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INFORMATION MANAGEMENT IN ZAMBIA WITH SPECIAL EMPHASIS ON THE APPLICATION OF INFORMATION TECHNOLOGY

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN INFORMATION SCIENCE

BY

JUSTIN CHISENGA

JUNE 1992

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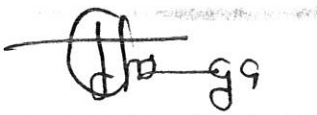
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DECLARATION

The thesis is my original work and has not been presented for a degree in any other university.



Justin Chisenga

16 May, 1992

The thesis has been submitted for examination with my approval as a university advisor.



Prof. A. Neelameghan

16 May , 1992

To my wonderful mum and dad, with love.

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ABSTRACT

The study reveals that Zambia has a relatively well developed information infrastructure in which the missing link is coordination at the national level. Coordination could be provided by formulation and implementation of a policy on information systems and services. Information technology has proliferated into both the public and private sectors of the economy, and computer applications are slowly being diversified beyond the traditional use for computing. Telecommunications developments in terms of transmission and switching techniques in the country have reached the digital stage. The major towns are served with digital exchanges and now efforts are towards the digitalization of the rural telephone network. Facilities for data communications, Local Area Networks and Wide Area Networks does exist but the limiting factor is the high telecommunications tariffs.

Training facilities for information technology personnel are not adequate and thus there is a shortage of qualified computer professional in the country and this has led to under-utilization of the equipment and heavy reliance on vendor support for the operations of the installed systems, as many installations are manned by inadequately qualified and inexperienced individuals.

Introduction of information technology in libraries, documentation and information centres in the country is slowly gaining ground and currently is largely being applied in special libraries and to a certain extent in academic libraries as well. These institutions are relatively well funded than the other categories of libraries (public and school libraries) in the country and in most cases they also have access to computer facilities of their parent institutions. However, computer applications to information management in these institutions is currently limited to word processing and in-house bibliographic database management. There is no single installation in the country at the moment supporting library house keeping activities, such as, acquisition, cataloguing and classification, circulation control, serials control and management information systems nor for database development, retrospective search, SDI and production of other information services. Emerging information technologies, such as, CD-ROM, networking and desktop publishing, in spite of their potential as means of information acquisition and dissemination are almost non-existent in Zambia's libraries.

The country also has no indigenous electronic databases where information can be accessed. The major implication of these factors is that vast amount of information is not being accessed by these institutions/users and thus the inadequacy

in the provision of information services especially to researchers and academic teaching staff.

The lack of diversity in computer applications in libraries and the inability to exploit other information technologies in information management is attributed mainly to lack of computer knowledge and skills among the library managers in the country.

As a way of enhancing the application of information technology to information management and dissemination in research and academic libraries, especially in those institutions were computer facilities are available, a cooperative computer based selective dissemination of information is proposed. The project outlines the requirements in terms of manpower, human resources, physical resources, funding and operating mechanism.

TABLE OF CONTENTS

Declaration. iii

Dedication iv

Acknowledgement v

Abstract. vii

Table of Content. x

List of Tables xxiv

List of Figures. xxiv

Abbreviations. xxv

PART ONE

CHAPTER 1

Introduction

1.1 General and Specific Objectives 1

1.2 Background and Justification 2

1.2.1 Information Technology 2

1.2.3 Computer Application in Zambia 4

1.3 Scope and Limitations of the Study 6

1.4 Methodology and Sources of Data 6

1.4.1 Literature Survey 6

1.4.2 Questionnaire 7

1.4.3 Personal Interviews 7

1.4.4 Letters 8

1.4.5 Visits and Observations 8

1.5 Organization of the Dissertation 9

1.4.1 Part 1 9

1.4.2 Part 2 10

1.4.3 Part 3 10

1.6 Definitions of Major Terms Used 11

1.6.1 Africa 11

1.6.2 Information Technology 11

1.6.3 Information Policy 12

1.6.4 Information Management 12

1.6.5 Information Systems and Services . . . 13

1.6.6 Telecommunications 13

1.6.7 Information 14

CHAPTER 2

The Republic of Zambia

2.1 Introduction 15

2.2 Geography and Population 17

2.3 Political Structure 18

2.4 Economic Structure 19

2.5 National Development Plan 21

2.5.1 Human Resource Development 23

2.5.2 Telecommunications 26

2.5.3 Research, Scientific and Technological Development 28

CHAPTER 3

Information Technology and its Applications: an Overview

3.1 Development and Growth of Information Technology 30

3.1.1 Computer Technology 30

3.1.1.1 First Generation Computers 1951-1959 33

3.1.1.2 Second Generation Computers 1959-1964 34

3.1.1.3 Third Generation Computers: 1965-1971 35

3.1.1.4 Fourth Generation Computers: 1972 - ? 36

3.1.1.5 Fifth Generation Computers . . . 36

3.1.2 Telecommunications Technology 37

3.1.2.1 Telegraph and Telephone 38

3.1.2.2 New Technologies in Telecommunications 39

3.1.2.3 Digital Technology 40

3.1.2.4 Satellites 41

3.1.2.5 Fibre Optics 42

3.1.2.6 Integrated Service Digital Network (ISDN) 42

3.1.3 Growth of Information Technology Industry 44

4.5.2 Shortage of Skilled Computing Manpower and Inadequate Training facilities . . 68
4.5.3 Inadequate Telecommunications facilities and Related Infrastructure 70
4.5.4 Information Technology Planning and Policy Deficiencies 70
4.6 Pan African Development Information Systems . 72

PART TWO

CHAPTER 5

Information Infrastructure in Zambia

5.1 Information infrastructure 75
5.2 Information systems and services 75
5.2.1 National Library 76
5.2.2 Academic Libraries 77
5.2.2.1 University Libraries . . . 77
5.2.2.2 College Libraries 78
5.2.3 Public Libraries 79
5.2.3.1 Zambia Library Service Library Network 79
5.2.3.2 District Council Libraries 80
5.2.3.3 International Governmental Agencies 81
5.2.4 Special Libraries 81

5.2.5 School Libraries 82
5.2.6 Archives and Museums 84
5.3 The Publishing Industry 85
5.4 The Mass Media 88
5.4.1 The Print Media in Zambia 89
5.4.1.1 Circulation Statistics . . 91
5.4.1.2 Local language Newspapers . 92
5.4.2 Radio and Television Broadcasting . . . 93
5.4.2.1 Radio and Television Programmes 95
5.4.2.2 Radio and Television Receivers in the Country . 96
5.5 Research Institutions 97
5.5.1 National Council for Scientific Research 98
5.5.2 The University of Zambia 99
5.5.3 Technological Development and Advisory Unit (TDAU) 100
5.5.4 The Copperbelt University 100
5.5.6 Other Research Institutions 101
5.6 Information Related Professional Associations 102
5.6.1 Zambia Library Association 102
5.6.2 Archives Association of Zambia . . . 103
5.6.3 The Booksellers and Publishers Association of 103

5.6.4 The Press Association of Zambia . . . 104
5.6.5 The Computer Society of Zambia . . . 104
5.6.6 The Zambia Computer Suppliers Association 105
5.7 Information Policy on Information Systems and Services 106
5.8 Training of Information Professionals in Zambia 109
5.8.1 Library/Information Personnel 110
5.8.2 Mass Media Personnel 111
5.9 Information use promotion and marketing . . 112
5.9.1 User Sensitization and Orientation Programmes 112
5.9.2 Information Services Marketing . . . 114

CHAPTER 6

Information Technology and Information Management in Zambia

6.1 Introduction 118
6.2.1 Computers in Zambia 118
6.2.1 Computer Industry 121
6.3 Telecommunications 122
6.3.1 Historical Development 123
6.3.2 Status of Telecommunication Infrastructure 124

6.3.3 Telecommunications Statistics 126
6.3.3.1 Telephone 126
6.3.3.2 Telegraph 128
6.3.3.3 Telex 128
6.3.3.4 Facsimile 128
6.4 Information Technology Applications 129
6.4.1 Desktop Publishing 131
6.4.2 The Mass Media: Broadcasting 133
6.5 Information Technology Manpower Development 133

PART THREE

CHAPTER 7

Application of Information Technology in Libraries, Documentation and information centres in Zambia

7.1 Sources of data 138
7.2 The questionnaire 138
7.3 Responses and data processing 140
7.3.1 All Respondent Institutions 140
7.3.1.1 Type of Information System . . 140
7.3.1.2 Size of Library Collection . 141
7.3.1.3 Documentation Activity 142
7.3.1.4 User Services Provided 142
7.3.1.5 Classification Scheme and Subject Heading List 142

7.3.1.6 Indexing 143
7.3.1.7 Thesaurus 143
7.3.1.8 Professional Staff 143
7.3.1.9 Computer Facilities 144
7.3.1.10 Telephone, Telex and Facsimile Facilities 144
7.3.2 Institutions with Computers 145
7.3.2.1 Utilization and Location of Computers 145
7.3.2.2 Types of Computers 145
7.3.2.3 Networks of Micros 145
7.3.2.4 CD-ROM Drives 146
7.3.2.5 Use of Computers 146
7.3.2.6 Software for Bibliographical Applications 146
7.3.2.7 Formats of User Services . . . 147
7.3.2.8 Databases 147
7.3.2.9 Access to Remote Databases . . 147
7.3.2.10 Efficiency 147
7.3.2.11 Training 148
7.3.2.12 Problems in the Use of Computers 148
7.3.2.13 Servicing of Computers . . . 149
7.3.3 Institutions Without Computers . . . 149
7.3.3.1 Type of Equipment 149
7.3.3.2 Computer Use 150

7.4 Analysis and Discussion of Survey Results . 150
7.4.1 Type of Libraries 150
7.4.2 Computer Application. 153
7.4.3 Software for Bibliographical/Library Database Management 156
7.4.4 Online Access and Networking 157
7.4.5 CD-ROM Technology 158
7.4.7 Computer Generated Services 159
7.4.8 Databases 159
7.4.9 Data Processing Personnel 160

CHAPTER 8

Information Requirements of Researchers and Teaching Staff in Selected Research and Academic Institutions in Zambia

8.1 Introduction 161
8.2 Methods of data collection and data sources 162
8.3 Responses and data processing 163
8.3.1 Nationality and Sex 164
8.3.2 Highest Degree/Diploma 164
8.3.3 Field of Specialization 164
8.3.4 Services Offered 164
8.3.5 Type of Information System Available 165
8.3.6 Purpose for Which they Use the Library 165
8.3.7 Library Services Provided 165

8.3.8 Information Needs Met? 166
8.3.9 Alternative Sources of Information . 166
8.3.10 Impact on Work 166
8.3.11 Time Taken 167
8.3.12 Number of Journals Subscribed To . . 167
8.3.13 Number of Journals Not Accessed . . 167
8.4 Analysis and Discussion of the Results . . . 168
8.4.1 Information Service Provided 168
8.4.2 Satisfying of Information Needs . . . 169
8.4.3 Other Sources of Information 169
8.4.4 Journal Subscription 170
8.5 The need for Information Dissemination Services 171
8.6 Selective Dissemination of Information . . . 172
8.7 Information Technology and SDI 176

CHAPTER 9

Computer-Based Selective Dissemination of Information for Research and Academic Libraries in Zambia: project proposal

9.1 Objectives of the project 178
9.2 Organizational structure 178
9.2.1 Focal Point 179
9.3 Physical Resources 180
9.3.1 Hardware and Software 181
9.3.2 Information Resources 182

9.4 Human Resources 182
9.5 Financial Requirement 183
9.6 Project Establishment 184
9.6.1 Steps in Organizing the System . . . 184
9.6.1.1 Role of Each Participating Centre 184
9.6.1.2 Proposed Sources of Information and Data 185
9.6.1.3 Bibliographic Standards . . . 185
9.6.1.4 Coordinating Committee 186
9.6.1.5 Preparations of User Profiles 186
9.6.1.6 Financial Contributions or Contribution in Kind 187
9.7 Project Operating Mechanism 187

CHAPTER 10

Conclusions and Recommendations

10.1 Conclusions 190
10.1.2 The General Information Infrastructure 190
10.1.3 National Information/Informatics Policy 191
10.1.4 Professional Associations/Societies 191
10.1.5 Computers and Computer Use 192
10.1.6 Local Databases 193
10.1.7 IT in Libraries 193

10.1.8 Telecommunications 194
10.1.9 Information Technology/Scientists Manpower Development 195
10.1.10 Future of IT in Zambia 195
10.2 Recommendations 197
10.2.1 Development of IT: The Role of the Government 197
10.2.2 Information Use Promotion, Sensitization and Marketing 198
10.2.3 Professional Bodies 199
10.2.4 Information Technology/Scientists Manpower 200
10.2.5 Information Technology Applications in Libraries 200
10.2.6 Information Dissemination Services: SDI 202
BIBLIOGRAPHY 203

ANNEXES

1. List of Individuals Interviewed. 225
2. Questionnaire on the Survey of the Application of IT in Libraries, Documentation and Information Centres in Zambia. 227
3. List of Institutions that Responded to the Questionnaire. 237

4. Statistical Frequency Tables on the Survey of the use of IT in Libraries, Documentation and Information Centres in Zambia. 242
5. Questionnaire on Information Needs of Researchers and Teaching Staff In Zambia. 270
6. Statistical Frequency Tables on Information needs of Researchers and Teaching Staff in Zambia. 276

LIST OF TABLES

1. World Production of Information Technology Systems-Growth Estimates 1986-1985. 44
2. Information Technology and Information Handling Activities: Some Examples. 51
3. Some Computerised Sectors in Africa. 56
4. Newspapers Published in Zambia From 1906 to 1983. . 89
5. Some major Computer Applications in Zambia. 130

LIST OF FIGURES

1. Flowchart for an SDI System. 175
2. Schematic Structure of the Proposed Computer-Based SDI System. 188

MAPS

1. Map of the Republic of Zambia xxviii
2. Map of Africa xxix

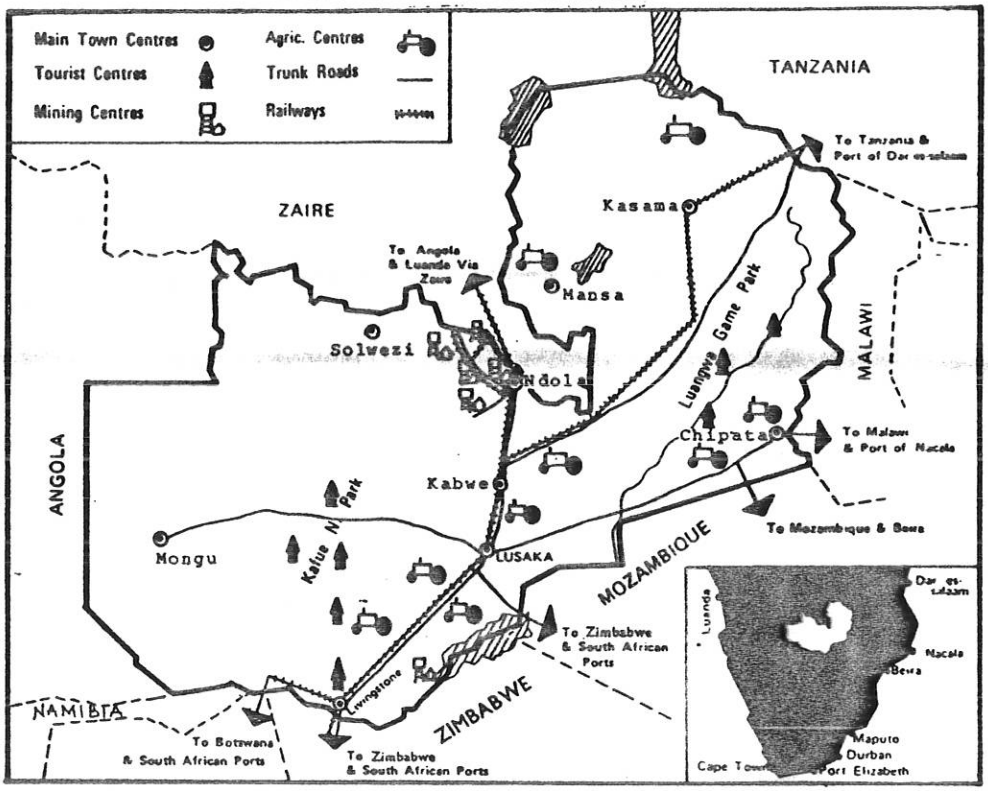
LIST OF ABBREVIATIONS USED

AGRICOLA	Agricultural On-line Access
BIOSIS	Biosciences Information
CABI	CAB International
CADIS	Central African Development Information System
CAS	Chemical Abstracts Services
CCF	Common Communication Format
CDS/ISIS	Computerised Documentation System/Integrated Set of Information Systems
CODESRIA	Council for the Development of Socioeconomic Research in Africa
COMPEDEX	Computerized Engineering Index
DBMS	Data Base Management System
DSE	German Foundation for International Development
DTP	Desktop Publishing
ECA	Economic Commission for Africa
ESADIS	Eastern and Southern Africa Development Information System
FOREX	Foreign Exchange Currency
GDP	Gross Domestic Product
GHASTINET	Ghana Scientific and Technological Information Network
GNP	Gross National Product
IAS	Institute for African Studies
IBS	Intelligent Based Systems
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDD	International Direct Dialling

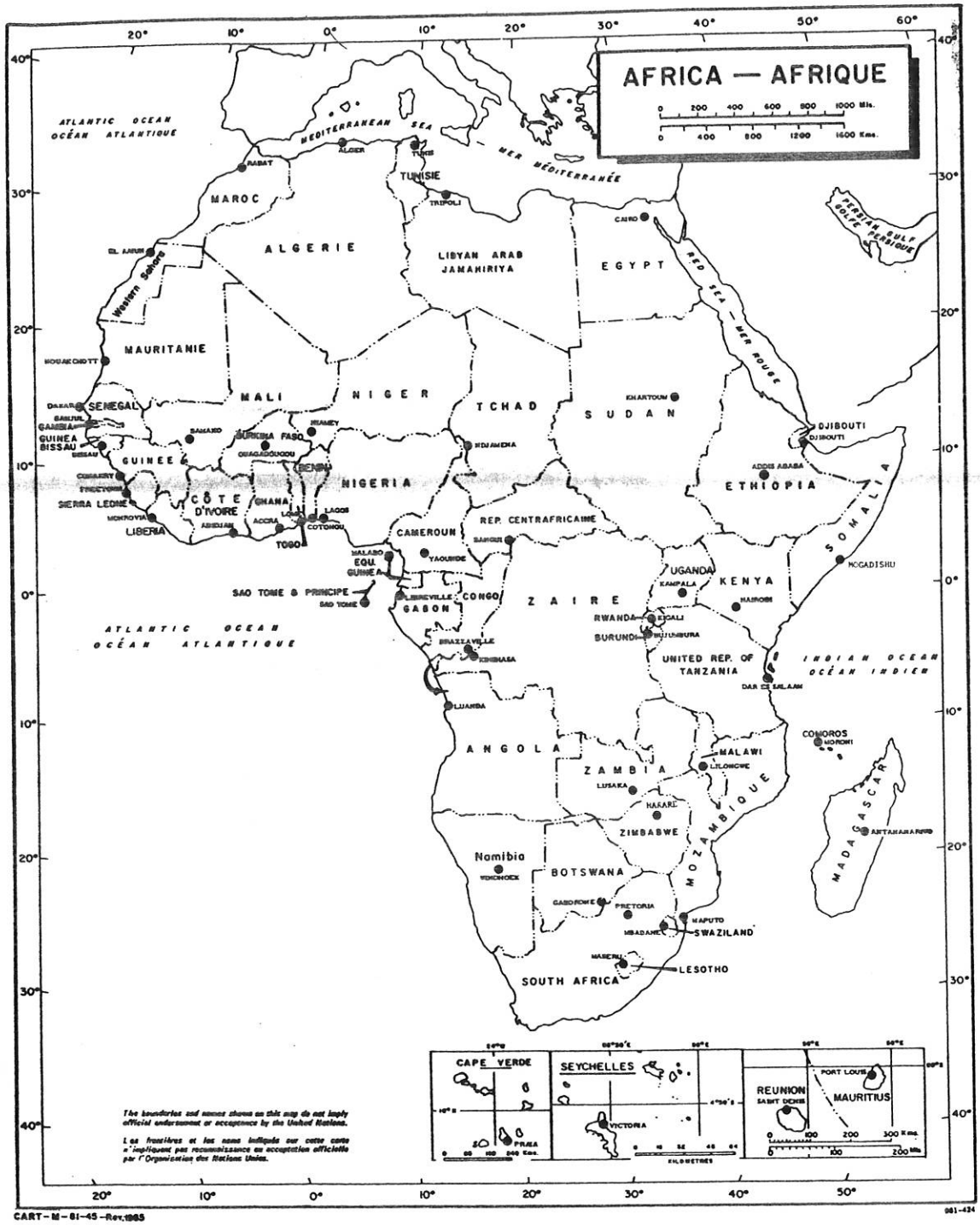
ILO	International Labour Organization
IMF	International Monetary Fund
INSPEC	Information Service in Physics, Electro-technology and Computer Control
INTELSAT	International Telecommunications Satellite
ISR	Information Storage and Retrieval
ISRA	Institut Senegalais de la Recherche Agricole
IT	Information Technology
ITU	International Telecommunications Union
JASPA	Jesuit Association of Student Personnel Administrators
MEDLINE	Medical Literature Analysis and Retrieval System Online
MEMACO	Metal Marketing Corporation
MIBIS	Microcomputer-based Bibliographic Information Systems
MMD	Movement for MultiParty Democracy
NCDP	National Commission for Development Planning
OAU	Organization of African Unity
PADIS	Pan-African Development Information Systems
PATU	Pan-African Telecommunications Union
PTA	Preferential Trade Area
PTC	Posts and Telecommunications Corporation
RESCOSCIX-WIO	Regional Cooperation in Scientific Information Exchange in the Western Indian Ocean Region
SADDC	Southern Africa Development Coordinating Conference
SIDO	Small Industries Development Corporation
TDAU	Technological Development Advisory Unit
TDRC	Tropical Disease Research Centre

UATP	Union Africaine de Postes et Telecommunications
UDI	Unilateral Declaration of Independence
UNDP	United Nations Development Programme
UNECA	Unite Nations Economic Commission for Africa
UNESCO	United Nations Educational Scientific and Cultural Organization
UNIP	United National Independence Party
WADIS	West African Development Information System
ZCCM	Zambia Consolidated Copper Mines
ZCTU	Zambia Congress of Trade Unions
ZIMCO	Zambia Industrial and Mining Corporation

THE REPUBLIC OF ZAMBIA



Adapted from Zambia in brief. [ ]. Lusaka: ZIS.


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PART ONE

GENERAL REVIEW ON ZAMBIA; AND DEVELOPMENT AND APPLICATIONS OF INFORMATION TECHNOLOGY

CHAPTER 1

INTRODUCTION

1.1 GENERAL AND SPECIFIC OBJECTIVES

The general objective of the study was to examine the trends in information management in Zambia with emphasis on the application of information technology. The following were the specific objectives:

1. To find out the extent to which information technology is being used in information management in Zambia's libraries, documentation and information centres;

2. To propose a plan and mechanism for a computer-based Selective Dissemination of Information (SDI) service to researchers and teaching staff in cooperating research and academic institutions in selected subject fields in Zambia; and

3. To contribute to the studies dealing with the application and impact of information technology in information management in Africa in general and Zambia in particular.

1.2 BACKGROUND AND JUSTIFICATION

1.2.1 Information Technology

Technology - the application of science to practical tasks - has assisted man in handling information ever since the earliest cave drawings (McKee 1985). Using painting, man was able to make many pictures of the same piece of information. Using transport, man was able to distribute information. But it is the modern electronic technologies which have given rise to the concept of Information Technology.

Traditionally, information technology in general, and specifically computer technology, has been used for information processing, essentially in computing. However, now among the various information processing tasks for which computers are used is the special class for which the term information takes on a literal and direct sense of recorded knowledge or intelligence (Salton 1975). The elements being transformed are no longer restricted to numerical symbols but include various character strings (words and phrases), images (pictures), etc. This development has led to the application of computers to information management or Information Resource Management (IRM) in Information Systems and in the provision of Information Services.

Application of computers to information management also came about after the realization that information is a resource, and like "other resources--oil, ore, crops-- its value can be enhanced by processing. ...Unlike other resources that are finite in supply and easily exhausted if not used prudently, the amount of available information tends to increase over time, often at a geometric rate. As the reserves of information grow, so does the need for more efficient means of processing it. The sheer quantity of raw data now available in areas such as agriculture, business, energy resources, and government is well beyond the ability of the human mind to process, at least within a reasonable time" (National Research Council 1986, 1).

Thanks to information technology, man is now able to manage this vast amount of resource, information. With IT, it has become easier to generate, collect, process, transmit, and store all kinds of information about all kinds of things and activities.

Developments in telecommunications, with the improvement in telephones communication via satellites, use of optical fibre etc. have greatly improved the ability to communicate information over a distance, thus enabling information systems disseminate information through networks and access to remote data banks.

The application of IT to information management has improved the efficiency in the processes of collection, analysis, cataloguing, storage, retrieval, transmission and dissemination of information in information systems. In fact, information technology is now said to encompass a wide spectrum of processes in the production and management of information (Kuznetsov 1989).

1.2.3 Computer Application in Zambia

Computer technology has been in use in Zambia since the early 1960s (Shitima 1989), and papers on the application of computers in the Zambian public and private sectors have indicated that computers have been mostly confined to their traditional use - the processing of numerical data. However, the application of information technology to other types of information processing in Zambia is certainly on the increase (Zambia Library Association 1987). In order to encourage and promote the use of this technology in information management, the information professionals in the country, led by librarians, submitted to the Government for discussion and possible adoption draft proposals of a National Information Policy. In these proposals it was stated that the Zambian Government should encourage the adoption and application of information technology in the processing and management of information so as to facilitate information generation,

collection, storage, dissemination and utilization and to enhance the activity of information sharing at national, regional and international levels (Zambia Library Association 1987).

So taking the above expressed views that applications of information technology to information management is resulting in the improvement and efficiency of information handling techniques, that the use of information technology in information management in Zambia is on the increase, and that computers have a definite role to play in the national information networking in Zambia (Wamulwange 1988), I considered it necessary to assess the status and trends in information management in Zambia with special emphasis on the application of information technology. Such a study would enable the identification of gaps and other inadequacies in the information infrastructure and the proposed national policy on information systems and services which in turn was to provide an insight into the actions to be taken to enhance the efficiency and effectiveness of the information systems and services with particular focus on information technology application.

1.3 SCOPE AND LIMITATIONS OF THE STUDY

Information management and information technology are two broad concepts forming the basis of the study and discussion in the thesis. However, the study was only limited to the application of information technology to information handling activities in Zambia, but with a little emphasis on libraries, documentation and information centres. The discussion of information technology is also mainly restricted to computer and telecommunications technologies.

1.4 METHODOLOGY AND SOURCES OF DATA

In order to achieve the stated objectives of the study a combination of literature survey, direct observation, questionnaire, letters and personal interviews were adopted for the study.

1.4.1 Literature Survey

The literature survey involved reviewing various articles, papers and books and other publications on the development and applications of information technology in general, in Africa and in Zambia in particular. Among the publications consulted that were of great use were the issues of Computers in Africa magazine, PADIS Newsletter and various

papers obtained from PADIS. These sources and some other publications from Unesco, IDRC and the Commonwealth Secretariat were among the major sources of information on the status of information technology application in Africa, and Zambia to some extent.

1.4.2 Questionnaire

Two sets of questionnaires were prepared. One set was on the survey of the application of information technology in libraries, documentation and information centres in Zambia. These were sent to a sample of 96 institutions with libraries. The responses and analysis of data is presented in Chapter 6.

The other set of questionnaires was on the survey of the information needs of researchers and the teaching staff in selected research and academic institutions in Zambia. These were also distributed to a random sample of the staff, and their responses and analytical data are presented in Chapter 7.

1.4.3 Personal Interviews

Personal interviews with a number of individuals working in the information field in the country also provided a substantial amount of primary information. Individuals to be

interviewed were mostly selected on the basis of their position in the profession, and their experience. Persons from the Zambia Library Association, the Computer Society of Zambia, Book Publishers and Bookseller Association of Zambia, the mass media, the Posts and Telecommunications Corporation, Ministry of Finance Data Processing Unit, Central Statistical Office and many more institutions were interviewed (Annex 1).

1.4.4 Letters

In some cases it was difficult to get the individuals for an interview or visit certain institutions. In such cases, letters were sent asking either the opinion of the organization on the subject or the operations and activities of the organizations.

1.4.5 Visits and Observations

A number of visits were made to selected institutions and in some libraries a few demonstrations where mounted on the various uses of computers.

Employing the above methods, data and information were collected on the following:

1. the existing information infrastructures in Zambia,
2. the existing information technology infrastructures in the country,
3. the application of information technology to information management in libraries, documentation and information centres in Zambia,
4. information needs of researchers and teaching staff in selected research and academic institutions in Zambia.

1.5 ORGANIZATION OF THE DISSERTATION

The dissertation is divided into three parts. Part 1 has four chapters; Part II has two and Part III has four Chapters.

1.4.1 Part 1

Chapter 1 is the introduction to the thesis and it outlines the objectives, background and justification for research, the scope and limitations and the methodology and data sources. Chapter 2 gives a brief review on Zambia with emphasis on those aspects that are important to the development of a viable information and information technology infrastructure. Chapters 3 and 4 review the developments of information technology and its applications in general, and in Africa in particular respectively.

1.4.2 Part 2

Part 2 in general focuses on information management and information infrastructure in Zambia. In particular, Chapter 5 reviews the status of the information infrastructure in Zambia and among other things looks at libraries, the mass media, publishing industry, training of information professionals and marketing of information in the country. Chapter 6 reviews the development of information technology infrastructure in the country and the various uses it is being applied to.

1.4.3 Part 3

Chapter 7 reviews and analyses the results of a survey on the application of IT in libraries, documentation and information centres in Zambia, while Chapter 8 reviews and analyses the results of the survey on the information needs of researchers and teaching staff in selected research and academic institutions in Zambia. Chapter 9 proposes a computer-based Selective Dissemination of Information to researchers and teaching staff in Zambia as one way of disseminating relevant and current information to them. Chapter 10 give the conclusions and recommendations. These are mostly based on the discussions and points observed in Part 2 and 3 of the dissertation.

1.6 DEFINITIONS OF MAJOR TERMS USED

Various specialized terms have been used in this thesis and it is important that their definitions or the context in which they are used is made clear on the onset. The following are the terms:

1.6.1 Africa

In the thesis Africa and Sub-Saharan Africa are used interchangeably. All in all the discussion is limited to Sub-Saharan Africa, that is excluding the Arab North Africa. South Africa is also excluded. If reference is made to North Africa or South Africa it should be understood in the context of the sentence in which it is used.

1.6.2 Information Technology

Information technology is used to refer to "the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronics-based combination of computing and telecommunications" (Langley and Shain 1985, 164). Thus included in this technology are word processors, videotex, teletex, electronic mail, LANs, WANs, compunications, facsimile, video, discs, fibre optics, digital technologies,

use of satellites, CD-ROM, hypertext, etc. The thesis touches upon most of these information technologies, but a little emphasis has been placed on computer and telecommunications technologies since it is these two that mainly form the core of information technology.

1.6.3 Information Policy

The concepts of information policy, informatics policy, national information policy and policy on information systems and services are used in the thesis interchangeably. They should be taken to mean a set of guiding principles of a strategy and programmes for the development and use of information resources, services and systems (Montviloff 1990). Thus they are policies concerned with the dissemination of research results, subsidizing and stimulating the information industry; broadcasting, telecommunications, libraries, documentation and information centres, archives and museums, organization of governmental information resources; and computer and information literacy (Manten and Timman 1983).

1.6.4 Information Management

Information management in a narrow sense will refer to the management of information. However, in its broader sense, it will refer to the planning, budgeting, organizing,

directing, training and control associated with information and it encompasses both information itself and related resources, such as personnel, equipment, funds and technology (Lytle 1986). Despite its broadness, its use in the thesis is restricted to the application of information technology to the manipulation of information in order to derive maximum benefit from it and to improve efficiency in information processing, dissemination and storage.

1.6.5 Information Systems and Services

Information systems includes libraries, documentation and information centres, while information services include the provision of information and data through information systems and networks of different types, in public and private sectors (data banks; databases; library systems, library services, documentation centres services; information analysis, consolidation and repackaging centres and services; archives, statistical services etc) (Montviloff 1990).

1.6.6 Telecommunications

The term is used as it is defined by ITU (1986, 5) as any transmission, emission or reception of signs, signals, writing, images, sound or intelligence of any nature by wire, radio, optical or other electromagnetic systems. However, the

thesis has not discussed all the forms of telecommunications available. Only some aspects, mostly two way common carrier communications, such as, telephone, telegraphy, telex, facsimile, etc are discussed.

1.6.7 Information

Information is not an easy word to define and in this thesis, I have adapted Aiyepeku's definition of information and thus the term will is used to "describe mankind's accumulated 'knowledge' derived from all subjects, in all forms and from all sources that could help its users to reduce their levels of uncertainty. Specifically, 'information' is defined as data of value in planning and decision making, in the execution, monitoring and evaluation of the public- and private-sector programmes of any community" (Aiyepeku 1982, 12).

CHAPTER 2

THE REPUBLIC OF ZAMBIA

2.1 INTRODUCTION

The development of a country's information infrastructure is influenced by various factors among which are the country's political and government structure, economic and industrial development, geographical location, demography etc. Taking these factors into account and assumptions (Montviloff 1990, 135-136) that:

* The physical environment of a country provides a measure of the geo-climatic conditions, ease of internal and international communications which make information activities easier or more difficult;

* The greater the population density, the easier the intercommunication of information; and the more dispersed the population, the more difficult will be the dissemination of, access to and use of information

* Extreme temperature and humidity hinder the preservation and use of documents and increase their cost;

* The better the communication (including telecommunications) the easier the flow of information among individuals and institutions;

* The higher the GNP the higher the overall economic capacity of a country and in particular the resources available for information activities;

* The priority the Government gives to one or another source of wealth (exploitation of natural resources, manufacturing of goods, marketing of services) will affect or impede information activity;

* The greater the emphasis on the diversity of public/private, small/large, national/multinational companies, the greater will be the diversity of information services;

* The higher the support to research the more intense will be the generation and use of information; and

* The more education and more educated people mean a greater capability to generate and use information as well as more intense information activities in this area,

this chapter gives a brief and general view about Zambia's geographical location and population, political and economic structures, and the country's development plans, as well as investment in manpower development, telecommunications and research infrastructures.

2.2 GEOGRAPHY AND POPULATION

The Republic of Zambia, a land-locked country, lies between latitudes 8° and 18° south and longitudes 22° and 33° east. It covers an area of 752,620 sq kilometres (289,190 sq mile), in South-central Africa, and shares its boundaries with no fewer than eight countries. Zambia is bordered on the south by Mozambique, Zimbabwe, Botswana and Namibia; on the west by Angola and on the north and east by Zaire, Tanzania and Malawi. The general elevation of the tropical high plateau which the country occupies varies from 1,067m to 1,372m above sea level. In the north-eastern border, a range of mountains rises to more than 1,807m.

Zambia's relatively high altitude enables her to have a moderate climate with three seasons: a cool dry season from late April to August; a hot dry season from september to early November and a warm wet season from mid-November to April. The temperatures in the country are generally moderate and the highest mean maximum exceeds 35°C only in the southern low

lying area of the country in October. July is the coldest month and has a mean minima of 5-10°C over most of the country, and the mean monthly temperatures of about 16°C are common on the plateau during this month.

The country's total population , according to the 1990 Census of Population, Housing and Agriculture is 7.8 million out of which about 4 million (50.2%) are females and 3.8 million (49.2%) are males (Zambia. CSO 1991). Of the total population, the urban dwellers account for 42 percent and this population is largely divided between the capital, Lusaka, and the Copperbelt Province in which the towns of Ndola and Kitwe are the largest. The country's population density is 10.4 persons per square kilometre and the average annual population growth rate is 3.2%.

2.3 POLITICAL STRUCTURE

From December 1972 to about July 1991, Zambia has had only one legal political party, the United National Independence Party (UNIP). Under the UNIP government, the Party's Central Committee and the National Council formed the supreme policy making body. No policy could be introduced in the country unless it was adopted or supported by either the Central Committee or the National Council. Under the Central Committee was the Cabinet headed by the Prime Minister. The

Cabinet's major task was to implement the Party's policies and decisions on behalf of the Government. Below the Cabinet were different ministries and departments which were concerned with implementation of development policies as promulgated by UNIP. Under UNIP Government structure, the Party was always supreme.

The re-introduction of plural politics in Zambia, in 1991, saw the UNIP Government losing the general elections held on October 31st, 1991 to the Movement for Multi-Party Democracy. So the MMD formed the first Government in the Third Republic. Under the new system of Government, the structure is made up of the President, Vice-President, Cabinet Ministers, Deputy Ministers and a Minister without Portfolio. The Cabinet is now the major and supreme policy making body. Under the Cabinet are ministries and departments charged with the task of implementing policies formulated by the Cabinet. The link between the MMD Party and the Government is through the Minister without Portfolio who is also the MMD National Secretary.

2.4 ECONOMIC STRUCTURE

Mining of minerals has been Zambia's most important economic sector for a long time. The mining sector in 1984/85 accounted for 95% of all the country's foreign exchange earnings, and copper alone produced 90% (Euromonitor. African.

1986), and the same sector accounted for 16%-18% of GDP (Europa 1986). The mining sector also produces for export Cobalt, Lead, Silver, Zinc, Emeralds and other minerals. Since 1975, the mining industry has been declining due to low copper prices at the London Metal Exchange but in spite of this factor, the sector still dominates the Zambian economy and its contribution to the country's foreign exchange earnings is still the largest compared to other sectors of the economy.

However, emphasis of the present Movement for Multi-Party Democracy Government is on shifting from dependence on the mining sector (MMD 1990).

The second most important economic sector in Zambia is manufacturing which accounts for some 10% - 15% of the GDP in an average year and caters mainly for the domestic market (Euromonitor. African. 1986). The manufacturing sector produces foodstuffs, tobacco, textile and clothing, wood products, plastics, chemicals, metal products and rubber goods. The sector's major disadvantage has been its dependence on imported raw materials and capital goods. Of late the shortage of foreign exchange has worsened the situation resulting in the sectors's real output falling steadily.

The industrial sector in Zambia has been dominated by parastatal companies. These state owned enterprises, which in

most cases are monopolies, have been the leading element in industrial development of the country and they account for over half of the country's GDP and about a third of the wage employment (Zambia 1989). However, the performance of some of the parastatal companies has been poor and they have been a drain on the country's meagre resources and in most cases the Government had to inject in funds in order to save them from collapsing. To avoid spending public funds on companies that do not make profits, the MMD Government has committed itself to privatization in order to optimize resource utilization, enhance the productivity and profitability of the public sector and assist in the reduction of the Government's deficit (MMD 1991, 4).

The agricultural sector, which is largely at subsistence level, generates 14% of GDP and 1% of foreign exchange earnings (Euromonitor. African. 1986). Despite this, the sector is seen as the country's best prospect for the future and the Government has been investing in the development of agriculture in the country. Exporting of non-traditional export crops is being encouraged.

2.5 NATIONAL DEVELOPMENT PLAN

National development plans outline a country's programme of action over a specified period of time. An examination of

such plans would reveal a country's priority target areas and projected outputs of specified parts of the economy set above the current trends. Information about the actions intended in order to achieve the targets set and a detailed account for the financing of the projects are also given. In short, development plans guide the country in the allocation of scarce resources, and formulate the objectives of the economy as a whole. Zambia has had six development plans out of which three have been full five year development plans, and two interim national development plans to date, namely:

1. Transitional Development Plan 1965 - 1966
2. First National Development Plan 1966 - 1970
3. Second National Development Plan 1972 - 1976
4. Third National Development Plan 1979 - 1983
5. New Economic Recovery Programme: Interim National Development Plan July - December 1988
6. Fourth National Development Plan 1989 - 1993

The following sections examine the above development plans with emphasis on the Governments programmes and investment in the fields of (i) human resource development (Education and Training), (ii) telecommunications, and (iii) promotion of research, scientific and technological development. This examination is done with the view to assessing later on, the development of the infrastructure in

telecommunication, training of personnel in information related fields, and information generation by research institutions.

2.5.1 Human Resource Development

At Independence, on 24th October 1964, the most immediate and perhaps the most serious handicap that Zambia faced was the lack of trained manpower. This was attributed to the non-progressive and restricted educational policy followed by the Federal and colonial administration (Zambia 1966). At that time, Zambia had a total of just over 1200 Africans with locally obtained school certificates and the number of Zambian graduates was scarcely 100. Thus, the educational system inherited at Independence could not provide for the country's manpower requirements and therefore the need to address this problem immediately.

The Transitional Development Plan (TDP) provided for the building of the University of Zambia, two big new teachers training colleges and it was estimated that places in secondary school enrolment was to go up by about 100%. Primary schools were to have 15,000 extra enrolment places. During this same period the Government expected to invest on education and training approximately £7.3 million. This plan paved the way for the First National Development Plan (FNDP).

Launched in 1966 and scheduled to run up to December, 1970 but extended to December, 1971, the FNDP addressed the education problems with very ambitious programmes, to ensure a universal primary education by the end of 1970; nearly 70,000 students in secondary school and 1,700 in the University of Zambia (Zambia 1966). In fact education under this Plan become the most expensive public activity with a total estimated investment of about £7.69 million.

A review of the programmes of the FNDP in the field of education shows some remarkable achievements. The University of Zambia which had started with three academic schools: Humanities and Social Sciences, Natural Sciences and Education, had the Schools of Law, Engineering, Medicine and Agriculture, added to the list. The expansion of education at University, primary and secondary school levels was impressive and closely in line with the Plan's ambitious targets. Primary enrolment in 1969 reached 660,000, virtually 100% of the Plan target; secondary enrolment was 48,000, 88% of Plan target; university enrolment in 1970 was 1,250, 74%, some 450 short of the Plan target, but still representing a four-fold increase over 1965 when the University was established (Jolly 1971). Thus the FNDP provided a basis for manpower development and further growth in the 1970s.

The Second National Development Plan (SNDP) was launched in January, 1972 and by the end of 1978, two years after its expected end, Zambia had made substantial progress in the field of education. Compared to 1964, enrolment in primary, secondary and technical education had increased by 155%, 520% and 333% respectively, and training at teachers training colleges, both at primary and secondary level had increased by 140% and 2,240% respectively (ILO and JASPA 1981). Estimated expenditure on education under the SNDP was K114,500* million.

The TNDP allocated K106 million for recurrent and capital expenditure on education and training. Under the TNDP, which went up to June 1988, the planned targets in primary and secondary school education were achieved or exceeded. The University of Zambia federal system which was introduced in 1975 was abolished, and the Ndola Campus of the University was converted to the Copperbelt University which incorporated the Zambia Institute of Technology. The School of Veterinary Medicine was also opened at the University of Zambia.

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* 1 US$ = K10.15 (As at December 30, 1988. SOURCE: IMF 1989)

K = Zambian Kwacha

The Fourth National Development Plan is scheduled to end in 1993. On human resource development, the Plan has the following statement:

> "As part of the human resources development strategy - a National Manpower Council will be established to enhance planning, co-ordination and monitoring of the development and utilization of manpower. Programmes will also be pursued to support existing vocational training institutes while in educational curricula the strategy will involve placing emphasis in mathematics, engineering, natural sciences, technology and accountancy" (Zambia 1989, 31).

The success of the Plan is yet to be evaluated.

2.5.2 Telecommunications

The emphasis of the Transitional Development Plan in the field of telecommunications was on the improvement of telecommunication facilities between the urban areas and the rural areas. The plan provided for the introduction of a new telephone exchange in Lusaka, a new line between Chingola and Solwezi and for improvement of telephonic communications between Lusaka and Fort Jameson (now Chipata). Under this Plan, the combined sectors of Transport, Communication (under which telecommunications falls), and Energy received an investment of £9.6 million.

During the FNDP, the telecommunications sub-sector was under the Information and Postal Services sector, which received an investment amount totalling £6.33 million. Under the SNDP in which K15.8 million was invested on Telecommunications and Postal Services, the Zambian Government planned to have an increase in the various telecommunications facilities provided in the country. The following were planned for:

- Number of telephone connections from 51,000 to 85,000
- Number of telex subscribers from 215 to 700
- Number of Public Telegraph Offices from 95 to 155

By the end of the SNDP, the Government had commissioned the Mwembeshi Earth Satellite Station, in october 1974. This led to the improvement of international telephone services, telex and other telecommunication facilities. The TNDP saw an increase in the investment in the telecommunication sector of the economy. The Government allocated K79,835 million to this sector. Mainly the money was to be spent on the following projects:

- Installation of an international telex exchange
- Improvement of inter-territorial communication
- Establishment of a national trunk network
- Automatic exchange and local distribution network

- Telephone exchange and bearer system
- Maintenance and support services
- Satellite earth station

Investment in the telecommunication sub-sector under the Fourth National development was estimated at K243.9 million.

2.5.3. Research, Scientific and Technological Development

In a developing country like Zambia, the need for a strong and well established scientific, industrial and technological research infrastructure cannot be over emphasised. As evidenced from the FNDP the Zambian Government realised the importance of this fact and established the National Council for Scientific Research (NCSR) by an Act of Parliament, in 1967. The Council's statutory functions are to advise the Government on scientific and technological research policy and to co-ordinate and promote scientific research in Zambia and relate such research to the requirements of the country's development plans.

Since the FNDP, all subsequent development plans have each contained some programmes of action concerning the NCSR. The SNDP allocated K9.9 million to NCSR out of which K4.5 was for capital expenditure, while the TNDP allocated K6 million for capital expenditure to NCSR out of which about K3.7

million was to be used on laboratory development. During the same period of the TNDP, plans were included to train about 20 and 70 Zambians at PhD and M.Sc levels respectively who were to occupy various posts at the Council. During the period of the Fourth National Development Plan, the Government estimates for the NCSR was K841,421,000.

Apart from the NCSR, the Government has also been encouraging research in other sectors and has established various research institutions in various ministries.

CHAPTER 3

INFORMATION TECHNOLOGY AND ITS APPLICATIONS: AN OVERVIEW

3.1 DEVELOPMENT AND GROWTH OF INFORMATION TECHNOLOGY

People have always needed to process and organize information, and advances in information processing technology has always been a response to the growing need to find better, faster, cheaper and more reliable methods of information management. The search for better ways to manage information has gone through various stages of changes and improvements and the technology being used in the processing of information has advanced at a fast pace in the last five decades. To appreciate and understand the technology being used in information management today, an examination of its evolution is useful. The following sections review the development and growth of computer and telecommunications technologies and their applications in information management.

3.1.1 Computer Technology

It has taken thousands of years for information processing to evolve from the use of notches on stick to the applications of the latest computer systems. One of the earliest mechanical computational devices was the Abacus which

has been in use since about 450 B.C in Asia and Greece (Wu 1979). The Abacus consisted of a number of beads strung on rows of wires set in a rectangular frame.

The computer concept originated when a 19 year old French philosopher and mathematician, Blaise Pascal, developed a rotating adding machine in 1642. Since Pascal's invention a number of people contributed in one way or another to the development of the modern computer. Notably are Gottfried Leibnitz, a German mathematician who constructed a machine to add, subtract, multiply, divide and calculate square root, in 1694; Charles Babbage, a British mathematician and engineer who by 1822 developed the concept and built a machine that could execute complex computations and print results; Ada Augusta Byron, who worked closely with Babbage on his machine and she is often referred to as the first computer programmer; Dr. Herman Hollerith, who was commissioned by the United States Census Board to develop a technique for speeding up the processing of census data and went on to develop a device to code data onto punched cards and automatically tabulate. Hollerith was also one of the founders of the International Business Machines Corporation (IBM).

Also included on the list of major contributors to the development of the computer are John Vincent Atanassof, who formulated the principles of the first automatic electronic

calculator at Iowa State University and with the assistance of a graduate student, Clifford Berry, constructed the Atanassof-Berry Computer (ABC); and Professor Howard Aiken of Harvard University, who in collaboration with engineers from IBM and with the support of the US Navy developed the first Automatic Sequence Controlled Calculator, later called MARK 1.

However, the history of modern electronic computer systems began less than 60 years ago with the successful completion of the ENIAC (Electronic Numerical Integrator and Calculator) at Moore School of Electrical Engineering of the University of Pennsylvania in 1946. The ENIAC, the first large scale fully integrated electronic computer, was built under the direction of John W. Mauchly and J. Presper Eckert. Among its many components, it contained some 18,000 vacuum tubes, 70,000 resistors, 1,000 capacitors; used over 150 kilowatts of electricity; occupied more than 1,500 sq ft of floor space; weighed 30 tonnes and could perform 5,000 additions or subtractions and 300 multiplications per second (Mandell 1979). The first active computer to have the stored program feature was the EDSAC (Electronic Delay-Storage Automatic Computer) which was completed in 1949 at Cambridge University under the direction of Prof. Maurice Wilkes. Work on the EDSAC had started in 1947. Instead of wired control panels, instructions stored in the computer itself controlled the operations of the machine.

Since the introduction of the first commercial electronic computer in 1951, the UNIVAC 1 (Universal Automatic Computer) the computer has evolved through four generations and currently there is a concept of the fifth generation which is expected to emerge by the turn of the century. The features of each generation are discussed very briefly below.

3.1.1.1 First Generation Computers 1951-1959

The UNIVAC 1, as indicated above, belonged to the first generation of computers. It was built by John W. Mauchly and J. Presper Eckert who were responsible for the ENIAC.

First generation computers used vacuum tubes to control internal operations. The tubes were fairly large in size and they generated considerable heat. They occupied considerable amount of space and required special air conditioning equipment to dissipate the heat generated by the tubes. Their internal capacity was limited and many used magnetic drums as storage medium. They were programmed in machine language and this was cumbersome and time consuming. Programming of first generation computers began with the development of programs to translate symbolic language into machine language by Dr. Grace Hopper in 1952 at University of Pennsylvania.

3.1.1.2 Second Generation Computers 1959-1964

By the end of the 1950s the transistor had been developed and was available for commercial installation. The second generation computers used transistors instead of vacuum tubes. This greatly reduced the heat generated by the machines. It also made possible the development of computers which were significantly smaller and more reliable than those of the first generation. Second generation computers were faster, had increased storage capacity and required less power to operate. Magnetic drums were replaced by magnetic cores as the primary internal storage medium. In many of them, the internal or main storage capacity was supplemented by the use of magnetic tapes for external or auxiliary storage. Input and output devices were also improved.

Programming of second generation computers was in high level languages which were application and problem oriented than machine oriented, i.e FORTRAN (Formular TRANslator) and COBOL (COmmon Business Oriented Language) used for scientific and business data processing respectively.

The most popular business oriented second generation computer was the IBM 1401. Its typical application included payroll processing, invoicing and maintenance of personnel records.

3.1.1.3 Third Generation Computers: 1965-1971

Continued technological advances in the field of electronics and solid state physics brought further reduction in computer size, improved reliability, speed and lowered the cost. Integrated circuits replaced transistors.

Other improvements were (i) greater storage capacity, (ii) versatile programs that automated many tasks previously handled by human operators, (iii) greater compatibility of components allowing easier expansion to permit remote input and output, (iv) ability to perform several operations simultaneously, and (v) capability to handle both business and scientific applications.

Third generation computers were programmed exclusively in high level languages. Progress was also made in the development of operating system software , programs to control the computer's operations and facilitate its use. Examples of third generation computers are the IBM 1360 and NCR 395 minicomputers. Their applications were mainly in airline reservation systems, market forecasts and credit card billing.

3.1.1.4 Fourth Generation Computers: 1972 - ?

Fourth generation computers are characterised by large scale integrated circuits (LSI), increased speed, greater reliability and storage capacities approaching billions of characters. The emphasis is on ease of use and application. Most systems have communication capabilities that permit remote input and output via communication channels such as satellites and ordinary telephone lines. The LSI technology allow circuits containing thousands of transistors to be densely packed on a single silicon chip.

Examples of the fourth generation computers are IBM 3033, Apple II (Minicomputers) and IBM Personal Computers. Fourth generation computers are used for various purposes some of which will be discussed later in this thesis.

3.1.1.5 Fifth Generation Computers

Predictions and ongoing researches point to the possibilities of developing fifth generation computers by the year 2000. This type of computer, according to Bishop (1986:50), "is conceived as a series of interconnected databases and parallel processing machines, accessed by means of intelligent inference machines which can (among other things) accept problems in a natural language".

Bishop (1986) goes on to state that the main functions of the fifth generation computers will not be information processing in the actual sense but, drawing inferences from knowledge bases. These computers are to incorporate a much higher degree of intelligence than contemporary computers, approaching that of human experts in certain circumstances. The main application area is expected to be the solution of highly complex problems, requiring a considerable measure of reasoning, intelligence and expertise, usually ascribed to people.

3.1.2 Telecommunications Technology

The importance of telecommunications systems can be illustrated by the following eight situations adopted from the report of the Independent Commission for World Wide Telecommunications Development (1984:7):

> " A Civil Servant whose Minister has to make an urgent announcement in the capital needs a crucial statistic from a provincial centre.
>
> A banker needs to confirm a customer's credit-rating to gain him a contract whose deadline is about to expire.
>
> A health worker on an island devastated by a typhoon wants to know whether urgently needed medicine will arrive for an outbreak of cholera.
>
> A farmer needs advice on combating a fungus which is destroying his crop.

The manager of a cannery wonders when the next consignment of fresh fruit will arrive from the interior.

A rural cooperative wants to know what price it will get for its beans in the capital.

A mother worries about her son who has left the village in search of work in the city.

A villager needs urgent information on farming equipment".

In the above situations, all the people involved need urgent information in order to solve their problems. Thanks to advancements in telecommunications systems, they need not travel long distances to get the answers. In most cases, a telephone call or a telex message or a facsimile message or a radio message can serve the purpose.

Telecommunications systems have become the vital arteries of our advanced world today. Without them, the whole world would probably grind to a halt. This section examines the major components of telecommunication and the recent advances in this vital technology.

3.1.2.1 Telegraph and Telephone

Both the telegraph and the telephone were developed in order to facilitate distant communication. Samuel F. B. Morse developed a code of dots and dashes representing letters and

punctuations in 1835. This code, known as the Morse Code, is used in sending messages over telegraph wires. He built his telegraph line between Baltimore and Washington in 1843. Its public use was inaugurated on May 24, 1844 with the message "What hath God Wrought". The telegraph helped in distant communication but its major drawback was that it was a one-way communication system.

Interested in the telegraph, Alexander Graham Bell attempted to solve the problem of sending messages over the same wire at the same time. He approached the problem through acoustics and electricity, the result was the invention of the telephone which he patented in 1876, in Boston. The telephone enabled people to communicate almost at the same time over the same wire.

3.1.2.2 New Technologies in Telecommunications

Now a little more than a century since the invention of the telegraph and the telephone, technology has advanced and revolutionised these two telecommunications systems, especially the telephone. While the initial telephone was developed to carry human voices and was based on analogue devices, the new devices use micro-electronics. Telephones have gone digital. Human voice is transformed into electric impulses and carried over the wires to the other end where

they are transformed back into voice signals. The telephone has brought the world closer.

Advancements in telecommunications technology have made possible complex world wide communication networks. Digital technology has been introduced in both public and private communication networks, especially in the developed countries; large capacity and high speed fibre optic transmission; radio transmission; packet switching technology; satellite communications technology, mobile communications technology, local area networking technology, and digital based integrated service digital network (ISDN) are among the new communications technologies. The following section examines four technologies because of their potential in computer data transmission.

3.1.2.3 Digital Technology

Analogue signals have been used in the transmission of messages over telephone lines for quite some time. However, the advent of computers and the need to transmit data over long distances required that analogue signals be converted to digital signals. Digital data takes on discrete values unlike analogue data which takes on continuous values. The quantization of signals into discrete bits of numerical information is known as digitalization.

The introduction of the Pulse Code Modulation (PCM), the process in which a signal is sampled, and the magnitude of each sample with respect to a fixed reference is quantified and converted to a digital signal led to the digitalization of the telephone network, switching and transmission systems. Digital technology and digitalization has a number of advantages over analogue technology in data transmission, some of which are the reduction in cost, fewer number of interface circuits with digital switches; virtually any message be it voice, motion picture, or music can be transmitted, stored or manipulated in digital form; and digital transmission offers the added advantage of distortion free transmission of data.

3.1.2.4 Satellites

Communication satellites systems offer a transmission capacity over long distance, unobtainable by current earthbound technology, and in terms of services and traffic they are primarily being used to transmit long distance phone calls and to relay radio and TV programmes. They also carry facsimile, electronic mail and tele-conferencing transmission and are being used increasingly for high capacity, long distance data links between computers and computer users.

3.1.2.5 Fibre Optics

Fibre optics are tiny strands of special glass no wider than a human hair (Unesco 1989), that carry thousands of telephone conversations or other digitalized data in the form of extremely fast streams of light impulses. Light travels down the strands and is converted back into sound or whatever at the other end. Thus this can allow six thousand telephone calls to be transmitted along a single fibre simultaneously (Unesco 1989, 66).

Fibre optic technology is quickly becoming the preferred medium of transmitting voice, data and video, especially over long distances. With optical communication, the entire 30 volumes of the Encyclopedia Britannica can be clearly transmitted in a tenth of a second (copyright laws permitting) (Rice Jr. 1980).

3.1.2.6 Integrated Service Digital Network (ISDN)

Latest technologies in telecommunications - digital switching, digital data transmission, modern signalling and control subnetworks-, and the need to transmit information in a variety of forms: voice, data, image and video over the same network lines have led to the concept of the Integrated

Service Digital Network (ISDN). Some of the benefits provided by ISDN service, which is being implemented in some developed countries are that users no longer need modems for data conversion from analog to digital, all forms of data (ie. voice, picture) can be transmitted over the same network and same line simultaneously, the service is faster, clearer and more error fee, and the customer controls services available on particular lines (Sherman 1986).

Trials for the ISDN started in 1984 when Nippon Telegraph and Telephone company of Japan began trialling its INS ISDN-alike service. The model system was restricted to Tokyo suburbs and it made available digital facsimile, high-speed data communications, video and high-quality digital voice telephones (Purton 1988).

Since 1984, various trials of ISDN have been conducted. Trials of the British Telecoms IDA ISDN- alike service began in 1985. France and Germany ISDN trials began in 1987, and in America a number of Bell Operating companies have been carrying out trials of as near as can be the full ISDN specifications.

3.1.3 Growth of Information Technology Industry

The Information Technology industry is currently among the leading industries in the world. The following table shows its growth and estimates for the period 1986-95:

Table 1

World Production of Information Technology Systems

Growth Estimates, 1986-95

	$ Billion (1)			Average Annual % growth
	1986	1990	1995	
Hardware	224	253	621	12
Software	84	174	433	20
Telecommunications(2) and computing servives	85	107	143	6
TOTAL	393	643	1197	13

1) At 1985 exchange rate

2) Telecommunications equipment solely for the public network

SOURCE: OEDC (adapted for the text from Gabel 1989, 56)

3.1.4 Optical Disk Technology

Optical disk technology is another development in information technology that is having positive effects on information management, and thus is worth examining. This technology has introduced new ways of recording, distributing and storing of information, particularly by means of the CD-ROM (Compact Disk Read Only Memory).

3.1.4.1 The CD-ROM

The CD-ROM, as Laub (1986, 47) points out, "represents an exciting break-through in information storage technology. It is a new publishing medium, the centre of a new genre of computer applications, and an educational tool of unprecedented power"

CD ROM technology developed was from CD audio technology and uses the same basic drive mechanism and disk manufacturing processes. Using a laser beam, data is recorded or read on the CD-ROM. Laser (Light Amplification by Simulated Emission of Radiation) beam draws pits on the CD-ROM disk surfaces. Thus the CD-ROM hold various forms of information. It can record graphics, animation, images, video, text and natural sound. The capacity for one CD-ROM disk is so large such that it can store at least 660 megabytes of digital data with accuracy and

reliability as good as those available with the best computer peripherals, and any piece of information can be located within 1 second of start of search for it (Laub 1986). One CD ROM disk can hold

". 75 minutes of music,
. 275 000 pages of text (A4),
. 1 500 5.75 inch of floppy disks,
. 18 000 pages of computer graphics,
. 9 000 pages of graphics and 8-bit stereo audio,
. 1 800 digitized images (200 dots per inc, 12:1 compression),
. 4 500 hours of digitized voice (16kbs) or
. an entire text of 20 volumes encyclopedia with an index to every word, filling 25% of the total space on the disk" (Heimburger 1988, 6).

The use of the CD-ROM in libraries and information centres is briefly discussed in section 3.1.6

3.1.4.2 Hypertext

Hypertext, "the ability to navigate through text in a non-sequential manner that provides links to associated data through the use of keywords, hot keys, and/or buttons" (Brooks

1988, 124), is another major development in information dissemination brought about by advances in computer technology. Traditional methods of recording and using information on paper requires that the user reads it in a sequential manner, and it is difficult to read related information at the same time. In an hypertext system, the user is allowed to identify relationships between information and to display related information on the screen. The first hypertext system was developed in the early 1960s by Douglas C. Engelbart, although the term "Hypertext" was coined by Ted Nelson in the mid-sixties (Ofiesh 1986).

In an hypertext system on CD-ROM, for example, a user interested in African birds may perform a search and retrieve information on birds in the eagle family. Highlighting FISH EAGLE, he gets a text on the Fish Eagle, further on by pressing another key, it may give him the picture of the bird, and the audio sound. Thus the information on the African Fish Eagle and its picture are both displayed on the same screen, and added to this is the birds' sounds.

The application of hypertext system in an information storage and retrieval system, especially on CD-ROM databases, is a very useful way of disseminating information. Users, are able to get almost all the information that they require on an item on one database.

3.1.5 Impact of Information Technology on Society

Information Technology is becoming a dominant force in the world. It is rapidly changing the world and this change is a matter of great significance because it is affecting profoundly the cultural, socio and economic aspects of life. At all levels of society, especially in developed countries, people are being enriched through more immediate and convenient access to information as a result of the development of information technology. Its impact has been felt in the home; education and training where self programmed instruction has seen a resurgence in computer-assisted instruction and the traditional education system has been enhanced through broadband program delivery via cable; health, where doctors are using expert systems and computers to diagonize diseases and prescribe medicines; defence and security, through the use of IT missiles like the US cruise missiles have been programmed and can hit the target with almost 100% accuracy; finance and commerce, where transfer of funds from one bank to another across continents no longer need bulk paper work as it is being done electronically; the industry where programmed robots are being used in more hazardous work environment where people could not work before; and in the office where the word processor, the telephone and a host of the latest technologies have changed the work environment and made repetitive routines more efficient.

Information Technology has also affected the way information is managed at every strategic, tactical and operational level within organizations. It has brought increased and improved information products and services to administrators and managers, enabling them to develop new concepts in handling information and decision making. The impact of IT has also been felt in the traditional information institutions such as libraries, documentation and information centres.

3.1.6 Impact of Information Technology on Libraries

The impact of Information Technology on the traditional information institutions is seen to be in two categories. Its impact on activities concerned with information storage and retrieval, and on those concerned with housekeeping routines.

Libraries, information centres and documentation centres are now providing their clientele with much better and more efficient information services through the use of Information Technology. They are now capable of accessing information from remote data bases through the use of online services. Computer terminals, telephone lines and data communication networks, that is Information Technology, provide the link between the libraries and remote computers containing vital information in data bases.

Computers are also being used in various house-keeping operations and activities in libraries. Library functions such as acquisition, cataloguing, classification, serials control, circulation control and the collection of management statistics are now being automated.

The use of the CD-ROM has resulted in the replacement of large reference publications, such as, directories, bibliographies, dictionaries, medical reference books, statistical studies, encyclopedias, etc (Heimburger 1988).

Application of information technology to information management has resulted in overall improvement in the performance of libraries and other related information institutions. The use of Information Technology in libraries is here to stay and already there are talks about a different form or type of library to emerge in the 21st century, the electronic library.

3.1.7 Summary of the Impact of Information Technology on Information Management

The table given below summarises the impact information technology has brought on various aspects of information handling.

Table 2

Information Technology and Information Handling Activities

Some Examples

INFORMATION ACTIVITY	CONVENTIONAL TECHNOLOGY	INFORMATION TECHNOLOGY
1. Generation of Data and Information	Writing; Typing; Carbon Copy; Typesetting; Dictionaries for Spelling	Word Processing; Character Recog.; Instrument Recog; Voice Recog. Spelling Checks.
2. Record/Store Data and Information	Paper; Microform; Handbook; Filing Cabinet	Magnetic Medium; Video Cassette; Electronic Filing; Database; CD-ROM.
3. Organization, Indexing, Retrieving of Data and Information	Card Index; Punched Card; Abstracting; Indexing	DBMS; ISR, Automated Process; Hardware Solution.
4. Manipulation; Synthesis of Data and Information	Centralised Data Processing; Calculator; Manual Graphics; Manual Diary	DDP; Software Solution; Electronic Scheduling; IBS; AI; Fifth Generation Computers
5. Communication and Dissemination of Information	Post; Telephone; Telex; Personal Communication	E-Mail; Telefax; CD-ROM; Viewdata; Computer Conferencing; Electronic Document Delivery; Laser/Optical Disk.
6. Weeding Out; Destruction	Shred; Burn; Destroy Medium	Magnetic and Optical Erasure; Re-use Medium.

SOURCE: A. Neelameghan (Class Lecture Notes)

3.1.8 Integrated Systems

Developments in computer technology, data communication technology and software engineering have resulted in the creation of more powerful and more efficient systems, integrated systems. Integrated systems present an opportunity to reduce the cost of information management using the latest technology. The section briefly examines these systems. Integration is mainly at two levels, hardware integration and software integration.

3.1.8.1 Hardware Integration

Currently, unlike in the past, a number of different hardware can be connected to one another and provide useful services. Microcomputers can be networked to a server, or connected to the mainframe computer and share the same peripherals such as storage disks and printers. The domestic TV screen is now being used as a display device and is connected to the public telephone network, as a means of transmitting information from a host computer (this is the case in Viewdata, a form of Videotex). The ISDN, is another form of integrated system that is developing. As seen earlier, this system is capable of transmitting all forms of data, be it video, audio etc, on the same network.

3.1.8.2 Software Integration

Initially, most software packages were developed to be used for a specific purpose or task. Thus there was need to acquire various software for various tasks. However, the trend now has shifted to integrated software production. These integrated packages permit the user to perform several different tasks because a number of programs are integrated on a single storage disk.

Examples of integrated software packages are Lotus developments of Lotus 1-2-3, which enables the user to carry out spreadsheet analysis, retrieve data from a data base and display graphic material; Symphony and Jazz, which add word processing and communications functions to the calculating, graph-drawing and data-organizing functions already available on Lotus 1-2-3 (Forester 1987). Other available software are Framework, dBase III PLUS and dBase IV form Ashton-Tate; Excel from Microsoft; and Sidekick, a desktop jotter designed by the Philippe Kahn, a Frenchman.

CHAPTER 4

INFORMATION TECHNOLOGY IN AFRICA

4.1 INTRODUCTION OF INFORMATION TECHNOLOGY

Computerisation in Africa mostly started in the 1960s. Like in most developing countries, the public sector was the first and is still the major user of computers in Africa. Sierra Leone started using computers in 1963, Tanzania in 1965, Malawi in 1966, Kenya in the mid-1960s and Zambia in the early 1960s (Kaul and Han 1988). According to Kaul and Han (1988), most of the systems installed in developing countries were in the public sector and were based on the hardware and software designed by and for the industrialised nations. Computers were concentrated in government sectors for various reasons among which were the cost and size of the equipment available at that time (mainly mainframes); centralised administrative systems required elaborate management and support infrastructures and these could be relatively more easily set up with the help of the supplier and they could be maintained within a limited and tightly controlled government environment (Kaul and Han 1988, 1.1).

Advances in computer technology have led to the availability of cheaper, smaller and more powerful microprocessors, and with it computerisation in Africa has diffused in other sectors of the economy. Computers are now being used in agriculture, mining, meteorological forecasting, rural development, project management, in health services and in many other areas. Table 3 shows examples of sectors that are computerised in some African countries.

The CD-ROM technology application has also been introduced in a number of institutions across Africa. For example the Institut Senegalais de la Recherche Agricole(ISRA) in Senegal creates CD-ROMs of its documents and disseminates the information to its members and the International Council for Research on Agroforestry (ICRAF) in Kenya uses CD-ROM for AGRICOLA database searches (National Research Council 1989).

4.2 COMPUTER INDUSTRY IN AFRICA

The industrial sector in most African countries is undeveloped and so it would be quite unfair at the moment to expect a developed indigenous information technology industry. However, as Gabel (1989, 58) wrote "there are some skills and an embryonic national industry in Algeria, Cote d'Ivoire, Senegal and Gabon but the plans use technology which is imported or applied by foreign firms".

Table 3

Some Sectors Computerised in African Countries

Country	Sector	Purpose
Angola	Energy	Petroleum: Geophysical research, prospection and production
Botswana	Education	Processing of Primary School Leaving Examination
Gambia	Trade	Processing of foreign trade statistics
Cote d'Ivoire	Health	Management and distribution of pharmaceutical products in major hospital centres
Kenya	Mass Media	Daily Nations use computers in the production of its newspapers
Nigeria	Transport	Transportation policy studies in the Ministry of Works
Senegal	ISRA	Publication of data on rain, soil and general agricultural conditions using desktop publishing
Zambia	Mining	Production control, mechanization and cartography in the copper mines
Zimbabwe	Posts	Post Office:management of current accounts and savings (deposits)

SOURCES: Birindelli (1989), Computers in Africa (1989), National Research Council (1989) and Kaul and Han (1988)

With the help or collaboration of foreign firms, computers have been assembled in some countries in Africa. The computer fair, held in Yaonde, Cameroon, in April 1988 saw the introduction of the Cameroonian PC "Ramses I" and Senegal's "Taaw" (Gabel 1988). TEK, a firm established in 1986 in Botswana started the manufacture and assembling of its own IBM PC compatible machine under the label TEK PC 88 (Computers in Africa 1989). It is important to note that in all the above cases the electronic components used for the assembling of computers or manufacturing, are imported form outside Africa.

However, one country in sub-Saharan Africa that is establishing itself in computer manufacturing is Nigeria. The Anambra State University of Technology (ASUTECH), of Nigeria, had by 1983 developed its own brands of mainframe and microcomputers. The University team, led by Professor O. N. Mobison, an electrical engineer and computer scientist, designed four computers; three mainframes - the ASUTECH 800, the ASUTECH 801 AT, and the ASUTECH 8000; and one microcomputer - the Onuku (the Ibo word for "stupid man") (Computers in Africa 1990). Fabrication of these computers has been done in Nigeria using imported electronic components. The University has also gone on to establish the ASUTECH Computer Company to continue the production of the computers.

While the manufacture of hardware in general is negligible, software production appears to be doing better although it also has its own problems. Nigeria, Zimbabwe, Cote d'Ivoire and Kenya have the potential to produce software in Africa. Although software development may not be capital intensive, it certainly requires considerable computer skills and expertise. Africa has very few qualified computer scientists and as such locally developed software in most countries lack quality and sophistication when compared to world standards. In most cases they are just first attempts at writing and developing computer software.

Despite the skilled manpower problems in software development, some notable successes have been recorded, and the illustrating example is that of Tara Systems Ltd, a Nigerian computer company. Tara has developed a good number of packages among which are Autobank, a complete merchant/commercial banking system; Tarabank for branch banking; Tarafares for international banking operations; Taraman, a personnel/payroll system; Tarastock for inventory management; and TaraGL, a multi-company, multi-currency accounting system (Fiofori 1990). Of all the banking packages in Nigeria, Tara's Autobank system has the largest installed base. Tara Systems Ltd is also active in Ghana, where it is the largest database supplier; in Cote d'Ivoire and the Republic of Benin.

Another notable achievement in the field of IT in Africa is the production of the CD-ROM databases. A Zimbabwe company, Media Technology, has developed the Svinga CD-ROM disk containing details of over 75 national parks and safari areas; 200 cities, towns and villages; 50 lakes, dams and rivers, 200 biographies of prominent Zimbabwens; and also included are nearly 1000 maps, drawings and pictures and extensive economic data (Dickinson 1991, 14). The Svinga CD-ROM is an idea information source on Zimbabwe for visitors and investors.

4.3 TELECOMMUNICATIONS INFRASTRUCTURE

Although there is a sporadic penetration of the African continent by the latest telecommunications technologies, the continent has as yet the least developed telecommunications infrastructure. Although accurate data is scarce, various examinations of the relationship between the number of telephone line in service and the size of the population, a measure used to determine the penetration of telecommunications within a country, reveals very sad situations. The United Nations (1979) revealed that the telephone penetration or density in Africa was 0.44 lines per hundred persons as compared to South American continent which had 4.5 lines per 100, or the Asian continent with 5.2 lines per 100. Minshull (1989) also indicated that according to figures compiled by AT & T, the US telecommunications giant,

the number of telephone lines in Africa (including South Africa) in 1986 had reached just over 3.2 million, with a density of 1.6 lines per 100 people, and only 0.9% of the world total. During the same year, 1986, it is interesting to note that the USA had a telephone density of 45 lines per 100 and West Germany had 42.2 per 100 (Griffin 1990). The figures on telephone density in Africa, although not quite recent, illustrate the slow pace at which the telecommunications infrastructure has been developing in the continent.

The recently developed telecommunications technologies, ie. fibre optic transmission, satellite communication, packet switching transmission and the ISDN service, are yet to be introduced in many countries.

The Economic Commission for Africa recently observed that the telecommunication infrastructure in many African countries is characterised by:

"(i) Conflicting policy signals from government,
(ii) Haphazard and uncoordinated planning,
(iii) Poor quality of service,
(iv) Under-utilization of available resources,
(v) Lack of manufacturing capacity,
(vi) Inadequate logistic machinery (manpower, equipment/tools, transportation),
(vii) Proliferation of different technologies leading to problems of interworking the system and inadequate executive capacity" (UNECA 1992, 7).

However, in spite of all of the above mentioned problems, African governments are trying bit by bit to improve the telecommunication infrastructure on the continent. The following section, 4.3.1 , examines what is being done in this area.

4.3.1 Efforts to Improve Telecommunications in Africa

The importance of a well developed telecommunications infrastructure in Africa has been recognised by various governments, non-governmental organizations, inter-governmental organizations and donor agencies, and efforts are being made to improve the situation. Mainly, the Pan-African Telecommunications Union (PATU), and the Union Africaine de Postes et Telecommunications (UATP) (African Posts and Telecommunications Union) are specifically concerned with the penetration, development and application of telecommunications technologies in Africa.

PATU is an intergovernmental body, established in 1978 as a specialised agency of the Organization of African Unity (OAU). Its headquarters are in Kinshasa, Zaire, and its membership is made up of OAU Members States. The activities of PATU have mainly concentrated on the Pan-African Telecommunications Network project, especially in the areas of implementation, operation, maintenance, tariffs, management

and training; and it is also concerned with radio propagation studies in Africa; promotion of manufacturing of telecommunications equipment; and inter-state cooperation in conferences and meetings relevant to the development of telecommunications in Africa (Unesco 1989).

While PATU is concerned with telecommunications development in the whole of Africa, AUPT concentrates on French-speaking African countries. Established in 1961, AUPT has a membership made up of the Posts and Telecommunications corporations of French-speaking African countries. Its activities mainly centres on research on tariffs and regulations, and the creation of multinational training schools and coordination of training practices (Unesco 1989).

The Organization of African Unity (OAU) has continued to recognise the importance of the telecommunications infrastructure to the development of African economies and is trying to improve the situation. Recently, in the Treaty signed by 51 African Heads of State establishing the African Economic Community, Article 63, concerned with the Posts and Telecommunications states that "In the field of Telecommunications, Member States shall:

a). develop, modernize, coordinate and standardize their national telecommunications networks in order to provide reliable inter-connection among member States;

b). establish a Pan-African Telecommunication Network end ensure its utilization and maintenance;

c). establish a Pan-African system of communication by satellite in order to improve telecommunications particularly in rural areas." (OAU 1991, 72)

The Treaty is not yet ratified but the above statements offers Africa the best opportunity to improve and modernise its telecommunication infrastructure . Unfortunately, the onus of doing it still lies on each individual State and it remains to be seen if they will invest in this important sector of the economy.

While every effort is being made to improve the continents telecommunications infrastructure, Africa is still facing serious problems making it difficult for substantial progress to be made in this sector. Lack of funds leading to low investment in the sector is one major problem. As Griffin (1990,35) states:

> "for decades, national PTCs have suffered from chronic under investment and multinational donors, for their part, have done little to help them to catch up or, more importantly, expand rudimentary services they already offer to their increasingly urban population".

The problems of under investments in the telecommunications infrastructure coupled with the fact that there is very little transfer of the knowledge, skills and capacity to manufacture telecommunications equipment, makes the situation more difficult. According to Unesco (1989) what exists in the form of technology transfer is mostly training of local technicians and engineers in equipment usage and management, equipment maintenance and repair, and equipment specifications. This has in turn led to the dependence on developed countries for the introduction of telecommunications technologies into Africa, and it is exactly what is happening.

Any advanced telecommunication technologies found in Africa today have been installed mostly as a result of the initiatives by the vendor companies. For example Fujistu has installed its digital FETEX 150 system, which relies heavily on centralised microprocessor features, in African countries, such as, Zimbabwe, at Bulawayo where a 3000 trunk line system one of the biggest in Africa; in Tanzania at Wadajir, and in Sudan at Barakat, Bajir and Hasaheisa (Minshull 1989). Multiplex exchange systems have also been installed in many Francophone countries, including Cote d'Ivoire, Benin, Burkina Faso, Senegal and Gambia by the French Alcatel-Thomson Company.

4.4 INFORMATION TECHNOLOGY APPLICATIONS IN LIBRARIES IN AFRICA

Computers offer access to a wide variety of information and support more gainful decision making both by the government and individuals, and a number of papers, journal articles and books have been written on the application of computers in Africa in various sectors. However, the application of IT in traditional information systems - libraries, documentation and information centres in the whole of Sub-Saharan Africa is not well documented and in most cases there is insufficient evidence on which to base appraisals of the application of IT in many regions. The survey conducted on the use of computers and telecommunications facilities in libraries and research institutes in Anglophone West Africa by Adeyemi (Adeyemi 1988) showed very low level of computer use in Ghana and Sierra Leone. It also revealed that there were no evidence suggesting meaningful interaction among the various information handling institutions in Ghana and sierra Leone via existing telecommunication linkages which interconnect the five countries in the region (Adeyemi 1988).

However, the mostly readily available information on the current status of IT applications in libraries and information centres is from PADIS surveys on the use of microcomputers in documentation and information centres in Africa. PADIS has conducted two surveys on the subject in 1988 and 1989/90. The

summary of the 1989/90 survey is presented in the following paragraphs.

The results of the survey according to UNECA (1990), out of 61 valid questionnaires that were returned, 75% indicated that they had computer equipment. Of those with computers, 93.5% were using microcomputers, 11% mainframes and 17.4% minicomputers. Nearly 58% indicated that they were using computers for bibliographic and/ or library database management; 54% for word processing, 16.4% for financial and management applications; 16.4% on numerical and statistical applications and 8% used computers for other applications.

As for the software used for bibliographic and/or library data base management, CDS/ISIS in its several forms dominated. Of the 34 users, 76.5% were using CDS/ISIS in its micro and mainframe versions, either alone or in combination with MINISIS. Only 8% used other software. The conclusions drawn form the survey were that centres were acquiring microcomputers at an increasing rate and the percentage of computerised centres is also growing. Also the number of computer based services provided to users is also increasing and the most important of all is the fact that it is becoming clear that information technology offers many low-cost possibilities to Africa to participate in the "Information Revolution" (UNECA 1990,10).

The use of CD-ROM technology in libraries in Africa in the provision of low cost information to user is also being established. The Medical Library at the University of Zimbabwe uses CD-ROM for searches on MEDLINE databases (National Research Council 1989). Addis Ababa University Kennedy Library uses the CD-ROM for databases searches and the production of catalogue cards. The International Livestock Centre for Africa is also among the major user of databases on CD-ROM in Africa. Its applications ranges from retrospective databases searches to the provision of Selective Dissemination of Information

4.5 CONSTRAINTS ON COMPUTER APPLICATIONS IN AFRICA

The major constraints affecting the effective application of information technology in Africa have been enumerated by various authors, among which are Gupta (1987), Zwangobani (1988) and Wilson (1990). The following are among the major constraints:

i) lack of foreign currency

ii) shortage of skilled manpower and inadequate training facilities

iii) inadequate telecommunication services and related infrastructure

v) Information Technology planning and policy deficiencies

4.5.1 Lack of Foreign Currency

The indigenous computing industry in Africa is not yet developed and as a result all the required hardware and software have to be imported from the industrialised countries and other emerging countries in computer manufacturing. Despite the fact that the cost of computing equipment had been reduced drastically, African countries have to pay for them in foreign currency. Of late this has presented several problems due to the fact that many African countries are facing serious economic problems that have led to a reduction in their foreign currency earnings. The little foreign currency that is earned mainly through the export of raw materials whose prices on the international market are not competitive is in turn spent on importing expensive food stuffs, raw materials and capital goods for the people and the few local industries of the country. The funds available are not enough to meet the countries's requirements both in the private and public sectors of the economy. Thus, most countries are now depending on donor agencies for the acquisition of computer equipment.

4.5.2 Shortage of Skilled Computing Manpower and Inadequate Training facilities

Skilled computing manpower has been in short supply and especially for experienced and qualified computer

professionals. It has been reported that in some countries a Data Processing Manager has, on the average, only about two to three years computing experience (Gupta 1987:53). The shortage of skilled manpower is worsened by the lack or inadequacy of training facilities for computer personnel in Africa.

Training of computer personnel has mainly been restricted to classical subjects such as computer programming in COBOL, FORTRAN and BASIC and have been conducted mainly by computer firms. A few institutions, both private and government, have also been offering short courses at certificate and sometimes at diploma level in computer basics.

However, first degree courses in computer sciences have been introduced. The University of Nairobi, Institute of Computer Sciences; University of Malawi Chancellor College; Addis Ababa University; University of Sierra Leone; and the University of Zimbabwe, just to name a few, are now providing undergraduate courses in computer science and information processing (Kaul 1988). Despite this, the situation still remains the same, as facilities for advanced courses in computing, systems analysis and design, database management techniques, telecommunications etc, are mostly not available. Individuals are sent abroad for studies in these subjects but due to the scarcity of foreign currency, only a few get the opportunity.

4.5.3 Inadequate Telecommunications facilities and Related Infrastructure

Efficient telecommunications infrastructure is the key factor in the development of a broad based information technology infrastructure as it facilitates wide area networks. Unfortunately, with the telecommunications infrastructure in most African countries being undeveloped it is quite difficult to implement wide area networks. In many countries data communication lines are only available in the main cities. The more technically capable countries provide data communications between the large urban centres but not to the growth points in the rural areas (Zwangobani 1988).

4.5.4 Information Technology Planning and Policy Deficiencies

In order to derive optimum benefits and advantages from the use of computers, it is important that the growth of this industry and the applications of this technology are properly planned. Planning will facilitate proper use of the available resources in terms of funds and skilled manpower. Unfortunately, computerisation in most African countries have in most cases been installed without adequate planning, and without a clear view about what they are supposed to be used for. This has led to under-utilization of equipment. Added to

the lack of planning is the lack of information/informatics policies in most African states.

"There is no full blown comprehensive national information policy in sub-Saharan Africa" (Kisiedu 1988,27). Uncoordinated sectoral policies in some cases do exist, and some countries have made some progress in policy formulation. This lack of a national information/informatics policy creates problems, such as, the difficult in placing responsibility on any one Government ministry or department for the development of information technology in the country. Governments also do not commit themselves fully to ensuring that the sector receives the attention it deserves. Therefore, it is important that for the information technology/information infrastructure to develop, appropriate policies should be put in place.

In addition to the above mentioned constraints on the application of information technology in Africa, the Economic Community for Africa recently indicated that IT application in Africa is hampered by a number of political, socio-economic problems experienced by individual countries, and among these problems are:

"(a) The lack of awareness among policy makers regarding potential strategic opportunities as well as problem areas associated with the use of these technologies.

(b) The lack of understanding of the unique issues associated with planned and controlled introduction of these technologies.

(c) The lack of experimental data on the relative effectiveness of various approaches and techniques for selecting the best alternative responses suited to the needs of a particular country. In specific case of the application of information technologies to African countries (UNECA 1992, 4).

These problems are further complicated by the lack of appreciation of the role of information in development by many African policy makers and planners leading to neglecting of the development of the information infrastructure in various countries.

4.6 PAN AFRICAN DEVELOPMENT INFORMATION SYSTEMS

Pan African Development Information System (PADIS) is worth discussing in the context of information technology applications in Africa's information systems. PADIS, established in 1980 with the overall objective of establishing a regional information system in Africa which will serve as a conduit for information and data for development, centred around national, sub-regional and regional networks to which all members will voluntary contribute information and share their information management techniques. PADIS was the first information system in Africa to use computers for database development (UNECA Report on PADIS. 1992). Since then, PADIS has worked towards the introduction of information technology

in Africa through its various programmes and projects. It has provided advisory services to governments, regional and sub-regional institutions and economic groupings in Africa on the utilization of appropriate information technology.

PADIS has and still continues to provide training in computers, mainly at basic level, in subjects like word processing, MS-DOS, desktop publishing, CDS/ISIS software, and PADIS methodologies for its network members. Currently, there are 36 national participating centres in PADIS network spread across Africa. These are in addition to sub-regional centres like ESADIS, CADIS, WADIS etc, and institutional participating centres.

Currently, PADIS is engaged in a pilot project towards computer networking in Africa. The project received a grant of US$185,000 from the International Development Research Centre (IDRC of Ottawa, Canada). It aims, among its many objectives is "to improve the flow of development information in Africa, contribute toward the appropriate utilization of data communications information technologies in Africa and to develop online linkages between existing information systems and networks in the region" (UNECA. PADIS 1990, 1). Through this experimental project, the following eleven institutions participating in PADIS network have succeeded in effecting computer-mediated communication to PADIS and to each other.

a) Through GreenNet in London

African Regional Centre for Technology (Accra)

GHASTINET (Accra)

The Association of African Universities (Accra)

RECOSCIX - WIO project (Mombasa)

b) Directly Using Modems

Environment Liaison Centre International (Nairobi)

International Livestock Centre for Africa (Addis Ababa)

National Scientific and Technological Documentation Centre (Addis Ababa)

Ethiopian Standards Authority (Addis Ababa)

School of Information Studies for Africa (Addis Ababa)

African Regional Organization for Standardization (Nairobi)

c) Through GEOnet in London

The Council for the Development of Economic and Social Research in Africa (CODESRIA, Dakar)

The project, despite the problems it has encountered, most of which are associated with those discussed in section 4.5 above, should be seen as an important step towards the promotion of the use of information technology in Africa.

PART TWO

INFORMATION INFRASTRUCTURE IN ZAMBIA

CHAPTER 5

INFORMATION INFRASTRUCTURE IN ZAMBIA

5.1 INFORMATION INFRASTRUCTURE

A country's information infrastructure is made up of various institutions concerned with the generation, processing, transmission, storage and dissemination of information produced in the country or acquired from outside. Included in the information infrastructure are information systems and services (academic, school, public and special libraries), archives and museums, the publishing industry, the mass media, information technology industry and research institutions. Added to this list are policies aimed at enhancing the performance of the information infrastructure, information specialists and information related professional bodies. This chapter examines the current status of the information infrastructure in Zambia. The status of information technology is presented in the next chapter.

5.2 INFORMATION SYSTEMS AND SERVICES

Libraries in Zambia are the most widely distributed information institutions in the country. There are academic libraries, serving institutions of higher learning; public

libraries; school libraries, attached to secondary and primary schools; and special libraries, serving government departments and ministries, parastatal companies and other institutions. Each type of library is discussed in the following sections:

5.2.1 National Library

It should be noted that Zambia has no National Library to coordinate library functions in the country. However, the functions of a national library are shared among four institutions, and these are:

University of Zambia Library - Reference function
Zambia Library Service - Lending function
National Archives - Depository function
National Council for Scientific Research Library - Documentation function

Each of the above institution has a legislation designating it to serve as such (i.e National Archives) or was declared in a political speech (i.e University of Zambia Library).

5.2.2 Academic Libraries

Zambia has two Universities; the University of Zambia established in 1966, and the Copperbelt University established in 1988. There are also a number of technical and vocational colleges, primary and secondary schools teachers' training colleges, and some business studies oriented colleges. Each of these institution has a library serving the information needs of its academic staff and students.

5.2.2.1 University Libraries

The University of Zambia Library established in 1966 and moved to its permanent building in 1969 on the Main Campus, is the largest library in the country both in terms of the size of the collection and its building. Its collection is well over 400,000 volumes, and subscribes to more than 2000 journal titles and receives 200 more titles by donations and exchanges (UNZA 1988). The School of Medicine located at Ridgeway Campus and the School of Veterinary Medicine, have each a library to serve their students and faculty members.

The Copperbelt University Library was initially established in 1978, when it was serving the University of Zambia at Ndola (UNZANDO) campus. Following the establishment of the Copperbelt University (CBU) in 1988, and the

incorporation of the Zambia Institute of Technology (ZIT) as the School of Technology into the CBU in 1989, the UNZANDO Library and the former ZIT Library merged to finally form the Copperbelt University Library. The CBU Library has a collection of well over 16,000 volumes and subscribes to about 160 journal titles.

The two university libraries, despite financial difficulties being experienced in the country, are relatively well financed and their book stocks are quite up to date.

5.2.2.2 College Libraries

Various libraries exist in technical, business and teacher training colleges in Zambia. Despite this being so, a good number of them have difficulties in developing their collections due to lack of funds. Their collections are quite old and journal subscriptions are almost non-existent. This has resulted in poor services to the library users. However, there are exceptions and these are libraries attached to academic institutions belonging to parastatal companies. Libraries of the Posts and Telecommunications Corporation Staff Training College in Ndola, the ZIMCO Institute of Management and the Zambia State Insurance Business Trust College are relatively better than those in Government run

colleges. They have book budgets and in most cases provide a variety of services.

5.2.3 Public Libraries

Zambia's public library system can be classified into three categories: (i) libraries under the Zambia Library Service, (ii) those under the District Councils and (iii) libraries operating under international organizations, specifically the British Council and the United States Information Agency (USIA).

5.2.3.1 Zambia Library Service Library Network

The Zambia Library service was established in 1962 with a grant of K82,000 (£43,000) from the Ford Foundation for its initial book collection and its terms of references at inception were:

" 1. To establish a public network of libraries throughout the Republic of Zambia in conformity with the trends of development in Zambia.

2. To run primary and secondary school library network.

3. To establish and run ministerial and government libraries.

4. To eventually take over public libraries that have been in the hands of local authorities" (Walubita 1978, 88)

Except for the establishment of the public library network and a few ministerial and government department libraries, the other terms of references have not been implemented due to various reasons among which is the shortage of funds and qualified manpower in ZLS.

The ZLS Library network mainly serves the rural population. The Service has opened a number of regional libraries in provinces which serve as distribution centres of materials to libraries in the rural centres. The network is managed from its headquarters in Lusaka.

5.2.3.2 District Council Libraries

Almost all district towns along the "line of rail" stretching from the town of Chililabombwe, in the northern part of the Copperbelt Province, through Central and Lusaka Provinces to Livingstone town in the Southern Province of Zambia have district public libraries under the local authorities. With a few notable exceptions, the state of most of these libraries leaves much to be desired. A good number of them are stocked with a few outdated books, mainly fiction. Very few educational materials are available. The main reason for this poor state of affairs has been due to poor funding. Most of them for years have had no book budgets. Periodicals found in these libraries are mainly local daily newspapers.

The Ndola Urban District Council Public Library System and the Lusaka Urban District Council Public Library systems are among the exceptions in this category of libraries. The Ndola Public Library has a collection of well over 80,000 volumes while the Lusaka Public Library has about 60,000. The two well stocked libraries provide good services to readers.

5.2.3.3 International Governmental Agencies

The British Council runs two public libraries, one in the capital city, Lusaka at its headquarters and the other in the Copperbelt Province in Ndola town. The Unites States Information Agency (USIA) runs a library, the Martin Luther King Jr. Memorial Library, at its headquarters in Lusaka.

Among the public libraries in the country, these three are the most well stocked libraries. The reasons are quite obvious, funds for running the libraries being available. Their collections are up to date; they subscribe to a number of journals and provide a variety of library services to the public.

5.2.4 Special Libraries

Realizing the importance of accurate and up to date information in decision making, a number of government

ministries, private and parastatal companies have established libraries in their organizations to serve their respective information needs.

In general all special libraries are well stocked, but notable among them are the Zambia Consolidated Copper Mines (ZCCM) Group Technical Library and Information Services, Mount Makulu Agricultural Research Station Library under the Ministry of Agriculture, Food and Fisheries, and the National Council for Scientific Research Library and Documentation Unit. The ZCCM Group Technical library has a collection of about 16,000 volumes, 34,000 volumes of documents and subscribes to about 300 journal titles. Mt Makulu Library has well over 28,000 books, 24,000 documents and subscribes to over 100 journal titles , while the NCSR Library has over 9,000 volumes of document materials and subscribes to about 380 journal titles.

5.2.5 School Libraries

While academic libraries and special libraries are well established and well taken care of despite financial problems, and the majority of public libraries are limping, school libraries, with some exceptions, are almost inactive in the country. The state of school libraries in the country was well elaborated at a seminar on the Plight of School Libraries on

the (Zambian) Copperbelt which was organised by the Zambia Library Association in 1984. At this seminar, the results of the survey conducted by the Association revealed the:

> "1. absence of libraries in secondary schools (not only on the Copperbelt, but also in other parts of Zambia),
>
> 2. absence of reading materials to augment the teachers' efforts in their determination to impart knowledge to their pupils,
>
> 3. absence of qualified personnel to manage whatever resources are available" (Lundu 1984, 69).

At the same seminar, Kashoki, elaborated further on the sad state of affairs concerning school libraries in Zambia with the following words (Kashoki 1985, 6):

> "... in most schools as one sees it today is that the school library, if one exists, is a facility that does not appear to be perceived as critical to the learning process.
>
> The school library is just a sufferable adjunct to the schools arsenal of teaching instruments.
>
> ... funds with which to equip the libraries adequately are largely absent, partially because of the relegation of the library to the position of an incidental appendage in the school's estimation of priorities."

Today, eight years after the seminar, the situation has not improved and is getting worse as the Government does not seem to address itself to the problems of school libraries. In fact, the few "school libraries in existence continue to be in a sorry state and some are disappearing from the school scene

in order to give way to the demands for more classrooms that have been caused by increased annual intake of pupils" (Kakoma 1991, 3).

The above gloomy picture of school libraries in Zambia, is confined mainly to Government run schools. A number of privately run schools, especially those run by parastatal companies and international communities, have well established libraries. The Zambia Consolidated Copper Mines has a number of trust primary schools and a secondary school with good libraries, so is the International School of Lusaka and Licef School both in Lusaka, and Lechew School in Kitwe.

5.2.6 Archives and Museums

Archives and museums are an important part in a country's information system. Archives (Unesco 1983, 47) "share with libraries, documentation centres, and scientific and technological information systems and services an interest in the preservation of information source materials, terminology, information dissemination and use, and technological developments applicable to the information field, including especially automation and reprography". Museums, like archives, also contribute a great deal to the country's information system. They preserve very important historical materials that are of great value as sources of information.

Zambia has a number of public and private archives and museums. The National Archives of Zambia collects and preserves government documents. As seen earlier, it also serves the depository function of a National Library. Copies of all materials published in Zambia are deposited at the National Archives.

The national museum, the Livingstone Museum, is located in the Southern Province of the country, with a branch in Ndola on the Copperbelt Province. It aims at collecting all historical relics and artifacts about Zambia.

The efforts of the National Archives and the Livingstone Museum are supplemented by a number of smaller private and district council archives and museums. ZCCM has its own mining archive; the Ndola Urban District Council has its museum located near the site where the plane carrying Dag Harmmaskjold, the former UN Secretary General crashed in 1961.

5.3 THE PUBLISHING INDUSTRY

The publishing industry helps in the recording of information that has been generated in physical formats. Published materials like books, journals, brochures, directories, indexes, reports, etc, all contain information

that is useful or will be useful at some time. Thus the importance of a strong national publishing industry can not be over emphasised in that it facilitates the capturing and recording of information generated in the country. Local authors, researchers, artists and many others can have their thoughts and works published, thus adding to the total knowledge store in the country.

Publishing in Zambia began with the formation of a voluntary organization, the African Literature Committee of Northern Rhodesia in 1937 (Chirwa 1980; Rooke 1986). The Committee's main task was to produce books for Africans to read. In 1947, the Committee was formalised by the Government and it came to be known as the Northern Rhodesia Publications Bureau and one year later, in 1948, its activities were expanded by the formation of the Joint Northern Rhodesia and Nyasaland Publications Bureau. This enhanced the Bureau's book production and distribution activities in the country.

In the publication of books, the Bureau used to work hand in hand with the established publishing multinational firms such as Macmillan, Oxford University Press, University of London Press and Longman.

At independence in 1964, the Bureau's name was changed to Zambia Publication Bureau and operated as a department in the Ministry of Education. In 1969, it was dissolved and all its publication programmes were taken over by the National Educational Company of Zambia (NECZAM), a subsidiary of the private publishing company, Kenneth Kaunda Foundation (KKF), established in 1966. The Foundation had another subsidiary, National Educational Distribution Company of Zambia (NEDCOZ) whose task was the marketing and distribution of educational materials such as textbooks, published by KKF. In 1971, by an Act of Parliament, KKF became a statutory corporation and its two subsidiaries, NECZAM and NEDCOZ, merged with the holding company.

At present there are over 30 publishing houses allocated with ISBN publisher identities in Zambia. Despite this, the active publishers are very few. The most active ones are the KKF, University of Zambia, Multimedia Zambia Limited, PrintPak, the Bible Society of Zambia, the International Book Publishing Company Africa Limited (IBCAL) and the Government Printers.

Unfortunately, it is quite difficulty to obtain statistics of the amount of materials published in Zambia. But this does not mean that no publishing activity is going on in the country. A number of school textbooks, reading materials

(fiction), in both English and some local languages, are being published. However, the number of titles published varies according to the nature of the work and availability of materials such as printing paper.

5.4 THE MASS MEDIA

The mass media- newspapers, radio and television broadcasting- enhances the dissemination of information to a broad audience both at national and international levels. At national levels, the mass media facilitates the dissemination of information from the Government to its nationals. Development programmes, health campaign messages, results of scientific and technological research conducted in the country, are all made known to a large number of people, even to those in the remotest part of the country, through the mass media. Thus a strong mass media, is an important aspect to a country's information infrastructure.

On the international level, the mass media coupled with latest information technology, makes it possible for information and events happening on any location in the world to be made available on other locations within a matter of seconds. A very good example was during the Gulf War in early 1991, when the world was treated to live television coverage of the air bombings of Iraq.

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5.4.1 The Print Media in Zambia

Kasoma (1986) has discussed the history of newspapers in Zambia from 1906, when the first paper in the country, the Livingstone Pioneer was published, to 1983. The following table shows the various newspapers that have been published in Zambia since 1906.

Table 4

Newspapers Published in Zambia From 1906 - 1983

Title	Year	Publisher/Owner
Livingstone Pioneer	1906	W Tranter
Livingstone Mail	1906	Leopold Frank Moore
Northern Rhodesia Advertiser	1935	-
The Copperbelt Times[1]	1932-43	E. C. Wykerd and E.B Hovelmeir
Mutende	1936-52	Colonial Government
The Northern News[2]	1943	-
Central African Post	1948	Alexander Scott
The African Eagle	1953	African Newspapers
African Times	1957-58	Alexander Scott
African Life	1958-61	Sikota Wina
African Mail[3]	1960	Alexander Scott
Central African Mail[4]	1960	Alexander Scott

The Leader	1961-62	Roman Catholic Church
The Northern Star	1962-64	Roman Catholic Church
Times of Zambia	1965-	Lonhro
Sunday Times of Zambia[5]	1965	-
Zambia Daily Mail	1965-	Government of Zambia
Workers Voice	1972-	ZCTU
The Mirror (National Mirror)	1972-	Multimedia (Z) Ltd
The Mining Mirror	1973-	Mining Companies
Weekend World	1978-79	City Radio Ltd
Workers Challenge	1981-	
Sunday Post	1982-83	-

1. Seperceded by The Northern News
2. Superceded by the Times of Zambia
3. Later became the Central African Mail
4. Later became the Zambia Mail, and then Zambia Daily Mail
5. Was formerly Zambia News

SOURCE: Kasoma (1986).

Between 1983 and February 1992, especially in 1991, a number of newspapers have been published in the country. Among those that started in 1991 are Eagle Express (later Eagle), owned by the United National Independence Party (UNIP), MultiParty News owned by the Movement for Multi-Party

Democracy, Weekly Post owned by Post Newspapers, Weekly Spotlight, Daily Express, Sunday Express and the Evening Times and nine other papers owned by Times Newspapers. The Financial Mail, the only weekly dedicated to financial matters was first published in February, 1992. By the end of February 1992, only the following papers, plus a few other small ones, were being published:

The Times of Zambia	Daily
Zambia Daily Mail	Daily
Sunday Times of Zambia	Weekly
The Weekly Post	Weekly
Financial Mail	Weekly
National Mirror	Fortnightly
Mining Mirror	Monthly
Workers Challenge	Bi-monthly
Workers Voice	Fortnightly

5.4.1.1 Circulation Statistics

Recent circulation statistics of the Zambian newspapers, like in most African countries, are scarce. Unesco (1989, 143) gives the following statistics for only two national dailies, the Times of Zambia and the Zambia Daily Mail, for the years 1981, 1985 and 1988:

Times of Zambia

Year	Total	Circulation per 1000 people
1981	57,119	20.6
1985	60,698	17.7
1988	41,415	11.6

Zambia Daily Mail

1981	figures not available	
1985	31,717	9.2
1988	38,953	8.1

The above figures show a decline in the circulation of the two papers, indicating that the increase in the number of copies being produced does not correspond to the increase in population.

The Weekly Post, started in 1991, was expected to begin with a circulation of about 30,000.

5.4.1.2 Local language Newspapers

Up to about mid-1980s, the Government through the Zambia Information Services, used to publish six monthly newspapers in some major local languages of Zambia. The main objectives

of the papers were to communicate general information and popularise government's policies (Ansah el at. 1981). The following were the papers published:

Newspaper	Language	Circulation
Imbila	Bemba	27,000
Tsopano	Njanja	12,000
Lisela-Zambia	Lozi	8,000
Intanda	Tonga	7,000
Lukanga	Bemba/Lenje	6,000
Ngoma	Lunda/Luvale/Kaonde	3,000

SOURCE: Ansah et al. (1981).

The return to plural politics in the country coincided with the Government intentions to publish the papers in 1991. The implicit objective in the Government's decision was to communicate the ruling Party's (UNIP) policies to the people in view of the general elections that were to be held in october 1991. The project took off in the mid-1991.

5.4.2 Radio and Television Broadcasting

The first radio station in the country was opened in 1941 in Lusaka by the Colonial Government and its main objective was to broadcast news of the Second World War to Africans

(Kasoma 1986). Later on prior to the Federation of Rhodesia and Nyasaland in 1953, the station was renamed as Central African Broadcasting Service and it undertook all broadcasting to Africans in Northern Rhodesia (Zambia), Southern Rhodesia (Zimbabwe) and Nyasaland (Malawi). Under the Federation, the control of the Service was shifted to Salisbury (Harare in Zimbabwe).

The Federation was dissolved in 1963 and the Northern Rhodesia Broadcasting Corporation was set up and on Independence was replaced by the Zambia Broadcasting Corporation. Two years later, in 1966, the Corporation was renamed as the Zambia Broadcasting Services.

Television transmission in Zambia started in 1961, twenty years after radio broadcasting. Initially it was an extension of the Rhodesia Television Ltd based in Southern Rhodesia, and was restricted to the Copperbelt Province. At Independence in 1964, Zambia Television Ltd took over the responsibility of television broadcasting in the country and in December 1965, introduced an experimental television broadcasting service in Lusaka. In 1967, the Government took control of the television service and it became a division of the Zambia Broadcasting Services.

In order to improve radio reception and television broadcasting in the country, the Government in the 70s , with the assistance of the Japanese Government, embarked on the building of the new premises, equipped with modern technology, for the Zambia Broadcasting Services. Construction of the buildings was completed in 1982, and the Services moved to the new "Mass Media Complex". Apart from accommodating radio and television broadcasting departments, the Complex also houses the offices of the Zambia News agency (ZANA) and the Zambia Information Service (ZIS). Zambia Broadcasting Services, by the Act of Parliament No. 10 of 1987, was turned into a corporation and thus renamed as the Zambia National Broadcasting Corporation (ZNBC), headed by a Director General.

Currently, radio broadcasts are in English and seven local languages on four channels. Television broadcasting, in colour, is mainly done in English. Local language broadcasts on TV, are done in seven languages, and each is allocated about 1 hour per week.

5.4.2.1 Radio and Television Programmes

Both the radio and television broadcasts various types of programmes, including plays, discussions, music, quiz, variety and magazine programmes. Emphasis is also placed on programmes relating to developmental projects produced or contributed by

various ministries. Various informative programmes like Today in Parliament (sometimes called Inside Parliament) which summarises the major parliamentary debates of the day when parliament is sitting; Lima Time, which focuses on agricultural development in the country and Focus on the Copperbelt which looks at various events happening on the Copperbelt Province are broadcast. Other programmes are produced as and when the situation demands. Commercial firms also do sponsor programmes ranging from discussion programmes to soap operas.

5.4.2.2 Radio and Television Receivers in the Country

Like in the case of newspapers, recent statistics on the number of radio and television sets in the country are not readily available. This can be attributed to the fact that there are no restrictions imposed on individuals purchasing or ownership of the equipment. Radio and television broadcasts in Zambia are provided free of charge and one does not need to have a licence in order to own a set. The United Nations (1990, 282, 287), however, does give the following statistics for the years 1970, 1975, 1980 and 1986:

Television Receivers

Year	Number	Number per 100 inhabitants
1970	17,000	4
1975	23,000	5
1980	60,000	11
1986	100,000	15

Radio Receivers

1970	75,000	Not available
1975	100,000	" "
1980	135,000	" "
1986	528,000	" "

The above statistics indicate that more and more people have been acquiring radio and television sets.

5.5 RESEARCH INSTITUTIONS

The main product of any research is knowledge (information), and therefore research institutions can be said to be among the major generators of information. In Zambia, research is mostly carried by government established institutions and the universities. Other private institutions,

like parastatal companies, do also have their Research and Development departments. In fact the Government has been encouraging and urging industrial organizations to establish R & D departments. This section examines the major research institutions in the country in the field of science and technology.

5.5.1 National Council for Scientific Research

The National Council for Scientific Research (NCSR) was established by the Act of Parliament No. 236 of 1967 with the objective of carrying out scientific and technological research in areas identified to solve socio-economic problems and to raise the standards and quality of life of the people. NCSR also has two research units located in different towns, the Livestock and Pest Research Centre in Chilanga and the Tree Improvement Research Centre based in Kitwe.

The Council's main research areas are: food processing and technology, livestock and pests research, industrial minerals silviculture, rubber, nuclear science, water resources, economic and social environment, building, and textiles. Among its many publications are the Zambia Journal of Science and Technology, Zambia Science Abstracts, NCSR Bibliography, Technical and Annual Reports.

5.5.2 The University of Zambia

The University of Zambia (UNZA) was established by the University Act Number 66 of 1965. The University has nine teaching schools and six research Bureaux/Institutes. The Technological Development and Advisory Unit of the University is briefly discussed in section 5.4.3.

The terms of service for academic members of staff requires that in addition to teaching duties, they should devote themselves to research activities and as such various schools and academic members of staff carry out research in fields related to the courses taught at the institution. Some of the areas of research by schools and members of staff are mechanical, electrical and civil engineering; crop breeding, animal husbandry and animal breeding; investigations in tropical diseases and community health geological, mineralogical and metallurgical investigations

Various publications produced by the University carry some of the research findings are published. The University research reports provide summaries of research projects carried out by members of staff and some scholars outside the University who are affiliated to enable them carry out research appropriate to the country's needs and aspirations.

5.5.3 Technological Development and Advisory Unit (TDAU)

The overall aim of establishing TDAU, in 1974, was to create an instrument enabling the University to adopt a dynamic and coordinated approach in its practical service to the total development of the nation and to stimulate the development of the rural areas towards self-sufficiency (UNZA). The Unit engages in research concerning rural development, small scale industries, alternative energy sources, agricultural mechanization, low cost building materials, intermediate technology and processes, technology needs surveys, technology assessment and extension and market and socio-economic feasibility studies. A bi-annual TDAU Newsletter is published.

5.5.4 The Copperbelt University

Established in 1988, with the Schools of Business, Environment Studies and Technology, the University's research programmes are not yet developed, but are to, among other things, concentrate on technology, especially in the School of Technology.

5.5.6 Other Research Institutions

The following research institutions also operate in the country in different fields :

Mount Makulu Research Station - agricultural research

Geological Survey Department - geology, mineral etc

Institute for African Studies - social sciences and related disciplines

Institute for Human Relations - aspects of human relations

Educational Research Bureau - all levels of education

Rural Development Studies Bureau - problems of rural development

Central Veterinary Research Station - entomology, parasitology, trypanosomiasis, etc

Forest Products Research Division - Ecology, silviculture, mining timber, etc

The above research institutions and many others not mentioned produce a substantial amount of information relevant to the country's developmental needs. They also represent important information users groups.

5.6 INFORMATION RELATED PROFESSIONAL ASSOCIATIONS

The following associations/societies related to information activities exist in the country: the Zambia Library Association (ZLA), the Press Association of Zambia (PAZA), the Booksellers and Publishers Association of Zambia (BPAZ), the Computer Society of Zambia (CSZ) and the Zambia Computer Suppliers Association (ZACOSA).

5.6.1 Zambia Library Association

The Zambia Library Association, initially formed as a branch of the Library Association of Central Africa on 28th April 1965 (Cheelo 1972), is the oldest information professional body in the country. It became an independent Society in 1967 after breaking away from the Library Association of Central Africa. The separation was due to various problems among which was the political problems between Zambia and the then UDI Rhodesia.

ZLA's membership is mainly made up of librarians, documentalists and information officers. It has branches at provincial levels on the Copperbelt Province, Lusaka Province and Southern Province. The Association produces a Newsletter and the Zambia Library Association Journal. It holds workshops, and in the past has organized training programmes.

5.6.2 Archives Association of Zambia

The Archives Association of Zambia was formed in 1987 with the aim of promoting the archives profession in the country; promoting archive and record management activities in companies and institutions; acting as a link between the archives professionals in Zambia and international bodies.

Membership of the AAZ was largely based on institutions and among the first members were the Bank of Zambia, Zambia National Provident Fund, Zambia Consolidated Copper Mines, the National Archives, the United National Independence Party and the Zambia National Building Society.

AAZ produces a newsletter, and provides resource personnel for courses in records management conducted by the Industrial Development Corporation (Indeco) for its subsidiary companies.

5.6.3 The Booksellers and Publishers Association of Zambia

The Association mainly looks after the interests of persons and organizations engaged in publishing and/or distribution of books in Zambia. With a membership of well over 30, the Association aims at encouraging the development

of the book industry in Zambia, and maintaining the high standard traditionally associated with book publishing and book selling. It also aims at promoting the consumption of books by the general public through book fairs.

5.6.4 The Press Association of Zambia

Formed on 8th December, 1983, the Press Association of Zambia's primary objective is to look after the interests and uphold professional standards of journalists in Zambia. Among its other objectives, the Association intends to:

> "publish periodical reports and activities of the Association; and assist in the education of practising journalists or those intending to join the profession" (Zambia Daily Mail 1983, 1).

PAZA operates at the national level, while each district, especially along the line of rail, has a Press Club. The most notable ones are the Kitwe Press Club, Ndola Press Club and Lusaka Press Club. These Clubs organise seminars and workshops at which various subjects are discussed.

5.6.5 The Computer Society of Zambia

The Computer Society of Zambia brings together individuals associated with information technology in the country. Among its objectives, the CSZ aims:

"To provide an educational curriculum examination scheme for members of the Society.

To encourage the creation of interest in, and awareness of information technology in the country.

To provide a vehicle for advising the government and industry on information technology and informatics as well as its implications for the country (CSZ 1990, 1)

The Society also sets down the code of ethics and standards of conduct for its members.

5.6.6 The Zambia Computer Suppliers Association

The Association was formed in September, 1991 and it brings together computer hardware and software suppliers in the country.

Apart from promoting ethical standards in the conduct of business and excellence of work among its members, it also aims at cooperating on matters affecting training and education of computer technicians and other computer personnel in Zambia, and to advise educational institutions on curricula and standards (ZACOSA 1991).

5.7 INFORMATION POLICY ON INFORMATION SYSTEMS AND SERVICES

Like many other countries in Sub-Saharan Africa, Zambia has no overall national policy on information systems and services. However, efforts towards a national information policy have been made. The Zambia Library Association, recognizing the importance of information in national development and the need for a policy to facilitate harnessing of this resource, brought together relevant professionals in the information disciplines at a seminar held in 1987, sponsored by UNESCO. The major objectives of the seminar were:

> "i To sensitise national authorities on the need for and elements to be included in a national information policy for Zambia.
>
> ii To examine relevant issues on national information policy and the problems thereof with particular reference to Zambia's own social, economic, cultural, political, scientific and technological context.
>
> iii To produce a draft document reflecting the thinking of information generators, producers, organisers, collectors and facilitators of information transmission as well as information users" (Lundu 1988, 5).

The notable result of the seminar was the production of a draft document on the National Information Policy for Zambia which was presented in 1987 to the then United National Independence Party's Central Committee which was the supreme policy making body in the country. Enshrined in the Draft proposals were the following principles:

" a) Information is one of the national issues crucial to development.

b). A national information policy should identify and define major areas of information need (in the context of the major objectives of the national development plan).

c). The policy statement should commit the state to provide the proper environment and the means for meeting the identified needs.

d). A national information policy will ensure planned, co-ordinated and strong infrastructural capabilities as the basis for co-operation and resource sharing at all levels (Kisiedu 1988, 122).

From the time the Draft proposals were presented to UNIP Central Committee up to UNIP's loss of the 31 October, 1991 Multi-Party General Elections, no official communication was available as to the status of the proposals. However, the following statement that appeared in the Fourth National Development Plan under the section reviewing the achievements of the Third National Development Plan showed some ambiguity in the Governments's action:

> "Because of its importance as a national organ for dissemination and co-ordination of information through libraries, the Zambia Library Service was designated as the main organ to spearhead the implementation of a national information policy for Zambia" (Zambia 1989, 307).

The information professionals in the country, especially librarians who have been spearheading the push for a national information policy, tried to get clarifications as to which

policy was being referred to. All efforts so far have been in vain. Also the appointment of ZLS as the implementing body, raises some doubts as to seriousness of the Government. ZLS lacks qualified manpower and finances to undertake such an important task.

While the efforts of the Zambian librarians towards a national information policy is well appreciated, it is worth to note that the Draft proposal is mainly:

> " a library oriented set of proposal in which an integrated system is implied rather than stated. In spite of references to 'the network', there is no identification of the structure of the proposed system. The relevance of the new technology is recognised, but not its full impact and dimensions, as only the applications are dealt with and those not in detail" (Kisiedu 1988, 123).

In the absence of a national information/informatics policy, information activities in the country have mainly been uncoordinated. However, issues dealing with the acquisition of computer hardware have been controlled by some government administrative procedures from time to time. The Computer Utilization Committee, established by the Government in the late 70s, has for a number of years ensured that the proliferation of computers in the country is minimised in order to ensure standardization, and it has also facilitated proper selection and utilization of equipment in order to optimize utilization of the scarce foreign exchange (Shitima 1988).

The Committee mainly consists of informatics professionals from major installations in the government and parastatal organizations. Between 1981 and 1985, it came up with procedures requiring, except in rare cases, that only applications for computer equipment sold by vendors already well established in the country were approved. The procedures ensured standardization of equipment used in the country. With the passing of time and the introduction of various mechanisms for the allocation of foreign exchange for the importation of goods into the country, the Committee seems to have gone "underground".

5.8 TRAINING OF INFORMATION PROFESSIONALS IN ZAMBIA

Up-to-date and accurate data on qualified personnel in information and information-related fields in Zambia are not available in spite of the existence of various professional bodies and the Government's Directorate of Manpower Development and Training. This section overviews the training facilities available in the country for librarians, documentalists, information officers and mass media personnel with some emphasis placed on the training of librarians. Training of information technology specialists is examined in the next chapter.

5.8.1 Library/Information Personnel

The University of Zambia's Department of Library Studies is the major institution training librarians in the country. The Department, established in 1966, produced its first Zambian librarians, three graduates, in 1970 and since then up to 1983 a total of 186 librarians have graduated from the Department (Mwiya 1984). This number includes those who obtained Bachelors degree qualifications, non-degree diplomas and certificated level qualifications. Kaniki (1991, 97) indicated that "... based upon the records of the Department of Library Studies of the University of Zambia, between 1984 to 1990, a total of 151 librarians graduated from the University of Zambia. Of these 85 attained the non-degree diploma qualification and 66 attained the bachelors degree qualification".

Currently, the University only runs programmes leading to the Bachelor of Arts with Library Studies. The Certificate course was phased out in 1975, and the Diploma course was suspended in 1990.

Beside the University programme, the Posts and Telecommunications Corporation Staff Training College offers a six month Certificate course in library studies. The programme, initially established in 1978 under the UNDP/ITU

programme for Namibian refugee students, later started admitting Zambian students. The course's annual intake is 10 students and since its inception approximately 130 students have graduated from the college (R.C.M Soko, letter to the author, August 1991).

The Evelyn Hone College of Applied Arts and Commerce has also introduced a Certificate course in library studies from 1990. This programme is run under the Department of Technical Education Vocational Training in the Ministry of Technical Education and Vocational Training. The other courses offered in library studies were those run by the Mindolo Ecumenical Foundation in conjunction with the Zambia Library Association. This was between 1971 and 1973.

5.8.2 Mass Media Personnel

Training of mass media personnel in the country is mainly conducted at four institutions. The university of Zambia's Department of Mass Communications offers a four year degree programme leading to a Bachelors degree in Mass Communication. The Evelyn Hone College of Applied Arts and Commerce has been offering a three year Diploma course in Journalism for quite some time now. The African Literature Centre, based in Kitwe at the Mindolo Ecumenical Foundation, offers a one year diploma programme in journalism, while the Zambia Institute of

Mass Communication offers in-service training in various fields of mass communications.

5.9 INFORMATION USE PROMOTION AND MARKETING

Information is accepted as vital to effective decision-making, policy making, planning, and research and development activities in both the public and private sectors of the economy. Despite this , availability and access to information is taken for granted by many people. This situation is made worse in the sense that even information specialists also take it for granted. For a long time now, information personnel, librarians, documentalists, information officers and information scientists, have relied on the belief that information seekers know and will use information effectively and purposely. Yet this is not the case, and so the need for the information professionals to use information use promotion programmes, user-sensitization programmes and further adopt marketing strategies for promotion of information use and information services. The following sections examines these activities in Zambia.

5.9.1 User Sensitization and Orientation Programmes

The Zambian information user ranges from professionals, researchers, politicians, administrators, educators, students,

needs and desires of individuals in society" Lundu (1985, 21). What then is the situation in Zambian.

Marketing of information in Zambia is almost non-existent. Education, the Zambian traditional environment, attitudes of information users and the general attitudes of the information professionals are some of the problems identified by Lundu (1985, 1989) making it difficult for the marketing of information in the country.

Lundu, in his two papers on marketing of information in Zambia, which I have relied on for this section, points out that the type of education that Zambia inherited from the British, although slightly modified by the 1977 Educational Reforms, had done very little to impart the kind of technical know-how required to promote the use of information for research and development. Most educated Zambians possess the type of knowledge that only enables them to perform routine tasks, and not enough to understand the scientific principles governing their work to enable them improve, modify or change it to suit the circumstances. Thus it could be said that they tend not to care about information.

Despite attaining a certain level of education in Zambia by a good number of people,

> "the Zambian traditional environment is not really conducive to the promotion of information utilization for economic, social,scientific, technological and political development. This is mainly because of the prevailing cultural, psychological and traditional beliefs, attitudes, behaviour, etc, which contribute to the character of dependence upon the notion of 'nature will provide' or the other fellow will do it'" (Lundu 1989, 21).

Lundu goes on to argue that the above mentioned attitudes can not create motivated market segment that could find access to information and its proper utilization a rewarding experience.

The information professionals in Zambia have also adopted the same attitude as the information users, the attitude of "waiting for something to happen". This can be attributed to the fact that they have gone through the same type of education like the users, and to make it worse they do not posses any marketing skills. They lack the technical know-how that could make them understand the local market and its social, cultural, traditional and psychological environment that may affect the marketing of information and information service (Lundu 1989).

If marketing of information is to be successfully done in Zambia, a number of things need to be done among which is the need to re-orient the education system in order to place emphasis on skills to motivate people to use information in

their daily activities, conduct programmes aimed at changing the attitudes of the people towards information and, of course, orienting the Zambian information professionals experts toward the importance of marketing information.

CHAPTER 6

INFORMATION TECHNOLOGY AND INFORMATION MANAGEMENT IN ZAMBIA

6.1 INTRODUCTION

No man is an island. Zambia and Zambians are not alone in the universe. They are part of a wider community and are affected by developments and changes taking place in the community. Chapters 3 and 4 examined the developments and applications of information technology to information management in general, and in Sub-Saharan Africa. This chapter focuses IT and its applications in Zambia.

6.2.1 Computers in Zambia

Computers were introduced in Zambia in the early 1960s, and like in most countries in Sub-Saharan Africa, the first installation was in the public sector. The first machine was an ICL 1500 installed at the Ministry of Finance and was later replaced by an ICL 1905 around 1965 (Shitima 1988).

Since the 1960s, computers have proliferated into both the public and private sector, and now among the major users are the Zambia Consolidated Copper Mines, Urban District councils, Zambia Airways, Zambia Railways, the University of Zambia, the Copperbelt University, the Posts and

Telecommunications Corporations, the Bank of Zambia and a host of other firms.

It is very difficult to make an accurate assessment of the number of organizations using computers and the type of installations available in the country. However, previous assessments have indicted that various types of computer models have been installed in Zambia. Shitima (1986) observed that there were various models of computers installed in the country, among which were over ten ICL ME29's, ICL 2903's and 2904's; IBM system 3's, two IBM System 34's, one IBM System 36, one IBM 4341, one IBM 370/135; National Advanced Systems AS 8000 series; NCR 9020s and 9300s; Wang computers in the form of VS/45, three VS/15; and various models of Personal Computers whose number was estimated to be well over three hundred both in the public and private sectors.

Kelly (1987) in his survey of 104 organizations out of which 47 responded, indicated that between the valid respondents, 33 that were using computers, they had 10 mainframes, 10 minicomputers and 96 microcomputers making a total of 116 installations. In a more recent survey of 55 organizations both in the public, parastatal, and the private (Zambian and foreign) sectors, Kelly (1989) found that between these institutions, they operated a total of well over 660

computers distributed as follows:

Mainframes	16 (2.5%)
Minicomputers	30 (4.5%)
Microcomputers	620 (93%)
Total	**666 (100%)**

These figures although no comprehensive, indicate that the number of computer installations in the country is increasing at a fast pace. Definitely, the number of microcomputers at present could be estimated to be quite over 1000, if those owned by individuals are taken into consideration.

Computerisation is going on at a faster pace in Zambia and it is important to note the main reasons behind this process. Computerisation in the country is said to be due to external factors (Kelly 1989), in most cases than to internal factors. Various aid and donor agencies have played a crucial role in the acceleration of computerisation in the public and parastatal sectors. They have mainly provided computers and personnel to use the equipment and the "motivation for doing this, in some cases, is to provide a data base of information to facilitate project control and review in some of the larger aid projects" (Kelly 1989, 8).

In the case of private companies, especially subsidiaries of foreign based parent companies, computerisation is mainly done under the direction of the parent company; while some Zambian organizations engaged in international activities have computerised mostly in order to compete or collaborate with other organizations on the international market.

6.2.1 Computer Industry

There are well over 15 computer firms selling hardware, software and offering services related to information technology in the country. Firms operating in Zambia are ICL (Z) Ltd, Woodgate Computer Systems (IBM agents), Techzam-Olivetti, NCR Zambia Ltd, RDS Business Machines (National Computers Systems agents), Computers Services Ltd (Wang agents), Data Care Ltd, Computech (Country agent for Apple Macintosh, AST Research and Microsoft), SCNR Computers Africa Ltd, Stainless Computer Services, APMAC Computer Systems (Apple Macintosh agents), Computer Systems (Z) Ltd, Sil Data Systems (Software House), Realtime Computers (DEC agents) and PGK Finance (Cybertek Computers).

In spite of the large number of computer firms operating in the country, the market is dominated by IBM and ICL computer equipment. NCR has captured the banking sector market, while Apple PCs have also started consolidating their

position. Almost all the equipment sold in the country is imported as complete, and except in a few cases, payment is made in foreign exchange.

The country's first locally assembled PC was launched on 4th September, 1991. The Rhino, 386 and 486 based, IBM compatible, Personal Computer, was assembled by Computer Systems Zambia in collaboration with American Information Technologies from the United States (Times of Zambia 1991).

The software industry is just as undeveloped as the manufacture of hardware. The major reason for this is the lack of computer skills among most Zambians. There are a few firms, like Realtime Computers, which are making commendable effort towards software development, but at the moment no firm dominates the market. As a result, dependence is on software packages developed from outside the country, mainly form Europe and America.

6.3 TELECOMMUNICATIONS

As observed in Chapters 3 and 4, a well developed telecommunications infrastructure is an important component of a country's information technology infrastructure. It facilitates the transmission of information, both within and outside the country. Wide Area Networks, and sometimes Local

area network are only possible if telecommunications facilities are available in the country, and in most cases, well developed and advanced. This section reviews the infrastructure in Zambia.

6.3.1 Historical Development

The history of telecommunications in Zambia began in September 1904 with the introduction of the Morse Code telegraphic service between Livingstone (Zambia) and Bulawayo (Zimbabwe). Since then, the major landmarks in telecommunications in the country have been as follows:

1913 - Introduction of Public Telephone service in Livingstone. The installed exchange had 50 lines

1926 - A 100 line manual exchange board is installed in Livingstone

1931 - The first telegraph printing apparatus, the Creed Wheetstone, was installed between Livingstone and Bulawayo

1931 - Ndola, on the Copperbelt Province, became the second town in the country to have a telephone exchange

1933 - On 23rd October, the first trunk service between Zambia, Zimbabwe and South Africa is commissioned

1933 - On 27th November, overseas telephone service was inaugurated by the Government of Northern Rhodesia

1937 - Introduction of subscriber's dialling facilities

1958 - Introduction of the telex service with eleven subscribers

1966 - Commissioning of the Lusaka - Copperbelt microwave link

1971 - National trunk dialling was commissioned

1974 - Commissioning of the Mwembesh Earth Satellite station

1975 - The General Post Office (GPO) became a parastatal body on 1st May, following a parliamentary bill. It became to be known as the Posts and Telecommunication Corporation

1975 - 1985 Various microwave links were commissioned link almost the entire country

1985 - Introduction of the International Direct Dialling (IDD) facilities

1988 - Commissioning of the Mwembeshi II Earth Satellite

1990 - Commissioning of five digital telephone exchange in rural area towns at Makeni, Solwezi, Mansa, Chinika and Mongu

SOURCES: Chongo (1991) and PTC (The Posts and. 1990).

6.3.2 Status of Telecommunication Infrastructure

Telecommunications in Zambia can be said to have developed at a fast rate to a certain degree than computer development. In terms of transmission and switching techniques, Zambia's telecommunications network has reached the digital stage. The major towns of Zambia, Lusaka, Ndola and Kitwe, are served with digital exchanges and now PTC's efforts are towards the digitalization of the rural telephone network. All provincial centres in the country have group switching centres to handle traffic from various areas and to

interface district exchanges within the national network. As from 1985, after the introduction of the IDD facilities, Zambian subscribers are able to dial directly to any part of the world without operator assistance.

In early 1992, PTC introduced a telephone service named US DIRECT. The service introduced in conjunction with AT & T of the United States of America enables telephone subscribers in Zambia to gain direct access to AT & T operator by simply dialling 00 899. The service, which is a Reverse Charge (Collect Call) charged to an AT & T calling Card or Call-me-Card, is available in the country from all exchanges with IDD facilities.

Zambia currently has 9 international telex circuits among which is the computerised international exchange opened in Lusaka, in 1976. The Lusaka exchange enables subscribers to have automatic trunk dialling services to most countries all over the world. Telex public call services are available in the towns of Lusaka, Ndola, Kabwe, Kasama, Mongu, Luanshya, Livingstone, Mufulira, Solwezi, Chipata, Chingola, Choma, Mansa and Kitwe.

By 1985, the country already had high capacity microwave links with some of its neighbours- Malawi, Tanzania and Zimbabwe, and the country is linked to Kenya and Botswana through Tanzania and Zimbabwe (ITU 1985).

The two earth based satellites, Mwembeshi I and Mwembeshi II, connect the country to the outside world. Mwembeshi I transmits to the Indian ocean region satellite, while Mwembeshi II transmits to the Atlantic region satellite. The transmission are through the space based satellites owned by INTELSAT. The two earth satellites provide telephone, radio and television, telegraphic and data transmission services between Zambia and the outside world.

Facsimile facilities were introduce in the country in the late 1980s and a number of organizations both in the public and private sectors are using the facility. The PTC also provides fax services to the public. Data communications lines are also supplied and installed by PTC at customer's request.

In terms of transmission media, the twisted pair and coaxial cables are the most widely used. Optical fibre transmission is yet to be introduced. Also the amount of traffic at the moment does not justify the costly investment into packet switching systems.

6.3.3 Telecommunications Statistics

6.3.3.1 Telephone

At Independence there were very few telephone lines, and the telephone density was about 0.5 per 100 inhabitants.

In the 1980s, the number of telephone units and density were as follows:

Year	Number of Units	Line/100 people
1980	61,000	1.1
1984	71,000	1.2
1985	75,000 (at March 31, 1986)	1.0
1986	85,000	1.1
1988	81,000 (at March 31, 1988)	1.1

SOURCE: Unesco (1989, 728).

As at March 31st, 1991, the telephone situation in the country was as follows:

Business telephone lines	31,115
Residential telephone lines	33,942
Total	**65,057**
Telephone density (lines/100 people)	0.8

SOURCE: PTC (1991).

The latest telephone figures and density, of 0.8, indicate a decline in the growth of telephones in Zambia. In fact by the same time, at March 31st, 1991, there were 47,860 applicants on the waiting list.

6.3.3.2 Telegraph

As at 31st March, 1991, Zambia had 94 telegraph exchanges, out of which one is an international exchange based in Lusaka.

6.3.3.3 Telex

At 31st March, 1991, there were 2875 telex lines operating in the country. Two telex exchanges serving the lines are located in the towns of Lusaka and Kitwe. The waiting list for telex subscriber had 1094 applicants.

6.3.3.4 Facsimile

PTC (1990) listed 267 subscriber with facsimile numbers in Zambia. By now, one would expect the number of subscribers with fax machines to have gone up.

The above statistic indicate that there is still more to be done in terms of the provision of telecommunications facilities and services in the country. The telephone density is below 1, the minimum recommendation by ITU for developing countries. The waiting lists for telephone and telex subscribers is growing large each year as more and more people and organizations request for these services. The situation

seem to indicate that the country's population growth has not been matched with adequate investment in the telecommunications infrastructure. Another factor is that telecommunications equipment is imported from abroad and this in turn requires foreign currency. The lack of forex has resulted in PTC not providing satisfactory service to its customers as most modern equipment can not be purchased to replace the obsolete machinery.

6.4 INFORMATION TECHNOLOGY APPLICATIONS

Until recently, the major applications of computers in Zambia has been in servicing the accounting departments of various organizations, among which payroll has been the dominant one. Now, management information systems and other applications are being introduced. The following table shows some major computer applications in both the government and private sectors.

Table 5

Some Major Computer Applications in Zambia

Institution/Organization	Application
Central Statistical Office	Compilation and analysis of census and surveys data
Copperbelt University	Adminstration and Education
Election Office	Voters Registration
Metal Marketing Corporation	Administration/Metal Marketing
Ministry of Education	Processing Grade VII Examinations
Ministry of Finance	Government Accounts, Payroll, Pension
Ministry of Home Affairs	Criminal Records
Multimedia (Z) Ltd	Desktop Publishing
National Commission for Development Planning	Development Project Preparations, Appraisal,Monitoring and Evaluation
University of Zambia	Adminstration and Education
Zambia Airways	Air Ticket Reservations
Zambia Consolidated Copper Mines	Production Control, Mechanization and Cartography in the Copper Mines

SOURCES: Computers in Africa (1990), Kaul and Han (1988), Shitima (1986, 1988) and Birindelli (1989).

The table indicate that computer applications is being diversified and as Kapepula (1990, 22) observed "there is a proliferation in the use of computers in all sectors of the economy: banking, agriculture, mining, transport, research, defence and security, medical services, accounting and communications"

6.4.1 Desktop Publishing

Among the new applications areas brought about by advances in information technology is electronic publishing, among which desktop publishing and optical publishing are becoming more popular. Processing of text using computers led to the following two major developments (Gates and Muslin 1982, 47)

> "...first, at the text creation stage it is now possible to make a machine-readable record which can be edited easily and then used either as a master for printing or for driving a typesetter; second, computer power can be used to assemble parts of pages, or even complete pages, by moving blocks of text and picture around on the visual display screen."

Thus desktop publishing presents to the publishing industry of the world today, and developing countries in particular, a number of advantages among which is the fact that the equipment is much cheaper than the conventional printing industry equipment and it is more readily available.

Desktop publishing in Zambia has, since its introduction, mainly been used by advertisers and advertising agencies and mostly they have been sub-contracting their design and graphic works to computer bureaux in the country (Computers in Africa 1990). However, gradually, DTP is finding its way into the county's publishing industry, and it is establishing itself in newspaper publishing. Multimedia (Z) Ltd, the country's largest Christian publishing organization, became the first local publisher to use desktop publishing to produce a bimonthly tabloid newspaper National Mirror, in October 1990, when it acquired an Apple Macintosh II CX computer equipment and software for publishing purposes (Computers in Africa 1990; Chris N. Simfukwe, letter to the author, March 1992)

Post Newspapers Ltd, a private company that publishes the Weekly Post, also uses modern production methods based on desktop publishing in the production of its newspaper. In fact, when establishing the company in 1991, the largest component of the total investment in the company went into the purchasing and installing of computerised desktop publishing equipment (Weekly Post 1991).

Another major publishing firm employing desktop publishing in its operations is PrintPak (Z) Ltd. Owned by the National Media Corporation, PrintPak prints almost all the

major newspapers in Zambia. The organization is using Adus Page Maker software in the production of most of its book publications on Apple Mancitosh computers.

Although desktop publishing is now being used in the country, the general situation is that conventional technology is still the mostly used in the country's publishing industry. This could be attributed mainly to lack of foreign exchange to import modern equipment and to lack of experienced manpower to operate the modern equipment. Optical publishing is yet to be introduced in Zambia.

6.4.2 The Mass Media: Broadcasting

The broadcasting media in Zambia is far behind in the race to introduce information technology and as thus it is still relying heavily on conventional equipment (Hopkins Mapulanga, personal interview, 19 February 1992). Plans to introduce information technology on a wider scale has been hampered by lack of funds.

6.5 INFORMATION TECHNOLOGY MANPOWER DEVELOPMENT

Zambia has only one institution offering a fully-fledged course in computer studies. The three year diploma course, is offered at the Evelyn Hone College of Commerce and Applied

Arts. The course, although introduced in mid-1986, enroled its first 25 students in 1987, and produced its first graduates in 1989. The diploma obtained from the College is of similar standard to the British Higher National Diploma (HND). Currently, among the courses offered are the following subjects:

Computer Architecture and Organization
Fundamentals of Data Processing
Programming and Data Structure
High Level Commercial Langauge (Cobol)
Systems Analysis

These course are studied at advanced levels in the second and third years of the programme.

The Zambia Industrial Mining Corporation (ZIMCO), offers full-time programmes leading to the Institute of Data Processing Management (IDPM) qualifications. IDPM is also offered on part-time at the National Institute of Public Administration (NIPA).

The University of Zambia and the Copperbelt University, the country's highest institutions of learning, offer some computers subjects only as parts or modules of other programmes. Mainly these are in mathematics, engineering,

business adminstration and accounting. Meanwhile plans are underway to introduce an undergraduate degree programme in computer science at the Copperbelt University.

Lack of well established institutions offering computer courses has resulted in computer training in the country mainly being done in-house for most installations. Computer firms conduct short courses for their clients to familiarise them with the installed system. Private firms have also started conducting short courses, mainly for one day, one week or two weeks, for the public and usually this is at exorbitant fees. These courses mostly deal with popular software and packages like MS-DOS, Microsoft Word, Wordstar, Wordperfect, Lotus 1-2-3, Dbase III PLUS, Programming with BASIC, and sometimes Desktop publishing. The Computer Society of Zambia also at times conduct some short computer courses for its members.

Lack of training facilities in the country has also led to organizations sending their staff for diploma, degree and advanced degree courses abroad. This is constrained by the lack of foreign exchange, and so most people sent abroad go under donor agency sponsorship.

The major result of the lack of computer training facilities in the country is the shortage of qualified

computer professionals in the country. This in turn has created many problems at strategic and operational levels. Many installations are manned by less qualified individuals and in some cases less experienced personnel. It is common to find certificate holders in computer programming holding titles like senior systems analysts. Lack of qualified personnel has led to the under-utilization of the equipment and heavy reliance on vendor support for the operations of the installed systems. Most computer users rely on the standard packages supplied by computer firms and often wait for the vendor to tell them what to do next. There is also lack of expertise to expand the use of computers beyond the traditional use- computing.

Despite the situation being so hopeless, certain institutions have made progress in computing and other related areas. The Zambia Consolidated Copper Mines (ZCCM), which in fact is the largest computer user in the country, is self reliant in computer related areas. The organization has its own training facilities, develops most of its software packages and maintains its own hardware with little reliance on computer vendors (Kapepula 1990).

In the field of telecommunications, the situation is far better than in computer training. The University of Zambia offers a degree programme majoring in electronics and

telecommunications engineering; the Copperbelt University in the School of Technology offer telecommunications programmes at technologist level, while the Posts and Telecommunications Corporations, at its Staff Training College, also offer various in-service training courses in telecommunications engineering, switching, transmission and various aspects of telecommunications. However, advanced training in telecommunications and especially in the latest technologies and equipment is done abroad.

PART THREE

RESULTS AND ANALYSIS OF THE SURVEY ON INFORMATION TECHNOLOGY IN LIBRARIES, DOCUMENTATION AND INFORMATION CENTRES IN ZAMBIA

CHAPTER 7

APPLICATION OF INFORMATION TECHNOLOGY IN LIBRARIES, DOCUMENTATION AND INFORMATION CENTRES IN ZAMBIA

7.1 SOURCES OF DATA

In order to get up to date information on the status of IT in libraries, documentation and information centres in Zambia, a questionnaire survey was conducted. Questionnaires were sent to 96 institutions. The survey was intended to be comprehensive and every effort was made to cover as many institutions as possible. Addresses of most libraries were obtained from the minutes of the Zambia Library Association Annual General Meetings of 1989 and 1990. Additional addresses were noted from the Post and Telecommunications Corporation 1990 telephone directory and a few from personal contacts.

7.2 THE QUESTIONNAIRE

The questionnaire used for the survey (Annex 2) was based on the one that was used by PADIS in its survey on the Use of Microcomputers in Information and Documentation Centres in Africa in 1990. A few modifications were made in order to adapt it to the objectives of the present survey. Like the PADIS questionnaire, it consists of three parts:

PART 1: sought general information: name and position of the individual filling the questionnaire, name and address of institution, type of library, telephone, telex and facsimile facilities, type of activities undertaken, kinds of services offered, size and type of collection, staff;

PART 2: sought information on the type and characteristics of the computer equipment used if any, and where applicable, plans for computerization, computer applications, kinds of software, user services and formats of outputs provided using computers, availability of CD-ROM drives, local and external databases used, access to remote on-line databases and plans for on-line access to remote databases;

PART 3: sought information from only those institutions that indicated that they had, or had access to computers. It sought information on the problems they had encountered, both personnel and equipment, availability of service for computers locally, training of personnel, and whether the use of computers had any impact on the work.

7.3 RESPONSES AND DATA PROCESSING

After various reminders and personal contacts, 78 institutions (Annex 3), representing 81.25% response rate, filled out and returned the questionnaires before 30th March, 1992. The quality of questionnaire completion was good and all of them were included in the analysis. Three government departments, a financial institution and four schools libraries returned the questionnaire indicating that they had no qualified personnel to fill them.

The responses were coded and processed using SPSS PC+ V2.0 statistical package on a Tandon 386/20, IBM compatible microcomputer available at SISA. The following were the results of the survey:

7.3.1 All Respondent Institutions

Statistical frequency tables of responses to the questionnaire are indicated in Annex 4.

7.3.1.1 Type of Information System

Thirty-four responding institutions, representing 43.6%, indicated that they had special libraries, 28 (35.9%) academic, 13 (16.7%) public, and 3 (3.8%) school libraries.

7.3.1.2 Size of Library Collection

The sizes of the library collections and number of items added to the collection in 1990 varied a great deal among the surveyed libraries. About 65% had book collections between 100 and 10,000 volumes. Only 34.6% had well over 10,000 volumes and this number included also the two university libraries in the country. Only 3.8% indicated as having periodical collection above 10,000; 6.4% had documents above 10,000, 1.3% maps above 10,000 and the same percentage for audio-visual materials and other materials (mostly standards were mentioned as being over 10,000).

Regarding additions to the collection in 1990, 52.6% added between 100 and 1,000 books to their collection, while only 2.6% had additions of between 1,000 and 5,000, and of above 10,000 volumes. Journals and documents additions also followed the book pattern. Only 2.6% added between 1,000 and 5,000 volumes to their collection in 1990. In general very few maps, microforms and audio visual materials were added to the collections in 1990. The number of maps was below 100, that is 5.1% of the surveyed institutions. Microforms and Audio Visual materials additions ranged between 100 and 1,000 by 3.8% and 1.3% libraries respectively.

7.3.1.3 Documentation Activity

Multisectoral documentation was carried out in 26.9% institutions, 17.9% indicated sectoral documentation; 12.8% bibliographic and the same percentage for bibliographic and referral services. Referral, and the combination of bibliographic, referral and sectoral 6.4% each; 2.6% was indicated for bibliographic and sectoral, referral and sectoral, and a combination of bibliographic, referral and sectoral. About one per cent indicated bibliographic/referral/numeric, and 3.8% did not indicate documentation activity.

7.3.1.4 User Services Provided

About 68% indicated offering current awareness services, 43.2% bibliographic services, 46.2% provided SDI, 44.9% Question-Answer services, and 16.7% indicated that they provided other services as well. Online searches received no mentioning.

7.3.1.5 Classification Scheme and Subject Heading List

About 73% indicated using Dewey Decimal Classification scheme, 12.8% used others, 9% the Universal Decimal Classification and 3.8% the Library of Congress scheme.

Regarding subject headings list, 62.8% indicated using Sear's List of Subject Headings, 10.3% Library of Congress, 11.5% others and 15.4% indicated nothing.

7.3.1.6 Indexing

Forty-six percent indicated that they index their materials by author, title, and subject, 14.1% author and title, 5.1% subject, and the same figure for author, 3.8% indexed using the title, 2.6% author and subject, and the same figure for descriptor and subject; author, title, subject and keyword. Indexing by keywords was indicated by 1.3%, and this was the same for a combination of author, title, geographical, and descriptor.

7.3.1.7 Thesaurus

Only 22 institutions, representing 28%, indicated that they were using thesauruses in the processing of library materials.

7.3.1.8 Professional Staff

The survey revealed that 53.8% of the libraries surveyed had only one professionally qualified librarian, or

documentalist or information scientist each. About 22% had two, and only 1.3% indicated eight professional staff.

Regarding data processing specialists, 2.6% indicated as having one, 1.3% had two specialists and another 1.3% had four.

On the whole, 10.3% indicated that they had no qualified professional staff

7.3.1.9 Computer Facilities

Thirty-three institutions (42.3%) indicated that computer facilities were available. Of these institutions, only 20 libraries (60.6%) were using or had access to computer facilities.

7.3.1.10 Telephone, Telex and Facsimile Facilities

Out of the 78 responding institutions, 76 (97.4%) indicated having telephone facilities available, 29 (37.2%) also had telex facilities. Only 19 (24.4%) did indicate as having facsimile facilities as well.

7.3.2 Institutions with Computers

The following sections present data only on those institutions that indicated the availability of computers.

7.3.2.1 Utilization and Location of Computers

Of the 20 libraries using computers, 65% were special libraries, 25% academic and 10% were public libraries. No school library indicated using computers. As to the location of the equipment, 65% percent had computers located within the parent institutions, 25% located within the library and 10% had the equipment available both in the parent institution and the library.

7.3.2.2 Types of Computers

Thirty percent indicated mainframes, 15% minicomputers and 85% microcomputers. Combination of microcomputers with main frames or minicomputers were also available.

7.3.2.3 Networks of Micros

Seventy percent indicated that the micros were stand alone, 15% indicated that they were networked, 5% indicated both stand alone and network, 10% did not state.

7.3.2.4 CD-ROM Drives

Only three libraries, representing 15% of those using computers, indicated as having CD-ROM drives.

7.3.2.5 Use of Computers

Regarding the purpose for which computers were being used, 70% indicated as using them for bibliographic and library database management, 85% for word processing, 5% for financial and management applications, and the same figure for numerical and statistical applications. Twenty percent indicated that they were also using them for other applications, among which is desktop publishing.

7.3.2.6 Software for Bibliographical Applications

As to the software used for bibliographical and library database management applications, CDS/ISIS (Micro) received 30% indications. A combination of CDS/ISIS and Dbase in its various forms also was indicated by 5% of the respondents. Thirty percent indicated Dbase and a combination of other software.

7.3.2.7 Formats of User Services

Ninety percent indicated that they provide their computer generated services as computer printouts. Thirty percent provide current awareness/SDI bulletins, 40% provide output on diskettes, and 5% indicated 'other'. CD-ROM and magnetic tapes formats received no mention.

7.3.2.8 Databases

Only 35% had developed some databases, and only 15% were acquiring databases from outside. These were in fact those libraries with CD-ROM drives.

7.3.2.9 Access to Remote Databases

No library indicated has having any access to any remote databases. However, 66% indicated that they had plans to connect to remote databases.

7.3.2.10 Efficiency

All 20 (100%) indicated that use of computers had improved efficiency in doing the work to which computers were applied.

7.3.2.11 Training

Fifty percent had the staff trained locally (25% individually, 10% in groups and 15% self-trained) in the use of computers while 30% sent their staff abroad for short courses and 25% for long courses.

7.3.2.12 Problems in the Use of Computers

Out of the twenty libraries using computers, only 9 indicated that they have had problems in the use of computers. Out of these nine or 33.3% indicated inadequacy of peripherals, and the same figure for lack of software documentation and other equipment related problems. 44.4% indicated inappropriate software and the same percentage complained of inadequate computer memory, 22.2% slow processing speed, 55.6% lack of spare parts and the same figure for environmental conditions and 66.7% lack of satisfactory domestic maintenance.

Regarding personnel problems, 66.7% indicated the shortage of trained manpower, 55.6% lack of training facilities, and 22.2% other personnel related problems.

7.3.2.13 Servicing of Computers

Sixty-five percent of the libraries using computers indicated that they received service for their computers locally , and 5% indicated that they called experts from abroad while 10% indicated other measures.

7.3.3 Institutions Without Computers

Asked on whether they had plans to introduce computers in their libraries, 55.6% of the 45 libraries without computers or without access to computers indicated that they had no plans of installing computers. 11.1% planned to do so in 1992, 2.2% in 1993, while 31.1% had plans but the date of installation was not definite.

7.3.3.1 Type of Equipment

Among those with plans to install computers, 15% indicated that their institutions intended to install mainframe computers, 20% minicomputers, 35% microcomputers, while 30% did not know.

7.3.3.2 Computer Use

Asked the purpose computers were to be used for when installed, out of the 20 that indicated that they had plans to install computers, 45% indicated bibliographic and library database management applications, 20% cataloguing and classification, 10% on-line searches and the same number for bibliographic/library database management, cataloguing and classification and online searches, while 5% indicated other applications as well.

7.4 ANALYSIS AND DISCUSSION OF SURVEY RESULTS

The survey on the application of information technology in libraries, documentation and information centres in Zambia revealed a number of points worth discussing. Among the various important points are the following:

7.4.1 Type of Libraries

Regarding the utilization of computers in libraries, most of the institutions using computers are those attached to private and parastatal organizations. In fact 65% of libraries using computers are special libraries, and they are mainly affiliated/located in research, private and parastatal

business organizations. The availability of computers or access to computers in these organizations can be attributed to the fact that most of these institutions have realized the importance of computerisation in improving efficiency in information management. Also funds are relatively more readily available for the acquisition of equipment.

Another point to note is that special libraries have led the way in computer applications, followed by academic libraries. However, the two university libraries, that is libraries of the University of Zambia and of the Copperbelt University, do not have computer facilities of their own. The University of Zambia Library uses the PCs belonging to the Demography Department for its Serials databases created with Dbase III PLUS, while the Copperbelt University Library has access to the University's Computer Centre for its word processing activities. This is in spite of the fact that the two libraries have played a leading role in the introduction of computer facilities at the two Universities. However, concrete plans are under way to computerise most house keeping operations in these two universities, after which they are expected to play a leading role in the introduction of computers in libraries in Zambia as they could also serve as training institutions.

The number of public libraries using computers, as expected, is very low. In fact only two indicated having computers, and these belong to foreign government agencies, namely, the British Council and the United States Information Agency. Almost all District Council run public libraries indicated that they had no plans to introduce computers. This could be attributed to various factors among which the major ones are the lack of well qualified staff in public libraries who can appreciate the essence of computerisation, and the lack of funding. Public libraries in Zambia are some of the most under-funded information institutions as observed earlier on in Chapter 5.

School libraries almost have no future in as far as computerisation is concerned. Unless the level of computerisation in the country reaches a high proportion, I do not see school libraries introducing computers. Poor funding, lack of building infrastructure and lack of qualified manpower will be the major barriers to the introduction of computers in school libraries in the country.

In all it could be said that the potential for the introduction of computers in libraries in Zambia is quite high in the case of special libraries.This is because they have access to the various facilities, both in terms of funds and equipment, that their parent institutions offer. Academic

libraries follow on the list, but considering the fact that most of them are public funded institutions, except for the two university libraries, they will progress at a slow pace. Public libraries and school libraries will be the last institutions to be computerised, if at all, among the libraries in Zambia.

7.4.2 Computer Application.

Introducing computers in libraries is one thing, and using them effectively is another. Computers in libraries as observed in Chapter 3, can be applied to various activities. The two major categories are in house keeping operations and information storage and retrieval systems.

The survey, however, revealed a high incidence of computers being used for word processing activities (85% of those libraries using computers). The sad thing to note is that some of the libraries that indicated as having computers located within their buildings, use them for nothing but word processing. Bibliographic and library database management applications seem to be doing quite well. Desktop publishing, among other applications, also received some mention. No institution indicated the use of computers for acquisition, cataloguing, classification, serials control, circulation control or management information system.

One would like to know the reasons for this state of affairs in the use of computers in Zambia's libraries. One would also like to know as to why some libraries, despite the fact that their parent organizations have computers, do not use the facilities for library functions. A clear picture can only emerge, in my opinion, if the professional library training in Zambia is examined critically. It is this training that produces the Zambian library managers who are in charge of most libraries in the country today.

A closer examination of the course contents of the four institutions which have been training information professionals in the country, and especially that of the University of Zambia which has produced most of the librarians managing libraries in the country, reveals that none of them has a module on information technology or on management of information technology. The University of Zambia offers courses aimed at producing traditional librarians. The course includes subjects such as cataloguing and classification, library management and administration, collection development, bibliography and reference services. Other subjects taught include some special treatment of various types of libraries and services, such as, special, university, public libraries, and archive and records management. The other programmes at certificate level, which have either been run or are being run by other institutions are also largely librarianship

programmes and no programmes leading to information science or information technology management qualifications are offered. The training currently offered has two implications on the Zambian library managers and their libraries.

The first implication is that most libraries have remained static and are not changing or evolving to become information age institutions. The librarians still place emphasis on the collection of information materials, organizing and preservation of the collection in relatively static form (eg books and periodicals), and not on the process of communication of information which in turn will demand the application of information technology. The library's emphasis is more on having than communicating, more on preserving older materials than quickly accessing new materials.

The second implication is that even without a comprehensive survey, one would be right to claim that the Zambian library manager today is "computer illiterate". By computer illiteracy in this thesis is meant the inability to properly understand and apply computers to library functions. Therefore it can be said that Zambian librarians since their formal library training which they have been through at the University of Zambia and the other institutions in the country did not offer them an opportunity to learn about Information technology, its applications to library functions and its

management, it is difficult for them to really appreciate or know how to handle this vital technology in relationship to their library work.

Also since the majority of Zambian Library managers obtained their professional qualification from the University of Zambia and in most cases have not furthered their education in order to familiarise themselves with the impact of the new technologies on their libraries they can not be expected to introduce information technology which they know nothing about in their libraries and it also would be difficult for them to convince the top management in their institutions or organizations to purchase the technology for library use if they thought there was need. This is because they have no sufficient background knowledge about the technology on which to base their argument.

7.4.3 Software for Bibliographical/Library Database Management

Micro CDS/ISIS seems to be gaining ground in Zambia as the main software for information storage and retrieval systems. This could be attributed to two major reasons: first, the software is distributed free of charge by Unesco, and second, various training courses in the use of CDS/ISIS are conducted by Unesco, DSE and PADIS and a number of people are

invited to attend, most of them sponsored by the organisers. Thus the software is readily available, and training is also available. The potential for the use of CDS/ISIS in Zambia can be said to be high, considering the number of libraries with access to computers. If appropriate courses in the use of the software were conducted in the country, the number would definitely go up.

7.4.4 Online Access and Networking

No institution indicated as having online access to remote databases. The main reason for this could be the fact there are no developed bibliographic or any form of electronic databases in the country or organizations providing database services. Those libraries that have developed their in-house databases, the number of records is so small to necessitate sharing on a large scale.

Sixty percent did indicate that they had plans for online access to remote databases. As long as no institution develops databases worth searching, these plans will not be effected. While the PTC does provide data communications line to user when they request, it is a fact that telecommunications tariffs in the country are quite high. Thus connect charges to other remote databases in the country, worse still outside the

country, are prohibitive. The high telecommunication charges are also hindering wide area networks.

However, if ESADIS were operational, online access to various database at ESADIS, and at PADIS to those institutions that can afford the cost, is feasible.

7.4.5 CD-ROM Technology

The importance and usefulness of CD-ROM in libraries were briefly discussed in Chapter 4. However, despite the opportunities presented by this technology for libraries to improve their service, only three institutions had CD-ROM drives. Thus, they are also the only ones with access to external databases available on CD-ROMs.

It is quite true that the price of CD-ROM drives and subscription to various databases could be quite high, but the benefits derivable from this technology, definitely justifies investment in it. CD-ROM databases could be put to various uses. For example, BIBLIOFILE CD-ROM database provides the complete Library of Congress catalogue (MARC) on three disks. This can be used in cataloguing and classification activities and in the production of catalogue cards. Other databases like CABI, CAS, MEDLINE, BIOSIS, COMPEDEX provide also SDI services and other information storage and retrieval activities.

7.4.7 Computer Generated Services

For all only those institutions with computers or have access to computers and are using them, they indicated 70% as the format in which they provide computer generated Current Awareness/SDI bulletins. This could also mean that computers are being used in the provision of Current Awareness services/SDI services. In- house computer generated SDI service, currently, do not require any sophisticated hardware and software. CDS/ISIS and a microcomputer are enough for such a service. Thirty percent did not indicate SDI service and this could either be because they lack qualified manpower in information technology who could exploit computer use to the provision of Current Awareness/SDI services, or they lack appropriate software for such services.

7.4.8 Databases

Only 30% of those using computers indicated as having developed in-house databases. This small number is a matter of concern, especially considering the fact that the country has no major electronic databases where information on various subjects could be accessed.

Bibliographic databases enable the scientists and researchers to gain access to information on research

already performed, information needed for the management of science and technology, for problem solving and information on the evolution of scientific knowledge or the pursuit of science studies (National research Council 1989). Thus the lack of databases, especially local ones, implies that scientists and researchers are not well informed about research developments in their country.

Creation of databases requires expertise in subject analysis, abstracting and indexing, systems design, database management and access to computers. While in the above cases computer access is readily available, the lack of the necessary skills creates problems. This could be the reason why bibliographic databases are missing in the country's information systems.

7.4.9 Data Processing Personnel

Libraries have no data processing personnel on their staff list, except for three. The reason is simple, no computer specialist in Zambia today can be expected to work in the library, when there are better, and well paid positions available for computer specialists in other organizations. This being the case, the onus is on the library training institutions to train librarians in the use of computers in libraries.

CHAPTER 8

INFORMATION REQUIREMENTS OF RESEARCHERS AND TEACHING STAFF IN SELECTED RESEARCH AND ACADEMIC INSTITUTIONS IN ZAMBIA

8.1 INTRODUCTION

Among the major information producers and consumers in Zambia are the researchers and members of the teaching staff in the various research and academic institutions found in the country. Researchers need information on the current researches going on in their field of specialization else where in the world. They also need information to help them in their researches. In turn, researchers generate information and knowledge, and this need to be disseminated as quickly and as widely as possible both within the country and outside.

The teaching staff, as mentioned in Chapter 5, also conduct some research and they need to be kept updated about current developments in their respective areas of interest. In addition, they need information to support their teaching activities. They need to update their teaching materials with the latest information available.

Taking the above expressed views into consideration, a

survey was conducted, aimed at finding out the information requirement of researchers and the teaching staff in the country. The survey was also aimed at assessing as to whether their information needs are being met by the libraries and documentation services available in their respective institutions.

8.2 METHODS OF DATA COLLECTION AND DATA SOURCES

A questionnaire (Annex 5) was prepared for the survey and it consisted of two parts. Part 1 aimed at collecting general information about the researcher/teacher, such as, academic qualification, field of specialization, affiliation, services being offered, whether conducting any research, and subjects taught, where applicable. Part 2 was concerned with the researchers' and teachers' sources of information, such as, the availability of a library at their institution, the purpose for which they use the library, information service provided to them by the library, whether their information needs are met, other alternative sources of information, whether the lack of information has any impact on their work, distance they travel to get to other sources of information, time it takes for them to obtain information materials requested through their libraries, number of journals they subscribe to, and those journals they have no access to.

The questionnaire was distributed to a random sample of one hundred researchers and teaching staff in the following selected institutions:

- The University of Zambia (UNZA)
- The Copperbelt University (CBU)
- National Council for Scientific Research (NCSR)
- Mt. Makulu Agricultural Research Station
- Institute for Africa Studies (IAS)
- Technological Development Advisory Unit (TDAU)
- Tropical Disease Research Centre (TDRC)
- Small Industries Development Organization (SIDO)

8.3 RESPONSES AND DATA PROCESSING

Out of 100 questionnaires distributed, 74 were collected but only 71 were used in the analysis. The other three were invalid. Six more questionnaires from TDAU were missed in the post. Thus the response rate was 71%, and the quality of answers to the questions was very good. The responses were coded and processed on a Tandon, 386/20, IBM compatible microcomputer using SPSS PC+ V2.0 statistical package. The following sections review the responses (Annex 6):

8.3.1 Nationality and Sex

Out of the 71 valid respondents, 66 (91.5%) were Zambians and the rest, 6 (8.5%) belonged to other nationalities. Of the total 71, 84.5% were males and 15.5% females.

8.3.2 Highest Degree/Diploma

About 48% of those surveyed hold a Masters degree, 21.1% doctorate, 12.7% postgraduate diploma, 15.5% bachelors degrees and 2.8% indicated other qualifications.

8.3.3 Field of Specialization

Categorised into broad disciplines of specialization, 69% belonged to the science and technology field, 18.3% to social sciences, 8.5% to education, 2.8% to medicine/veterinary science and 1.4% to the humanities.

8.3.4 Services Offered

About 37% indicated that they are researchers. 18.3% are engaged in research, consultancy and teaching, 15.5% in teaching or training, 14.1% in research and consultancy, 9.9% research and teaching, 1.4% consultancy and 4.2% indicated other services. Asked if they are conducting any research, 51

respondents, representing 71.8%, indicated that they were currently conducting research.

8.3.5 Type of Information System Available

All the institutions from which the sample of research and teaching staff were selected had an information system. Sixty-one percent indicated that they had a library, while 39% indicated a documentation centre.

8.3.6 Purpose for Which they Use the Library

Borrowing of books and journals received 90% of the indications, followed by consulting of journals with 84.5%, and 16.9% indicated that they used the library/documentation centre for other things as well, such as, using the facilities in the preparation of teaching materials, situation papers, and in obtaining information materials from other institutions, both within and outside the country.

8.3.7 Library Services Provided

Asked to indicate the services provided to them by the library or documentation centre, 69% indicated Current Awareness Services, 38% indicated Selective Dissemination of

Information, 11.3% Question and Answer Service, 74.6% Reference service, while online searches received no mention.

8.3.8 Information Needs Met?

Regarding the question as to whether the library or documentation centre meets all their information requirements, 77.5% indicated that it did so to some extent, 11.3% indicated "No", and the same number indicated "Yes".

8.3.9 Alternative Sources of Information

Regarding other alternative sources of information used, 18.3% indicated that they obtained information from friends and institutions based abroad, 31% indicated friends or institutions within Zambia, 7% indicated both local-based and foreign-based information sources, while 16.9% mentioned other source (mostly personal collections).

8.3.10 Impact on Work

The lack of information was said to have some limitations but not serious on the work of 52.1% of those surveyed, while 33.8% indicated that it had serious impact, and 14% indicated no constraints at all.

8.3.11 Time Taken

When information materials are requested through the library or documentation centre, 14.1% indicated that it took between 1 and 7 days before receiving the materials. About 39% indicated that it took over a month; 7% a month; and 5.6% indicated between 8 and 15 days. About 34% did not indicate anything or stated that the service was not available.

Regarding the distance travelled, if they do, to other sources of information, 33.8% indicated that they travelled well over 10km; 19.7% between 6 and 10km, and 14.1% between 1 and 5km. About 32% did not indicate anything.

8.3.12 Number of Journals Subscribed To

Asked to indicate the number of journals to which they personally subscribed to, 64.8% stated nil, 15.5% indicated that they subscribed to one journal title, 9.9% to two, 2.8% to three and four, and 1.4% to five, six and ten titles.

8.3.13 Number of Journals Not Accessed

Asked to state the number of journals to which they think they have no access to, minus those they subscribed to and those the library subscribed to, about 17% indicated four

titles, 14.1% indicated three and five titles, 9.9% two titles, 7% ten, 5.6% six and fifteen titles, 2.8% one title, and 1.4% eight and eleven titles. Twenty one percent did not indicate anything.

8.4 ANALYSIS AND DISCUSSION OF THE RESULTS

Like the survey on the Application of Information Technology in Libraries in Zambia discussed in Chapter 7, this survey also reveals some points worth noting regarding the service provide to researchers and teaching staff. These are discussed below.

8.4.1 Information Service Provided

The survey revealed that the most common service provided is the reference service followed by current awareness service and then selective dissemination of information. Reasons for such ranking could be attributed to various factors.

The provision of reference services received the highest ranking mainly because almost each library has a reference section. Thus each and every person is free to use the section but this does not mean that they always find the information that they are looking for. Research and academic teaching staff are a special category of information consumers and the

type of information they would like to have is particular and not general. Thus when current awareness services and SDI services and not being provided the implication is that this groups information needs are not being attended to.

8.4.2 Satisfying of Information Needs

It is quite difficult to meet all information requirements of a researcher to the fullest extent, but libraries should make every effort to provide comprehensive and pertinent information. The survey indicates that a large number of people have their information needs met to some extent, although a certain number did indicate that their needs were are not met at all. This is a matter of concern and study by librarians and information scientists.

8.4.3 Other Sources of Information

Evidently, researchers and teaching staff whose information requirements are not met by their respective libraries are turning to other sources both within and outside the country. This tendency should be contained. The libraries and information centres should work out ways and means of finding out the information requirements of their users and accessing or works out the means of acquiring the information from appropriate sources.

8.4.4 Journal Subscription

A large number of researchers and teaching staff in Zambia do not subscribe to any journals in their field. Lack of foreign exchange facility is the major reason given. Devaluation of the Zambian Kwacha, has also contributed to this factor in that more Kwacha equivalent to the dollar is required for subscription.

The major implications of this situation is that first and foremost Zambian researchers have to depend entirely, in most cases, on the information service provided to them by their libraries and documentation centres. But also noting that a number of journals in their areas of interest are not available in these institutions, it is clear that they are unable to keep updated with the developments in their fields. This can also explain why a number of them use information sources abroad as the only alternative course.

There is an urgent need to assist the researchers and teaching staff in Zambia in their quest for information to support their work. The following section of this chapter examines how SDI can be used to disseminate information to researchers Zambia in order to help bridge the gap.

8.5 THE NEED FOR INFORMATION DISSEMINATION SERVICES

Provision of a well stocked library collection and a good reference department in a research or academic library does not in itself constitute an effective dissemination of information to researchers and teaching staff. In the world today, more and more information is being produced and all information seekers in various fields are experiencing what might be termed as an "information overload". It is impossible for one to keep in touch with all that is being produced in his subject of interest, even if the library collected everything. As Alvin Toffler (1970, 157) declared "I dont't really know the answer unless we declare a moratorium on publications for ten years".

The ever increasing production of information often termed as "Information explosion" in this "information age" has affected individual information seekers, especially researchers and academics who most of the time rely on timely, and recent information for their work. They can no longer be expected to monitor the world information output and they have to depend only on the core literature in their field of interest but with limited financial resources, it is almost impossible to subscribe to all the core literature. The other alternative available is to rely on libraries, documentation and information centres but these institutions inability to

disseminate information acquired also imposes limitations on the accessibility to information.

Researchers and teaching staff can be effectively served through the provision of effective information dissemination service tailored to their needs. Information enabling them to keep abreast with developments in their areas of interest must be made available at regular intervals by the various institutions charged with the responsibility of disseminating information. The service should enable each individual to have access to at least the 'core' literature in his/her area of interest. One such service that provides this opportunity is the Selective Dissemination of Information (SDI) .

8.6 SELECTIVE DISSEMINATION OF INFORMATION

Rowley (1986, 105) defines SDI as "a current awareness mechanism through which the individual information user can expect to receive regular notifications of the new literature and data in accordance with his statement of interest or 'profiles'". In an SDI service the user profile is the core of the service and Kemp (1979, 110) defines it as "an expression of the current interests and needs of a client stated in a way which enables it to be used to identify records of documents which will meet those interests and needs". The profile

specifies the topics to be covered, keywords pertinent to those topics, and some titles of known relevant papers.

Thus an SDI system can be seen to be based on the following four principles:

1. Each information user has a description of his interests prepared and stored
2. Each new document entering the system has a record prepared and stored
3. At regular intervals, the new records of the documents are compared with information users profiles
4. Details of each record document corresponding to each user profile are recorded and sent to the user.

The above mentioned components and principles of an SDI system also brings out the distinguishing features of the service from all other forms of current awareness service. SDI is a personalised service directed toward an individual user or user groups whereas all other forms of current awareness services are directed at a subject area or a topic (Leggate 1975, 95). The other distinct feature of SDI service is that it is a continuous process and once it has been started, it provides for a continuous flow of information, unless the user decided to stop or changes his profile (Figure 1, adapted from Tedd 1984, 194).

As can be seen from Fig.1, the assessment of the information received from the system by the user, and the subsequent feed back to the system, enables the process of updating user profiles. This in turn facilitates the provision of information to suit the changing needs of the users.

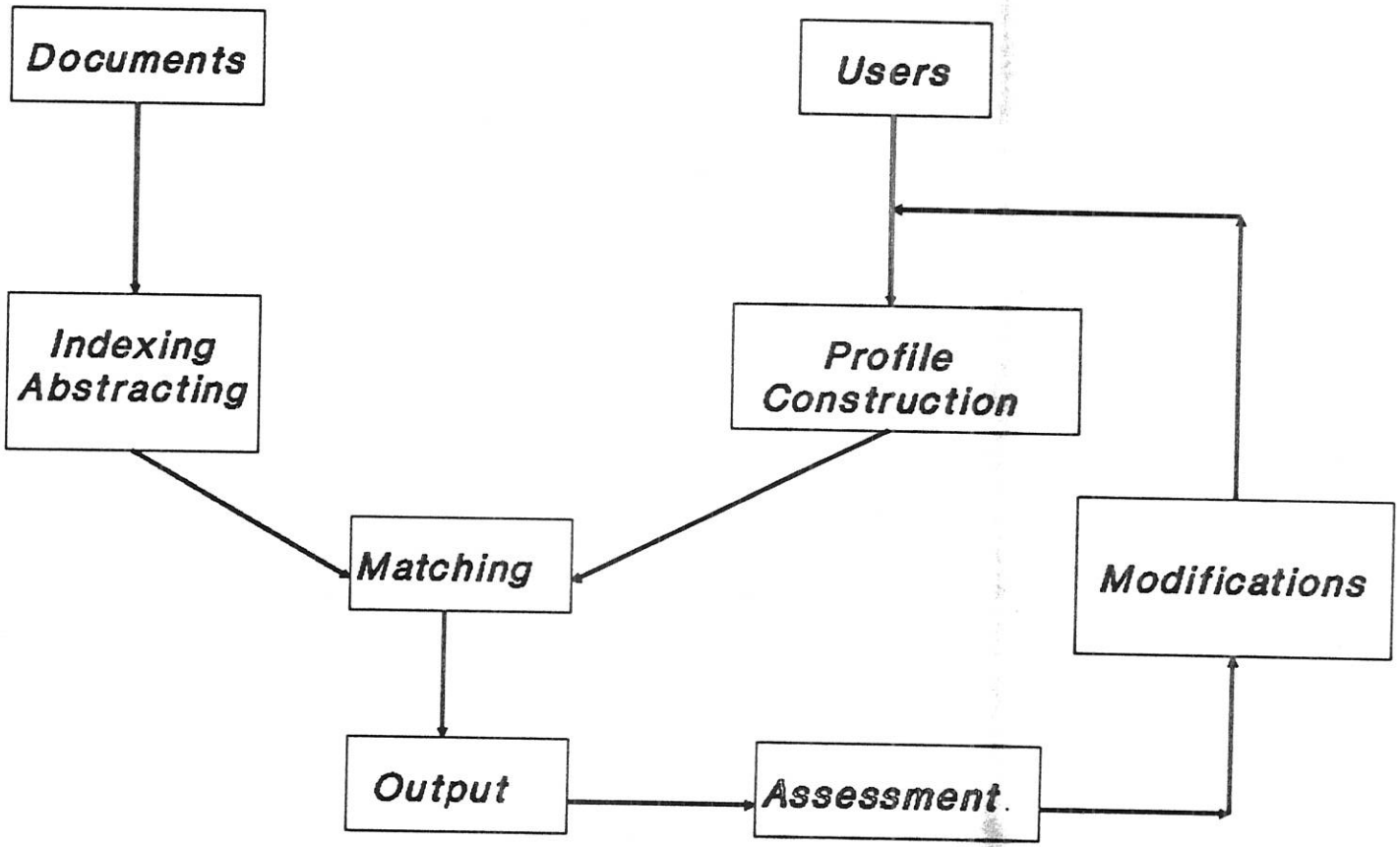


Fig. 1 FLOWCHART FOR AN SDI SYSTEM

The SDI service's main objective is to reduce user effort in trying to browse and select from the thousands of information materials being produced. Thus it is the recommended mechanism for the provision of information to researchers and teaching staff as it is effective in disseminating relevant and timely information to each individual researcher.

8.7 INFORMATION TECHNOLOGY AND SDI

Computers have been in use in the provision of SDI services for quite some time now. The first proposal for an automated SDI service was made by Luhn in 1958 when he proposed an automated Business Intelligence system to disseminate new information to the various sections of an industrial, scientific, or government organization (Mauerhoff 1974). Since then a number of computer based SDI services have been developed and have proved to be efficient in the provision of information.

The main features of an automated SDI service are the hardware, software and databases to be used. Developments in information technology, as observed in Chapter 3, have brought about advancements in the creation of electronic databases. These databases are now the main source of all forms of information and they are currently being widely used in the

provision of SDI service. Databases are also available on CD-ROM discs which can be used in SDI services. Thus the need to introduce IT in SDI services is evident as it provides means of access to vast quantities and range of information.

CHAPTER 9

COMPUTER-BASED SELECTIVE DISSEMINATION OF INFORMATION FOR RESEARCH AND ACADEMIC LIBRARIES IN ZAMBIA: PROJECT PROPOSAL

9.1 OBJECTIVES OF THE PROJECT

The main objective of this project proposal is to outline a basis on which libraries, documentation and information centres, in research and academic institutions in Zambia can enhance the application of information technology to information management and the provision of information services. The proposed SDI service could contribute to the improvement of the work and effectiveness of researchers and teaching staff academic and research institutions through better and timely access to information on current developments in their respective research/teaching areas.

9.2 ORGANIZATIONAL STRUCTURE

The proposed Computer Based Selective Dissemination of Information System for Zambia is initially proposed to comprise the following four institutions on a co-operative basis:

- The National Council for Scientific Research Library
- The University of Zambia Library
- The Copperbelt University Library
- Mount Makulu Agricultural Research Station Library

The above institutions are selected on the basis of their specialization, number of researchers and teaching staff, size and collection of their libraries, their capacity to subscribe to a number of journals in various fields, as well as their potential and plans to automate most of their library activities. Among them they represent the following disciplines: science and technology, social sciences and agriculture. Later on, when the service becomes established, other research centres in the country can be invited to participate.

9.2.1 Focal Point

The focal point, or SDI Centre, of the proposed system, should preferably be an institution that is easily accessible and centrally located. The centre should have a super microcomputer, 386-based, or should have access to the computer facilities of the parent institution, which should be either a minicomputer or a mainframe.

Taking the above criteria into consideration, the National Council for Scientific Research Library located on the airport road, although not centrally located is a suitable choice. Among the four institutions, it is the one that has computer facilities located within the Library, and has on order an IBM PS/2 microcomputer with RAM of 1.44MB and hard disk capacity of 120MB.

Mount Makulu Agricultural Research Library also has a microcomputer located within the centre with 20MB capacity, while the Copperbelt University Library only has access to computer facilities at the University Computer Centre.

Circumstances permitting, the University of Zambia, because of its central position and other facilities that could be exploited for the project, would have been a better and suitable centre. But at the moment it has no access to the mainframe computer on campus and only uses microcomputers located in other departments of the University. However, the SDI Centre could be shifted to UNZA after it has installed its computers.

9.3 PHYSICAL RESOURCES

The physical resources proposed for the system include facilities, trained personnel, equipment and information

resource materials. Since all the envisaged participating centres are already well established, all that is required of them is to make available space for the operation of the system and to readily supply the necessary information resources to the system.

9.3.1 Hardware and Software

For a start, the equipment proposed for the computer based national selective dissemination of information include:

a) A microcomputer IBM PC/XT/AT or a compatible equipment for each centre; with 640K RAM, and one floppy disk drive (preferably for 3.5" double sided and double density); hard disk capacity of at least 20MB. However, the SDI Centre should have a hard disk capacity of at least 80MB.

b) Printing equipment

c) If possible, participating centres should also acquire CD-ROM drives.

The software recommended is Micro CDS/ISIS obtainable from Unesco, Paris, at no cost, and the SDINEW program written in Pascal language obtainable from ICRISAT, India. The program

operates in the CDS/ISIS environment. CDS/ISIS has proved to be a powerful and flexible software for bibliographic database management, and it has been installed in a number of African countries. The use of CDS/ISIS will also enable the system to import other databases from outside Zambia and integrate them in the SDI DATABASE.

9.3.2 Information Resources

Each participating centre should be able to input into the system a number of records. Thus each centre should be subscribing to a number of journal titles or should have access to some external databases in electronic form available on CD-ROM or other magnetic media.

9.4 HUMAN RESOURCES

Each participating centre should designate the staff to work on the project. The staff involved should at least have sufficient knowledge of computer applications to information processing in libraries, documentation and information centres, and should also have good working knowledge of CDS/ISIS. Abstracting and indexing skill are also essentials and necessary.

Training of the staff to be operating the system should be provided. The cooperating institutions should work out the training programme and approach Unesco, PADIS, and DSE to provide resource persons. Local qualified staff should also be utilised in the training of personnel.

9.5 FINANCIAL REQUIREMENTS

The financial requirements for the establishing and operating of the SDI system would have to be provided by the participating centre. Each centre should try as much as possible to absorb the costs in its overall library operating budget. Parent institutions should also be informed about the importance of such a project in order for them to invest in it. Other sources of additional funds could be both local and international organization with interest in the information field. Organizations, such as, Unesco, IDRC and DES, may assist if approached with definite proposals.

Later on, it is hoped the SDI products can be marketed to information seekers in the various sectors of the economy, especially industries, and could start generating some of the funds to meet it operations.

9.6 PROJECT ESTABLISHMENT

9.6.1 Steps in Organizing the System

The first step in the organization of the project will be the identification of the following:

1. The role each participating centre is going to play
2. The sources of information and data
3. Agreeing on standards to be used
4. Working out the mechanism for coordination of the activities and thus appointing a coordinating committee.
5. Preparation of user profiles
6. Financial contribution or contribution in kind

9.6.1.1 Role of Each Participating Centre

Each centre should concentrate in providing bibliographic records in one specialised area. For example Mt. Makulu Agricultural research Station could concentrate on all aspects of agriculture. The participating centres should also identify the titles of journals each centre will be abstracting and indexing for input into the SDI DATABASE. This should be agreed upon, in order to avoid duplication of work. The centres should also take stock of the number of important

journals that they are not subscribing to in order for them to work out other means of having access to them.

9.6.1.2 Proposed Sources of Information and Data

The system should exploit all the possible sources of information for inclusion in the bibliographic data bases for the SDI. Initially, each centre should abstract and index materials from its own resources, that is journals available, reports, research papers produced, etc. Then means should be found of obtaining data bases on CD-ROMs and augment those produced in-house. Databases available on CD-ROM such as AGRICOLA, CABI on agriculture and related applies biological sciences; COMPENDEX, INSPEC on engineering and sciences DISSERTATION ABSTRACTS ONDISK containing information on more than 900,000 dissertations and masters thesis written since 1861, and many others, could provide useful inputs into the system

9.6.1.3 Bibliographic Standards

Standards on the preparations of bibliographic record between the cooperating centres should be agreed upon. This is necessary in order to have smooth integration of records at the focal centre. One standard that is suited for CDS/ISIS bibliographic records is MIBIS or the CCF.

9.6.1.4 Coordinating Committee

Mechanism for coordination of the system must be worked out in order to facilitate smooth operation of the project. Thus a committee, comprising of individuals in charge of each participating centre's section operating the system should be formed. This committee should then be advising the librarians of each centre and make appropriate recommendations.

9.6.1.5 Preparations of User Profiles

Initially, the project must be conducted on a trial basis, and researchers interested to participate in the project must be invited to submit their profiles on a prescribed form. The profile form should be aimed at soliciting information on the following: Name, affiliation or organization, title or position of responsibility, address (telephone, telex, facsimile and electronic mail if any); brief description of the kind of information required, field and subject ares of interest, description of on-going research or description of present work; and aspects of the topic of particular important to the person in terms of geographical areas, sub-topics, etc.

The present study on the Information requirements of researchers and teaching staff in research and academic

institutions in Zambia could provide a basis on the selection of researchers to participate in the project. Both individual and group profiles should be encouraged. Also to be included are profiles of projects. This will enable the system to be supplying relevant information to support various projects in selected subject areas.

9.6.1.6 Financial Contributions or Contribution in Kind

The cooperating centres should also agree on the amount of money each centre is going to contribute in order to set the project in motion. Contribution in kind should also be encouraged.

9.7 PROJECT OPERATING MECHANISM

Each participating centre, using micro CDS/ISIS and the agreed format for the preparation of bibliographic records, should prepare monthly inputs into the SDI DATABASE. Local databases prepared should then be sent to the focal centre where they will be integrated into the SDI DATABASE. After all the inputs have been integrated, the SDI program should then be run (Figure 2). SDI outputs should be sent to the participating centre which will then in turn distribute them to their respective users. This will reduce the cost involved in postage of bulk documents.

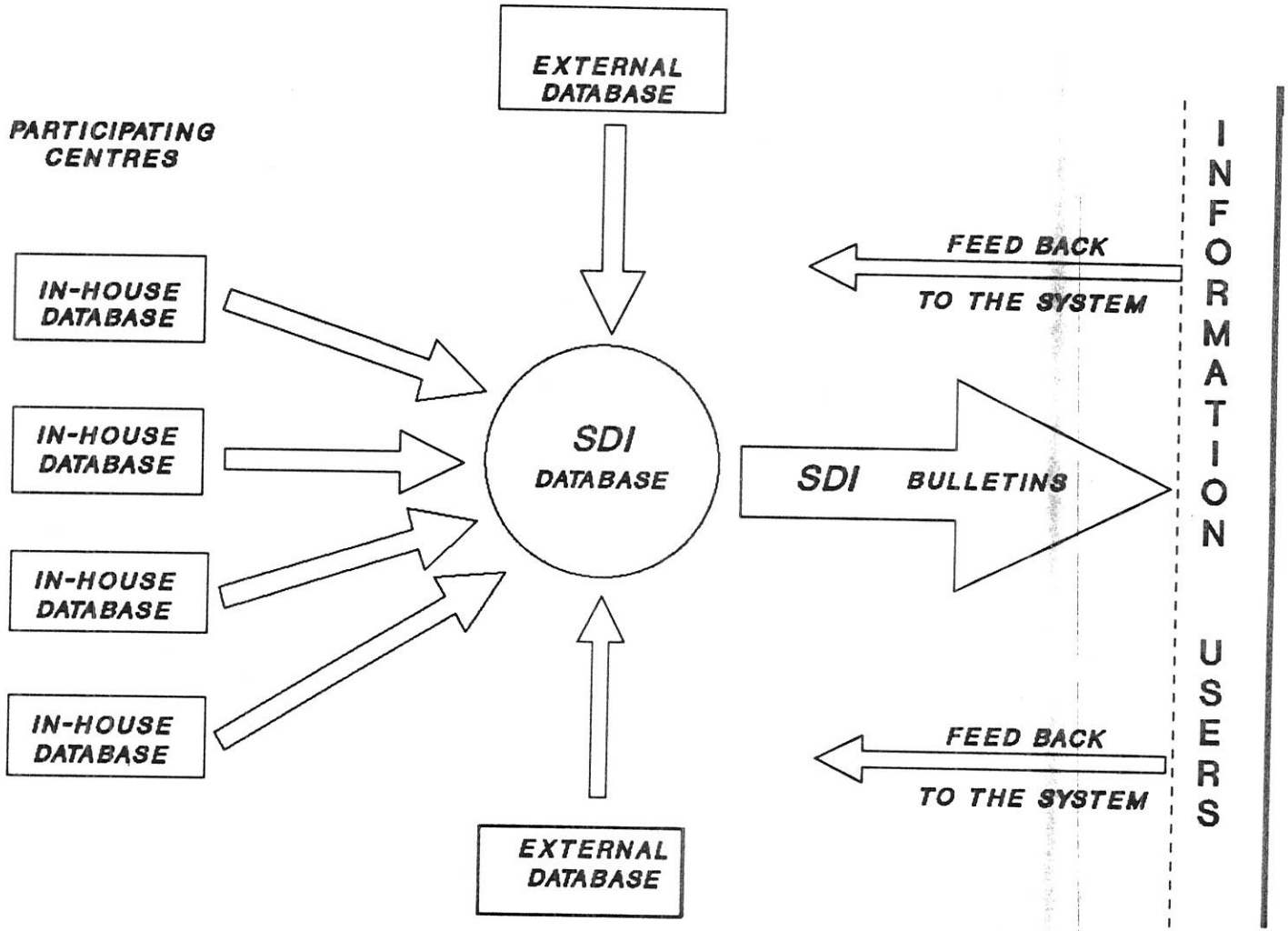


Fig. 2 SCHEMATIC STRUCTURE OF THE PROPOSED COMPUTER BASED SDI SYSTEM

The feedback mechanism should also be included in the system. Information users of the system should be encouraged to send back information on the usefulness and relevance of each item from the SDI DATABASE that is sent to them. This information will help the SDI Centre to modify the profiles of each user according to the changing interests and also identify types of records to be added to the system.

Since the capacity of the equipment available will not permit the development of a permanent SDI DATABASE, the database should only be operated on a monthly basis. That is every time the new records are submitted for integration, the old record should be "purged". This could be done by storing them in floppy diskettes, which could be used later for retrospective searching.

A system of supplying photocopies or access to hard copies of the available documents should be implemented. Researchers should be able to get the hard copies whenever they felt that it will help them in their work. Thus inter-library loan system and photocopying system should operate side by side with the SDI service.

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

The following are the major conclusions that have been drawn from the survey, study and discussion of the existing information infrastructure in Zambia, the status of IT and its applications and, IT in libraries, documentation and information centres.

10.1.2 The General Information Infrastructure

Zambia has a relatively well developed information infrastructure but the major missing part in the whole structure is coordination. Coordination of the information activities in the infrastructure at the national level is absent and thus its growth and development is haphazard.

Also the re-introduction of plural politics in the country, liberalization of the economy, participation in regional bodies (PTA and SADCC) and the opening up of South Africa will definitely have an impact on the development of Zambia's information infrastructure and especially the development of information technology in the country, and therefore there is an urgent need for the establishment of a

mechanism to coordinate all information activities in the country. A policy on information systems and services could provide the missing link.

10.1.3 National Information/Informatics Policy

Zambia has no overall national information policy (NIP) in place. However, efforts have been made, especially by the library professionals, to propose the structure of a NIP. The Draft Proposals submitted to the former UNIP Government have not yet been discussed and one can only hope that the MMD Government will take a serious approach to this issue. Implementation of the policy will necessitate the coordination of information activities in the country.

10.1.4 Professional Associations/Societies

A number of professional bodies, as observed in Chapter 5, exist, and each one of them represents the interest of a particular group of information professionals. Despite the fact that all of them are concerned with information in one way or another, there is almost no relationship among them whatsoever. The Zambia Library Association operates on its own, so does the Computer Society of Zambia, and other information related professional bodies. The results of this

has been differences in the approach to common issues, like the issue of a National Information/Informatics Policy.

10.1.5 Computers and Computer Use

On the whole, computerisation has proliferated in all sectors of the Zambian economy and its applications are being diversified. However, the use of certain information technologies that hold the promise of improving information dissemination, and the management of information systems and services are still under-utilised.

The CD-ROM, despite its relatively low cost, vast storage potential, ease of use, is still not much in use. Desktop publishing also despite its relatively low cost and potential for producing excellent printed outputs, especially scientific documents, is also just establishing itself mostly in newspapers production and advertising.

Electronic mail and computer conferencing is almost unheard of in the country. Thus, scientist and other information users are missing an opportunity of accessing and exchanging information provided by these two means.

10.1.6 Local Databases

There are currently no electronic indigenous databases developed on a large scale for individual use or that can serve as a basis for sharing information. Various research publications, both scientific and non-scientific are not being catalogued and indexed and entered into a database that could provide access to others, and as such the chances of duplicating effort in research are quite high as information on current local research developments is not easily accessible in electronic form.

10.1.7 IT in Libraries

The introduction of IT in libraries, documentation and information centres in the country is gaining ground but currently its applications are limited to in-house information storage and retrieval activities and word processing. It is unlikely, that Zambian libraries will be able to have access to international electronic databases in the form that will enable them meet a significant level of their clients information needs.

The chances of automating acquisition, cataloguing, circulation, serials control processes and the introduction of

management information systems (MIS) in Zambian libraries at the moment are very remote, and this is mainly due to lack of trained library systems analysts, and the traditional approach to the execution of library professional duties by the majority of library managers in Zambia.

10.1.8 Telecommunications

In spite of the fact that telecommunications infrastructure in the country is in general well developed, the telephone density in the country is still below 1. The list of those waiting for telephone connections and telex lines is growing longer every day. It is also important to note that most telephone line are located in the urban areas. Facilities for LANs and WANs do exist but the charges of installing them are quite exorbitant.

However, there is great potential for the country to develop its telecommunications infrastructure beyond its present status. Zambia's participation in the regional economic groupings, such as, PTA and SADCC, and the commissioning of the second earth satellite station, Mwembeshi II, has made her become the hub of telecommunications in the sub-region. This will in turn require massive investments in the infrastructure by the government.

10.1.9 Information Technology/Scientists Manpower Development

The country's education infrastructure is well developed. There are a number of both primary and secondary schools, A reasonable number of technical colleges, business oriented colleges, and two universities.

Despite this being the case, there is shortage of training facilities for information technology personnel. Only one institution offers a three year diploma programme in computer studies. Places on the course are limited only to about 20 per annum. No degree programme is being offered in the country. Training at undergraduate and graduate levels in Computer science is currently done abroad.

Training of librarians and the mass media personnel is well catered for at the certificate, diploma and undergraduate level. However, post-graduate training has now to be done outside the country.

10.1.10 Future of IT in Zambia

Admittedly, predicting the future is a hazardous occupation and thus I would say that it is impossible to predict the future developments of information technology in

Zambia with absolute certainty. However, extrapolation of current developments indicate that IT development in Zambia has a bright future, but it is worth noting that this will depend on a number of factors, among which are (Lungu 1990):

- the state of the economy
- adoption of a policy on information systems and services
- regional cooperation developments
- demand for information
- availability of qualified information and information technology specialists
- benevolence of donor agencies
- overcoming of traditional barrier

and above all the Government's willingness and commitment to invest in the country's information infrastructure, especially in IT. Diversification in the application of computers will largely depend on the level of computers skills available in the country. The future of IT applications in libraries, documentation and information centres in the country will, in addition to some of the above mentioned factors, also depend on the realization by the financing authorities the fact that the modernization of libraries is a necessity rather than a luxury since these institutions cannot lag behind in the race for the 21st century electronic library.

10.2 RECOMMENDATIONS

The following are the major recommendations on various issue discussed in the thesis:

10.2.1 Development of IT: The Role of the Government

In the absence of a comprehensive, well defined national information/informatics policy, the onus remains with the government to play an important role in monitoring the growth and development of all aspects of the information infrastructure. Taking this into account, the Government of the Republic of Zambia should:

- promote the provision of training and support research and development in the information and information technology areas. It should also subsidize research and development in information and IT;

- encourage individual free enterprise and individual endeavour in IT;

- create an environment that will enable among other things proper coordination and management of information systems and optimum utilization of resources;

- encourage the development of the information industry in the country-publishers, information and library services, software bureaus, information and information products distributors etc;

- invest in IT for the modernization of information services and systems;

- review matters related to the importation of IT, the cost and pricing of the equipment;

- Work out a mechanism for maintaining data national information manpower requirements at all levels.

- Promote and support the establishment of training at undergraduate, graduate and post-graduate level in information science and information technology; and

- make all efforts to introduce computer studies at secondary school level.

10.2.2 Information Use Promotion, Sensitization and Marketing

The information professionals, in particular the librarians, in the country should work out a mechanism for

promoting the use of information, sensitize the policy makers and promote information marketing activities. User sensitization programmes should be conducted regularly aimed at various groups of users. Possibilities of marketing of information to the industrial sector must be explored.

10.2.3 Professional Bodies

Professional bodies in Zambia have an important role to play in enhancing the introduction and application of information technology in the country.

Professional bodies should conduct programmes to familiarise their members with IT applications in their areas of operation. The Computer Society should diversify its areas of operation and not restrict itself to institutions that are applying computers in the traditional way - computing.

Coordination for a comprehensive national information and informatics policy should be done among the associations. Liaising in matters of common interest should be encouraged.

10.2.4 Information Technology/Scientists Manpower Development

First and foremost there is an urgent need to restructure the existing training programmes in library studies. The scope and course content should incorporate the current trends and new techniques affecting the profession. Areas, such as, information technology and its applications in libraries, information management techniques, information marketing and desktop publishing as means of acquisition and dissemination of information. Meanwhile short courses to sensitize the library managers on computer applications should be conducted preferably by the Zambia Library Association and the Department of Library Studies of the University of Zambia.

The introduction of degree programmes in computer science at one of the country's universities should be considered as a priority area. The infrastructure for training at undergraduate level in computer studies in available in the country. What is required is to take definite and serious steps towards the establishment of such a programme.

10.2.5 Information Technology Applications in Libraries

The University of Zambia Library and the Copperbelt University Library should make all necessary efforts towards

automation, especially in the areas of information storage and retrieval. The necessity for these institutions to automate is quite overwhelming in order for them not to lag behind in the electronically communicated academic world. They should install equipment for network access and CD-ROM stations to access databases on CD-ROMs. If these two university libraries do not automate, participation in regional activities will be futile. Lack of computer facilities at the University of Zambia Library, the national participating centre in PADIS projects, has definitely an adverse impact on the level of participation in the project. The Centre can not network itself to PADIS.

However, automation should be done only after proper and thorough systems analysis has been conducted in order to design and determine the type of equipment that will better serve the need of the libraries. Fortunately, the two university libraries do not lack qualified manpower to embark on such projects. What is mainly missing is the provision of enough funds for automation of the institutions.

There is also a great need to automate the libraries, documentation and information centres supporting the information needs of the key industries and research institutions like the mining sector, banking sector, National Commission for Development Planning (NCDP), etc. This

institutions or sectors require information for their operations and improvement of efficiency.

10.2.6 Information Dissemination Services: SDI

The need for the improvement of information dissemination services to researchers and the teaching staff in the country's research and higher education institutions can not be over emphasized. Libraries in this institutions with computer facilities, should try as much as possible to adopt the SDI systems, proposed in Chapter 9, either on individual basis, funds permitting, or on cooperating basis, as proposed in the thesis. Such a method of disseminating information will ensure that information users in this institutions are kept abreast on developments in their areas of interest.

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ANNEX 1

LIST OF PEOPLE INTERVIEWED DURING DATA COLLECTION PERIOD BETWEEN 15TH JUNE 1991 AND 26TH FEBRUARY 1992

1. Dr. Maurice Lundu	University Librarian, Copperbelt University, Kitwe.
2. Dr. Hadwell Mwachalimba	Chief Librarian, University of Zambia, Lusaka.
3. Dr. Andrew Kaniki	Head, Department of Library Studies, University of Zambia, Lusaka.
4. Mr. S. F. C. Zulu	Lecturer, Department of Library Studies, University of Zambia, Lusaka.
5. Mr. M. Ndhlovu Shitima	Data Processing Manager, Data Centre, Ministry of Finance, Lusaka.
6. Mr. S. Mwale	Treasurer, Computer Society of Zambia and Data Proceesing Manager, Metal Marketing Corporation (MEMACO), Lusaka.
7. Mr. H. Lombe	Director, Publishing and Printing Division, Kenneth Kaunda Foundation, Lusaka.
8. Ms. Grace Chirambo	Production Controller, Kenneth Kaunda Foundation, Lusaka.
9. Ms. Christine Kasonde	Chairperson, Book Publishers and Booksellers of Zambia and Senior Editor, Kenneth Kaunda Foundation, Lusaka
10. Mr. Melody Kalonga	Co-ordinator for Journalism Programme, Africa Litrature Centre, Kitwe.
11. Mr. C. B. M. Lungu	Senior Sub-Librarian, Copperbelt University, Kitwe.

12. Mr. Rudi De Smet	Co-ordinator, Copperbelt University Computer Centre and Lecturer School of Business, Kitwe.
13. Mr. Justin Chisanga	Principal Medical Librarian, Tropical Disease Research Centre Library, Ndola.
14. Mr. Joseph Haabeka	Principal Engineer, Radio and Transmission, Post and Telecommunications (Zambia), Ndola.
15. Mr. M.P. Sakala	Chief Telecommunications Officer, Statistics, Post and Telecommunications (Zambia), Ndola.
16. Mr. C. M. Kangulu	Lecturer, Department of Library Studies, Uiversity of Zambia, Lusaka.
17. Mr. Hopkins Mapulanga	Principal Engineer and Acting Regional Controller, Nothern Region, ZNBC, Kitwe.
18. Mr. David Diangamo	Acting Director, Central Statistcal Office, Lusaka.
19. Dr. Parrick Corr	Acting Head, Computers Studies Section, Evelyn Hone College, Lusaka.
20. Mr. Markos Sahlu	Head, Information Processing Unit, ILCA, Addis Ababa, Ethiopia.

ANNEX 2

The Copperbelt University,
Library Department,
P.O. Box 21692,
KITWE.
21st January, 1992.

Dear Sir/Madam

I am a Graduate student in the School of Information Studies for Africa (SISA), Addis Ababa University, Ethiopia conducting a research on:

INFORMATION MANAGEMENT IN ZAMBIA WITH SPECIAL EMPHASIS ON THE APPLICATION OF INFORMATION TECHNOLOGY.

My research, among other things, involves studying and surveying the use of Information Technology in Libraries, Documentation and Information Centres in Zambia, and attached to this letter is the questionnaire for the survey. Please help me by answering the questionnaire and returning it by 30th March, 1992. A self addressed, stamped envelope for the mailing of the completed questionnaire is also attached.

The questionnaire is in three parts. Part 1: General Information, Part 2: Computer Facilities and Part 3: Problems Related to the Use of Computers. Many of the questions are multiple choice and several responses may be appropriate to the situation in your institution. In that case, kindly tick all responses which apply. Please feel free to use additional sheets whenever you think it is necessary. Also ensure that you read each question because even if you do not have computer facilities, there are questions that may be applicable to your institution.

The data to be collected from the survey will assist me in the preparation of my thesis which I am expected to submit sometime in June, this year. I will therefore, appreciate you assistance in filling out the questionnaire.

Thanking you in anticipation of your favourable assistance.

Yours Sincerely,

Justin Chisenga.

SURVEY ON THE APLLICATION OF INFORMATION TECHNOLOGY TO INFORMATION MANAGEMENT IN LIBRARIES, DOCUMENTATION AND INFORMATION CENTRES IN ZAMBIA

QUESTIONNAIRE

PLEASE TYPE OR PRINT. THE COMPLETED QUESTIONNAIRE SHOULD BE RETURNED BEFORE 30TH MARCH, 1992 TO:

JUSTIN CHISENGA
COPPERBELT UNIVERSITY LIBRARY
P.O. BOX 21692
KITWE.

ITSURVEY NO. [ ]

OR

SCHOOL OF INFORMATION STUDIES FOR AFRICA
ADDIS ABABA UNIVERSITY
P.O. BOX 1176
ADDIS ABABA
ETHIOPIA

PART 1. GENERAL INFORMATION

1. Name and Position of Person Filling the Questionnaire
   .....

2. Name of the Information System (Library, Documentation or Information Centre) .....
   .....

   Address .....
   .....
   .....
   .....
   .....

   Telephone .....
   Telex .....
   Fax .....

3. If your Information System is a library, to which category does it belong? (Please tick one)

   [ ] Academic Library
   [ ] Special Library
   [ ] Public Library
   [ ] School Library

4. Parent Organization (If any) .....
.....

5. Type of documentation activities (Tick where appropriate)

[ ] Bibliographic
[ ] Numeric
[ ] Referral
[ ] Sectoral
[ ] Multisectoral

6. Type of user services provided (Tick where appropriate)

[ ] Current Awareness Services
[ ] Bibliographies
[ ] Selective Dissemination of Information
[ ] Online searches
[ ] Question answer services
[ ] Others (Please specify).....
.....
.....
.....
.....
.....

7. What is the size of your information system collection?

Number of	Total	Number added in 1990
Books	.....	.....
Periodicals	.....	.....
Documents	.....	.....
Maps	.....	.....
Microforms	.....	.....
Audio Visual materials	.....	.....
Others (Please specify)		
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

8. Classification system used (Please tick where appropriate)

[ ] Library of Congress
[ ] Dewey Decimal Classification
[ ] Universal Decimal Classification
[ ] Colon
[ ] Others (Please specify) .....
.....
.....
.....

9. Subject heading list used (Please tick where appropriate)

[ ] Library of Congress
[ ] Sear's List
[ ] Others (Please specify) .....
.....
.....
.....

10. Types of indexing (Tick where appropriate)

[ ] Subject
[ ] Keyword
[ ] Title
[ ] Others (Please specify)
.....
.....
.....
.....

[ ] Author
[ ] Descriptor
[ ] Geographical

11. Thesaurus used (If any)
.....
.....
.....

12. Professional staff.

a) Number of Librarians/Documentalist/Information Scientists .....
b) Number of computer/data processing specialists .....
c) Total number .....

PART 2. COMPUTER FACILITIES.

13. Does your institution have any computer facilities? (Tick one)

[ ] Yes [ ] No

IF answer is YES go to QUESTION 14 and IF answer is NO go to QUESTION 26.

14. The computer facilities are:

[ ] located within the Library/Documentation/Information Centre
[ ] located within the parent institution
[ ] shared with another institution : (Name).....
.....

15. Describe the computer facilities in your institution in the spaces below (Please write where appropriate and feel free to use additional sheets if necessary)

a) **Mainframe computers**

Make/ Model	Main Memory	Operating System	Date Installed	Disk Units	Tape Units	Disk Capacity

b) **Minicomputers**

Make/ Model	Main Memory	Operating System	Date Installed	Disk Units	Tape Units	Disk Capacity

c) **Microcomputers** (In case of more than one system, please use one line per system)

	Make/Mode	Main Memory	Operating System	Date Installed	Hard Disk
i)					[ ] Yes [ ] No Capacity in MB .....

ii)

[ ] Yes
[ ] No
Capacity in MB .....

16. Microcomputers are:

[ ] Stand alone [ ] In a network

17. Does your institution have any CD-ROM drives:

[ ] Yes [ ] No.

IF answer is YES, describe them below in terms of make/model

.....
.....
.....
.....
.....
.....

18. Does the Library/Documentation/Information Centre utilize these computer facilities? (Please tick one)

[ ] Yes [ ] No

IF the answer is YES go to QUESTION 19 and IF NO go to QUESTION 26.

19. For what purposes are the computer facilities being used? (Please tick where appropriate)

[ ] Bibliographic/Library database management
[ ] word processing
[ ] Financial management/Management applications
[ ] Numerical/Statistical applications
[ ] Others (Please specify) .....
.....
.....
.....
.....

20. If the computer facilities are being used for bibliographical purposes, what software do you use (Please tick where appropriate)

[ ] CDS/ISIS (Mainframe version)
[ ] CDS/ISIS (Microcomputer version)
[ ] MINISIS
[ ] Dbase
[ ] Others (Please specify) .....
.....

21 In what format do you provide computer-generated services to users? (Please tick where appropriate)

[ ] Computwer printouts
[ ] Diskettes
[ ] CD-ROM
[ ] SDI/Current Awareness Bulletins
[ ] Magnetic tape
[ ] Others (Please specify) .....
.....
.....
.....
.....

22. Databases.

a) **Local Databases** (Those developed within the institution)

Name	Number of Records	Frequency of Updating	Number of Records added in 1990
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

b) **External Databases** (Those acquired from outside)

.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

23. Currently do you have any on-line access to remote databases (Please tick one)

[ ] Yes [ ] No

24. IF answer to Q23 is YES, list down the remote databases you have acces to and institutions where they are located:

.....
.....
.....
.....
.....

25. IF the answer to Q23 is NO, do you have any plans to connect your system to remote databases? (Please tick one)

[ ] Yes [ ] No

26. If your institution does not presently have or utilize the computer facilities, are there plans to install or use them in the near future? (Tick one)

[ ] Yes [ ] No

IF YES when do you intend to do so? (Tick one)

[ ] in 1992
[ ] in 1993
[ ] in 1994
[ ] in 1995
[ ] in 1996-2000
[ ] Planned but no definate date

27. If planned, what type of computer does your institution intend to introduce (Please tick where appropriate)

	Make/Model (If known)
[ ] Mainrame	.....
[ ] Minicomputer	.....
[ ] Minicomputer(s)	.....

28. What do you intend to use the computers for?

.....
.....
.....
.....
.....

PART 3: PROBLEMS. (This part is only for those using computers)

29. Have you encountered any problems in the use of computers in your institution? (Please tick one)

[ ] Yes [ ] No

IF YES go to QUESTION 30 and IF NO go to QUESTION 31

30. What kind of problems? (Tick where appropriate)

a) **Equipment Related Problems**

[ ] Lack or inadequacy of peripherals (printers,... etc)
[ ] Lack of or inapproppriate software
[ ] Lack of software documentation
[ ] Inadequate computer memory
[ ] Slow processing speed
[ ] Unavailability of spare parts
[ ] Unavailable or unsatisfactory domestic maintenance
[ ] Environmental conditions (unstable electric current, heat, humidity, dust, etc)
[ ] Others (Please specify) .....
.....
.....
.....
.....
.....

b) **Personnel Related Problems**

[ ] Shortage of trained staff
[ ] Lack of available training for staaff in software, hardware use
[ ] Rapid rate of skilled manpower turnover
[ ] Others (Please specify) .....
.....
.....
.....
.....

31. How were staff trained in the use of computers?

a) [ ] Sent abroad

[ ] For short (under three months) courses
Number of staff .....
[ ] For long courses
Number of staff .....

b) Trained locally

[ ] Individually: Number .....
[ ] In groups : Number .....
[ ] Self trained: Number .....
[ ] Others (Please specify) .....
.....
.....
.....

32. Are you able to obtain service for you computers locally? (Please tick one)

[ ] Yes [ ] No.

33. IF answer to Q32 is NO what do you do when service is needed? (Please tick where appropriate)

[ ] use back up system
[ ] mail whole system abroad
[ ] identify faulty parts internally and send those for replacement
[ ] call for experts from abroad
[ ] Others (Please specify) .....
.....
.....
.....
.....

34. Do you feel that the work in your Library or Documentation or Information Centre has become more efficient since the introduction of computers?

[ ] Yes [ ] No

35. If YES in what way and If NO what do you think is the reason?

.....
.....
.....

THANK YOU VERY MUCH FOR SPENDING YOUR TIME ON FILLING OUT THIS QUESTIONNAIRE

ANNEX 3

LIST OF LIBRARIES THAT RESPONDED TO THE QUESTIONNNAIRE ON THE SURVEY OF IT IN LIBRARIES, DOCUMENATION AND INFORMATION CENTRES IN ZAMBIA

1. British Council
   Library
   P.O. Box 70414
   NDOLA

2. UNZA Library
   P.O. Box 32379
   Lusaka

3. British Council
   Library
   P.O. Box
   LUSAKA

4. P.T.A Library
   P.O. Box
   Lusaka.

5. Lima Bank Library
   P.O. Box
   LUSAKA

6. Zambia Daily Mail
   P.O. Box 31421
   LUSAKA

7. Times of Zambia
   P.O. Box 70069
   NDOLA

8. ZCCM Technical Library
   Services
   P.O. Box 260071
   KALULUSHI

9. Dag Hammarskjold
   Memorial Library
   P.O. Box 21493
   KITWE

10. Multimedia (Z)
    Library
    P.O. Box 320199
    LUSAKA

11. SIDO Library
    SIDO House
    LUSAKA

12. Chainama College
    Library
    Box 30043
    LUSAKA

13. Ndola Public
    Library
    P.O. Box 70388
    NDOLA

14. Kitwe Public Library
    P.O. Box 20070
    KITWE

15. Kafue Public Library
    P.O. Box 21
    KAFUE

16. Kabwe Public Library
    P.O. Box 80424
    KABWE

17. ZAMSEED Library
    Buyantashi Road
    P.O. Box 35441
    LUSAKA

18. PTC College Library
P.O. Box 71601
NDOLA

19. Lake Road Trust School
P.O. Box 320042
LUSAKA

20. Lechew School
P.O. Box
KITWE

21. Copperbelt University Library
P.O. Box 21692
KITWE

22. Mt. Makulu Agricultural Research Station Library
P.O. Box
CHILANGA

23. Chipata Teachers Training College Library
P.O. Box
CHIPATA

24. Nkhruma Teachers College Library
P.O. Box 80404
KABWE

25. President Citizenship College Library
P.O. Box 80415
KABWE

26. Forestry and Timber Research Library
P.O. Box
KITWE

27. Central Veterinary Research Library
P.O. Box 50060
LUSAKA

28. David Livingstone Teachers Training College Library
P/Bag 1
LIVINGSTONE

29. Livingstone Museume Special Library
P.O. Box 60498
LIVINGSTONE

30. Technical and Vocational Teachers College Library
P.O. Box 90199
LUANSHYA

31. Evelyn Hone College of Applied Arts Library
P.O. Box 30029
LUSAKA

32. Geological Survey Library
P.O. Box 50135
LUSAKA

33. Martin Luther King Jr Memorial Library
P.O. Box 32053
LUSAKA

34. Export Board of Zambia Library
P.O. Box
LUSAKA

35. National Archives of Zambia Library
P.O. Box 50010
LUSAKA

36. National Council for Scientific Research Library
P.O. Box CH 158
LUSAKA

37. Natural Resources Development College Library
P.O. Box CH 310099
LUSAKA

38. Parliamentary Information and Research Library
P.O. Box 31299
LUSAKA

39. United National Independence Party Library
P.O. Box 30302
LUSAKA

40. United Nations Information Centre
P.O. Box
LUSAKA

41. Zambia Bureau of Standards
P.O. Box 50259
LUSAKA

42. Kabwe Trades Training Institute
P.O. Box
KABWE

43. Nkumbi International College Library
P/Bag 1
KAPIRI MPOSHI

44. Northern Technical College Library
Chela Road
P.O. Box KJ 250093
NDOLA

45. Tropical Disease Research Centre Library
P.O. Box 71769
NDOLA

46. Copperbelt Tearchers Training College
P.O. Box 20382
KITWE

47. Cooperative College Library
P.O. Box 50208
LUSAKA

48. National Monuments Commission
P.O. Box 60124
LIVINGSTONE

49. Zambia News Agency Library
P.O. Box 30007
LUSAKA

50. Zambia National Broadcasting Corporation Library
P.O. Box 50015
LUSAKA

51. National Political Museume Library
P.O. Box 50491
LUSAKA

52. ZIMCO Institute of Management Library
P.O Box 31735
LUSAKA

53. Lusaka Public Urban District Council Library
P.O. Box 31304
LUSAKA

54. Ministry of Agriculture (MAWD)
LUSAKA

55. International Red Locust Control Centre
Mpelembe House
P.O. Box 240252
NDOLA

56. Zambia Institute of Certified Accountants
Library
P.O. Box 32005
LUSAKA

57. Technological Development and Advisory Unit (TDAU-UNZA)
P.O. Box 32379
LUSAKA

58. Helen Kaunda Memorial Library
P.O. Box 90140
LUANSHYA

59. Zikhalo Jere Memorial Library
P.O. Box 10104
CHINGOLA

60. Zambia State Insurance College
Library
P.O. Box
LUSAKA.

61. Institute for African Studies
P.O. Box 30900
LUSAKA

62. Lusaka Trades Training Institute
P/Bag RW 20 A
LUSAKA

63. International School of Lusaka
P.O. Box 50121
LUSAKA

64. Lukashya Trades Training Institute
P.O. Box 410015
KASAMA

65. Solwezi Teachers Training College
P.O. Box 110096
SOLWEZI

68. Kitwe Teachers Training College
P.O. Box 22596
KITWE

67. Mansa Teachers Training College
P.O. Box 710391
MANSA

68. Malcom Moffat Teachers Training College
P/Bag 1
SERENJE

69. Luanshya Trades Training Institute
P.O. Box
LUANSYA

70. ZNBC Kitwe Studios
KITWE

71. National Institute
for Public
Administration
Main Campus
P.O. Box 31990
LUSAKA

72. Management Services
Board
LUSAKA

73. Attorney General's
Chambers
P.O. Box 50106
LUSAKA

74. Kalulush Public
Library
KALULUSHI

75. Ndola School of
Nursing and Midwifery
Postal Agency
NDOLA

76. ZESCO Training Centre
P.O. Box 86415
NDOLA

77. Mufulira T. T.
College
P.O. Box 40400
MUFULIRA

78. Kamuchanga Public
Library
P.O. Box 40798
MUFULIRA

ANNEX 4

STATISTICAL FREQUENCY TABLES FOR THE SURVEY ON THE APPLICATION OF COMPUTERS IN LIBRARY, DOCUMENTATION AND INFORMATION CENTRES IN ZAMBIA

ALL REPONDING INSTITUTIONS

Type of Library

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Academic	1	28	35.9	35.9	35.9
Public	2	13	16.7	16.7	52.6
Special	3	34	43.6	43.6	96.2
School	4	3	3.8	3.8	100.0
	TOTAL	78	100.0	100.0	

Documentation Activity

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated	0	3	3.8	3.8	3.8
Bibliographic	1	10	12.8	12.8	16.7
Sectoral	2	14	17.9	17.9	34.6
Referral	3	5	6.4	6.4	41.0
Multisectoral	4	21	26.9	26.9	67.9
Biblio & Referral	5	10	12.8	12.8	80.8
Biblio & Sectoral	6	2	2.6	2.6	83.3
Referral & Multi	7	3	3.8	3.8	87.2
Refer & Sect	8	2	2.6	2.6	89.7
Biblio/Ref/Multi	9	5	6.4	6.4	96.2
Biblio/Ref/Sec	10	2	2.6	2.6	98.7
Biblio/Ref/Num	12	1	1.3	1.3	100.0
	TOTAL	78	100.0	100.0	

LIBRARY COLLECTION

Number of Books

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	8	10.3	10.3	10.3
100-100	2	7	9.0	9.0	19.2
1,001-5,000	3	19	24.4	24.4	43.6
5,001-10,000	4	17	21.8	21.8	65.4
Above 10,000	5	27	34.6	34.6	100.0
	TOTAL	78	100.0	100.0	

No. Of Books Added in 1990

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	19	24.4	24.4	24.4
Less than 100	1	14	17.9	17.9	42.3
100-100	2	41	52.6	52.6	94.9
1,001-5,000	3	2	2.6	2.6	97.4
5,001-10,000	4	2	2.6	2.6	100.0
	TOTAL	78	100.0	100.0	

Number of Periodicals

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	60	76.9	76.9	76.9
100-100	2	10	12.8	12.8	89.7
1,001-5,000	3	5	6.4	6.4	96.2
Above 10,000	5	3	3.8	3.8	100.0
	TOTAL	78	100.0	100.0	

No. of Periodicals Added in 1990

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	66	84.6	84.6	84.6
Less than 100	1	4	5.1	5.1	89.7
100-100	2	6	7.7	7.7	97.4
1,001-5,000	3	2	2.6	2.6	100.0
TOTAL		78	100.0	100.0	

Number of Documents

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	59	75.6	75.6	75.6
Less than 100	1	3	3.8	3.8	79.5
100-100	2	8	10.3	10.3	89.7
1,001-5,000	3	3	3.8	3.8	93.6
Above 10,000	5	5	6.4	6.4	100.0
TOTAL		78	100.0	100.0	

No. of Documents Added in 1990

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	66	84.6	84.6	84.6
Less than 100	1	6	7.7	7.7	92.3
100-100	2	4	5.1	5.1	97.4
1,001-5,000	3	2	2.6	2.6	100.0
TOTAL		78	100.0	100.0	

Number of Maps

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	45	57.7	57.7	57.7
Less than 100	1	30	38.5	38.5	96.2
100-100	2	2	2.6	2.6	98.7
Above 10,000	5	1	1.3	1.3	100.0
TOTAL		78	100.0	100.0	

No. of Maps Added in 1990

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	74	94.9	94.9	94.9
Less than 100	1	4	5.1	5.1	100.0
TOTAL		78	100.0	100.0	

Number of Microforms

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	70	89.7	89.7	89.7
Less than 100	1	4	5.1	5.1	94.9
100-100	2	3	3.8	3.8	98.7
1,001-5,000	3	1	1.3	1.3	100.0
TOTAL		78	100.0	100.0	

No. of Microforms Added in 1990

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	76	97.4	97.4	97.4
Less than 100	1	1	1.3	1.3	98.7
100-100	2	1	1.3	1.3	100.0
TOTAL		78	100.0	100.0	

Number of a.V Materials

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	57	73.1	73.1	73.1
Less than 100	1	14	17.9	17.9	91.0
100-100	2	5	6.4	6.4	97.4
1,001-5,000	3	1	1.3	1.3	98.7
Above 10,000	5	1	1.3	1.3	100.0
TOTAL		78	100.0	100.0	

No. of A.V Materials Added in 1990

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	73	93.6	93.6	93.6
Less than 100	1	4	5.1	5.1	98.7
100-100	2	1	1.3	1.3	100.0
	TOTAL	78	100.0	100.0	

Number of Other Materials

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	69	88.5	88.5	88.5
Less than 100	1	5	6.4	6.4	94.9
100-100	2	1	1.3	1.3	96.2
1,001-5,000	3	1	1.3	1.3	97.4
5,001-10,000	4	1	1.3	1.3	98.7
Above 10,000	5	1	1.3	1.3	100.0
	TOTAL	78	100.0	100.0	

Number of Other Materials Added in 1990

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/None	0	74	94.9	94.9	94.9
Less than 100	1	1	1.3	1.3	96.2
100-100	2	1	1.3	1.3	97.4
5,001-10,000	4	1	1.3	1.3	98.7
	6	1	1.3	1.3	100.0
	TOTAL	78	100.0	100.0	

TYPES OF SERVICE OFFERED

Current Awareness Service

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	26	33.3	33.3	33.3
Service Provided	1	52	66.7	66.7	100.0
	TOTAL	78	100.0	100.0	

Bibliographic Services

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	45	57.7	57.7	57.7
Service Provided	1	33	42.3	42.3	100.0
	TOTAL	78	100.0	100.0	

Selective Diessemination of Information

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	42	53.8	53.8	53.8
Service Provide	1	36	46.2	46.2	100.0
	TOTAL	78	100.0	100.0	

Online Searches

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	78	100.0	100.0	100.0
	TOTAL	78	100.0	100.0	

Question-Answer Service

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	43	55.1	55.1	55.1
Service Provided	1	35	44.9	44.9	100.0
	TOTAL	78	100.0	100.0	

Other Services

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	65	83.3	83.3	83.3
Service Provided	1	13	16.7	16.7	100.0
	TOTAL	78	100.0	100.0	

CLASSIFICATION SCHEME USED

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated	0	1	1.3	1.3	1.3
LC	1	3	3.8	3.8	5.1
DDC	2	57	73.1	73.1	78.2
UDC	3	7	9.0	9.0	87.2
Others	5	10	12.8	12.8	100.0
	TOTAL	78	100.0	100.0	

SUBJECT HEADING LIST USED

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
None/Not Stated	0	12	15.4	15.4	15.4
LC	1	8	10.3	10.3	25.6
Sear List	2	49	62.8	62.8	88.5
Others	3	9	11.5	11.5	100.0
	TOTAL	78	100.0	100.0	

INDEXING

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated	0	7	9.0	9.0	9.0
Subject	1	4	5.1	5.1	14.1
Author	2	4	5.1	5.1	19.2
Keyword	3	1	1.3	1.3	20.5
Title	5	3	3.8	3.8	24.4
Author & Title	7	11	14.1	14.1	38.5
Author & Subject	8	2	2.6	2.6	41.0
Descriptor & Subj	9	2	2.6	2.6	43.6
Aut/Tit/Sub	10	36	46.2	46.2	89.7
Aut & Tit & Geo	11	1	1.3	1.3	91.0
Aut/Tit/Sub/Des	12	2	2.6	2.6	93.6
Aut/Sub/Geo/Des	13	1	1.3	1.3	94.9
Aut/Tit/Sub/Geo	14	2	2.6	2.6	97.4
Aut/Tit/Sub/Key	15	1	1.3	1.3	98.7
Aut/Tit/Key/Sub	16	1	1.3	1.3	100.0
	TOTAL	78	100.0	100.0	

THESAURUS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Used/N.S	0	57	73.1	73.1	73.1
Thesaurus Used	1	21	26.9	26.9	100.0
	TOTAL	78	100.0	100.0	

PROFESSIONAL STAFF

Librarians/Documentalist/Information Scientists

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0	0	8	10.3	10.3	10.3
1	1	42	53.8	53.8	64.1
2	2	17	21.8	21.8	85.9
3	3	5	6.4	6.4	92.3
4	4	1	1.3	1.3	93.6
5	5	3	3.8	3.8	97.4
6	6	1	1.3	1.3	98.7
8	8	1	1.3	1.3	100.0
	TOTAL	78	100.0	100.0	

Computer/Data Processing Specialists

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0	0	74	94.9	94.9	94.9
1	1	2	2.6	2.6	97.4
2	2	1	1.3	1.3	98.7
4	4	1	1.3	1.3	100.0
	TOTAL	78	100.0	100.0	

Total Professional Staff

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0	0	8	10.3	10.3	10.3
1	1	41	52.6	52.6	62.8
2	2	15	19.2	19.2	82.1
3	3	9	11.5	11.5	93.6
4	4	1	1.3	1.3	94.9
5	5	2	2.6	2.6	97.4
6	6	1	1.3	1.3	98.7
9	9	1	1.3	1.3	100.0
	TOTAL	78	100.0	100.0	

COMPUTER FACILITIES

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Available	0	45	57.7	57.7	57.7
Available	1	33	42.3	42.3	100.0
	TOTAL	78	100.0	100.0	

Location of Computers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	46	59.0	59.0	59.0
Within Library	1	5	6.4	6.4	65.4
Within Parent Ins	2	25	32.1	32.1	97.4
Library/Parent Ins	3	2	2.6	2.6	100.0
	TOTAL	78	100.0	100.0	

Types of Computers

a) Mainframe Computers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Available/N.A	0	73	93.6	93.6	93.6
Available	1	5	6.4	6.4	100.0
	TOTAL	78	100.0	100.0	

b) Minicomputers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Available/N.A	0	75	96.2	96.2	96.2
Available	1	3	3.8	3.8	100.0
	TOTAL	78	100.0	100.0	

c) Microcomputers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Available/N.A	0	54	69.2	69.2	69.2
Available	1	24	30.8	30.8	100.0
	TOTAL	78	100.0	100.0	

CD-ROM Drives

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/Not Stated/N.A	0	75	96.2	96.2	96.2
Available	1	3	3.8	3.8	100.0
	TOTAL	78	100.0	100.0	

Library Use Computers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/N.A	0	58	74.4	74.4	74.4
Yes	1	20	25.6	25.6	100.0
	TOTAL	78	100.0	100.0	

Telcommunications Facilities

a) Telephone Facilities

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Indicated	0	2	2.6	2.6	2.6
Available	1	76	97.4	97.4	100.0
	TOTAL	78	100.0	100.0	

b) Telex Facilities

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Indicated	0	49	62.8	62.8	62.8
Available	1	29	37.2	37.2	100.0
	TOTAL	78	100.0	100.0	

c) Facsimile Facilities

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Indicated	0	59	75.6	75.6	75.6
Available	1	19	24.4	24.4	100.0
	TOTAL	78	100.0	100.0	

INSTITUTIONS WITH COMPUTERS

Type of Library

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Academic	1	9	27.3	27.3	27.3
Public	2	3	9.1	9.1	36.4
Special	3	20	60.6	60.6	97.0
School	4	1	3.0	3.0	100.0
	TOTAL	33	100.0	100.0	

Library Use Computers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/N.A	0	13	39.4	39.4	39.4
Yes	1	20	60.6	60.6	100.0
	TOTAL	33	100.0	100.0	

LIBRARIES USING COMPUTERS

Type of Library

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Academic	1	5	25.0	25.0	25.0
Public	2	2	10.0	10.0	35.0
Special	3	13	65.0	65.0	100.0
	TOTAL	20	100.0	100.0	

Location of Computers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Within Library	1	5	25.0	25.0	25.0
Within Parent Ins	2	13	65.0	65.0	90.0
Library/Parent Ins	3	2	10.0	10.0	100.0
	TOTAL	20	100.0	100.0	

Mainframe Computers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Available/N.A	0	16	80.0	80.0	80.0
Available	1	4	20.0	20.0	100.0
	TOTAL	20	100.0	100.0	

Minicomputers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Available/N.A	0	17	85.0	85.0	85.0
Available	1	3	15.0	15.0	100.0
	TOTAL	20	100.0	100.0	

Microcomputers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Available/N.A	0	3	15.0	15.0	15.0
Available	1	17	85.0	85.0	100.0
	TOTAL	20	100.0	100.0	

Network of Micros

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/Not Stated/N.A	0	2	10.0	10.0	10.0
Stand Alone	1	14	70.0	70.0	80.0
Networked	2	3	15.0	15.0	95.0
Network/Std Alone	3	1	5.0	5.0	100.0
	TOTAL	20	100.0	100.0	

CD ROM Drives

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/Not Stated/N.A	0	17	85.0	85.0	85.0
Available	1	3	15.0	15.0	100.0
	TOTAL	20	100.0	100.0	

COMPUTERS USED FOR

Bibliographic/Library Database Magt

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	6	30.0	30.0	30.0
Yes	1	14	70.0	70.0	100.0
	TOTAL	20	100.0	100.0	

Word Processing

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	3	15.0	15.0	15.0
Yes	1	17	85.0	85.0	100.0
	TOTAL	20	100.0	100.0	

Financial/Management Applications

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	19	95.0	95.0	95.0
Yes	1	1	5.0	5.0	100.0
	TOTAL	20	100.0	100.0	

Numerical/Statistical Applications

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	19	95.0	95.0	95.0
Yes	1	1	5.0	5.0	100.0
	TOTAL	20	100.0	100.0	

Other Applications

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	16	80.0	80.0	80.0
Yes	1	4	20.0	20.0	100.0
	TOTAL	20	100.0	100.0	

Current Awareness Service

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	7	35.0	35.0	35.0
Service Provided	1	13	65.0	65.0	100.0
	TOTAL	20	100.0	100.0	

Selective Diessemination of Information

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	6	30.0	30.0	30.0
Service Provide	1	14	70.0	70.0	100.0
	TOTAL	20	100.0	100.0	

Bibliographies

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	6	30.0	30.0	30.0
Service Provided	1	14	70.0	70.0	100.0
	TOTAL	20	100.0	100.0	

Online Searches

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	20	100.0	100.0	100.0
	TOTAL	20	100.0	100.0	

Question-Answer Service

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	10	50.0	50.0	50.0
Service Provided	1	10	50.0	50.0	100.0
	TOTAL	20	100.0	100.0	

Other Services

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	17	85.0	85.0	85.0
Service Provided	1	3	15.0	15.0	100.0
	TOTAL	20	100.0	100.0	

Software Used for Database Management

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	6	30.0	30.0	30.0
CDS/ISIS (Micro)	2	6	30.0	30.0	60.0
CDS/ISIS & Dbase	4	1	5.0	5.0	65.0
Dbase & Others	5	6	30.0	30.0	95.0
Others	6	1	5.0	5.0	100.0
	TOTAL	20	100.0	100.0	

FORMAT OF COMPUTEWR GENERATATED SERVICES

Computer Printouts

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	2	10.0	10.0	10.0
Yes	1	18	90.0	90.0	100.0
	TOTAL	20	100.0	100.0	

Diskettes

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	12	60.0	60.0	60.0
Yes	1	8	40.0	40.0	100.0
	TOTAL	20	100.0	100.0	

CD-ROM

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	20	100.0	100.0	100.0
	TOTAL	20	100.0	100.0	

Current Awareness/SDI Bulletins

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	14	70.0	70.0	70.0
Yes	1	6	30.0	30.0	100.0
	TOTAL	20	100.0	100.0	

Magnetic Tape

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	20	100.0	100.0	100.0
	TOTAL	20	100.0	100.0	

Other Formats

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	19	95.0	95.0	95.0
Yes	1	1	5.0	5.0	100.0
	TOTAL	20	100.0	100.0	

DATABASES

Local Databases

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	13	65.0	65.0	65.0
Available	1	7	35.0	35.0	100.0
	TOTAL	20	100.0	100.0	

External Databases

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	17	85.0	85.0	85.0
Available	1	3	15.0	15.0	100.0
	TOTAL	20	100.0	100.0	

Online Access to Remote Databases

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/N.A	0	20	100.0	100.0	100.0
	TOTAL	20	100.0	100.0	

Plans for Online Access

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/N.A	0	8	40.0	40.0	40.0
Yes	1	12	60.0	60.0	100.0
	TOTAL	20	100.0	100.0	

PROBLEMS IN USE OF COMPUTERS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/N.A	0	11	55.0	55.0	55.0
Yes	1	9	45.0	45.0	100.0
	TOTAL	20	100.0	100.0	

TRAINING

Short Courses - Abroad

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	14	70.0	70.0	70.0
Yes	1	6	30.0	30.0	100.0
	TOTAL	20	100.0	100.0	

Long Courses - Abroad

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	15	75.0	75.0	75.0
Yes	1	5	25.0	25.0	100.0
	TOTAL	20	100.0	100.0	

Trained Locally

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	10	50.0	50.0	50.0
Individually	1	5	25.0	25.0	75.0
In Gropus	2	2	10.0	10.0	85.0
Self-trained	3	3	15.0	15.0	100.0
	TOTAL	20	100.0	100.0	

MEASURES TAKEN WHEN SYSTEM IS DOWN

Service for Computers Locally

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/N.A	0	7	35.0	35.0	35.0
Yes	1	13	65.0	65.0	100.0
	TOTAL	20	100.0	100.0	

Use Back Up System

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	20	100.0	100.0	100.0
	TOTAL	20	100.0	100.0	

Mail System Abroad

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	20	100.0	100.0	100.0
	TOTAL	20	100.0	100.0	

Identify/Replace Faulty Parts

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	20	100.0	100.0	100.0
	TOTAL	20	100.0	100.0	

Call Experts From Abroad

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	19	95.0	95.0	95.0
Yes	1	1	5.0	5.0	100.0
	TOTAL	20	100.0	100.0	

Other Measures

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	18	90.0	90.0	90.0
Yes	1	2	10.0	10.0	100.0
	TOTAL	20	100.0	100.0	

Efficiency Improved

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Yes	1	20	100.0	100.0	100.0
	TOTAL	20	100.0	100.0	

LIBRARIES USING COMPUTERS AND FACING PROBLEMS

Inadequacy of Peripherals

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	6	66.7	66.7	66.7
Yes	1	3	33.3	33.3	100.0
	TOTAL	9	100.0	100.0	

Inappropriate Software

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	5	55.6	55.6	55.6
Yes	1	4	44.4	44.4	100.0
	TOTAL	9	100.0	100.0	

Lack of Software Documentaion

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	6	66.7	66.7	66.7
Yes	1	3	33.3	33.3	100.0
	TOTAL	9	100.0	100.0	

Inadequate Computer Memory

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	5	55.6	55.6	55.6
Yes	1	4	44.4	44.4	100.0
	TOTAL	9	100.0	100.0	

Slow Processing Speed

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	7	77.8	77.8	77.8
Yes	1	2	22.2	22.2	100.0
	TOTAL	9	100.0	100.0	

Lack of Spare Parts

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	4	44.4	44.4	44.4
Yes	1	5	55.6	55.6	100.0
	TOTAL	9	100.0	100.0	

Lack/Unsatisfactory Domestic Maintenance

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	3	33.3	33.3	33.3
Yes	1	6	66.7	66.7	100.0
	TOTAL	9	100.0	100.0	

Environmental Conditions

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	4	44.4	44.4	44.4
Yes	1	5	55.6	55.6	100.0
	TOTAL	9	100.0	100.0	

Other Equipment Problems

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	6	66.7	66.7	66.7
Yes	1	3	33.3	33.3	100.0
	TOTAL	9	100.0	100.0	

Shortage of Trained Manpower

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Satated/N.A	0	3	33.3	33.3	33.3
Yes	1	6	66.7	66.7	100.0
	TOTAL	9	100.0	100.0	

Lack of Training Facilities

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	4	44.4	44.4	44.4
Yes	1	5	55.6	55.6	100.0
	TOTAL	9	100.0	100.0	

Rapid Rate of Turn Over

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	9	100.0	100.0	100.0
	TOTAL	9	100.0	100.0	

Other Personnel Related Problems

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	7	77.8	77.8	77.8
Yes	1	2	22.2	22.2	100.0
	TOTAL	9	100.0	100.0	

INSTITUTIONS WITH LIBRARIES BUT LIBRARIES NOT USING THEM

Type of library

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Academic	1	4	30.8	30.8	30.8
Public	2	1	7.7	7.7	38.5
Special	3	7	53.8	53.8	92.3
School	4	1	7.7	7.7	100.0
	TOTAL	13	100.0	100.0	

Year Computers to be Used

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No/N.A	0	5	38.5	38.5	38.5
1992	1	2	15.4	15.4	53.8
Planned/not def	6	6	46.2	46.2	100.0
	TOTAL	13	100.0	100.0	

Computers to be used for

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	7	53.8	53.8	53.8
Biblio/Dbase Magt	1	4	30.8	30.8	84.6
Biblio /Dbase/Onl	4	1	7.7	7.7	92.3
All	5	1	7.7	7.7	100.0
	TOTAL	13	100.0	100.0	

LIBRARIES WITHOUT COMPUTERS

Type of library

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Academic	1	19	42.2	42.2	42.2
Public	2	10	22.2	22.2	64.4
Special	3	14	31.1	31.1	95.6
School	4	2	4.4	4.4	100.0
	TOTAL	45	100.0	100.0	

Year Computers to be Installed/Used

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No Plans	0	25	55.6	55.6	55.6
1992	1	5	11.1	11.1	66.7
1993	2	1	2.2	2.2	68.9
Planned/not defi.	6	14	31.1	31.1	100.0
	TOTAL	45	100.0	100.0	

Type of Computers to be Installed

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Known/N.A	0	31	68.9	68.9	68.9
Mainframe	1	3	6.7	6.7	75.6
Minicomputer	2	4	8.9	8.9	84.4
Microcomputers	3	7	15.6	15.6	100.0
	TOTAL	45	100.0	100.0	

Computers to be Used for

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated/N.A	0	27	60.0	60.0	60.0
Biblio/Dbase Magt	1	9	20.0	20.0	80.0
Catalog & Classi	2	4	8.9	8.9	88.9
Online Searches	3	2	4.4	4.4	93.3
All	5	2	4.4	4.4	97.8
Others	6	1	2.2	2.2	100.0
TOTAL		45	100.0	100.0	

ANNEX 5

The Copperbelt University,
Library Department,
P.O. Box 21692,
KITWE .
20th January, 1992.

Dear Sir/Madam,

I am a Graduate Student in the School of Information Studies for Africa (SISA), at Addis Ababa University, Addis Ababa, Ethiopia conducting a research on:

INFORMATION MANAGEMENT IN ZAMBIA WITH SPECIAL EMPHASIS ON THE APPLICATION OF INFORMATION TECHNOLOGY.

Among other things, the research involves a survey of the information needs of researchers and teaching staff in selected research and academic institutions in Zambia. The results of the survey will be used in the preparation of my thesis in which I intend to design a plan and mechanism for a computer-based Selective Dissemination of Information (SDI) among cooperating institutions in Zambia. Attached to this letter is a questionnaire intended for the survey.

The questionnaires are being sent to research and teaching personnel at Agricultural Research Stations, National Council for Scientific Research, Tropical Disease Research Centre (TDRC) the University of Zambia, the Copperbelt University and other relevant research institutions.

Please, help me by filling out the attached questionnaire and returning it by 30th March, 1992 to the above address. A self addressed, stamped envelope for mailing the completed questionnaire is also attached.

Thanking you in anticipation of your favourable assistance,

Yours Sincerely

Justin Chisenga.

SURVEY OF INFORMATION NEEDS OF RESEARCHERS AND TEACHING STAFF IN SELECTED RESEARCH AND ACADEMIC INSTITUTIONS IN ZAMBIA

QUESTIONNAIRE

PLEASE TYPE OR PRINT. THE COMPLETED QUESTIONNAIRE SHOULD BE RETURNED BY 30TH MARCH, 1992 TO:

JUSTIN CHISENGA
COPPERBELT UNIVERSITY LIBRARY
P.O. BOX 21692
KITWE.

OR

SCHOOL OF INFORMATION STUDIES FOR AFRICA
ADDIS ABABA UNIVERSITY
P.O. BOX 1176
ADDIS ABABA
ETHIOPIA

PART 1. GENERAL INFORMATION

1. Surname..... Other name(s).....

   Nationality....:.[.].Male Sex[ ] Female

2. Permanent Mailing Address
   .....
   .....
   .....
   .....
   .....

   Telephone: Home.....
   Office.....
   Telex .....
   Fax .....

3. Academic Qualifications.

   Highest Degree/Diploma .....
   Subject (Major) .....
   Institution .....

4. Main Fields of Specialization
(Please indicate what you consider to be the best subject areas in which you are particulary competent and be specific)

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5. Affiliation
(Give the name and address of the institution where you are currently working)

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.....
.....

6. Services offered (The category of work you do. Please tick where appropriate)

[ ] Research
[ ] Training/Teaching
[ ] Consultancy
[ ] Others (Please specify) .....
.....
.....
.....

7. Are you currently conducting any research? (Tick one)

[ ] Yes [ ] No

If YES what is it about? (Please be brief and specific)

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8. If you are engaged in teaching, what subjects do you teach?

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.....

PART 2. INFORMATION NEEDS

9. Does your institution have any of the following information system? (Tick where appropriate)

[ ] Library
[ ] Documentation Centre
[ ] Information Centre

10. If any of the above information system is available, for what purpose do you use its facilities?

[ ] borrow books and journals for preparation of teaching materials or research
[ ] consult journals in order to keep abreast with developments in you field
[ ] others (Please specify) .....
.....
.....
.....

11. Does your information system provide you with any of the following services? (Tick where appropriate)

[ ] Current Awareness Services (Informing users of new items received eg. public display of new items received or display of lists showing new items added to the collection)

[ ] Selective Dissemination of Information (Giving specific information to specific users about items received relevant to their field of specialization)

[ ] Online searches of databases (interactive interrogation of databases containing bibliographic information or source data, held on a host computer)

[ ] Question and answer services

[ ] Reference services

12. Do you feel that your Library/Documentation/Information Centre meets your information requirements? (Tick one)

[ ] Yes [ ] To some extent [ ] No

13. If the answer to QUESTION 12 is NO or TO SOME EXTENT what other sources of information do you use to meet your information requirements?

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14. Please, indicate if possible, the extent to which inadequate information facilities hamper your work as a researcher or lecturer?

[ ] No limitation
[ ] Some limitation but not serious
[ ] Serious limitations (Please explain).....
.....
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.....

15. If you do get materials from other sources through your Library/Documentation/Information Centres, how long does it take to get them?

[ ] 1 - 7 days
[ ] 8 - 15 days
[ ] a month
[ ] more than one month

16. If you travel in order to have access to other Library/ Documentation/Information Centre facilities, how far do you travel? (Tick where appropriate)

[ ] 1 - 5km
[ ] 6 - 10km
[ ] above 10km

17. What is the number of Journals to which you personally subscribe to?

..... Journals

18. Approximately what is the number of Journals (those you know) that are of interest to your field of specialization that you have no access to? (This should exclude the number that you personally subscribe to and ....those subscribed to by your Library/Documentation/Information Centre)

.....Journals

19. What materials, relevant to you field of specialization would you like your library/documentation/information centre to add to its collection? (Name those materials that are currently not available in your institution)

.....
.....
.....
.....
.....
.....

THANK YOU VERY MUCH FOR YOUR TIME IN FILLING OUT THIS QUESTIONNAIRE.

ANNEX 6

STATISTICAL FREQUENCY TABLES OF DATA ON
INFORMATION REQUIREMENTS OF RESEARCHERS AND TEACHING STAFF

PART I.

NATIONALITY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Zambian	1	65	91.5	91.5	91.5
Foreigner	2	6	8.5	8.5	100.0
	TOTAL	71	100.0	100.0	

SEX

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Male	1	60	84.5	84.5	84.5
Female	2	11	15.5	15.5	100.0
	TOTAL	71	100.0	100.0	

HIGHEST DEGREE/DIPLOMA

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Doctorate	1	15	21.1	21.1	21.1
Masters	2	34	47.9	47.9	69.0
Post-Graduate Dip.	3	9	12.7	12.7	81.7
Bachelors	4	11	15.5	15.5	97.2
Others	5	2	2.8	2.8	100.0
	TOTAL	71	100.0	100.0	

DISCPLINE OF SPECIALIZATION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Science and Tech.	1	49	69.0	69.0	69.0
Social Sciences	2	13	18.3	18.3	87.3
Education	3	6	8.5	8.5	95.8
Humanities	4	1	1.4	1.4	97.2
Medicine/Vete.	5	2	2.8	2.8	100.0
	TOTAL	71	100.0	100.0	

SERVICES OFFERED

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Research	1	26	36.6	36.6	36.6
Training/Teaching	2	11	15.5	15.5	52.1
Consultancy	3	1	1.4	1.4	53.5
Research/Consult.	4	10	14.1	14.1	67.6
Research/Teachinng	5	7	9.9	9.9	77.5
Research/Teach/Co.	6	13	18.3	18.3	95.8
Other Services	7	3	4.2	4.2	100.0
	TOTAL	71	100.0	100.0	

CONDUCTING RESEARCH

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No	0	20	28.2	28.2	28.2
Yes	1	51	71.8	71.8	100.0
	TOTAL	71	100.0	100.0	

PART II.

TYPE OF INFORMATION SYSTEM

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Library	1	43	60.6	60.6	60.6
Documentation C.	2	28	39.4	39.4	100.0
TOTAL		71	100.0	100.0	

A. LIBRARY USE

1. BORROW BOOKS/JOURNALS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated	0	7	9.9	9.9	9.9
Borrow Books/Jour.	1	64	90.1	90.1	100.0
TOTAL		71	100.0	100.0	

2. CONSULT JOURNALS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated	0	11	15.5	15.5	15.5
Consult Journals	1	60	84.5	84.5	100.0
TOTAL		71	100.0	100.0	

3. OTHER USES

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated	0	59	83.1	83.1	83.1
Other Uses	1	12	16.9	16.9	100.0
TOTAL		71	100.0	100.0	

B. LIBRARY SERVICE PROVIDED

1. CURRENT AWARENESS SERVICES

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	22	31.0	31.0	31.0
Service Provided	1	49	69.0	69.0	100.0
	TOTAL	71	100.0	100.0	

2. SELECTIVE DISSEMINATION OF INFORMATION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	44	62.0	62.0	62.0
Service Provided	1	27	38.0	38.0	100.0
	TOTAL	71	100.0	100.0	

3. ONLINE SEARCHES

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	71	100.0	100.0	100.0
	TOTAL	71	100.0	100.0	

4. QUESTION-ANSWER SERVICES

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Provided	0	63	88.7	88.7	88.7
Service Provided	1	8	11.3	11.3	100.0
	TOTAL	71	100.0	100.0	

5. REFERENCE SERVICES

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not provided	0	18	25.4	25.4	25.4
Service Provided	1	53	74.6	74.6	100.0
	TOTAL	71	100.0	100.0	

INFORMATION NEEDS MET?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No	0	8	11.3	11.3	11.3
To Some Extent	1	55	77.5	77.5	88.7
Yes	2	8	11.3	11.3	100.0
	TOTAL	71	100.0	100.0	

ALTERNATIVE INFORMATION SOURCES

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated	0	19	26.8	26.8	26.8
Abroad	1	13	18.3	18.3	45.1
Local	2	22	31.0	31.0	76.1
Local and Abroad	3	5	7.0	7.0	83.1
Other Sources	4	12	16.9	16.9	100.0
	TOTAL	71	100.0	100.0	

LIMITATION ON WORK

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
No Limitations	0	10	14.1	14.1	14.1
Some Limits	1	37	52.1	52.1	66.2
Serious Limits	2	24	33.8	33.8	100.0
	TOTAL	71	100.0	100.0	

PERIOD OF TIME

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated	0	24	33.8	33.8	33.8
1-7 days	1	10	14.1	14.1	47.9
8-15 days	2	4	5.6	5.6	53.5
A Month	3	5	7.0	7.0	60.6
Above a Month	4	28	39.4	39.4	100.0
	TOTAL	71	100.0	100.0	

DISTANCE TRAVELLED

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Not Stated	0	23	32.4	32.4	32.4
1-5km	1	10	14.1	14.1	46.5
6-10km	2	14	19.7	19.7	66.2
Above 10km	3	24	33.8	33.8	100.0
	TOTAL	71	100.0	100.0	

NUMBER OF JOURNALS SUBSCRIBED TO

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Zero/Not Stated	0	46	64.8	64.8	64.8
1	1	11	15.5	15.5	80.3
2	2	7	9.9	9.9	90.1
3	3	2	2.8	2.8	93.0
4	4	2	2.8	2.8	95.8
5	5	1	1.4	1.4	97.2
6	6	1	1.4	1.4	98.6
10	10	1	1.4	1.4	100.0
	TOTAL	71	100.0	100.0	

NUMBER OF JOURNALS NOT ACCESSED TO

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Zero/Not Stated	0	15	21.1	21.1	21.1
1	1	2	2.8	2.8	23.9
2	2	7	9.9	9.9	33.8
3	3	10	14.1	14.1	47.9
4	4	12	16.9	16.9	64.8
5	5	10	14.1	14.1	78.9
6	6	4	5.6	5.6	84.5
8	8	1	1.4	1.4	85.9
10	10	5	7.0	7.0	93.0
11	11	1	1.4	1.4	94.4
15	15	4	5.6	5.6	100.0
	TOTAL	71	100.0	100.0	