

**A COMPARATIVE STUDY OF
CDS/ISIS AND INMAGIC
IN RELATION TO MANIPULATION OF TEXTUAL DATABASES**

By

PATRICK MWANGI MACHARIA

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Macharia, Patrick
*A comparative study
of CDS/ ISIS and*



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My parents Mr. & Mrs. Naftaly Macharia and my friends and family for their encouragement throughout my studies.

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JACINTA WERE (University of Nairobi)

LECTURER DEPARTMENT OF LIBRARY & INFORMATION SCIENCE
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ACKNOWLEDGEMENT

I wish to acknowledge the support and assistance of my family for their financial and moral support throughout my studies.

DEDICATION

To my parents Mr. & Mrs. Naftaly Macharia, the Kajumba's and Wanjagi for their encouragement throughout my studies.

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LIST OF ABBREVIATIONS

ICRAF	International Council on Research in Agroforestry
ILRAD	International Laboratory for Research on Animal Diseases.
ICIPE	International Centre for Insect Physiology and Ecology.
UoN	University of Nairobi

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ABSTRACT

Use of Computer technology has rapidly spread in most Kenyan's Information and Documentation centers with different types of computer software developed for use in Information and Documentation Centers. It has become rather difficult for information Managers to decide the best software for use in their organisations.

CDS\ISIS and INMAGIC are the main textual databases in use in most Information and Documentation in Kenya thus the comparative study examines the two softwares in relation to factors such as User friendliness, compatibility, flexibility, strengths, limitations, hardware and software local support.

BACKGROUND INFORMATION

INTRODUCTION

In the background, an attempt was made to locate the research problem in Kenyan context.

First the term computer was defined. Wagner (1983 p.14) defines a computer "as a tool for accomplishing the data processing functions of input, processing, output and storage." Thus a computer can process data and deliver information in large volumes, efficiently and at a relatively low cost.

In Kenya there has been a widespread use of computers especially in the last decade. This can be attributed to tremendous advances in computer technology which has seen rapid increase in both the speed and memory capabilities of computers. This has also resulted into reduction in computer costs making it possible to store large volumes of information in computerized form.

1.1.1 COMPUTERIZATION OF INFORMATION AND DOCUMENTATION CENTERS IN KENYA

Computer technology has not yet taken root due to the factors discussed above. However there are other specific factors hindering computerization of information and documentation centres such as computer illiteracy among staff and users of information and documentation centres, financial limitations, limited choice of software used in information and documentation centres, apathy in

national decision makers, inability by information and documentation centres to retain trained staff in computer science. However the situation is different in International funded but locally based Information and Documentation Centres, such as:-

- a. International Council on Research in Agroforestry (ICRAF)
- b. United Nations Environmental Program (UNEP)
- c. International Laboratory for Research on Animal Diseases (ILRAD)
- d. International Development Research Centre (IDRC) and others which have computerised their systems for various services.

1.1.2 ADVANTAGES OF COMPUTERISATION

Roose (1985) asserts that one of the major advantages of computerisation is that computers are able to handle repetitive long-on sequences especially on an on-line searching. Lancaster (1990) observes that computers have the ability to handle extremely large files and conduct many searches at the same time, provide multiple access points to documents conveniently and economically, conduct comprehensive and exhaustive searches, and produce printed lists of retrieval citations or even high quality published indexes.

Were (1990) summarises advantages of computerization as high rate of efficiency, high speed of processing resulting in instantaneous response, provides compact storage facilities, computers offer flexibility and versatility in many access points, provides reliable security system, provides powerful searching capabilities and gives high staff morale due to training and job reassignment

1.1.3. FACTORS AFFECTING COMPUTERISATION OF INFORMATION AND DOCUMENTATION CENTRES IN KENYA

Were (1986) observed that library automation remains unexplored in computer industry in Kenya and upto date only a few libraries mostly international libraries like ICIPE, ILRAD, UNEP etc. have ventured into this new technology. Factors attributing to this slow move towards automation can be summarised as financial limitations, computer illiteracy, lack of cooperation and coordination among Documentation and Information centers, most Information Managers are not conversant with the local computer market, and limited choice of software suitable for information and documentation centres.

This last factor is one of the major factors limiting automation of information and documentation centres, and it is of special interest to the researcher as the research problem is based on this particular factor. Currently lack of common software devoted to information and documentation centres is a major problem.

The main softwares being used in the mentioned information and documentation centres are CDS/ISIS and INMAGIC. Others used locally but on a smaller scale are Pro-cite, dbase III+, Card box, Tin-lib, Bibliotec, Smart systems, and others.

As a result information and documentation centres are being forced to choose between the two main packages. These are MICRO CDS/ISIS used in many Kenyan institutions such as University of Nairobi, ICRAF, and currently being introduced in Kenyatta University Library and INMAGIC currently used in ILRAD and ICIPE.

1.1.4 SOFTWARE DEVELOPMENT IN KENYA

Early computerisation in Kenyan information centres started in 1970's. The first information centre to computerise was University of Nairobi Library which was linked to a computer centre. The centre used an ICL 2950. The mainframe based software COBOL used in the library was written by one of the library staff who was a programmer but stalled on her departure.

Commercial packages were introduced into Kenyan libraries in the mid 1980's by International Organisations. Database management systems were introduced first and the first to venture into this new discovery was the International Centre for Research and Agroforestry ICRAF which installed dBase II in 1985. Library of Congress (LC) was next with dBase III and other libraries followed suit.

DBase was being used due to unavailability of library packages on the local computer market. The limitations of dbase encouraged

libraries to search for better alternatives. This arose after the failure of the UNESCO software IV+V at UNEP library in Nairobi which was a pilot project in 1984. The package was a total failure and it was withdrawn from the market.

In 1985/86 INMAGIC software was introduced in international Laboratory for Research on Animal Diseases (ILRAD) by the Librarian who came across it while on a trip to the U.S.A. in 1985. It was installed in 1986. International Centre of Insect Physiology and Ecology (ICIPE) on the advice of ILRAD installed it in 1987. The software was a success in the two libraries and other libraries could not adopt it because of the cost of installing and maintaining the software.

After the failure of IV+V, UNESCO came up with another micro-based software called CDS/ISIS which was first installed in UNESCO's library in 1986 to replace IV+V. The software was a success and the use of CDS/ISIS has spread fast in Kenyan libraries.

1.1.5 STATEMENT OF THE PROBLEM

Automation of information centres remains unexplored in computer industry in Kenya. Upto date only a few information centres mostly International funded like ICIPE, ILRAD UNEP, have ventured into this new technology.

The most commonly used softwares are CDS/ISIS and INMAGIC which are both textual database softwares. One of the problems

attributing to this slow development of automation in the Information centres is that, it has been difficult for Information managers to choose a good software from the various software programs in the market for use in their systems as they lack the technical knowledge to do it. As mentioned earlier, CDS/ISIS and INMAGIC are the main textual software packages in use in most information centres. Thus this study makes a comparative study of CDS/ISIS and INMAGIC in relation to textual databases so as to enable Information Managers to choose the best software program to use in relation to their needs.

1.1.6 OBJECTIVES OF THE STUDY

This study aims at :

- i. Helping Information managers to choose between the two main textual software programs used in Kenya, the best for use in their systems.
- ii. Comparing two main software packages used in Kenyan Information Centres.
- iii. Bringing in the strengths and weaknesses of the two software packages.
- iv. Making recommendations to Information Managers on the best software package depending on the results of the study.

1.1.7 SIGNIFICANCE OF THE STUDY

This study is very important because the findings can enable Information Managers in choosing the best textual database software for use in their systems.

The study also seeks to assist in selecting a textual database software compatible with a wide range of operating systems for better management of Information Centres and which is also compatible with other packages.

The study would also be helpful in selecting a database software covering all possible information for Information centres applications and should be in modules which can be acquired when needed and as funds permit.

The study would also assist in analyzing the status of the firm(s) producing the program, its reliability and sustainability. This would help information managers in that, you need to acquire computer software and hardware from a locally based firm for ease of maintenance.

The study also seeks to determine

- i. user friendliness,
- ii. flexibility
- iii. cost

- iv. number of records it can support
- v. data structures
- vi. Availability of software and hardware of the two textual databases, so as to recommend to Information Managers on the basic program to use in relation to the needs of Information centres.

1.1.8 LIMITATIONS OF THE STUDY

In this study only a sample of five Kenyan libraries will be studied.

- i. ILRAD Library
- ii. ICRAF Library
- iii. University of Nairobi Library
- iv. Glaxo Library
- v. ICIPE Library

Though there are few more Kenyan libraries that utilize computers for various services such as Kenya National Library Services, IDRC, Moi University etc, the study will be limited to the above 5 libraries due to the constraints of time and finance.

The basis for selection was the extent of computerization. For instance university of Nairobi, ILRAD and ICRAF operate under a well defined computer environment.

Other factors considered for the selection of the sample is that University of Nairobi has good facilities like libraries, computers, staff, books, etc. and an example of one of the oldest libraries in Kenya which is computerising its services.

Another factor limiting the study is lack of enough references materials, the two software programs being very new in Kenya, there are few Kenyan authors who have written or studied the use of the two programs.

Time is also a limiting factor in carrying out the study because the research is supposed to be done in two semesters as there will be pressure to attend subjects being pursued in the course.

Definition of CDS/ISIS

The CDS/ISIS system is a computerized system that allows you to search for information in a database. It is a non-

Development of the CDS/ISIS system

The CDS/ISIS system is a computerized system that allows you to search for information in a database. It is a non-

CHAPTER TWO

2.0.0 REVIEW OF RELATED LITERATURE

2.1.0 INTRODUCTION

There is very little written on CDS/ISIS and INMAGIC programs as the two main textual databases used in Kenya. In fact no comparative study has been undertaken comparing the two softwares. An attempt will be made to discuss what Kenyan authors have written about CDS/ISIS and INMAGIC in general, and this will be supplemented by what authors worldwide have commented about the two software programs, and other software programs currently in use in information centres.

2.1.1 Definition of CDS\ISIS

CDS/ISIS is a short form of Computerised Documentation System/Integrated Set of Information Systems. It allows you to create, develop and manage an unlimited number of structured non-numerical database.

2.1.2 Development of Micro CDS/ISIS in Kenya

Micro CDS/ISIS is a software which was designed and developed by UNESCO. It was first released by UNESCO in 1983 and the main

objective of UNESCO was to develop a software which could be distributed free of charge for use in developing countries.

The first version of Micro CDS/ISIS was released in 1985 and it was introduced in UNEP as a pilot study. Other institutions such as ICRAF, University of Nairobi, KTTC introduced the software in their systems. The package was very cumbersome but most organisations opted for it because it was available free of charge to non-profit organisations of UNESCO member states. Complaints from users prompted UNESCO to update the package and came up with version 2.3 in 1989. In 1992 version 3.0 was released and the latest version 3.03 which was released in November 1993.

2.1.3 Features of Micro CDS\ISIS

According to Jasco (1986) Micro CDS/ISIS is a set of programs written in PASCAL language. He names six modules which are divided into systems programs and user programs. He outlined the functions of the systems programs used as follows:

- a) to define the structure of the database, the master file, the index files, the formatfile, the content of the worksheet and menus.
- b) to reorganise, backup and restore files
- c) to create message files, stop word lists and items.

He contends that end users such as Information Managers and their patrons are not concerned with system programs, but user programs.

These are used to:

- a) enter and modify data
- b) update and index file
- c) search the database
- d) sort display and print results.

According to mini-micro CDS/ISIS reference manual (version 2.3) 1989, the following are the major systems functions provided by CDS/ISIS as a textual database.

- i. defining databases containing the required data elements.
- ii. entering new records into a given database
- iii. modifications, correcting or deleting existing records.
- iv. it automatically build and maintain fast access files for each database in order to maximise retrieval speed.
- v. retrieve records or portions therefore according to your requirements.
- vi. prints partial or full catalogues and/or indexes.
- vii. develop specialised applications using the CDS/ISIS integrated programming facility.

These facilities are provided through a set of 8 major services, classified in two user services, operating on existing databases,

and system services, designed for creation of new database and perform various tasks.

According to CDS/ISIS manual ver. 2.3 (1986), the four user services provide the following functions:

- i. ISISENT - Data entry and record editing
- ii. ISISRET - Information Retrieval
- iii. ISISPRT - Production of printed outputs such as catalogues and indexes
- iv. ISISINV - Inverted file maintenance and utility functions.

The functions of the four systems -services are as follows:

- i. ISISDEF - Definition of new databases and modification of existing databases definitions.
- ii. ISISUTL - Miscellaneous system utility functions.
- iii. ISISXCH - facilities for interchanging data with other systems and master file utility functions.
- iv. ISISPAS - advanced programming facilities which allow you to develop your own application programmes and integrate them with CDS/ISIS.

2.1.4 REVIEW OF KENYAN AUTHORS

Few people have commented about the two programs being compared in Kenya. Were Jacinta, (1989) in her paper presented in a training course held in Mombasa on Management of Information Resources and Sharing, 15-26 April, 1991, had this to say about softwares in general:

"Development trend in modern technology is shying away from programming and focusing on packages that do not need programming. That time when computer rooms were restricted to only experts is over".

CDS/ISIS and INMAGIC are such software programs which were referring to, as the user do not require programming knowledge to operate them but what is required is the basic computer knowledge. Thus these are ideal packages in Information Centres as they do not need any programming knowledge.

In the same paper were commented about the use of CDS/ISIS by saying that "The best Library Software available to developing countries is the UNESCO package mini-micro CDS/ISIS".

Maoli in his paper Introduction to Information Technology: using CDS/ISIS described the main features of CDS/ISIS as follows:-

i. CDS/ISIS is a database management system, but it is different from others in that, it can handle fields and records of variable length, and unlike other standard database management, often referred to as structured:

database management systems, it has specifically been tailored to accommodate textual information and hence its suitability for library and information centres application.

ii. It works with an inverted file. The inverted file contains keywords/authors or any other field which may be used to access or retrieve records. The keywords are linked to records by means of posting or addresses of the documents in the file. CDS/ISIS maintains this inverted file semi-automatically.

iii. The user can create their own databases. This involves the following:-

- a. definition of fields in the field definition table.
- b. definition of data entry worksheets
- c. definition of access points in the field select table
- d. definition of display/print format using the print format language

2.1.5 ADVANTAGES OF CDS/ISIS

Were (1991) outlines the following as the major advantages of CDS/ISIS.

- i. The package is available free of charge to non-profit organisations of the UNESCO member states.
- ii. It is a very flexible software as once the database is designed you can make any type of changes you want at any time.
- iii. CDS/ISIS has variable fields, meaning that the storage space for any field will adopt the size of that field at that particular time and will automatically change as the size of the field changes. It also offers a facility for unlimited number of fields.
- iv. It is easy to master as you do not need to be a programmer to use it effectively and the format language is easy to master.
- v. The software was designed to handle problems in information centres and can answer about 90% of data base problems in these centres.
- vi. It has no facilities for using MARC records.

2.1.6 Strengths of CDS/ISIS

Kinyanjui 1993 in his paper "CDS/ISIS for Library automation: an evaluation" commented that CDS/ISIS has a generalized design allowing for creation of numerous databases, for example you can create a database for each of the different sections in the library such as main collection, special services e.g. Newspaper cuttings and indexes and office operations, such as inventory control etc.

Were (1991) outlines the following as the major advantages of CDS/ISIS.

- a) The package is available free of charge to non-profit organisations of the UNESCO member states.
- b) It is a very flexible software as once the database is designed you can make any type of changes you want at any time.
- c) CDS/ISIS has variable fields meaning that the storage space for field will adopt the size of that field at that particular time and will automatically change as the size of the field changes. It also offers a facility for unlimited number of fields.

- d) It is easy to master as you do not have to be a programmer to use it effectively and the format language is easy to master.
- e) The software was designed to handle problems in information centers and can answer about 90% of data base problems in these centres.
- f) It has programming capability that enables advanced users to develop specialised applications and/or the functional extension of the software as originally provided.
- g) Provides extremely powerful search and sorting facility.
- h) Provides capability to display and print information in any varying formats and detail.
- i) It is in use in a fairly large number of organisations in Kenya and can therefore be subjected to wide scrutiny.
- j) It is supported by UNESCO.
- k) Each organisation can make use of CDS/ISIS in the way it wishes.
- l) Many institutions can agree to use commonly defined database to enhance storing of information and resources, for example

2.1.7 LIMITATIONS OF CDS/ISIS

Njuguna 1991 outlines the following as the major limitations of CDS/ISIS.

- i. Documentation is rather poor
- ii. Software is relatively complicated to new users.
- iii. Formatting function is very complicated

2.1.8 WHAT IS INMAGIC

Diloreto, 1984 in her paper INMAGIC: A software review and case study defines INMAGIC plus hereafter referred to as INMAGIC as "a file management system which has been available for use on mini-computer since 1980. Versions are now available on several micro-computers".

INMAGIC PLUS (users manual) version 1.0, describes INMAGIC as a powerful package, flexible and relatively easy to use.

INMAGIC was developed by Warner Eddison Associates, a consulting

firm with experience in library applications. The software can be used in a variety of library applications as well as non-library applications.

INMAGIC incorporation describes INMAGIC as a textual database management program used by mini-computers since 1980, thus the software can be used in handling software programs in information centres.

Njuguna (1991) outlines the following as the major features offered by INMAGIC

- i. Variable length fields
- ii. User defined data structures and report formats
- iii. the use of boolean operatives (AND,OR,NOT) to connect, expand or limit search requests.
- v. Keyword or term indexing on any field.
- vi. no limit on the number of records in a database.
- vii. On-line help screens and tutorials
- viii. flexibility report generator for attractive presentations.

Daehn,(1985) describes INMAGIC as a file management system which is powerful, flexible and relatively easy to use and can be used for

a variety of library applications as well as non-library applications.

On the use of INMAGIC "A Quick Start with Biblio" states that the greatest thing about INMAGIC is that it requires no former knowledge of computers , particularly with the extra help of BIBLIO which allows special librarians to create library management databases easily.

Lundeen has this to say about INMAGIC, that the system accepts commands or will offer menus and help screens if needed and that, in searching it offers the following Boolean operators AND, OR, NOT and can restrict a search to records satisfying relational criteria.

2.1.9 FEATURES OF INMAGIC

INMAGIC is particularly strong in organising text records of variable length efficiently according to INMAGIC for special libraries: a quick start with Biblio.

There is no limit on the size of field, for example, on the number of records in a database. INMAGIC supports a full vested Boolean query language (using AND, OR, NOT) that can be used to perform rapid searches for any word or word stem in a field.

INMAGIC requires advanced knowledge of computers or software, particularly with the extracts of Biblio which allows special librarians to create library management databases easily.

INMAGIC have help screens and tutorials to guide one through this data management tool.

INMAGIC prompting screens according to INMAGIC Inc. lead you through data entry and database maintenance functions useful for working with a few records in an interactive fashion, directly on line. For larger collections of records to be added to a database or to be edited, you may use one of the many word processing packages compatible with INMAGIC to prepare information for your database.

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2.1.10 Strengths of INMAGIC

Njuguna (1991) describes the following as the major strengths of INMAGIC:

- i. Comprehensive easy to use main menu.
- ii. A simple to use comprehensive reference manual
- iii. Simple teach tutorials to familiarise INMAGIC novices
- iv. Several other facilities to help in bibliographic databases creation e.g. MAINTAIN, DEFINE, AUXILARY, FILES, CHANGE, TEACH etc.
- v. Allows flexibility in searching including free text searching through a facility called searchmagic.
- vi. Retrieval key facility enables you to retrieve any records with a unique identification, regardless of the size of the database.
- vii. The maintain mode enables you to create, change or import records, rebuild indexes.
- viii. Inmagic incorporates powerful boolean logic searching facilities of AND, OR, NOT.
- ix. The select mode enables you to search, print, sort, store and further modify the results of searchers.
- x. The keyboard index and Term index facilities enable speedy sorting and retrieval of any field.

CHAPTER THREE

3.1.0 METHODOLOGY:

3.1.1 INTRODUCTION

The study attempts to compare two main computer softwares used in Kenyan Information and Documentation Centres, namely Micro CDS/ISIS and INMAGIC

The aim of the study is to enable Information Managers to choose the best textual database software for use in their systems.

INSTRUMENTATION:
The study also seeks to assist in selecting a textual database software compatible with a wide range of operating systems for better management of information centres, and which is compatible with other packages. In the study, a representative sample of 5 Information and Documentation Centres were selected. The selection was based on the level of computerization and as such, the relatively well developed Information and Documentation Centres were selected namely, the University of Nairobi, ILRAD, ICRAF, ICIPE and Glaxo Libraries out of a possible 27 computerized information centres.

The main method of collecting data was through questionnaires designed for two different types of categories.

3.1.2 DESCRIPTION OF POPULATION

The population of the study involved the following:

- a. Head of computer section of each of the selected Information and Documentation Centre who answered part 1 of the questionnaire.
- b. Computer operators, handling and operating computers in the Information and Documentation Centres.

It was anticipated that the sample would be representative on the comparative study of the two software programmes in Kenya.

QUESTIONNAIRE DEVELOPMENT

3.1.3 INSTRUMENTATION:

The main method of data collection as stated earlier was a detailed questionnaire. However personal interview and observation were also conducted by the researcher as most of the questionnaires were filled in the presence of the researcher.

The questionnaires were distributed and the respondents given at least two weeks of answering the questionnaires and giving the researcher an appointment for the personal interviews.

Some of the problems encountered by the researcher when administering the questionnaires were:

i. In Nairobi University the head of the Library Computer Department had to fill parts I and II of the questionnaire as the computer operators could not comfortably answer most questions in part II of the questionnaire.

ii. Glaxo is a restricted and confidential library thus the researcher had to rely on the information given to him by a consultant librarian to the library.

In general all the respondents were very cooperative and no major problems were encountered while the researcher was conducting the personal interviews.

3.1.4 QUESTIONNAIRE DEVELOPMENT

TYPES OF QUESTIONS

There was only one questionnaire which had two parts as mentioned above.

PART I

This particular section was designed for the Head of the Library computer section. Most of the questions found in this section were general questions designed to collect information on documentation centres that use computers.

Thus some of the areas covered in this section include:

- a. General questions about computerization of the organisation
- b. Questions on hardware used.
- c. Questions on software used and
- d. Questions on personnel for each of the sampled Information and Documentation Centre

Part II or Section II of the questionnaire was addressed to computer operators operating and handling computers in the said Information and Documentation Centres.

Questions in this particular section included:

- i. Name, status, academic and professional experience of each respondent.
- ii. Questions on INMAGIC
- iii. Questions on CDS/ISIS
- iv. Space provided for the last question for any other information which might have been omitted by the researcher which the respondent may think necessary for the research.

3.1.5 Discussion

The research interviewed the respondents informally before completing the questionnaires. The respondents were informed about the research and assured that the information given will be treated confidentially and would only be used for the purposes of the research.

The interviews/discussions helped to establish a free atmosphere with the respondents which in turn assisted in clarifying and explaining any matter that was unclear to the respondents.

3.1.6 Statistics and Analysis

The information collected from the respondents was thoroughly analyzed by scrutinizing the individual questionnaires into either statistical analysis or summarising the essential implications derived in prose form.

4.1.0 Analysis & Discussion

4.1.1 ICRAF

ICRAF Library was established in 1977 and it supports Research Scientists on Agroforestry.

The organisation is financed by western donors of the CGIAR group. The library system was computerised in 1985 and IBM compatible micro computers are used. The main reason for computerising the system was to take advantage of the power of the computer in relation to speed and versatility. The present system was opted for because of affordability of price and convenience of use.

Hardware

ICRAF use Gateway 2000 computer, acquired in 1993. It was decided on by the Librarian because of its large hard disk capacity, while service maintenance can be handled by ICRAF computer unit.

Software

The main software used for library operations is Micro-CDS/ISIS acquired in 1986. The software is locally available. The

software was decided on by the management. According to ICRAF the main problems encountered when using the software system are:

- i) lack of good reference manual
- ii) not user friendly.

4.1.2 ICIPE

ICIPE information and Documentation Centre was established in 1970. It serves scientists undertaking research. It is financed by western donors. The system was computerised in 1985. Initially a WANG computer was being used, but recently it was replaced with an IBM computer. Hardware change was due to compatibility with industry.

The main reasons for computerising the system were to speed up information Retrieval and delivery and to save on manual labour.

Hardware

ICIPE use IBM compatible and this particular hardware system was decided on by the management because it is economical and compatible. Also the hardware system is locally available from Kenya Micro. ICIPE internal Engineer and Kenya Micro can maintain the hardware.

The main problems encountered when using the hardware system can

be solved by consulting engineers who in turn may involve Kenya micro.

Software

The main types of software used is INMAGIC and CDS/ISIS. INMAGIC was acquired in 1985 while CDS/ISIS was acquired in 1989. INMAGIC is not locally available while CDS/ISIS is supplied by ICRAF and ARSO. INMAGIC incorporation a firm in U.S.A. which manufactures the software supplies the software and it is consulted for maintenance of the software.

The main problems encountered when using INMAGIC software programme are

- i) INMAGIC cannot search globally and is not used widely in Kenya because it is expensive and thus raises issues of compatibility in exchange of data with partners.
- ii) CDS/ISIS has some bugs and its reference manual is difficult to follow.

To solve some of these problems

- i) ICIPE is phasing out INMAGIC
- ii) They have joined user groups to exchange ideas on how to solve problems of CDS/ISIS.

4.1.3 GLAXO

Glaxo East Africa Ltd. is a pharmaceutical firm which recently set up a resource centre to furnish its employees and researchers with relevant information. The resource centre was set up in May, 1994. Glaxo is a commercial firm and is therefore able to support its resource centre.

The system was first computerised in February 1994 and a micro computer system is used. The main reason for computerising the system was to strengthen information dissemination through effective retrieval of relevant documents.

Reasons for opting to use the present system are

- .the library is small
- .micro computers are cheap
- .easy to manage and maintain.

Hardware

The type of hardware used in Glaxo is PC IBM compatible running on DOS and it was acquired in 1992 by the management who decided on the hardware system. This particular hardware system was decided on as it is locally available from such firms as Impression Computer Services. Impression Computer Services maintains the hardware system in case of any break down.

Software

Glaxo use Bibliotech software system which was acquired in 1993. The software is locally available and its supplied by Integrated Systems. The software was decided on by the management.

4.1.4 ILRAD

The organisation was established in 1973 and it is financed by CGIAR (group of western donors). The system was computerised in 1986 and IBM compatible micro computers are used. The main reasons for computerising was to make the library operations more effective and the present system was opted for because of its convenience in use.

Hardware

ILRAD uses IBM compatible microcomputers running on DOS operating system. It was acquired in 1985 and was decided on by the management. This type of hardware is locally available and it can be supplied by IBM locally. ILRAD hardware is maintained internally.

Software

ILRAD library has several software programmes, but for inhouse routines INMAGIC is used. INMAGIC software system was acquired in 1989 from U.S.A. and it was decided on by the management.

University of Nairobi was established in 1956 and it is financed by the Kenya Government. The computerised system was established in 1988. IBM is the main computer system used.

The main reasons for computerizing the library system were to strengthen the operation and to increase the efficiency of the services. The main hardware in use was opted as it was a donation from ODA.

University of Nairobi library before used the University's mainframe but time sharing environment was not suitable for the libraries needs, necessitating the library to acquire the present micro-computers.

Hardware

IBM hardware system running on NOVELL Netware is the main type of hardware used. It was acquired in 1989 and the management decided on this type of hardware. The main reason for the choice of this hardware was that, it was a donation and this particular one the best out of the 3 offers given at the time.

The hardware is locally available and some of the firms dealing with this type of hardware are International Business Machines (IBM).

The main problem encountered when acquiring the hardware was that the library had no budget thus a major problem when it came to selecting the hardware.

The library has no maintenance budget for the hardware thus a big problem when it comes to using the hardware system in that, when the system breaks down, petty cash is used to do the repairs which is never sufficient.

Software

The main type of software used are CDS/ISIS, Word perfect, Lotus 1-2-3 and these softwares were acquired in 1988. CDS/ISIS was acquired from UNESCO and was decided on by the Head of library computer department.

4.2.0. USAGE OF CDS/ISIS AND INMAGIC

ILRAD and Glaxo had no previous experience of using CDS/ISIS. In ILRAD it is being introduced into the system otherwise most of the routine duties are done using INMAGIC. As for Glaxo, the library is using Bibliotech and currently they have no intentions of changing to CDS/ISIS or INMAGIC or any other software programme.

CDS/ISIS have been installed in ICRAF, ICIPE and University of Nairobi, where it had been in use for the last 6, 4, 7 years respectively.

4.2.1 User friendliness

On the question of whether CDS/ISIS software package is user friendly, some information centres stated that it is flexible while others stated that it is unfriendly as follows:

ICRAF Stated that CDS/ISIS software program is unfriendly to users as it was described as having a poor reference manual, the package is still developing and it is limited in its applications (in integrated systems).

ICIPE Stated the software program is user friendly but gave no reasons.

ILRAD No comments.

U.o.N. Indicated that the program is partly user friendly and the main reason were that it is menu driven. However, the menus are limited and it does not provide facilities for pop-up windows.

ICIPE Stated that they have not used the package but are just about to change to CDS/ISIS.

4.2.2 Flexibility

On the flexibility of the CDS/ISIS software programme ICIPE, ICRAF, and UoN unanimously agreed that the software program is

flexible. There was no response from Glaxo and ILRAD since they have not used the software package.

The main reasons given in support that CDS/ISIS software program is flexible are as follows:

- i) According to ICRAF, CDS/ISIS can easily be used to define your own data structures.
- ii) ICIPE contends that CDS/ISIS is flexible in handling information and related work.
- iii) UoN explained that when using CDS/ISIS
 - a) it allows you to design a database entirely to your taste
 - b) you can use it for non-library databases.

4.2.3 Strengths of CDS/ISIS

The questionnaire also sought to know the main strengths (if any) noticed when using MICRO-CDS/ISIS software programme when compared with other software package used by each of the specific libraries and the answers were given as follows:

- i) According to ICRAF CDS/ISIS has capacity to manipulate text.
- ii) CDS/ISIS is good in handling indexing work contends ICRAF librarian
- iii) The head of library computer section U.o.N. had this to say about the strengths of CDS/ISIS:

- . It is available free of charge.
- . It is well designed to solve searching and printing needs of the library.
- . It allows you to do far more than library work.

4.2.4 Limitations of CDS/ISIS

The main limitations of CDS//ISIS software program as answered in the questionnaires from the various libraries were as follows:

- . a poor reference manual
- . the package is still developing
- . it is limited in its application for instance, when compared with integrated systems

The head computer section, UoN had this to say about limitations of CDS/ISIS.

- . it cannot handle circulation application
- . it cannot support data capture equipment for circulation processes.
- . it has no facilities for using MARC records.

4.2.5 Non Library Databases handled by CDS/ISIS

Non library databases that can be handled by CDS/ISIS include inventory, personnel, Administration for example, registry and mailing lists.

4.2.6 Local Support for CDS/ISIS

According to all the libraries under study, local support for CDS/ISIS software is available. ICRAF outlines Kenisis as the Group which supports the softwares used in libraries UoN lists Kenisis, Arso, Unesco and other users, while ICIPE outlines user groups.

ICIPE

4.3.0 Usage of INMAGIC

Out of the 5 libraries under study only three libraries had previous experience in the use of INMAGIC. These are ILRAD, ICRAF and ICIPE.

INMAGIC software program is user-friendly. University of Nairobi and Glaxo libraries had not used INMAGIC software program thus did not participate in answering questionnaire in this particular section.

On the question of how long the library had used INMAGIC software programme, the responses were as ILARD 9, ICIPE 5, U.o.N Nil, ICRAF 6, and Glaxo Nil years respectively.

4.3.1 Data analysis

In this particular part of Analysis information relevant to the research study was collected using questionnaire and observation methods.

4.3.2 User-friendliness

The issue of whether INMAGIC software programme is user friendly had the following responses.

ILRAD	YES
ICRAF	YES
ICIPE	YES

This represented 100% of the responses from those who have used the software program. Reasons given to support that INMAGIC software program is user friendly were as listed below:

ILRAD the INMAGIC software program is user-friendly because

- i. It enables you to build as many databases as you need and use them according to your requirements.
- ii. it does not limit the number of records in a database, the size of records or fields or the number of entries in fields.
- iii. you can get helpful information while working within INMAGIC by pressing [F1] key.
- iv. you can store searches for later use
- v. INMAGIC is easy to search, print, input etc.
- vi. its ready made, that is you do not need to

programme.

ICRAF INMAGIC has

- i. online help available
- ii. a clear and simple reference manual
- iii. adequate vendor back-up
- iv. overlay programmes available.

ICIPE Use of menu searching and operation facilities are organised in ordinary language formats.

4.3.3 Flexibility

On whether INMAGIC software programme is flexible, the following were the responses:

ILRAD Yes, due to the following reasons:

- i. one can use menu or commands to accomplish any task.
- ii. the software allows phrase and proximity searching.
- iii. when editing, you can delete, paste, insert etc.
- iv. you can ask in any term, i.e. year, date, name and it gives you what you want.

ICRAF: In INMAGIC you have an option to accept or reject default data structures and instead construct your own.

As for ICIPE there was no comment on this particular question.

4.3.4 Limitations of INMAGIC

When asked to comment about the main limitations of INMAGIC software programme, ICRAF stated there are none, besides the high cost of acquiring the software. ICIPE comments were "as far as operation is concerned, there are no limitations encountered", whereas the main comments from ILRAD was that, care should be taken never to open maintain and leave the software program running as it is very sensitive area.

4.3.5 Strengths of INMAGIC

The question on the main strengths of using INMAGIC software when compared with any other software used in the library before had the following responses.

ILRAD compared INMAGIC and CDS/ISIS and their view was INMAGIC is more user friendly than CDS/ISIS. ICRAF had the following comments, INMAGIC has

- i. on line help available
- ii. clear and simple reference manual
- iii. adequate vendor backup.
- iv. overlay programmes available.

4.3.6 Non-Library databases handled by INMAGIC

On what other databases INMAGIC can handle, the following responses were given, ILRAD stated that it can handle any data as long as you instruct it on the Data structure, for instance, personnel, Accounts, Administration and others. ICRAF stated that, it can handle law reports, budgeting, personnel and others while ICIPE gave no comments.

4.3.7 Local-support

On whether the local support for INMAGIC is available, the answers were confusing as ILRAD and ICIPE stated "None" while ICRAF said the local vendor can offer support which was not clear.

For ILRAD and ICIPE who stated local support is not available had the following to say on how INMAGIC software is supported. ILRAD is registered with INMAGIC Inc., while ICIPE are presently using manuals available and any other update information material.

4.3.8 INMAGIC Application Areas

The main areas which INMAGIC can be applied in information centres were listed as Acquisition, Cataloguing, Serials, Circulation and budgeting.

5.1.0 Conclusions and Recommendations

From the results of the study the following were given as the main reasons of computerisation in the sample of the five information and Documentation centres.

- i. to take advantage of the power of computer in relation to speed and versatility.
- ii. speed up information retrieval and delivery and to save on manual labour.
- iii. strengthen information dissemination through effective retrieval of relevant documents.
- iv. make library operations more effective .
- v. strengthen operations and increase the efficiency of the services.

It is also apparent from the results of the study that, the main type of computer hardware system used is IBM compatible. Some of the reasons given for the preference of this hardware are

- a) it is locally available from local firms such as IBM (International Business Machines), Kenya Micro and Impression Computer Services.
- b) it is cheap, reliable and compatible.

The main problems given, when acquiring the hardware system are:

- i) lack of enough funds
- ii) lack of maintenance budget
- iii) lack of technical knowhow of which hardware system to acquire.

The following observations were made when comparing CDS/ISIS and

INMAGIC

User friendliness

a. CDS/ISIS

- According for the reseacher the issue of user friendliness when using CDS/ISIS or INMAGIC depends on the following factors.

i) Organisations where CDS/ISIS software was introduced for the first time find the software to be user friendly as users have comfortably learnt to use the software.

ii) Organisations which changed from INMAGIC to CDS/ISIS, or are using the two software concurrently, find CDS/ISIS to be unfriendly as it lacks facilities offered by commercial softwares like INMAGIC, PROCITE and Dbase. The reason why CDS/ISIS lacks such features could be the fact that CDS/ISIS is offered free by UNESCO to non-profit organisations within UNESCO member states thus the manufacturer could not be very keen to spend much in

updating the software.

iii) Development of the software:

In this you consider the age of the software since it was developed. The software needs more time to develop and sought out the criticism levelled against it. In view of the above I would conclude that CDS/ISIS is partly user friendly. However, the software requires more facilities like those found in commercial softwares such as pop-up windows to make it more user friendly.

INMAGIC

From the results of the study there is a general consensus that INMAGIC is user friendly as

- i) it enables you to build as many databases as you need according to your requirements.
- ii) it has on line help available.
- iii) overlay programmes are available.
- iv) use of menu searching and operation facilities which are organised in ordinary language formats.
- v) it is easy to search, print, input etc.
- vi) INMAGIC is ready made, that is you do not need a programmer.

Flexibility

a. CDS/ISIS

It was observed that CDS/ISIS is a flexible software and the main reasons given to support this were:

- i) In CDS/ISIS you can easily define your own data structures.
- ii) it allows the user to design a database entirely to his/her own taste.
- iii) you can use it for non-library database.

b. INMAGIC

The study shows that the software is flexible and the following reasons were outlined.

- i) one can use menu or commands to accomplish any task.
- ii) the software allows phrase proximity searching.
- iii) when editing you can delete, paste and insert.
- iv) In INMAGIC you have an option to accept or reject default data structures and instead construct your own.

Strengths of CDS/ISIS and INMAGIC

a. CDS/ISIS

The following observations were made on the main strengths of CDS/ISIS software:

- i. It has generalized design allowing for the creation of numerous databases, for example you can create a database for each of the different sections in the library such as:
 - vi. a) main collection
 - b) special services e.g. Newspaper cuttings and indexes
 - c) office operations, such as inventory control etc.

- ii. CDS/ISIS is integrated, that is once the database is created, you can perform any of the following tasks:
 - . enter new records
 - . modify, correct and delete records.

 - viii. It automatically builds and maintains fast access files to each database
 - . retrieve records.
 - . Display the records
 - . print catalogues and/or indexes

- iii. CDS/ISIS uses simple menus to access various modules.

- iv. The package is available free of charge to non-profit organisations of the UNESCO member states.

v. It is a very flexible software as once the database is designed you can make any type of changes you want at any time.

xii. It is an easy to use software.

vi. CDS/ISIS has variable fields meaning that the storage space for field will adopt the size of that field at that particular time and will automatically change as the size of the field changes. It also offers a facility for unlimited number of fields.

xiii. It is a very easy to use software.

vii. It is easy to master as you do not have to be a programmer to use it effectively and the format language is easy to master.

xv. It is a very easy to use software.

viii. The software was designed to handle problems in information centres and can answer about 90% of data base problems in these centres.

xvi. It is a very easy to use software.

ix. It has programming capability that enables advanced users to develop specialised applications and/or the functional extension of the software as originally provided.

xvii. It is a very easy to use software.

x. Provides extremely powerful search and sorting facility.

xviii. It is a very easy to use software.

xi. Provides capability to display and print

information in any varying formats and detail.

xii. It is in use in a fairly large number of organisations in Kenya and can therefore be subjected to wide scrutiny.

xiii. It is supported by UNESCO.

xiv. Each organisation can make use of CDS/ISIS in the way it wishes.

xv. Many institutions can agree to use commonly defined database to enhance storing of information and resources. For example CDINET Database common communication Format.

b. INMAGIC

The main strengths of INMAGIC observed were as follows:

- i. Comprehensive and easy to use main menu
- ii. A simple to use comprehensive reference manual
- iii. Simple teach tutorials to familiarize INMAGIC novices
- vi. Several other facilities to help in bibliographic databases creation e.g MAINTAIN, DEFINE, AUXILIARY, FILES, CHANGE, TEACH etc.
- v. Allows flexibility in searching including free text searching, through a facility called searchmagic.

- vi. Retrieval key facility enables you to retrieve any records with a unique identification, regardless of the size of the database.
- vii. The maintain mode enables you to create, change, or import records, rebuild indexes.
- viii. Inmagic incorporates powerful boolean logic searching facilities of AND, OR, NOT.
- ix. The select mode enables you to search, print, sort, store and further modify the results of searches.
- x. The keyboard index and Term index facilities enable speedy sorting and retrieval of any field.

Limitations

a. CDS/ISIS

From the study the following were observed as the main limitations of CDS/ISIS.

- i) Unlike commercial packages, you need to work at it before perfecting its use.
- ii) CDS/ISIS requires meticulous planning cooperative effort and an understanding that is in short supply in Kenya,
- iii) The circulation module is not part of the present programmes. You can add this at an extra cost but you need more powerful computers.
- iv) The software package has a poor reference manual (needs updating).

b. INMAGIC

The main limitations of INMAGIC software noted were:

- i) it is an expensive programme to acquire thus compatibility is not possible as few firms can afford to buy and maintain the software.
- ii) INMAGIC is not specifically tailor-made to handle library operations although it can be manipulated to handle most operations in a library setting.
- iii) There are few local firms (if any) providing back-up facilities.

GENERAL RECOMMENDATIONS

Local Support

a. CDS/ISIS

According to the results of the study local support for CDS/ISIS can be offered by KENISIS GROUP which supports the softwares use in libraries. However, the group should be encouraged to provide training should not be a problem.

b. INMAGIC and software support

There is no specific firm which offers local support for INMAGIC. For maintenance of the software, INMAGIC incorporation the firm which manufactures the software has to be consulted.

Non-Library databases handled by

a. CDS/ISIS

CDS/ISIS can handle several non-library databases. These include personnel files, administration files such as registry and mailing lists.

b. INMAGIC

INMAGIC can handle any data as long as you instruct it on the data structure. Examples of databases handled by INMAGIC are personnel, Accounts, Administration, law reports and financial statements.

5.1.2. GENERAL RECOMMENDATIONS

Local Support

- i. On the verge of computerisation, where the choice has to be made between overseas and local vendors, the latter should always be preferred due to the need for continued support service and general maintenance of hardware and software. However, organisations with good financial backing should not limit themselves in the choice of hardware and software support.
- ii. The researcher would suggest to the local information managers to familiarise and have a thorough knowledge of what is available through local window shopping.

This should be done by visiting computer vendor dealers around the city to keep in touch with the latest computer technology, both in software and hardware development.

They should also keep update by reading current journals on computer technology to keep the informed, so that they do not wholly depend on computer consultants who are commercial minded.

iii. Information and documentation centres wishing to computerise should first consult older experienced libraries like ILRAD, ICIPE, ICRAF as they can advise them on the best hardware and software systems to acquire, which local computer vendor to consult for any service maintenance of both hardware and software. This would help to avoid making costly blunders as computer should never be a trial and error affair.

5.1.3. Specific Recommendations

Choice of software

The choice of the software, whether INMAGIC or CDS/ISIS depends on the financial backing of the organisation. The researcher would recommend use of CDS/ISIS for those information centres which lacks good financial backing, as the software can be acquired free of charge to any non-profit making organisation within UNESCO member states, of which Kenya is a member.

This particular software is tailor-made for use in information centres. The software has adequate local support and can be run in most hardware systems available in the local market such as IBM.

However for those organisations which have good financial back-up, can acquire INMAGIC as it is a very powerful package which would comfortably handle most library databases and a wide range of non-library databases. The only problem with this software is that, it is very expensive to acquire and local support is not guaranteed.

Choice of Hardware

It is the view of the researcher that, the choice of the hardware system should depend on the following factors.

- . The hardware system should be easily available from the local computer vendors.
- . it should be cheap.
- . local support should easily be available for service and maintenance.
- . should be from a recognised supplier such as IBM who would guarantee service maintenance in case the hardware system develops a problem.
- . should be compatible with a wide range of softwares.

should have enough storage capacity capable of handling all library functions.

BIBLIOGRAPHIC REFERENCES

Local support

According to the results of the research study, local support for CDS/ISIS can be availed by the KENISIS GROUP.

The good thing about Kensis group is that they support softwares used in libraries.

For INMAGIC, there is no established firm which specifically supports INMAGIC. However, the researcher is on the view that, one can try local vendors such as Kenya Micro. Otherwise the manufacturer of the software INMAGIC incorporation based in America, should be consulted for any serious software service maintenance.

BIBLIOGRAPHIC REFERENCES

Adeyemi, N.M. New Technology and the developing countries: The Nigerian experience
In Brown, K.R. ed: The Challenge of Information Technology. 1983.

Ambat, R. Improving the effectiveness of small libraries and Information Units (moduls) of Training Courses 1988/89/90. University of Botswana: Gabarone, 1990.

Boidhie, S.W. Automatic Library Services: special Reference to the University of Nairobi: Thesis, 1989.

Daeln, Ralph M. Methods and software for bibliographic databases. Canada Library Journal, National Library of Canada. Vo.42(3).

Deitel, H.M. Computers and Data Processing Academic Press: New York, 1985.

Diloreto, Ann. Legal Information Alert INMAGIC: A software Review and case study. Nov./Dec. 1984, Vol.3 No.10. Chicago

Gathimbu, E.H. Staff training: An Analysis of Requirements and Future potential for the University of Nairobi Library, Thesis: 1990.

Igwilo, V. Chukwuma. Guidelines for the Development of computer based circulations control systems in university libraries in Nigeria. (Dissertation) University Microfilms International: University of Pittsburg, 1980.

INMAGIC Plus users manual. Version 1.0. INMAGIC Inc. Massachusettes, 1980.

INMAGIC for special libraries: a quick start with BIBLIO., INMAGIC INC, Broadway, Cambridge.

Jacob, Peter et.al. Micro-CDS/ISIS: A Bibliographic Information management software from UNESCO. Computer Applications and service company: Budapest, 1986.

Kamau, G.W. Trends in Information Technology: A Kenyan perspective. A seminar paper. Kenyatta University 1986/87 (unpublished).

Kamau, G.W. Provision of scientific and technological information for development in Kenya with particular reference to the development of a National Information Service. (Dissertation): University of Sheffield: Sheffield, 1984.

Labelle, R. Bibliographical information management using Micro Computers: The experience of ICRAF. In: Training workshop on the use of computers in information Handling, 21st April - 2nd May, 1986, ed. Huttman, L. and Inganyi, F. PADIS: Nairobi, 1986.

Lauro, Anne Di. Manual for preparing Records in microcomputer - Based Bibliographic information systems. IDRC: Ottawa, 1990.

Line, M.D. Libraries and information services in a Post Technological Society. In: Journal of Library automation, 1986 14(4)260.

Lundeen, Gerald and Carol Tempir. Micro computers for information management. Ablex Publishing Corp., 1984.

Maoli, K.H. Training workshop on use of computers in information handling. Edited by Lutz, Huttlemann. DSE & PADIS Publishers: Addis Ababa, 1986.

McGraw Hill Encyclopedia of Science and Technology. Vol.4. 6th ed. McGraw-Hill: New York, 1987.

Muiruri, M.A.W. Computer Applications in University Libraries with special reference to Kenyatta University Library. Thesis, 1986.

Mutanji, P. Implementation of Automated House Keeping Systems in Academic Libraries in Kenya. Thesis, 1986.

Muya, E.W. Unesco's General Information Programme: Analysis of some of its implications in the provision of information in Kenya. Thesis, 1979.

Nickerson, R.S. Using Computers: Human Factors in information systems. MIT Press: Cambridge, Mass, 1986.

Njuguna, I.K. A Critical Study of Computerised Information Systems in some selected Kenyan Libraries. (Research project) Kenyatta University, Nairobi, 1991.

Ornager, Susanne. CDS/ISIS Version 2.3. Supplement to CDS/ISIS Reference Manual 3rd rev. ed. 1989.

Popkin, G.S. and Pike A.H. Introduction to Data Processing, 2nd ed. Mifflin, Boston, Houton, 1986.

Rosenberg, R.S. Computers and the information society, Wiley: New York, 1986.

The prentice-Hall Standard Glossary of Computer Ferminology. Prentice-Hall: Eaglewood Cliffs, N.J. 1985.

The Professional Microcomputer Handbook. New York. Van Nostrand & Reinhold, 1986.

Were, J. Library Automation: Analysis of existing choices with a view to the Kenyan situation. In: Information for National Development KLA Annual Seminar. ed. Weche, P. and Mulaha, A.R. KLA: Nairobi, 1986.

Were, J. Problems of Automating Libraries in Developing Countries: Kenya. In: Training Workshop on use of Computers in information handling 21st April - 2nd May, 1986, ed. Huttenmann, L. and Ingaji, F. PADIS: Nairobi, Addis Ababa, 1986.

Were, J. Problems of Automating Libraries in Developing country: Kenya. Huttenmann, L. and Ingaji, F. eds. Training Workshop on use of computers in information handling 21 April - 2nd May, 1986, Nairobi Addis Ababa: PADIS, 1986.

Were, J. Computerization of Library Services: Development in Kenya. In: Information and Libraries in the developing world: 1. Sub-Saharan Africa, ed. M. Wise and A. Olden. London: LA, 1990.

Were, J. The role of computers in information networking: a paper presented at the KLA Annual Seminar, Nairobi, April 10th - 12th 1991 (Unpublished).

Were, J. Library Automation: Analysis of existing choices with a view to the Kenyan situation. Weche, P. and Mulaha A.R. EDS. In: Information for National Development KLA Annual Seminar, Nairobi, KLA, 1986.

APPENDIX 1

QUESTIONNAIRE: SECTION I

This Questionnaire is aimed at getting information which will be used in comparing CDS/ISIS and INMAGIC in relation to textual databases.

The information you supply will be treated confidentially. Please give the answers you think are most appropriate.

HEAD OF COMPUTER SYSTEM QUESTIONNAIRE

Put a tick (_/) or (X) against a "YES" or "NO" choices respectively, or fill in the blanks where appropriate.

- 1. Name of the organisation-----
- 2. When was the organisation established-----
- 3. Who finances the organisation-----

COMPUTERISATION OF THE ORGANISATION

- 4. When was the system computerised-----
- 5. Name of the computer system used -----
- 6. What were the main reasons for computerising the system

7. Give reasons for opting to use the present system

8. Had you used another system before? YES---- NO----

9. If "YES" to question NO.8, what were/are the reasons for changing-----

10. If "NO" to question NO. 8, are you intending to change the system in the present or in the near future.

YES---- NO----

11. If "YES" to question No.10, give reasons why you want to change. hardware-----

QUESTIONS ON HARDWARE

12. Name the type of hardware used.

13. When was the hardware system acquired-----

14. Who decided on the present hardware system.

Self -----
Management-----
Any other (specify)-----

15. Why was this particular system decided on

16. Is the hardware locally available YES----- NO-----

17. If "YES" to No.16. List some of the firms selling this
type of hardware locally-----

SOFTWARE

18. If "NO" to question 16, where did you get your hardware from

19. Are there any problems which you encountered when acquiring the hardware.

20. Who maintains your hardware

22. Are there any problems encountered when using the hardware system(s) YES---- NO----

23. How do you try to solve these problems.

24. Are there any problems encountered when using the hardware system(s) YES _____ NO _____

If "YES" to No. 24, please describe some of the problems encountered

QUESTIONS ON SOFTWARE

24. Name the type of software used in your system

25. When was the software acquired-----

26. Is the software locally available

YES _____ NO _____

27. If "YES" to No. 26; Name some firms supplying (selling)

the software -----

28. If "NO" to No.26; where did you get your software

29. How was the software decided on

Self -----

Management -----

Consultants -----

Any other (please specify)-----

30. Are there any problems encountered when using the software,

YES _____ NO _____

31. If "YES" to No. 30, please list down some of the problems encountered

32. How are these problems solved.

This particular ... by ...
operating and hand ... in the ... of informati
The informati ... will be true
... think are

QUESTIONS ON PERSONNEL

33. How many personnel do you have in your computer department -

34. What are the basic academic qualifications required-----

35. What are the professional qualifications required for this
staff -----

Where -----

36. Are there training opportunities available locally ?

YES --- NO --- (Please ...)

37. If Yes, list the training facilities

to No.5, please go to ...

APPENDIX 2

SECTION II

This particular section should be answered by those operating and handling computers in the Library or Information Centers. The information you will supply will be treated confidentially, so please give the answers you think are most appropriate.

Put a tick (✓) or (X) against a "YES" or "NO" choice respectively or fill in the blanks, where appropriate.

1. Name and status of the respondent

2. How long have you been working in the Library / Information Center computer section -----
3. What are your professional qualifications-----
4. Where did you receive your professional qualifications
----- e.g. (i). Kenya
(ii). Overseas (Please specify)-----

QUESTIONS ON INMAGIC

5. Have you ever used INMAGIC software programme
YES -----NO -----
6. If "YES" to No. 5, how long have you used the software

7. If "NO" to No.5, please go to question No.15.

If "NO" to No.11, give reasons

The following part is both for those who had used INMAGIC software but now using a different software package, and those currently using the package.

8. Do you think the INMAGIC software package is user friendly.

YES ----- NO-----

9. If "YES" to No.8, give reasons

Give the main strengths you have noticed when using INMAGIC software, when compared with any other soft

10. If "NO" to No.7, give reasons

11. Do you think the software programme is flexible

YES ----- NO ----- (personnel, etc).

12. If "YES" to No.11, please give your reasons

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13. If "NO" to No.11, give reasons

14. What would you give as the main limitations encountered when using INMAGIC software

15. Give the main strengths you have noticed when using the INMAGIC software, when compared with any other software you have used before.

16. Apart from Library/Information Centres databases what other data bases can INMAGIC handle e.g. (personnel, accounts, etc).

17. Is local support for INMAGIC available? YES----- NO-----

18. If " YES " to NO.17, Who supports your System ?

19. If " NO" to NO.17, how do you support the system ?

20. Which of the following library/Information Centre applications can the package handle.

i. Acquisitions

ii. Cataloguing/Classification

iii. Serials

iv. Circulation

v. Any other (specify)

26. If "NO" to No. 24, give reasons

QUESTIONS ON MICRO-CDS/ISIS

21. Have you ever used MICRO-CDS/ISIS software programme

YES-----NO----- (CDS/ISIS) is

22. If "YES" to No. 17, how long have you used the software

23. If "NO" to No. 17, please go to question No. 36.

28. If "YES" to No. .

If " NO" to No. 27, give re-

The questions below are for those who had used CDS/ISIS software, but now using a different software package, and those currently using the CDS/ISIS package.

24. Do you think MICRO-CDS/ISIS software package is user_ friendly. YES----- NO-----

25. If "YES" to no. 24, give reasons

26. If "NO" to No. 24, give reasons

27. Do you think the software programme (CDS/ISIS) is flexible.
YES----- NO-----

28. If "YES" to No. 27 give reasons

29. If " NO" to No. 27, give reasons

30. Are there any limitations when using CDS/ISIS software programme YES----- NO-----

31. If "YES" to No. 30, give the main CDS/ISIS limitations

32. Give the main strengths (if any) noticed when using MICRO-CDS/ISIS software when compared with any other software package, you have used before.

33. Apart from Library/Information Centres databases what other data bases can CDS/ISIS handle e.g. (personnel, accounts, etc).

34. Is local support for CDS/ISIS available? YES----- NO-----

35. If " YES", Who supports the System

-----Library and