DEVELOPMENTS IN INFORMATION TECHNOLOGY (IT)
TRAINING FOR LIBRARIANS AND OTHER INFORMATION
MANAGERS IN KENYA

Jacinta Were

Introduction
Evans E. Woherem states that “One reason for the non-successful implementation of IT in many developing countries is lack of skilled IT personnel”. This is true of Kenya as well. The baseline of the problem has been lack of IT training programs on the local market.

Until recently, Kenyan Information managers (librarians, documentalists, archivists, etc.) had to attend oversees universities and colleges on overseas scholarships for their training needs. No such courses were available locally. However, the last few years have been accompanied by serious setbacks in the provision of such scholarships. As a result, the Kenya Government has focused on developing courses to cater for the information sector locally. Consequently public universities, polytechnics and other colleges now offer courses at various levels for librarians, documentalists, archivists and other information workers. The available course programmes at these institutions cover a great deal of Information Technology.

This progress has resulted overall in a positive development of information centres. With the availability of trained information managers, organizations are now encouraged to meet their own information needs by setting up in-house resource centres, which increasingly use computers in information processing.
An overview of the current IT situation
The term “Information Centre” in this context covers:

- Libraries: Academic • Public • Private • Special • School libraries
- Documentation Centres
- Archival Centres
- Resource Centres
- Information Centres

All these terms have been used by various organizations in Kenya to refer to a collection of organized information resources e.g. books, periodicals, audio visual material, electronic databases, and others.

The use of computer technology in information handling in Kenya has certainly made a breakthrough. Since my survey of 1989, more and more information centres in Kenya have adopted computer technology in the management of their information systems. In 1989 there were about 30 libraries and documentation centres in Kenya using computers. This figure more than doubled in the next four years. A lot of them are Non-Governmental Organizations (NGO’s). This development can be greatly credited to the promotion of the Unesco software micro CDS/ISIS in Kenya. CDS/ISIS, being available free of charge to non-profit organizations of Unesco member states, has greatly eased the tight budgets of many institutions, enabling them to initiate use of computers. With CDS/ISIS most organizations are left with only the hardware costs to cater for.

The use of IT in information centres in Kenya is however concentrated in urban areas (major cities and towns). The rural areas still remain undeveloped even in traditional methods of information processing. The discussions contained in this chapter are therefore based on developments in urban areas especially the capital city of Nairobi.

Hardware
A recent survey revealed that microcomputers are the only type of computer hardware used in information centres in Kenya. Most of these centres are small in size, both collections and number of users at any time. All they need are stand alone personal computers (PCs) to manage their systems. More-
over, most of them rely on donor funding and microcomputers are favoured as being less costly for donor funded projects.

Microcomputer systems are cheaper and also easier to manage in terms of installation, maintenance and operational controls. Such systems are now as powerful as a lot of minicomputers in terms of speed and processing power. They are therefore as able as their counterparts in accommodating the work loads of various organizations. For this reason, the Kenyan information sector is adopting microcomputer-based technology.

Large information centres such as university libraries, Kenya National Archives and Documentation Services (KNADS) and Kenya National Library Services (KNLS) house large collections. They cannot effectively operate on individual stand alone PCs and require complex computerized network environments to operate efficiently. Such installations are costly and cannot possibly be funded from the national budget. This problem has hindered progress in the use of IT in national universities. They continue to lag behind in this area. The general trend however, even in these libraries, is to use microcomputer based network systems.

The University of Nairobi Library is currently using a microcomputer network system whose storage capacity is far less than what is really required to accommodate the number of records (over 500,000 volumes) of books and periodicals. The system was a British ODA donation. Plans are underway to upgrade to the required capacity through a further donor funded project.

Moi University Library has developed a fully integrated system running on a network of microcomputers. The rest of the universities are moving through the needs assessment and approval stage, and coming down in favour of similar microcomputer-based systems.

Kenya National Archives and Documentation services is currently using stand alone PCs for information storage and retrieval. These however do not meet their needs. According to a feasibility study done in 1991, KNADS requires a microcomputer network system of over 400 MB hard disk. Plans are underway to implement the project on donor funds.
Software
Library software development in Kenya poses a very exciting profile. As late as 1992, it was a common phrase to state that library software is not available on the local market. This is no longer the case. A variety of library software packages have hit the local market within recent years. It has become more and more difficult for information workers, especially documentalists to choose from what is available locally. Even the local computer industry has taken a historical step of venturing into library-based software packages.

The most commonly used software packages in Kenyan information centres include:

- CDS/ISIS (free Unesco software)
- Bibliotech (local)
- SLS (locally supported)
- In-Magic (Imported)
- Pro-Cite (Imported)
- Tin-Lib (Imported)
- DATA-TREK (Imported)

Micro CDS/ISIS
The Unesco software micro CDS/ISIS is still the leading software used in Kenyan information centres. A major reason for its popularity is its availability at no cost. CDS/ISIS has however other advantages over its counterparts. Support and training is easily available locally through the user groups and distributors. It is also a very powerful software and very flexible. Furthermore, development of the package in recent years has been very encouraging. In March, 1993 Unesco came up with version 3.0 which for the first time was a network version. By the end of the same year version 3.06 was produced and subsequent updates and extended developments have included a circulation module, the lack of which was for many years a major limitation of the program.

Bibliotech
Bibliotech is a library software manufactured by a Kenyan computer firm called Integrated Systems. It is more of an inventory system. A major advantage of
the software is that it can be customized to the organization's needs. It is also easy to use and is very user friendly. The package is integrated with circulation, cataloguing, serials and acquisitions all in one module. Bibliotech however can handle only small libraries. It is very ideal for commercial set ups.

SLS
Smart Library System (SLS) is a commercial package which is supported and marketed by a local firm. It has very strong circulation features and is compatible with micro CDS/ISIS, a factor which is increasing its popularity on the Kenyan market.

Pro-Cite
Pro-Cite is a textual database management system that is also being taken up in the country. It is now marketed and supported by a local firm. Pro-Cite is another very user friendly package and easy to use. It is however not as flexible as CDS/ISIS and others.

TIN-LIB
Tin Lib is currently viewed by university libraries as a solution to their needs. It is a fully integrated system with all the modules fully developed independently of each other. The package can run under both stand alone PCs and network environments depending on the level of installation. Tin-Lib however is an imported software without local support. This poses a major problem to the would-be users. At the time of writing it was used by the British Council Library and Moi University Library.

MINISIS
Recently IDRC introduced the micro version of their MINISIS software; fairly powerful and easy to use, with current facilities like windows. It could become a serious rival to CDS/ISIS.

Kenya indeed needs to boost its IT training facilities to cope with such developments.
Levels of IT training
The current development of IT applications in information centres has been facilitated by the increased awareness among information workers of the value of information technology to information processing. The developments above reflect increased rate of computer literacy supported by the availability of IT training facilities in the country.

Training for librarians and other information managers in Kenya can be grouped into two categories:

1. Formal training
   - Certificate level
   - Diploma level
   - Post-Graduate Diploma level
   - Masters level

2. Informal training
   - Computer training colleges
   - In-house training
   - Software user-groups

The formal training aims at producing professional and paraprofessional information workers. This category caters for librarians, archivists and documentalists. It also covers desktop publishing and record management. IT training for information workers in Kenya cannot be discussed in isolation. It is usually part and parcel of the Information Science curriculum offered at various training institutions.

Paraprofessional level consists of the Certificate, Diploma and Bachelor of Information Science courses. These aim at training assistants in information centres in basic concepts of information management. The IT component in these courses provides computer literacy to the paraprofessional staff, enabling them to assist technically in computer sections of the information centres where they work. It prepares them to customize their qualification to the organization’s needs through further training.

The professional level of training comprises Masters in Information Science. A Postgraduate Diploma in Information Science is not currently offered anywhere in Kenya. Masters programmes are offered by Moi University and Kenyatta University. These two institutions have strong IT programmes
that aim at producing database managers. Except for university training, all other colleges and polytechnics adopt the curricula prepared by the Kenya Institute of Education (KIE).

At an informal level, there are several computer firms that offer computer training at various levels. This is heavily supported by the in-house and user-group training programmes. These types of IT training options are open to all categories of information workers.

Certificate course
The Certificate Course for information workers is offered at the Kenya Polytechnic, the Kenya School of Professional Studies (SPS), and Sigalagala Polytechnic.

It is a one year programme offered on part-time basis at the Kenya Polytechnic. SPS and Sigalagala Polytechnic offer the course on full-time basis. Entry qualifications is ‘O’ level (8-4-4) with a minimum aggregate of C grade or the equivalent.

The Certificate Course does not cover IT applications. Students graduating with a certificate therefore have to look elsewhere for IT training. A computer is a tool to enhance our day to day operations. To be able to use computers effectively one has to have the basics of a particular profession. For this reason, it has been found inappropriate to introduce IT at the certificate level. It is recognized that this group requires basic concepts of managing information first before they can apply computer technology to the process.

Diploma in information science
The approved institutions for Diploma in information science course are as above, the Kenya Polytechnic, the Sigalagala Polytechnic, and the Kenya School of Professional Studies.

The general objectives of the course are to enable students to:

a) Identify and understand the operations of different types of information systems and services.

b) Understand and apply information technology techniques in library, archives and other information systems and services.

c) Identify, store and care for information resources,
d) Organize, facilitate, retrieve and disseminate information.

e) Apply management principles in the administration of libraries, archives and other information systems and services.  

To qualify for this course a student must have as a minimum ‘0’ levels (8-4-4) with an aggregate mark of a C+ or the equivalent.

The Diploma Course is a 3 year full-time course with extensive period on field attachments. The programme covers a great deal on IT. According to the KIE syllabus, the general objectives of the IT component are to ensure that the students can:

a) Demonstrate an understanding of the applications of information technology in libraries, archives and other information centres.

b) Operate safely both electrical and electronic equipment used in libraries, archives and other information centres.

c) Demonstrate care in handling information technology equipment and materials.

d) Use computerized databases.

The core curriculum offered for the course covers such topics as: Introduction to computers; Hardware and Software; Introduction to programming; Data Processing; Database management; CD-ROM technology; Data communications; Computer security.

The practical sessions involve hands-on practice on the machines and therefore require a well developed computer laboratory, which has been planned to facilitate the teaching of IT at the Diploma level.

The course, as described above, is fairly strong covering the major components of computer technology. Students graduating from the Diploma course have the capability of assisting productively in a computer section of any information centre. They can be used to enter data, to train others, and in the maintenance of developed databases.

Bachelor of Science in Information Science

B.Sc.(Information Science) is an undergraduate course currently offered only at Moi University, having started in 1989. This programme is perhaps the strongest in IT available at the moment. It is backed up by a strong Information Technology Department and well equipped microcomputer laboratory.
The qualifications required for the course are an '0' level certificate with normal university entrance requirements. The latter differs according to performance per year. Apart from the school leavers, the faculty gives a chance to a small percentage of practicing library assistants. Duration of the course is 4 years with 3 months field attachment.

The curriculum ensures that all students are exposed to IT applications at the basic level during their first and second years of study. Included in topics covered in the first year are: *Introduction to computers; Hardware; Software; Introduction to programming; Software packages – Word-processing – Spreadsheets – DBMS; Database Management; Library Software; Telecommunication*

The syllabus for the 2nd year course includes: *Software packages; Database management; Automated indexing; Knowledge-based systems; Management information systems; Telecommunications*

In their final year, the students are allowed some specialization. They are encouraged to study to a greater depth an area of their choice. The options available to students include: *Publishing and book trade; Information Technology; Librarianship; Records management.*

The IT component at this level covers advanced features of information technology such as: *Management information systems; Information systems design; Evaluation of information systems; Hardware/Software selection; Database construction and management; Advanced information retrieval; On-line searching; Intelligent systems; Telecommunications.*

The graduates of this course are able to manage a small automated information centre on their own. They also can assist in computer sections of large automated information centres. To some extent they are able to:

- Plan for library automation
- Design and develop databases
- Evaluate software packages
- Work as database managers
- Undertake trouble shooting.

Interviews with employers revealed that Moi graduates are quite competent in information technology and other areas of library management. Most of the NGO's are using them to staff their resource centres.
Masters in Information Science

Moi university programme

Moi University recently introduced its Masters programme in information science, but the unfortunate shortage of scholarships delayed its take-off in the 1994/95 academic year. The curriculum for the programme includes an IT unit entitled Automation of libraries and information centres. The aims of this unit are stated in the student’s handbook as follows:

- To introduce students to the range of computer applications in libraries and information centres.
- To equip students with training needs and specific methods of analysis and systems techniques used in libraries and information centres to enhance information provision.
- To introduce students to the use and design of systems to aid management decision making in all types of organisations, the appropriate use of the supporting technology in this area of information management, and relevant methods of analysis and systems design.

According to the stated objectives of the course, the student should, on completion be able to:

- Identify, select, evaluate and procure the relevant computer hardware and software to automate housekeeping and in-house information applications for libraries and information centres.
- Carry out needs assessment for libraries and information centres using appropriate scientific methods and write proposals for the acquisition of computer-based library systems.
- Design, implement and manage computer-based databases, using one or more selected database management systems or information retrieval packages.
- Initiate and implement productive management change.
- Identify the needs and opportunities for automation and review alternative strategies;
- Keep abreast of current trends in library automation and information technology products, and be able to appropriately integrate IT in an organisation's information structure.

The programme covers: Introduction to computers; Use of computers in libraries and information centres; Project life-cycle; Planning and management of
change; Management information systems; Software and hardware identification, evaluation and selection for library applications; Data communication and computer networks; Data protection and security; Current trends in library automation; Computer industry and market in Kenya.

The emphasis on IT at Masters level must be on practical sessions. It therefore requires a lot of preparation in terms of training facilities and staffing to ensure that the course produces competent graduates to face the existing market with confidence. The success of Moi University in this course is vital to boosting the IT development of Kenya, by resolving over time the staffing problems facing IT training institutions. As implied by the course objectives, aims and topics, students graduating from the programme will be qualified to teach IT at any level.

Kenyatta University Programme
Kenyatta University (KU) offers information science at Masters level. This programme however differs from the one at Moi. Whereas Moi has a Faculty of Information Science and offers a full degree in information science, Kenyatta University still operates at departmental level. Its department is still within the faculty of Education and the Degree offered, Masters of Education (M.Ed) in Information Science, is part of the Education degree. The KU programme has grown over the years, having started as a unit within the Faculty of Education. Besides information science, the students were then required to do other subjects in Education. In 1993, the department received its full status and has subsequently focused fully on information science, planning to develop into a full Faculty.

The KU programme is a two year course with field visits and attachments. For students to qualify for this course they must have a first degree and university entry qualification for a Masters Degree. The programme has IT component. In the first year the students take Library Automation I as one of their compulsory courses, during which they are given a general introduction to computers covering the following topics: Introduction to computers; Historical development; Computer hardware; Computer software; Types of computer systems; Types of programming languages; Principles of computer applications to information management; Batch and on-line processing; Telecommunications.
The topic on software covers: MS-DOS; Word processing; Spreadsheets (general); DBMS (general)

The 1st year programme aims at introducing students to computer processing in general. It mainly focuses on the capabilities of computers in processing information and comprises theory and practical sessions.

At the end of the course the students are able to:

- Operate microcomputers: Switch on/off; Connect and disconnect power; Handle diskettes properly; Operate printers; Computer security.
- Use MS-DOS operating system.
- Use Word processing packages.
- Identify Spreadsheets program and explain functions.
- Identify DBMS and explain functions.

The first year course prepares the students for a second phase in IT applications in their second year.

The second year course, Library Automation II, is a more advanced course. During this period the students focus more on IT applications in libraries and other information centres. The course topics include: Automation in information management; Planning and implementation; Feasibility study and systems analysis; Options for automating; Computer-based information retrieval and services; Batch and on-line searching; Database management – Design and construction – CDS/ISIS; Information networks

The second year course aims at producing database managers who can prepare proposals, carry out feasibility studies, carry out systems analysis and prepare computer specifications for any specified library. They are capable of planning for automation for resource centres.

Kenyatta University had yet to develop a computer laboratory to strengthen the practical part of this course and plans were underway to develop such a laboratory.

Commercial colleges
Apart from the courses available at the formal academic institutions in Kenya, librarians and other information workers can get IT training at the various computer training institutions which operate commercially. While commercial
colleges offer courses in computer science, their programmes are not related to libraries or any other resource centre. Information workers taking such courses have to find a way of relating it to their area of work.

Most of these colleges offer computer courses in basic software packages. Included in the courses offered are:

- Introduction to computers: Hardware • Software • MS-DOS
- Word-processing: WordPerfect • WordStar • etc.
- Spreadsheet packages
- DBMS
- Desktop Publishing
- Others

One can choose to take any of the listed courses which are offered as different units. The limitation of this training option is the high cost involved. Each topic costs a minimum of US $75. It is therefore fairly expensive through this option to complete a full course covering all units.

**User-Groups**

Information workers in Kenya have also adopted the option of providing technical support to each other through user groups. Users of the same package help each other in technical support and in training. By sharing their technical experiences they are able to learn from one another.

The users of micro CDS/ISIS have formed a user group called KENISIS to give each other technical support and offers courses in using CDS/ISIS. As mentioned earlier the majority of information centres use it and it is a recognised key note to IT applications for many Kenyan information workers.

**In-house training**

On-the-job training is one of the most effective methods of providing computer literacy to staff in information services. This type of training bears fruits immediately because it is tailor-made to the needs of the organization. In-house training often focuses on the software packages being used by the library. This is an important factor when considering the relevance of a course to the needs of the organization.
Many institutions in Kenya are using this method to train their staff. The trainees are also given an overview of computer operations and in particular the operating system being used. The University of Nairobi Library for instance, has a strong in-house training programme for the staff who may be deployed to the computer section. Kenyatta University also has a computer literacy in-house programme for staff.

The most effective in-house training programmes for IT are provided in the private sector, especially in such international organizations as ICRAF, IDRC, ILRAD. People working in these institutions get very good exposure to IT applications and become very competent in the practical aspects of IT. They however miss out on the theory part which forms an important part of the IT requirements.

ESAMI Management Courses
The Eastern and Southern Africa Management Institute (ESAMI) in Tanzania plays the role of a backup institution to Kenyan IT training programmes. It offers professional courses to staff on management levels. The courses last between three and six weeks. One of its most popular courses is Microcomputer Database Management Systems, which has a large component on software packages for libraries and information systems. The main library software used in the training is CDS/ISIS.

The ESAMI course covers basic concepts of computer applications for information management. The main topics covered are: Introduction to computers; MS-DOS; CDS/ISIS; dBaseIII+; Data processing

Participants receive a very strong introduction to computers. The micro CDS/ISIS component is comprehensive and very practically useful to the librarians and other information workers who take the course. In addition ESAMI offers an advanced course in micro CDS/ISIS for two weeks as a follow up to the first one

University of Botswana
The University of Botswana is yet another backup institution to Kenyan IT training institutions. It offers courses in information science at different levels
which have strong components on IT with the main focus on micro CDS/ISIS. It offers a two-year full time diploma course for library assistants.

Botswana and ESAMI offer cheaper alternatives to oversees training. Kenyan institutions have taken advantage of this and more and more staff are being sent down to Botswana for the Diploma course.

Staffing
Lack of qualified staff remains a serious problem to the teaching of IT in all Kenyan training institutions for information science. Teaching of any computer subjects requires familiarity with the structure of computers and their programming. This knowledge is acquired only through the study of computer science as a subject. To teach IT effectively in Information Science schools therefore one requires graduate qualifications in both computer and information science at degree levels. The computer knowledge has to be backed up by extensive practical experience to enable the lecturer to handle the practical sessions with confidence.

This combination is rare and difficult to achieve. Many librarians in Kenya and elsewhere are still reluctant to get involved with computers. They are happy being librarians and they do not want to go a step outside their traditional operations and study computer science, a subject considered too technical to crack. The computer experts on the other hand do not find librarianship a very lucrative area and they are therefore not very keen on study-ing the subject.

Until comparatively recently (1991) Kenya had only one person (this writer) with the two qualifications at degree level. At their initial stages most of the training institutions turned to this one person for part-time teaching, who also played a major role in the design of curricula for most of the training institution in the country. At the time of writing the statistics of qualified personnel in the country stood at only four. On the whole, teaching institutions have relied heavily either on librarians who have some working experience with computers, or on computer experts who make some efforts to understand basic concepts of library processing.

My recent survey showed that polytechnics and other colleges still rely on this category of lecturers. Universities on the other hand are making vigorous
efforts to get lecturers with the required qualifications. They are also moving
to develop their own staff to the required level. Moi University decided on
the option of employing a computer expert whom they have since trained in
basic information science concepts. Kenyatta University on the other hand
has relied on part-time lecturers who have the right qualifications.

This problem should be curbed soon by the out-coming graduates of
Masters programme at KU and Moi University. IT programmes at both insti-
tutions are fairly strong. Graduates of both institutions will therefore form a
strong IT teaching group.

Relevance of IT curriculum
Seth Manaka states that, "...Africa has adopted models of former colonial
masters ... an effort is now being made to adopt these alien educational sys-
tem to national needs". The IT curricula in Kenyan training institutions are
fortunately not alien. The syllabi were designed by Kenyan information experts
who carefully tied them down to Kenyan needs and to the available facilities
in the country. The curricula are occasionally revised to accommodate new
changes and additional needs.

The Kenyan computer industry is quite competitive with a wide variety of
recent technologies including Electronic Mail, CD-ROM. The IT syllabi in
all the institutions have taken care of these developments; programmes focus
on software used on the local market, and CDS/ISIS, which is a leading package
in Kenyan information centres forms the corner stone in software topics of
IT curriculum in every training institution. The teaching also focuses on
microcomputer database management systems, which is the main com-
puterization technic in Kenyan information centres.

Factors affecting progress in IT training
With all these openings Kenya cannot complain about lack of training facilities
for IT personnel. Yet according to the known statistics not many people have
been trained in this field especially at the higher level. Qualified personnel in
Kenya with both information Science and Computer Science at degree level
are few. Several factors have and continue to contribute to the slow rate of
progress in the staff development in the area of information technology. These factors are discussed below.

Financial
Insufficient funds is still a major obstacle to staff development projects in Kenya. Public institutions continue to find it expensive to sponsor their staff to further training. Thus enrollment is greatly affected by shrinking budgets.

Staffing
Poor staffing as a problem in IT training institutions is already discussed. This problem affects the quality of graduates at the paraprofessional level.

Training Facilities
Lack of adequate training facilities remains a disturbing factor to the teaching of IT in Kenya. Such courses require an up to date well equipped computer laboratory, a resource that is absent from most training institutions due to limited budgets. Those that manage to set up a computer laboratory have difficulty in upgrading them and they continue to operate on obsolete machines.

Employment Facilities
University and public libraries as well as KNADS are the major employers of information managers in the country. Unfortunately, these institutions do not yet have adequate computerized services to warrant employment of IT trained personnel. Those who end up in such institutions do not find a matching challenge in their work. This problem tends to throw a shadow on the decision making strategies of some students when enrolling for information science courses.

Future Development
The information sector in Kenya is experiencing a rush in the use of computers in information processing. Libraries, archives and documentation centres are greatly affected by this development trend. Soon librarians, archivists and documentalists who qualify without IT knowledge will have no place in the field.
The future quality of IT training in Kenya will depend on the realization of:
- Training institutions of the role of IT in information processing
- Employers that IT is the way forward
- Government that information is the key to development.

Lack of realization that information is a priority to development projects is a problem in developing countries. If this fact was appreciated by policy and decision makers, information managers would be more effective. This has not been achieved in most African countries. The shrinking budgets could easily accommodate IT projects if public institutions got their priorities right.

African countries have yet to learn that information is power, that information generally is the key to development. They have to learn that information is a priority. They have to invest in the collection, organization and dissemination of information. Hence they have to support training programmes for information workers. As long as information continues to be accorded low priority in development plans, Africa will continue to stall in mid-stream as regards technological development.
References


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