

EDUCATION AND TRAINING FOR INFORMATION TECHNOLOGY IN AFRICA

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Abstract: Inadequate manpower has been attributed to be one of the main constraints to the use of information technology (IT) in Africa. A survey of the curricula of 10 library and information science schools reveal that only four training institutions had substantial IT content in their curricula. Two of the institutions run the programme at the master's level while the remaining two are at the bachelor's level.

Two major obstacles identified as likely to militate against the education and training for IT in Africa, are the attitude of information managers towards information technology and the prevalent brain drain to Europe, America and the Gulf, of Africa's best professionals including lecturers skilled in information technology. The study concludes that the various library associations in Africa should attract international funding for library and information science institutions to enable them strengthen this area.

Introduction

Information Technology has been described by Debons (1986) as the technology that augments and supports the human capacity to deal with the environment. Thus technologies that are associated with information system starting with those that enable one to acquire data, transmit data, process data and communicate data constitute information technology. The need to have technologies that will support and augment the human capacity in the field of information cannot be over emphasised if one considers the rate at which information is growing. The growth is exponential, therefore human capacity alone cannot keep pace with the growth. In the industrialised world it has been possible to cope with this phenomenal growth because of the various technologies that have emerged especially those associated with information such as micro processors technology and telecommunications technology. These technologies have enabled researchers and information specialists through on-line system to gain access to information stored several kilometres away. Africa is still to exploit fully this modern technology, even the little information that is produced within Africa constitutes a big problem when it comes to access which

has resulted in many unnecessary duplication of research efforts in several disciplines.

Constraints to the use of information technology (IT) in Africa include, 1) lack of enough resources to purchase IT components 2) inadequate infrastructures necessary to support this technology and 3) lack of adequate trained manpower to use IT. Adequate manpower is perhaps the most formidable obstacle to the use of IT in Africa. According to Alabi (1987) shortage of manpower and lack of continuing education have hampered most of the attempts made at automating library services in Africa.

Except for libraries/information centres of international organisations based within Africa and libraries/information centres with substantial funding from international organisations, most attempts of IT applications have failed. None of the university libraries in Nigeria that have attempted automation since the early 1980's has successfully automated its entire library system. Mohammed (1991) surveyed the automation of academic and special libraries in Nigeria and concluded that it was still a continuous exercise as only few libraries have succeeded in automating some systems in their libraries. Enyia (1991) also examined computerisation in Nigerian libraries and found that only the international Institute of Tropical Agriculture (IITA) has succeeded in automating its entire system. Ubogu and Gupta (1987) survey of the current status of computerisation in 80 libraries, documentation and information centres in Nigeria revealed that only four of the libraries and documentation centres surveyed, had computer installations but interestingly most of the respondents fully appreciated the need to computerize the library system, although a negligible proportion was adverse to it. The same trend is perhaps prevalent in other parts of Africa.

Alabi attributed the failure of most of these libraries to the absence of theoretical frame work necessary to provide a basis for useful application and therefore called for the need to educate future information specialists in IT within the African region. This is because IT experts trained in the industrialised world, where IT infrastructures are taken for granted find it difficult to operate in an African environment where the necessary infrastructure to support the application of modern information technology are lacking. Ubogu and Gupta also identified education and manpower as one of the constraints of computer application in Nigeria.

The main objectives of this study are to identify information/library training schools in the English speaking sub-saharan Africa that cover a substantial IT content in their curricula, based on the course content for IT recommended by the Institute of the Information scientists in 1988 and also to ascertain the proportion of IT courses

covered and finally to recommend how the education and training for IT can be enhanced in Africa.

Education and Training for IT in Africa - A State of the Art

Up till the late 1980's there was no institution for education and training for IT in Africa, what existed in most curricula was largely introductory computer technology. Thus up to that time, the few information professionals in Africa with skills in information technology were trained abroad. However as information continued to expand not only in the developed world but also in Africa coupled with the fact that access to the literature in Africa was becoming a difficult task, it was realised that in Africa were to cope with information explosion then the need to train people locally to effect the necessary changes will constitute a crucial phase in the application of IT in Africa.

The first attempt at addressing this issue was in 1983 when the International Development Research Centre (IDRC) based in Canada and the Unesco made an exploratory tour of eight potential centres for the training of information professionals with skills in IT in six countries of Africa (Ethiopia, Ghana, Kenya, Nigeria, Zambia and Zimbabwe). The aim of the exploratory visits was to identify a training institution in Africa for the purpose of training information scientists locally in Africa. At the end of the visits two schools were recommended as training institutions for information specialists with IT component. These are the Africa Regional Centre for Information science (ARCIS) located in Ibadan, Nigeria to cater mainly for West African students and the School for Information Studies for Africa (SISA), Addis-Ababa, Ethiopia focusing mainly on the Eastern and Southern African students. The two schools admitted their first set of students at the beginning of the 1990/91 session. Both are postgraduate programmes, while the duration of ARCIS programme is 18 months, SISA programme lasts for two years. On graduation students are awarded a master's degree in information science. The first set of graduates of the two schools has since been produced. Meanwhile the Faculty of Information sciences, Moi University, Kenya admitted its first set of students at the undergraduate level in 1988. Some of the students specialise in Information Technology and the school has also produced its first set of graduates.

At the conference of the Nigerian Library schools held in Ibadan in 1988, one of the resolutions of the conference was that library schools in Africa should include substantial content of IT in their curricula. It is therefore not surprising that the Department of Library Studies, University of Ibadan, Nigeria restructured its curriculum to include the IT component hence the name of the Department was broadened to the Department of Library, Archives and Information Studies and it

extended its one year master's programme to 18 months. This was to ensure that adequate period of time was devoted to the IT courses. The same trend was also observed at the Department of Library studies, University of Botswana, when according to Havard-Williams (1989) the curriculum of the Department was restructured to include IT courses and the name of the Department was changed to the department of Library and Information Studies. The Bachelor's programme of the Department that took off in the 1990/91 session consequently had substantial IT content. Thus in a way, formal training in substantial IT courses began in the English speaking sub-saharan Africa in the late 1980s and early 1990s.

Even though up to the late 1980s there was no institution for the training of information professionals in IT, never - the - less continuing education in this area was addressed. The Pan-African Development Information System (PADIS) of the United Nations Economic Commission for Africa based in Addis-Ababa, Ethiopia organised a series of courses on IT in several parts of Africa. The use of IT in information retrieval system was the focus of PADIS hence it concentrated on PADIS methodologies and CDS/ISIS which is a database management system. The German Foundation for International Development, DSE, in collaboration with the Department of Library and Information Studies, University of Botswana also incorporated IT courses in their annual workshops for librarians in Eastern and Southern Africa in 1989, The CDS/ ISIS workshop annually held for participants from developing countries in Berlin, Germany was also formally transferred to the University of Botswana with effect from 1991. The Consultancy unit of the University of Ibadan, Nigeria through the Information Technology Application and Research Group (ITARG) also started organising different courses in IT for information professionals in Nigerian in 1988. Such courses range from largely introductory courses in IT to database management systems such as Dbase III plus and CDS/ISIS.

Methodology

In order to attain the stated objectives, the curricula of 10 library and information science schools with bachelors postgraduate diploma or master's programmes were scrutinized based on the IT module of Information Science as recommended by the Institute of the Information Scientists (1988). The Institute had recommended four modules to be covered by any training institution seeking its approval. These are the core area of information science, information management, information technology and ancillary skills.

Under the Information Technology module, four broad areas are outlined. These are:

1. Computer systems: hardware and software
2. Telecommunications
3. Information technology applications
4. Environment (health and safety, ergonomics, data protection, copyright, piracy, encryption etc.)

The institute model was used because the assumption was that a training institution that covers a substantial proportion of the IT module of the Institute of the Information Scientists will produce graduates who will have enough skills in IT and will be able to function effectively in the African environment. Apart from scrutinizing the prospectuses of the schools surveyed, visits were made to some of the schools to ascertain the existing facilities used for teaching IT. Some lecturers teaching IT were also interviewed. However the principal instrument for collecting the data was an examination of the prospectuses of the training institutions.

The curricula examined were those of the three oldest library schools in Nigeria, Ibadan (masters), Zaria (masters and bachelors), Maiduguri (bachelors), and the newly created African Regional Centre for Information Science (masters) located in Ibadan, Nigeria. Other library schools examined were those of Botswana (bachelors and postgraduate diploma), Ghana (postgraduate diploma), Moi University Kenya, (Bachelors) Uganda (bachelors), Zambia (bachelors), and the School of Information Studies for Africa (SISA) (masters) Addis-Ababa, Ethiopia.

Results and Analysis

According to Table 1, the survey shows that only four library/information science schools had substantial IT component courses in their curricula. Only two of the four schools are at the master's level (SISA and ARCIS) while the remaining two are at the bachelors' level (Moi University and Botswana). Table 1 shows a list of the schools identified and the proportion of IT courses covered in their curricula. Surprisingly two of the schools surveyed (Ghana and Zambia) have no IT courses in their curricula. ARCIS, SISA and Moi University have their computer laboratories within their buildings thus they have unfettered access to computers and other information technology equipment. The same is true to a large extent of Botswana students., although the Department has not got a computer laboratory within its building due to lack of space, the Department has 10 workstations located in lecturers offices which students have access to, most of the times. There is

Table 1

PROPORTION OF IT MODULE OF THE INFORMATION SCIENTISTS COVERED BY
TRAINING INSTITUTIONS IN AFRICA

Training Institutions	IT MODULE COURSES													Number of Courses	Percentage
	Introduction to Computers	Software packages	Programming	Data structures	Telecommunication equipment	Communication technologies	Networking	Information retrieval system	Automation of libraries	Office automation	Data protection	Privacy & copyright	Information Environment		
MUI UNIVERSITY (BSc)	X	X	X	X	X	X	X	X	X	X	-	-	-	9	75.0
IBADAN (M.L.S.)	X	X	-	-	-	-	-	-	X	-	-	-	-	3	25.0
MAIDUGURI (BLS)	X	X	-	-	-	-	-	-	X	-	-	-	-	3	-
ZARIA (BLS) {MLS}	-	X	-	-	-	-	-	-	-	X	-	-	-	3	-
ARCIS (M.Inf.Sc.)	X	X	X	X	X	X	X	X	X	-	-	-	-	9	75.0
SISA (M.Sc)	X	X	X	X	X	X	X	X	X	-	-	-	-	9	75.0
BOTSWANA (BLS) {PGDL}	X	X	X	-	-	-	-	X	X	-	-	-	-	6	50.0
GHANA (PGDL)	-	X	-	-	-	-	-	X	X	-	-	-	-	4	33.3
UGANDA (B.A.)	X	X	-	-	-	-	-	-	-	-	-	-	-	3	25.0
ZAMBIA (B.A.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

also a university wide computer laboratory for all the students which can be booked anytime especially during the weekends. Ibadan used to have only, one Hewlett Packard desk computer but efforts are being made to have a computer laboratory. This has reached an advanced stage. Thus it is believed that training institutions will only be able to teach IT courses effectively when they have the equipment as part of their facilities and not having to share the computer facilities available to the whole university system. Table 2 reveals that most of the schools have introduction to computer technology, soft ware packages and automation of libraries in their curricula while none of the school cover office automation, data protection and information environment.

Table 2

Rank Order of IT Module Covered by Training Institutions' Programmes

N = 12

IT Courses	No of Training Institutions	%
Introduction to computer	9	75,0
Softwarte packages	9	75,0
Automation of libraries	9	75,0
IR system	5	41,7
Programming	4	33,3
Networking	4	33,3
Data structure	3	25,0
Telecommunications	3	25,0
Communications technology	3	25,0
Office automation	-	-
Data protection	-	-
Information environment	-	-

The Future of Education and Training for IT in Africa

The establishment of the two postgraduate schools in Information science in Africa currently being funded by IDRC and Unesco, the Faculty of Information Sciences established at Moi University Kenya, and the strong IT component of the Department of Library and Information Studies, University of Botswana have made the education and training for IT in Africa a reality. One can therefore make an

educated guess that a sufficient number of information specialist with skills in IT will be produced before the year 2000. These specialists would have been trained in an African environment and will be academically and professionally ready to function in an indigenous environment. This will hopefully facilitate the automation of the various library services in Africa.

The future of education and training for IT in Africa is however very dicey. There are some obstacles that may hamper the training. The major constraints are the attitude of some information managers towards new information technology and the present brain drain of skilled manpower in Africa to the Gulf, Europe and America.

Most of heads of libraries and information centres in Africa were trained in the old traditional librarianship and some of them find it difficult to adjust to the new trend. While a negligible proportion of them are ready to imbibe the new culture the majority are adverse to it. Thus a situation where most of the graduates will not be easily employed on graduation cannot be ruled out since the environment conducive for the practice of the new acquired skills will be absent in the various libraries and information centres. Perhaps a more potent obstacle is the prevalent brain drain of Africa's best professionals to other countries in search of greener pastures. Only a negligible proportion of lecturers in the various library and information schools are adept at information technology and they were all trained in the industrialised countries of Europe and America hence they are marketable anywhere in the world.

While the first constraint of the attitude of library and information managers can be changed by exposing them through continuing education to the various aspects of IT, the question of retaining and attracting lecturers in IT in Africa will constitute a major problem for a long time to come. In spite of these formidable problems, it is believed that IT will soon become a major component of the curricula of most library and information training institutions and it will be offered at all levels therefore ensuring that there will be a constant supply of graduates who will function effectively in the African environment. The fact that the education and training for IT in Africa has commenced in a step in the right direction. All it behoves on the various library associations in Africa is to canvass for international support and funding for these training schools already identified. This will strengthen the various programmes especially in the areas of equipment and other resources. Most of the training institutions still depend on the university wide computing centre which students have to share with students doing other programmes. This obviously prevents unfettered access to the computers. It is hoped that most of these institutions in the near future will have their own IT laboratories where they will have unrestricted access.

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