academic institutions and private-sector undertakings in most of the developing countries. Partnership with the private sector should be a key institutional strategy.

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