

ADDIS ABABA UNIVERSITY  
SCHOOL OF GRADUATE STUDIES  
SCHOOL OF INFORMATION STUDIES FOR AFRICA

THE MARKETING OF SCIENCE AND TECHNOLOGY INFORMATION PRODUCTS  
AND SERVICES IN SUB SAHARAN AFRICA: A CASE STUDY OF THE  
ETHIOPIAN SCIENCE AND TECHNOLOGY COMMISSION (ESTC).

A Thesis

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for the degree of

Master of Science in Information Science.

by

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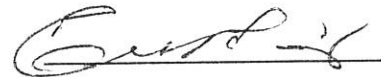
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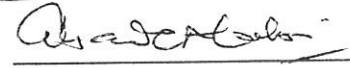
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## TABLE OF CONTENTS

DECLARATION .....	i
DEDICATION .....	ii
ACKNOWLEDGEMENTS .....	iii
LIST OF FIGURES OR ILLUSTRATIONS .....	v
LIST OF TABLES .....	vi
ABSTRACT .....	x

### CHAPTER ONE

INTRODUCTION .....	1
1.1 BACKGROUND AND STATEMENT OF THE PROBLEM .....	1
1.1.1 Statement of the problem .....	1
1.1.2 The importance of marketing .....	3
1.1.3 Information marketing strategies in Sub Saharan Africa .....	4
1.2 JUSTIFICATION OF THE STUDY .....	5
1.3 OBJECTIVES OF THE STUDY .....	6
1.3.1 General objective .....	6
1.3.2 Specific objectives .....	6
1.4 SIGNIFICANCE OF THE STUDY .....	7
1.5 SCOPE AND LIMITATIONS OF THE STUDY .....	8
1.6 METHODOLOGY .....	9
1.6.1. Sampling .....	10
1.6.1.1 Sample design .....	12
1.6.2 Survey instruments .....	12
1.6.2.1 Questionnaire .....	12
1.6.2.2 Interviews .....	14

1.6.2.3 Observation . . . . .	14
1.6.3 Analysis of data . . . . .	15
1.7 ORGANISATION OF THE THESIS . . . . .	15

## CHAPTER TWO

MARKETING OVERVIEW: A REVIEW OF LITERATURE . . . . .	17
2.0 INTRODUCTION . . . . .	17
2.1 WHAT IS MARKETING? . . . . .	17
2.2 THE MARKETING PARADIGM SHIFT . . . . .	19
2.3 THE MARKETING OF LIBRARY AND INFORMATION SERVICES(LIS): AN OVERVIEW . . . . .	20
2.4 MARKETING STRATEGIES IN LIBRARY AND INFORMATION SERVICES . . . . .	24
2.4.1 Market research . . . . .	25
2.4.2 Market segmentation . . . . .	26
2.4.3 Marketing mix . . . . .	27
2.5 MARKETING MODELS . . . . .	28
2.5.1 Portfolio management . . . . .	29

## CHAPTER THREE

THE MARKETING OF LIBRARY AND INFORMATION SERVICES IN SUB SAHARAN AFRICA . . . . .	32
3.0 INTRODUCTION . . . . .	32
3.1 SUB SAHARAN AFRICA (SSA): AN OVERVIEW . . . . .	32
3.1.1 The information infrastructure in Sub Saharan Africa . . . . .	34
3.1.2 Science and technology institutions in Sub Saharan Africa . . . . .	35
3.2 MARKETING OF INFORMATION SERVICES AND PRODUCTS IN SCIENCE AND TECHNOLOGY INSTITUTIONS IN SUB SAHARAN AFRICA . . . . .	36

## CHAPTER FOUR

MARKET RESEARCH AND ANALYSIS OF THE RESULTS . . . . .	45
4.0 INTRODUCTION . . . . .	45
4.1 THE ETHIOPIAN SCIENCE AND TECHNOLOGY COMMISSION:	
FURTHER BACKGROUND . . . . .	46
4.1.1 Establishment . . . . .	46
4.1.2 Organisational structure . . . . .	47
4.1.3 Facilities and services at the National Computer and Information Centre(NCIC) . . . . .	51
4.1.3.1 Hardware and software . . . . .	51
4.1.3.2 Databases . . . . .	51
4.1.3.3 Library collection . . . . .	52
4.1.3.4 Staff . . . . .	52
4.1.3.5 Budget . . . . .	53
4.2.1 Government policies towards science and technology . . . . .	54
4.2.2 Other institutions in the information provision business in Ethiopia . . . . .	55
4.2.3 Users (the market) of the library and information services . . . . .	56
4.3. WEAKNESSES AND STRENGTHS OF THE LIS AT THE ESTC. . . . .	62
4.4 SUMMARY OF THE FINDINGS . . . . .	63

## CHAPTER FIVE

THE MARKETING PLAN . . . . .	65
5.0 INTRODUCTION . . . . .	65
5.1 EXECUTIVE SUMMARY . . . . .	66
5.2 MISSION STATEMENT . . . . .	67
5.3 THE PRESENT SITUATION . . . . .	68
5.3.1 Portfolio analysis . . . . .	70
5.4 THE MARKETING OBJECTIVES . . . . .	72
5.4.1 Goals . . . . .	72
5.4.2 Specific objectives . . . . .	73

5.5 MARKETING STRATEGY . . . . .	73
5.5.1 Market segment strategy . . . . .	73
5.5.2 Product strategy . . . . .	75
5.5.4 Distribution strategy . . . . .	80
5.5.5 Promotion strategy . . . . .	80
5.6 FINANCIAL BUDGETS REQUIRED . . . . .	82
5.7 TIMETABLING AND SCHEDULING . . . . .	83
5.8 IMPLEMENTATION PLAN . . . . .	90
5.9 EVALUATION AND CONTROL. . . . .	92

## CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS . . . . .	94
6.0 INTRODUCTION . . . . .	94
6.1 SUMMARY AND CONCLUSIONS . . . . .	94
6.2 RECOMMENDATIONS. . . . .	96
6.3 IMPLICATIONS OF THE STUDY . . . . .	99
REFERENCES . . . . .	101
APPENDICES. . . . .	111
GLOSSARY OF SELECTED TERMS . . . . .	132

## DEDICATION

To my wife Beatrice Ngulube and my children Phathisani,  
Patriarch, Partridge and Perpetua who endured my  
absence for two years, to my mother Tamalia  
Bayeza Ngulube who inculcated in me the  
value of education and in memory of  
my sister Simesihle Moyo who  
never lived to see the  
fruits of my endeavour.  
No words can express  
my feelings for  
them and the  
sacrifices  
they have  
made, but  
this token  
gesture is  
the least  
I can do.

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*If I have seen farther, it is by standing on the shoulders of giants.* Isaac Newton

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## LIST OF FIGURES OR ILLUSTRATIONS

Figure 2.1: BCG marketing matrix

Figure 2.2 : H.I Ansoff's (1957) market development matrix

Figure 3.1: Organisational chart of science and technology in Ethiopia.

Figure 3.2: Organisational chart of the National Computer and Information Centre (NCIC)

Figure 5.1: The Welcome Screen

Figure 5.2: Menu Options Screen

Figure 5.3: Output Screen

Figure 5.4 Scheduling model of a marketing plan

## LIST OF TABLES

Table 3.1: Regularity of user studies

Table 3.2: Utilisation rates of LIS in SSA compared to SSA standards

Table 4.1: Sources of information for the users

Table 4.2: Information preferences of the users

Table 4.3: The user's utilisation and awareness of LIS

Table 4.4: Attitude of users towards information services

Table 5.1 Budget estimates for the marketing plan

Table 5.2: Steps in marketing planning (strategic level)

Table 5.3: Steps in marketing planning (tactical level)

Table 5.3: Steps in marketing planning (tactical level) (continued)

Table 5.4: Summary of the optimistic(a), most likely(m) and pessimistic times(b)

## LIST OF APPENDICES

Appendix I: Countries in Sub Saharan Africa in alphabetical order

Appendix II: Map of Sub Saharan Africa

Appendix III: Addresses of science and technology institutions in Sub Saharan Africa that were surveyed

Appendix IV: Regional science and technology institutions in Sub Saharan Africa

Appendix V: Questionnaire for collecting information about the marketing of science and technology information in Sub Saharan Africa

Appendix VI: Survey of information management at Ethiopian Science and Technology Commission

Appendix VII: Survey of the information needs of the users of the library and documentation services at the Ethiopian Science and Technology Commission (ESTC)

Appendix VIII: Reminder letter to respondents

Appendix IX: Interview schedule for collecting information about the marketing of science and technology information in Ethiopia

## LIST OF ABBREVIATIONS AND ACRONYMS

- AAAS: American Association for the Advancement of Science.
- AAU: Addis Ababa University.
- ARCT: African Regional Centre for Technology.
- BCG: Boston Consulting Group.
- CCF: Common Communication Format.
- CDS/ISIS: Computerized Information Service, Integrated Scientific Information System.
- CD-ROM: Compact Disc Read Only Memory.
- E-Mail: Electronic mail.
- ESTC: Ethiopian Science and Technology Commission.
- FDT: Field Definition Table.
- FID/ET: International Federation for Information and Documentation Education Training Committee.
- GHASTINET: Ghana National Scientific and Technological Network.
- GNP: Gross national product.
- IDRC: International Development Research Centre.
- ISO: International Standardization Organisation.
- IT: Information Technology.
- LIS: Library and Information Services.
- MARC: Machine Readable Catalogue.
- MIBIS: Microcomputer Based Bibliographic Information.
- MS-DOS: Microsoft disk operating system.
- NASO: African Academy of Science and Network of African Scientific Organisations.
- NASTIDC: National Scientific and Technological Information and Documentation Centre.

NCIC: National Computer and Information Centre.

OAU: Organisation of African Unity.

OCDE: Organisation for Economic Co-operation and Development.

PADIS: Pan African Development Information Systems.

PERT: Program Evaluation and Review Technique.

PEST: Political, Economic, Social and Technological(also see SWOT).

SAP: Structural adjustment programme.

SAS: Statistical Analysis System.

SISA: School of Information Studies for Africa.

SSA: Sub Saharan Africa.

S&T: Science and Technology.

STI: Scientific and technological information.

SWOT: Strength, weaknesses, opportunities and strengths.

UK: United Kingdom.

UN: United Nations.

UNECA: United Nations Economic Commission for Africa.

UNESCO: United Nations Educational, Scientific and Cultural Organisation.

## ABSTRACT

This thesis addresses the topic of the marketing of information services and products in Sub Saharan Africa with special reference to Ethiopia. It examines the broadened concept of marketing and how the concept has been applied in the library and information services(LIS) world in general and Sub Saharan Africa in particular. The marketing concept which is a philosophy that advocates a user oriented organisation and views users as the lifeblood of the business is also explored.

Various marketing models are considered and a network analysis/scheduling model is suggested. The steps in model building were market research and portfolio analysis. The research revealed that marketing strategies are not applied in most LIS in Sub Saharan Africa. Marketing planning is conspicuously absent. Much of what passed for marketing in LIS in Sub Saharan Africa was a variety of discrete activities rather than a planned and coherent programme.

Although information services and products exist their utilisation is very low. Utilisation of information seems to depend on the awareness of its existence. For users to be aware and utilize the information resources, and thus maximize the return on investment marketing planning is suggested. The illustration of the network analysis/scheduling model for marketing planning at the Ethiopian Science and Technology Commission is given.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 BACKGROUND AND STATEMENT OF THE PROBLEM

##### 1.1.1 Statement of the problem

The concept of information as a basic resource is comparatively new. Information has always been a resource, but considering it in the same economic context as labour and capital is a recent phenomenon (Kar 1992). Today there is greater consciousness that information is a genuine raw material for growth and prosperity. The axiom *Information is Power* is no longer a buzz phrase of empty connotations, but it is a hard reality to reckon with. Information is a vital input to the economic, technological and cultural development of any society. This means that more attention should be paid to its access and use (UN 1985, 9).

The use of information is dependent on, and is accelerated by, knowledge of its existence and access. The *raison d'être* of an LIS is to provide access to recorded information and ideas for the community and the individual. To do that, they have to produce and deliver goods and services that people want and value. The role of the LIS should not stop at the production of services, but the LIS must have an added responsibility of creating awareness through adopting marketing strategies.

Studies (Lundu 1988; Villars 1995) have shown that the lack of appreciation of the marketing concept in SSA has led to the under-utilisation of information services. Opinions have been expressed to the effect that the problem in Africa is not lack of information, but the low level of awareness of its existence and use (AAAS 1995, 4). The

adoption and application of the techniques and practices of marketing to library and information services (LIS) would greatly enhance the role of LIS in the development of Africa's information society (UNECA 1996a, 12).

Marketing in the true sense of the word is not applied in the LIS world in SSA. LIS in SSA have already implemented some elements of marketing into the service, but this marketing process is in fact unconscious and is not done in any formal way. Many S&T institutions do not go beyond producing brochures and posters. This, however, is only one component of marketing and to just produce a brochure and a few posters describing various collections and services is not a full marketing exercise (Kinnell 1990).

A number of writers (Bryson 1990, 14; O'Brien 1992, Kinnell and MacDougall 1992; de Sáez 1993; James 1993; White and Abels 1995; Weingand 1995b) have argued that a strategic approach to marketing would increase the chance of exploiting opportunities. Marketing would ensure that the LIS determines what the users want and provide services that satisfy user needs.

The need to adopt the marketing concept is further made urgent by the developments in technology which has opened a myriad of choices to information seekers. Modern telecommunication technology has linked the world into a *global village*. The diverse avenues to information challenge the role of LIS. Information-seekers who once turned to their LIS for help may now be prompted to use electronic or commercial document services, to purchase individualised access rights in the form of database subscriptions or purchased books, or to accept abbreviated abstracts instead of retrieving full-text abstracts (White and Abels 1995).

The specific concern of the study revolves around the fact that information centres exist primarily to provide information services and that marketing principles will enable LIS to achieve their objectives more effectively. Marketing in stressing the importance of

measuring and satisfying consumer needs, tends to produce an improved level of client service and satisfaction.

The proposition advanced is that information centres in SSA are not providing effective services to users and users are not making effective use of the services because of lack of marketing strategies. Furthermore without proper marketing strategies the survival of information centres in their present form is in doubt.

### **1.1.2 The importance of marketing**

The supreme position of marketing owes a lot to the change in orientation which occurred through this century, from the days when industry was production-oriented, through the period when it became sales-oriented and to the present time when it became customer-oriented (Sowter 1995, 6). The prevailing purpose of an organisation became the identification and satisfaction of the customer's needs. The product itself ceased to be all-important.

It was this paradigm shift that made marketing which was generally thought of by the practitioners as the process of satisfying consumer needs at a profit and, therefore, only applicable to the profit making commercial sector of the economy, to become relevant to non-profit services like health and educational institutions, welfare organisations, media arts centres, museums, archives and libraries and information centres provided for the public good using public funds.

By means of its marketing decision, the organisation adjusts its products and services to the needs and desires of society. The adoption of the concept of marketing in the LIS world would aid the development of a strategic, client-led approach to services. It would lead to understanding what should be offered to whom, when, where and in what

quantities and form. This would help the LIS to achieve their role as information providers; and make LIS dynamic centres of informational needs rather than buildings where librarians and/or information specialists get jobs. It would make LIS aggressive wheels in the knowledge whirlwind of the contemporary world rather than plodding stables of a quickly bored society.

### **1.1.3 Information marketing strategies in Sub Saharan Africa**

LIS in SSA have (Lundu 1988; Villars 1995) concentrated on producing information products and services without paying due attention to creating awareness and increasing the rate of utilisation. Investments have been on building up and maintaining information collections and delivery capabilities in the form of national and sectorial libraries, documentation centres, archives and statistical offices. According to IDRC (1988, 18) the utilisation of these have been far below desirable levels. In order to identify the causes of under-utilisation there is need to carry out user studies and/or market research.

The concept of information marketing has not received much attention, but it is one which, if fully harnessed, will play a major role in the dissemination of scientific information for achieving national development goals (GHASTINET 1992, 2). Among the factors that militate against the development of viable information marketing strategies in developing countries, in general, and particularly in SSA are the following (Lundu 1988; Seetharama 1990, 101; James 1993, 9):

1. User needs assessment studies to determine user requirements are rarely done.
2. The objectives of the LIS are stated in generic terms and do not set targets making the practice of strategic marketing difficult.

3. There is confusion at the conceptual level among librarians and information scientists that marketing is nothing more than promotions and sales.
4. LIS do not have marketing plans.
5. Product development and targeting leaves a lot to be desired due to the absence of market research and segmentation.
6. There is a paucity of documented examples of LIS marketing in Sub Saharan Africa.

These observations are equally applicable to the ESTC. The Ethiopian Science and Technology Commission(ESTC) was established in order to bring about sustained science and technology (S&T) capacity building in Ethiopia (Government of Ethiopia 1993, 1). The information needs of S&T are catered for by the National Computer and Information Centre (NCIC). Although information services and products are available at the ESTC their level of use is not satisfactory.

This could partly be attributed to the fact that the ESTC does not have any marketing plan and that little effort is put to positive marketing. User studies to determine user requirements are rarely done.

## 1.2 JUSTIFICATION OF THE STUDY

The role of information in the development of a country is directly proportional to the economic, scientific and technological levels of the country. In other words, the extent to which information is utilised indicates the levels of development of the economy; and science and technology (NASTIDC 1993, 1). A variety of information products and services exist in SSA, but their level of utilisation is low. Emphasis has been on capacity building in terms of holdings and accommodation.

Information, no matter how well organised and indexed, does not realise its value until it is used. There is a strong feeling that greater attention needs to be given to marketing because it addresses the demand side of any type of information system and leads to awareness and the need to utilise. The utilisation of information in general and S&T information in particular would help SSA face the challenge of underdevelopment (Jugessor and Hamel 1995, 24).

Marketing is essential to effective library and information management and ultimately to the ability to successfully move to the next century (Weingand 1995a). There is mounting evidence that marketing, with its emphasis on meeting user needs and on adopting an overall systematic plan to meet library objectives can help the LIS to operate more efficiently, provide collections and services that will better satisfy users and attract more resources (Baker 1993, 3).

### 1.3 OBJECTIVES OF THE STUDY

#### 1.3.1 General objective

Using the ESTC as a case study the general objective of this study is to develop a model of marketing for information services that could be used with certain adjustments in similar institutions in SSA.

#### 1.3.2 Specific objectives

In order to achieve this general objective the following specific objectives were formulated:

1. To identify the actual users and potential users of the current S&T information

systems.

2. To identify the S&T information products and services offered.
3. To assess the level of awareness among users and nonusers about the information services at ESTC.
4. To analyze the existing levels of utilisation of science and technology information.
5. To assess the extent to which marketing strategies are practised in information centres in SSA in general, and Ethiopia in particular.
6. To investigate and recommend suitable marketing strategies for science and technology information services.
7. To design a marketing plan and prototype databases that would be inputs in the implementation of the marketing plan.

#### 1.4 SIGNIFICANCE OF THE STUDY

In view of the scarcity of documented examples of LIS marketing in SSA this study would serve as a starting point for those information centres that intend to implement marketing strategies. If the proposed marketing plan were implemented, individual users of the system would receive services tailored to their needs. The proposed marketing model should be of use to institutional leadership with no prior formal training in the marketing discipline and to the proponents of the application of the marketing concept in the LIS regardless of its domain.

By implementing the proposed marketing plan the ESTC would benefit from increased usage and popular support. The community would become increasingly aware of the information products and services available in the midst of exploding knowledge. The funding bodies would appreciate the value for money being achieved if the ESTC

improves its image and its services seem worthwhile. It is hoped that the results of the study would have widely applicable conclusions which would influence actual practice in the future.

#### 1.5 SCOPE AND LIMITATIONS OF THE STUDY.

Sub Saharan Africa(SSA) is an extensive area covering 49 countries (Appendix I). Only an overview of marketing of information in the sub region is given. Regional sources such as PADIS and ARCT were used to supplement the survey.

The survey was inhibited by the difficulties in getting the addresses of all the S&T institutions SSA. The survey was therefore limited to those countries with national S&T policy making bodies and whose S&T addresses are in the 1996 PADIS network national participating list and available directories (Wollet and Allal 1985; IDRC 1992, 241-258; NASO 1992; OCDE 1992). Countries without national S&T institutions were not considered in this survey and they are marked with (X) in Appendix I.

Responses were low from the French speaking countries. The generalised conclusions are mainly based on the information from East and Southern Africa. The sample frame for the users at the ESTC was determined from the Ethiopian Experts Database (EXPERT). The possibility of sending questionnaires either to deceased people or invalid addresses could not be ruled out as the database was last updated in 1990.

Due to time and resource constraints this study is limited to S&T information services and products. For the same reasons a case study approach was adopted (Mauch and Birch 1993, 112). Lawler et al (1985) argued that simple case studies are helpful in developing and refining generalizable concepts and frames of reference. The ESTC is a typical representative of the larger category of the S&T institutions in SSA from which it

was drawn from.

The results of the study could be generalised to a larger population and applied to different settings although there may be need for assessment to determine applicability to specific situations and local adaptation.

Network analysis/PERT<sup>1</sup> (Srivastava et al 1989, 585; Mustafi 1993, 151; Burke 1993,2) models were used for planning and scheduling the marketing plan. These techniques provided for the framework which defined the activities to be done; integrated them in a logical time sequence and finally afforded a system of dynamic control over the process of the plan.

The views expressed are of an information professional with a management background. The main concern is to demonstrate that marketing as a management function should be part and parcel of the management of LIS in SSA to ensure their survival and their active participation in Africa's information society; and to propose a marketing model that could be implemented to achieve these goals.

## 1.6 METHODOLOGY

The survey research method was used for data collection. Through this method it is possible to generalise from a sample to a population so that inferences can be made about some characteristics, attitudes or behaviour of the population (Creswell 1994, 11). This method has economy of design and the rapid turn around in data collection. Prior to this study an informal preliminary study was carried out. The results of the preliminary study provided the framework within which this research is designed.

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<sup>1</sup> *PERT and CPM are nowadays used interchangeably to refer to network analysis(Srivastava et al 1989, 609; Burke 1993,*

2).

### 1.6.1. Sampling

In order to assess the user needs and users of the information services and products at the ESTC a population of 4 345 users and potential users was considered. Sampling was conducted to ensure that the final sample size was manageable. The Ethiopian Experts Database(EXPERT) at the ESTC was used as the sample frame to identify the user groups. The database contains bio-data of Ethiopian experts who comprise of administrators, planners, decision makers and researchers in human development. Though access to the database is restricted, samples of the directory are available.

The sample members fall into five categories which constitute ESTC priority development sectors. The database has not been updated since 1990. The database was originally compiled with 24 000 records, some of which are incomplete.

The experts ranged from people with certificates to those with doctorates. The process of selection involved eliminating all records of certificate holders. Records without full addresses were also removed. This reduced the records to 4 345 and this was considered as the population for the case study survey.

When computing the size of a sample it is sometimes presumed that a sample should be based on some agreed percentage of the population from which it is taken. The view (Chisnall 1981, 93) that there is a percentage, often thought to be around 10% which can be applied when sampling populations of all kinds and sizes is quite wrong. If a population had characteristics that were completely homogenous throughout, a sample of one would be adequate to measure those particular attributes.

The adequacy of a sample depends on its own numerical size rather than on its relationship to the size of the population being surveyed (Dillon et al 1994, 250). Although it is accepted that uncertainty can be reduced by taking larger samples (Cochran 1977, 5;

Chisnall 1981, 93), this, inevitably increases the cost of the survey. Too large a sample implies a waste of resources and too small a sample diminishes the utility of the results. Sampling theory (Kothari 1990, 194; Cochran 1977, 72) provides a framework within which optimal sample sizes are determined. The following formulae (Cochran 1977, 75) were used to determine the sample size:

$$n = \frac{t^2 \frac{PQ}{d^2}}{1 + \frac{1}{N} (t^2 \frac{PQ}{d^2} - 1)} \quad (\text{Equation 1.1})$$

$d$  = margin of error in the estimated proportion  $p$  of units in the population = 0.05.

$t$  = 1.96 degree of freedom of 0.025 as read from the student's  $t$  distribution in statistical tables.

$P = 0.2$ .  $Q = 0.8$  for  $P+Q = 1$ .

$N = 4\ 345$  the sample frame.

For practical use, an advance estimate  $p$  of  $P$  is substituted in equation (1.1). If  $N$  is large, a first approximation is:

$$n_0 = t^2 \frac{PQ}{d^2} = \frac{PQ}{V} \quad (\text{Equation 1.2})$$

where

$$V = \frac{PQ}{n_0} = \text{variance of the sample proportion} \quad (\text{Equation 1.3})$$

$n_0/N$  is negligible so  $n_0$  is a satisfactory approximation of  $n$  of equation (1.1). It is apparent on comparison of equation (1.1) and (1.2) that  $n$  is obtained as:

$$n = \frac{n_0}{1 + (n_0 - 1)/N} = \frac{n_0}{1 + (n_0/N)} = 233 \quad (\text{Equation 1.4})$$

$n = 233 \text{ sample size} + 25\% = 291$ . 25% is to cater for the non response factor (Chisnall 1981:94). The sample size of this survey was taken as 291.

#### 1.6.1.1 Sample design

Since the population from which the sample was drawn did not constitute a homogenous group, the stratified random sampling technique was used. A stratified sample was obtained by separating the population elements into non-overlapping groups, called strata and then selecting a simple random sample from within each strata (Kothari 1990, 77). The strata were based on the ESTC priority sectors described in sub-section 4.1.1 of Chapter Four.

Disproportional stratified random sampling was used in this study. The number of elements were drawn from the various strata independent of the size of the stratum. The researcher was thus spared the troubles of securing an unnecessarily larger volume of information from the most prevalent group in the population.

After determining the strata a simple random sample was taken from each stratum, and the sub samples were combined to form the total sample.

#### 1.6.2 Survey instruments

The survey instruments used included questionnaires, interviews and observation.

##### 1.6.2.1 Questionnaire

The questionnaire method was chosen as the most appropriate as the study covered a vast

geographical region, that is, thirty one countries in SSA and a countrywide coverage of Ethiopia. Appendix III lists the addresses of the S&T institutions in the thirty one countries. The questionnaire approach is more economical when compared to other instruments such as interview and observation.

The questionnaire design was based on the methods documented by Dillon and others(1994, 332); Churchill(1991, 222); Kothari(1990, 125); Seetharama(1990, 223); and Wilkinson and Bhandarkar(1984, 197-200). Modifications were made on the content to suit the subject area and the objective of the study. Sample questionnaires are annexed in Appendices V to VII.

A pilot survey (de Sáez 1993, 105) was carried out before the questionnaire was finally distributed. The pilot survey tested both the questionnaire design and the sample selection procedure, as well as the field methods on a small scale before the full survey was conducted. The questionnaires were pilot tested at AAU, ESTC, AAU and ARCT workshop for Information Management Personnel of S&T Institutions in Africa, held on 27 January- 7 February 1997, Addis Ababa, Ethiopia and among randomly selected experts from the ESTC EXPERT database.

On the basis of the pilot tests adjustments and amendments were made. This was a marked improvement to the questionnaire. The response from the Ethiopian experts helped in determining the ( $p$ ) for determining the sample size computed in equations 1.1 to 1.4 in sub-section 1.6.1 above (Kothari 1990, 218). The proportion to calculate the sample size was determined to be approximately 20%. Twenty percent of the surveyed experts were neither aware of nor used the information services of the ESTC.

Questionnaires were distributed physically by hand and through postal mail. Questionnaires were distributed to a total of 31 countries in SSA and 291 individuals in Ethiopia. Appendix III lists the addresses of countries that were contacted. The E-Mail;

and the three phase follow up sequence suggested by Sproull (1988, 153) was used to follow up the potential respondents.

Initial mailing was followed by sending out a postcard reminder one week after the original mailing, three weeks later, a reminder letter (Appendix VIII) and a replacement questionnaire were sent. This improved the response rate.

#### 1.6.2.2 Interviews

Informal discussions were held with information specialists from countries several countries in SSA. Structured interviews were held at the ESTC. Appendix IX shows the sample interview schedule. The interview schedule ensured that all respondents replied to the same questions.

The unstructured interviews were used in a limited way because it was recognised that the analysis of unstructured responses was much more difficult and time consuming than that of the structured responses secured during the interviews.

#### 1.6.2.3 Observation

The observation technique was used to gather supplementary materials that would help interpret findings obtained by the interviews and questionnaires. This technique has the advantage of recording behaviour as it occurs. Many other research techniques depend entirely on people's retrospective or anticipatory reports of their own behaviour. Observation is independent of people's willingness to report. Unstructured observation was used in this study.

### 1.6.3 Analysis of data

The data collected from different sources were analyzed using both manual and automated methods. The survey data were coded and tabulated. Editing was done to improve the quality of the data for coding. Editing checked for the questionnaires' completeness, legibility and inconsistencies.

Coding transformed raw data into symbols that could be tabulated and counted. The essential operation involved in tabulation was counting to determine the frequencies and the numerical strengths of different categories of responses and summarisation of results in the form of statistical tables after data reduction.

SAS was used for data analysis. SAS facilitated the sorting of data and computing of frequencies, sums, means, percentages, standard deviations, standard errors, the probability values for the chi-square distribution and the probability of the t distribution. Other software used included Harvard Graphics Version 3.2 and Corel Draw Version 4.0 for graphical data representation; Word Perfect 5.1 for word processing; and Micro-CDS/ISIS Version 3.2 for application, prototype development and sample databases.

## 1.7 ORGANISATION OF THE THESIS

The organisation of the thesis was based on AAU School of Graduate Studies guidelines and suggestions from literature (Miller and Taylor 1987, 70; Mauch and Birch 1993, 228). The thesis begins with the Chapter giving a general introduction and the statement of the problem and objectives of the study.

Chapter Two deals with the literature related to the area of study. Building on the experiences of others this chapter reveals what has previously been done on the topic and

what is proposed in this study. Chapter Three describes the existing situation in SSA. Chapter Four presents the market research results. The proposed model and user interfaces are presented in Chapter Five. The conclusions and recommendations are in the last Chapter. References, appendices and the glossary are at the end of the thesis.

## CHAPTER TWO

### MARKETING OVERVIEW: A REVIEW OF LITERATURE

#### 2.0 INTRODUCTION

A literature review places the research in a context related to existing research and theory; it enables one to ensure that one's research would contribute to a better understanding of the phenomenon and it helps to avoid mistakes made by others (Dane 1990, 62; Creswell 1994, 21). It provides a framework for establishing the importance of the study, as well as a benchmark for comparing the results of the study with other findings. Literature review recognizes that every theory is related to at least one other theory through sharing concepts or propositions (Kuhn 1962). Building upon previous studies this chapter is going to focus on defining marketing; showing the paradigm shift that has occurred in marketing; demonstrating the application of marketing concepts in LIS globally and in SSA; and highlighting the marketing strategies and models used in LIS.

#### 2.1 WHAT IS MARKETING?

Marketing is a relatively recent term which gained prevalence after Theodore Levitt's seminal 1960 paper, *Marketing myopia* (Levitt 1960). Since then there has been a proliferation of definitions which range from those that see marketing as mere selling, those that equate it with promotional activity, and to those that see it as holistic in nature and broadly applicable to management.

While, *selling focuses on the needs of the buyer* (Levitt 1986, 22); marketing is about finding out what the customer wants first, and then producing the product to fit those

needs as opposed to producing the product or service and then seeing whom it can be sold to. Marketing includes a whole gamut of activities, selling and promotion being only parts of these.

The British Institute of marketing defines marketing as:

*the management function which organises and directs all those business activities involved in assessing customer needs and converting customer purchasing power into effective demand for a specific product or service to the final consumer or user so as to achieve the profit target or other objectives set by the company or organisation.* (Wilson et al 1992, 2).

According to Philip Kotler:

*Marketing is the analysis, planning, implementation and control of carefully formulated programs designed to bring about voluntary exchanges of value with target markets for the purpose of achieving organisational objectives. It relies heavily on designing the organisation's offering in terms of the target markets' needs and desires and on using effective pricing, communication, and distribution to inform, motivate and service the markets*

(Kotler 1982, 6).

The above definitions show that marketing has evolved from its early origins in distribution and selling into a comprehensive philosophy for relating any organisation dynamically to its markets. From the definitions it is apparent that: (1) marketing is a managerial process involving analyzing, planning, implementation and control of conditions in order to facilitate exchange between an organisation's offerings and its publics; and (2) the marketing process involves the identification and analysis of market

opportunities; segmentation and selection of target markets; and the development of competitive market strategies.

## 2.2 THE MARKETING PARADIGM SHIFT

Prior to the 1920s the focus in marketing was on producing large quantities of products better than one's competitors. This philosophy made Emerson to conclude that: *If a man..... make a better mousetrap than his neighbour, though he built his house in the woods, the world will make a beaten path to his door* (Sowter 1995, 6). Marketing during this phase was product and production orientation. The Great Depression of 1929 changed this approach. Everyone had a *mousetrap*, the take it or leave it approach of the 1920s gave way to aggressive sales approach which dominated industry until Theodore Levitt's(1960) article turned the focus onto the customer and thus the paradigm shifted for a third time.

Marketers realised that customers do not choose between competing products family or technical performance, therefore marketing efforts shifted to determining customer needs and finding the most appropriate ways to meet those needs. This led to the evolution of the marketing concept which recognized that success primarily depended upon identifying changing customer wants and developing products and services which match the needs better than those of competitors. This paradigm shift allowed nonprofit organisations such as health and educational institutions, welfare organisations and LIS to adopt marketing strategies.

The implication of the paradigm shift is that in today's climate marketing and not technical or production problems is most critical to the success of the LIS. Users must be offered what they (and not what the LIS) perceive as real value for money, time and

energy; and this can only be achieved by identifying and understanding their requirements. Despite this implication the LIS world has been very slow in adopting the marketing concept as demonstrated in sections 2.3 and 2.4 below.

### 2.3 THE MARKETING OF LIBRARY AND INFORMATION SERVICES(LIS): AN OVERVIEW

The idea of applying marketing to nonprofit organisations had its birth in a series of articles by Kotler and Levy (1969); Kotler and Zaltman (1971) and Shapiro (1973). They argued that marketing went beyond selling and was applicable to all societal activities. This was followed by Kotler's (1975) attempt to legitimize nonprofit marketing as few scholars recognised this at the time (Tucci 1988).

In 1982 the aim of Kotler's second edition was *to broaden and apply the conceptual system of marketing problems to nonprofit organisations* (Kotler 1982, xiv). In 1987 a third edition appeared under a revised title (Kotler and Andreasen 1987). The title revision reflected the inclusion of areas out of the earlier editions. All the three earlier editions were largely *designed to instruct, to share marketing wisdom drawn primarily from private sector with those already doing nonprofit marketing and those students planning to enter the field some day on a full-time or a vocational basis* (Kotler and Andreasen 1991:ix).

The fourth edition (Kotler and Andreasen 1991) makes much more use of inputs from practitioners in the field and is fraught with checklists, hints, narratives of experiences, and sample materials drawn from nonprofit sources. Although Kotler and Andreasen (1987, 1991) do not directly address marketing concepts in the information field in general and the third world in particular, they provide a generic model for nonprofit

organizations.

While reviewing literature on the marketing of information services and products, Valerie K. Tucci (1988) divided the adoption of marketing principles in the LIS into three parts. The early 1980s, are regarded as a period of *planting the seeds*; the mid 1980s a period of *growing the crop*; and the later years, a time to *harvest the crop*. This analogy is consistent with Kotler and Andreasen's (1991, ix) perception of the growing popularity of marketing in nonprofit organisations. The growing recognition of marketing in the LIS world was demonstrated by the large number of articles, special journal issues, readers and books advocating marketing between 1980 and 1995. In countries like Australia they have even gone to the extent of producing packaged self-education marketing courses for LIS (Nicholson 1993). The 1980s opened with the publication of the ASLIB Reader (Cronin 1981) which was a collection of writings on marketing in one volume. John Berry in his Library Journal editorial of 15 May 1981 called marketing a *fad* and argued that the attempt to apply marketing concepts to nonprofit sectors was the latest invention of a few marketing professors attempting to expand their own field into the public sector.

John Berry was proved wrong as the literature on marketing of LIS continued to grow. The growth of literature on marketing in the LIS up to 1988 is aptly presented by Tucci (1988). It would suffice to mention that in 1983 the Journal of Library Administration (Ford 1983) devoted a special issue to marketing of LIS and in 1995 Library Trends (Weingand 1995b) followed suit. According to Weingand (1995b, 289), the decision by Library Trends to devote a special issue to LIS marketing *is a significant affirmation of the relevance of marketing to our field*. In 1992 the second volume of the Aslib Reader (Cronin 1992) on the marketing of information services and products appeared. This was followed by de Sáez's book in 1993 (de Sáez 1993).

The literature between 1988 and 1995 calls for the adoption of strategic marketing

principles and service quality; and emphasizes the need for written marketing strategies in order to ensure the survival of LIS (Bryson 1990, 14; O'Brien 1992, Kinnell and MacDougall 1992; de Sáez 1993; James 1993; White and Abels 1995; Weingand 1995b).

Though there is so much literature on marketing of LIS available, there are few examples (Cummings 1994) of the practical implementation of LIS marketing. The few examples in literature on the marketing of information services and products are: Cedara Library in Natal, South Africa (van Niekerk and van Niekerk 1986), Manchester Commercial Library, UK (Gallimore 1988) and The Royal Tropical Institute (KIT), Amsterdam, The Netherlands (Cummings 1994).

Up until now the adoption of marketing in the LIS world has remained unrealised. As Tucci's (1988) concluded the harvesting of the crop is not foreseeable as yet. Indeed seminar themes like *Marketing and library services: a new marriage* (FID/ET 1996, 2) show that the adoption of marketing principles is still at a nascent stage. In the West where there has been in the last twenty years a wider acceptance of marketing in general in non-profit organisations, the marriage might be new but in most SSA the marriage does not exist. It seems for the crop to be harvested, more studies are needed on the practical implementation of LIS marketing. There is scepticism in adopting marketing practices because:

*Marketing is one of those abstract terms which is interpreted so differently that it is impossible to apply in any consistent way.....In the information world not only is the definition of marketing rather hazy, but the product itself, information is usually hard to quantify* (Smith 1993, 334).

Recent surveys have revealed that the appreciation of marketing principles in LIS was generally low. A recent report for the British Library Research and Development

Department concluded that *in libraries there was a lack of knowledge and skills in marketing and related disciplines, although there was a thirst for knowledge about them.* (de Sáez 1993, introduction). A research carried (Kinnell and MacDougall 1992; de Sáez 1993, 3) out by MAPS (Marketing in Public Services) Group at Loughborough University in 1990s in public libraries in the UK revealed that most libraries did not have any marketing plans. There was also a general lack of awareness of the implication of the marketing strategies; and confusion over promotion and marketing was prevalent.

Though the marketing concept is gaining recognition, a great deal remains to be achieved. This partly explains why, when concluding a study that explores likely trends in the ways that information would be generated, handled, stored and used in the period up to the year 2000 in the UK, Martyn and others said:

*Strategic, operational and network planning, involving modern management techniques will be needed. Marketing as distinct from sales skills will be required with emphasis on market research and user feedback. Professional library and information workers will have to establish their roles as communicators of information adept in new technologies and more directly serving user needs* (Martyn et al 1990, 272).

Although marketing in developing countries is undervalued and often ignored (Kinsey 1988, 18; PADIS 1994, 21) there are a number of voices in the LIS world in SSA that are advocating the adoption of marketing principles. There are journal and book articles (Lundu 1988; Michael 1992; AAAS 1993; Villars 1995) on marketing of LIS; and seminars (PADIS 1988; PADIS 1994; UNESCO 1992, 20; AAAS 1993; James 1993, 31;) in Africa that incorporate marketing of LIS. This shows the growing acceptance of marketing of LIS in Africa.

The participants at the seminar on the *Marketing of information services* organized by the Institut Supérieur de documentation at the University of Tunis from 4 to 6 May 1992, expressed a keen desire to understand and practice the marketing process (UNESCO 1992, 20; James 1993, 31), but they, however lamented over the lack of literature and examples of LIS marketing in developing countries.

There is a paucity of documented examples of LIS marketing (James 1993, 3; PADIS 1994). The need for concrete examples in marketing was also highlighted by Adeyemi's(1995) editorial comments on Villar's(1995) article. In his own words:

*The paper leaves the concretization of most of the assertions on the methodologies and effectiveness of information marketing strategies on the continent to the user. There are no examples from any particular country....*

(Adeyemi 1995, x).

The paucity of documented examples of LIS marketing in SSA could be partly explained by the fact that not much research has been done on the utilisation of information in Africa (Lundu 1995).

The low level of acceptance of the marketing function in SSA could be attributed to the fact that the concept of marketing is new in Africa (PADIS 1994, 21; Villars 1995). The basis of appreciating the marketing concept is understanding some of the marketing strategies and models outlined in sections 2.4 and 2.5 below.

#### 2.4 MARKETING STRATEGIES IN LIBRARY AND INFORMATION SERVICES

Marketing strategies involve appreciating what an LIS can do best and interpreting that in terms of current and predicted market requirements, in order to decide what products and

services will be offered to what groups of customers. The basis of such marketing strategies is market research, market segmentation and marketing mix. The marketing mix encompasses the controllable variables that an organisation can use to influence the user's responses.

#### 2.4.1 Market research

The user/customer orientation made market research an important aspect of marketing. Market research links the organisation with its marketing environments<sup>2</sup>. Market research provides the means to determine how best to use scarce resources through discovering latent demand, indicate ways to convert it to effective demand, directing procedures to develop marketable services and suggesting more effective distribution channels. It involves the specification, gathering, analyzing and interpretation of information to help management understand the environment.

An essential ingredient in developing effective marketing strategy is a thorough understanding of consumers' needs and wants. Market research involves PEST and SWOT analyses. It involves assessing the controllable and uncontrollable variables in the environment that the organisation is operating in. Market research is, therefore the source of marketing and marketing intelligence information which is the basis for market segmentation and the marketing.

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<sup>2</sup> *The uncontrollable factors termed PESTs (de Sáez 1993, 22) or environments comprise of the society, government, technology and competition.*

## 2.4.2 Market segmentation

Since markets differ in their heterogeneity, different targeting strategies must be used. Target market strategies suggested are aggregation or segmentation (Kotler and Andreasen 1991, 167).

Market aggregation which is going after the whole market with one offer and marketing mix in order to attract as many users as possible is also referred to as undifferentiated marketing or mass marketing (Kotler and Andreasen 1991:167). Though it saves costs through promoting only one offering, it is the same as the selling orientation.

Markets are generally too varied and too heterogeneous to be considered a single uniform entity. Market segmentation takes this into account. Market segmentation is the division of the market into homogenous groups of potential customers who may be treated similarly for marketing purposes. One or more market segments are selected as the organisation's target market. A separate marketing mix is developed for each segment or group of segments in this target market.

The benefits of segmentation are: its a customer-oriented philosophy as it identifies the needs of customers with a sub-market(segment) and satisfy those needs; it is an efficient use of limited marketing resources; it facilitates the design of products that really match market demands; and permits easier and cheap promotion of the products.

Segmentation could be based on the geographic distribution of the population; demographic categories such as age, sex, education, occupation; and psychographic considerations based on sociological and psychological factors such as culture, social class, personality, attitude and beliefs.

### 2.4.3 Marketing mix

Four major controllable variables that are utilised in creating a strategy are Professor Jerome McCarthy's (1978) widely known four Ps of the marketing mix, viz, product, promotion, price and place. The marketing mix assists the organisation to reach its target markets and achieve its specified objectives. The marketing mix contains the factors which an organisation can control in order to maximize utilisation of services.

It helps in selecting from the possibilities, products and services which can be offered in sufficient volume and at a sufficient price to generate utilisation. It ensures that the products and services which are developed, meet user requirements. The marketing mix draws attention of the users to the chosen products through promotion, which involves: advertising, exhibitions, direct mail, brochures, public relations, technical articles and conferences.

Price is an element that is difficult to consider in a LIS environment, especially, in SSA where the belief is that information should be a free commodity (PADIS 1994, 9). But price does not necessarily imply cash value; according to Kotler's (1984, 8) exchange process definition, the price paid could be in terms of time, energy or other opportunity or activity foregone. However, price can not be ignored forever if quality services are to be provided. In these times of economic retrenchment and cost recovery where agencies are supposed to generate income to sustain themselves, the question of cash value should be actively pursued. The marketing mix is determined through model building and portfolio management. The main input for modelling is from the marketing information system.

## 2.5 MARKETING MODELS

The idea of modelling in market research was evolved in the 1960s. The philosophy was elaborated by William. F. Massy and Frederick. E. Webster (1964) in the lead article of the Journal of Marketing Research. The idea led to a long chain of model building efforts focused on the marketing mix. Models come in a variety of forms (Winsniewski 1994, 6). However, any model no matter what its form or purpose has one distinctive feature: it is an attempt to represent a situation in a simplified form. Models focus on the key aspects of the situation and ignore the rest.

The major types of models (Stair 1992, 13) are narrative, physical, schematic and mathematical. Both verbal and written descriptors of reality are considered narrative models. Physical or iconic models are tangible representations of reality. Graphs, charts, figures, diagrams, illustrations and pictures are all types of schematic models. Mathematical models are arithmetic representations of reality comprised of equations and inequalities. Just as the concept of marketing has permeated the LIS world, the idea of modelling is also gaining root. Behavioral learning models (Weingand 1984, 37) based on the behavioral learning theory have been used, but most models in literature are narrative models based on Kotler (Gallimore 1988; Cummings 1994; Powers 1995). The original purpose of Kotler's model (Kirby 1977) was to provide a context for the discussion and investigation of alternative competitive strategies for choice for the marketing mix decision vector. Its a purely theoretical analysis.

The UNESCO model (James 1993, 26) does not go beyond Kotler's (1975) generic model. Three models based on the Boston Consulting Group (BCG) portfolio analysis matrix (Bryson 1990, 137; Toit 1992; de Sáez 1993, 29) are mentioned in LIS literature. The other models also discussed are Igor Ansoff's product matrix (de Sáez 1993, 33) and

the product life cycle concept (de Sáez 1993, 35). However the practical application of these models from the commercial world are left to the reader to guess.

Little has been done in using networking analysis or scheduling models. Only Andreasen(1980); Kotler and Andreasen (1991, 444) and de Sáez (1993, 133) mention the usefulness of networking as a management tool without elaborating.

The popularity of models in recent years is due to an increased competence on the part of decision makers to build and use them; and a greater need to incorporate the rapidly increasing uncertainty of problem situations in the decision making process. The advantages of models (Weinberg 1981) are that they allow the search for better solutions; improve prediction; and help with the formal statement of input assumptions and the logic analysis. Models can also guide research by identifying areas which information is needed and to which the model output is sensitive.

### **2.5.1 Portfolio management**

The concept of portfolio management assists in determining market attractiveness and opportunities. Among the many models of portfolio analysis are the BCG, Arthur D. Little strategic condition matrix, the McKinsey/General Electric multifactor matrix and the Shell directional policy matrix (Wilson et al 1992, 231). Most of these models were developed to address what was perceived as the shortcomings of the BCG approach. They have a lot of elements in common with the BCG method. They are all concerned with the product's competitive advantage and its market potential. The BCG approach has remained prominent (Kotler and Andreasen 1991, 109; Wilson et al 1992, 231; de Sáez 1993, 29; Sowter 1995, 223).

The BCG model analyzes the various products of a business on a matrix which

measures relative market share and the rate of market growth. It is helpful in determining what the market would be like in future. This conceptual tool could be used by librarians and information professionals as a starting point for making practical working tools (de Sáez 1993, 30). But its practicality could be enhanced if used in conjunction with the concept of product life cycle and the opportunity identification (Ansoff 1957) models.

According to the BCG matrix model the organisation's activities are divided into operational areas known as strategic business units as illustrated in Fig. 2.1 below:

		high	low
market growth	high	STARS	QUESTION MARKS
	low	CASH COWS	DOGS
		Relative market share	

Figure 2.1: BCG marketing matrix (Wilson et al 1992, 229).

The potential rate of return on investment is represented by the market growth axis, because use is likely to be greater for products/services which are introduced into growth markets than for products introduced into declining markets. The relative market share is being used as the sole indicator of competitive position.

Market share and growth are often portrayed simultaneously in the form of the concept of product life cycle. Usually presumed to be S-shaped this curve breaks down the use of a product or service into four segments; introduction, growth, maturity and decline. Igor Ansoff's (1957) product matrix model assists in identifying opportunities. Fig. 2.2 illustrates the product matrix model.

	CURRENT SERVICES/PRODUCTS	CURRENT SERVICES/PRODUCTS
Current Market	Market Penetration	Service/Product Development
New Markets	Market Development	Diversification

Figure 2.2 : H.I Ansoff's (1957) market development matrix.

Market penetration refers to existing products and existing markets that the organisation seeks to expand by gaining greater dominance in markets it already serves. Market development means that the organisation offers existing products in new markets. Product development refers to new or improved products in existing markets. Diversification moves the organisation into new products and new markets, but is highly risk. Having reviewed marketing literature and marketing models the next Chapter gives an overview of the marketing of library and information services in SSA.

CHAPTER THREE  
THE MARKETING OF LIBRARY AND INFORMATION SERVICES IN  
SUB SAHARAN AFRICA

### 3.0 INTRODUCTION

Based on secondary sources and primary data the first part of this Chapter gives an overview of SSA in order to portray the capabilities to provide information resources and services; and the second part will review the existing situation.

### 3.1 SUB SAHARAN AFRICA (SSA): AN OVERVIEW

Sub Saharan Africa (SSA) comprises forty nine countries whose names are listed in Appendix I. The map in Appendix II shows the geographical coverage of SSA. It covers a surface area of approximately 24 283 000 square kilometres out of 30 037 000 square kilometres of the whole of Africa (UNECA 1994, 29). Its population is approximately 572.9 million out of Africa's 701.1 million. SSA countries are characterised by great differences in climate, soils and vegetation (Sparks 1995).

People in SSA, along with South Asia remain among the poorest in the world in real income and access to social services (World Bank 1996, 5). Twenty eight of the thirty six least developed countries of the world are in SSA. Seventy to eighty percent of the population live in rural areas. In 1993 an estimated (World Bank 1996, 6) 40 percent lived on less than US\$1 per day.

Some other facts on SSA are summarized below. (i) SSA has lost the ability to feed itself as most countries now depend on food imports (Sparks 1995). (ii) SSA is burdened

by foreign debt and have difficulties in attracting investment. (iii) SSA faces significant problems in the provision of health services and education. (iv) the expansion of primary education enrolment during the 1960s and 1970s (World Bank 1996, 46) gave way to stagnation and decline during the 1980s. SSA has the lowest gross primary enrolment ratio of all developing regions. (v) Literacy rates in Africa are also among the lowest, second only to South Asia (Sparks 1995; World Bank 1996, 47).

(v) Most SSA countries have adopted structural adjustment programmes (SAP) designed to bring about economic recovery (World Bank 1996, 50). Foreign aid is often made available if governments promote domestic production and reduce imports; and depend less on national borrowing. Governments have thus committed themselves to reduce expenditures and to stop wasteful spending. The external debts of many SSA countries were rescheduled. Since most LIS in SSA are supported by governments, they are facing serious financial problems in this period of economic retrenchment.

Surprising enough, the present development crisis in SSA is not matching with the huge endowment of her natural resources (Jugessor and Hamel 1995, 21).

Many African governments have realised that probably the only way to increase their GNP, alleviate poverty, and reduce dependency on the developed countries is to apply S&T (OAU 1981). It is in view of this that in the S&T chapter of the Lagos Plan of Action for Economic Development of Africa 1980-2000 the OAU underlined the importance of S&T and how national technological information centres would be helpful in the acquisition, selection and adaptation of techniques.

That a good scientific or technological base needs a sound information system to sustain it is also being realized by many African governments (Jugessor and Hamel 1995, 24). In 1987 the Second Conference of Ministers Responsible for the application of S&T to Development in Africa (CASTAFRICA II) recommended African states to focus on

scientific and technological information(STI). This meant that priority was to be given to the generation and diffusion of S&T information. Despite efforts made in implementing these recommendations the application of S&T to development in SSA to date remains a major challenge.

### **3.1.1 The information infrastructure in Sub Saharan Africa**

The information infrastructure is not an end in itself, but simply a means to an end. The telecommunications infrastructure to transport data to remote areas, information technology for processing data and manpower capable of exploiting the opportunities in the information society, are the main components of an information infrastructure.

Human resource development in information is very much overlooked in SSA. Though there are steps towards ensuring the balanced development of the information profession in the region (Harvard-Williams 1994) a lot still has to be done. Although there are a number of library and information science schools in SSA they cannot adequately cope with the demand for skilled manpower required to handle information technologies for accomplishing various information needs.

The information technology(IT) infrastructure in SSA vary widely from country to country and from region to region within a given country. Few countries have a fairly well established IT infrastructure. The diffusion of IT in SSA is behind the rest of the world. SSA countries have been affected by the new information technologies. Recent developments in microcomputer technology and communication software make it possible to envisage the provision of a comprehensive and efficient system for the dissemination of information. Personal computers are increasingly available in Africa and, with the limited addition of a modem and appropriate communication software, they can transfer

data over poor quality telephone lines at minimal cost (Godard 1995).

The merging of information technology with communications makes the telecommunication infrastructure a fundamental component of SSA information infrastructure. Telecommunications infrastructure in the region is well known for its bad quality and unreliability and low density, especially in rural areas. SSA has the least tele-density in the world (Wilson III 1996). There are more telephone lines in Manhattan or Tokyo than all of SSA. According to Wilson III(1996), few SSA countries have produced a truly national information strategy that transcends the telecommunications sector to address computer hardware, software systems, publishing and the Internet.

Internet policies (Wilson III 1996) in Africa are hit and miss. Only eight countries, namely, Ghana, Kenya, Mozambique, Namibia, South Africa, Uganda, Zambia and Zimbabwe have constant links with the Internet. The problems facing SSA in the information sphere are regulatory (Godard 1995; Wilson III 1996), institutional and political rather than financial or technical. Governments have tended to have a monopoly over the provision of telecommunications and thus closing out the more enterprising private investment in the telecommunication sector.

### **3.1.2 Science and technology institutions in Sub Saharan Africa**

Science and technology institutions (UNESCO 1986:10: UNESCO 1987:11) do not incorporate the production of goods and services as such, which as far as government policies are concerned is taken care of by industry, agriculture, health, transport and other government institutions. S&T deals with planning, budgeting, co-ordination, administration and promotion of S&T and the effective implementation of activities in the areas of research and scientific services. S&T institutions assist in the definition of the nature and

the orientation of the overall national development policies.

Many SSA countries have S&T institutions whose aims among others are: to determine priorities for scientific and technological activities, to strengthen national capabilities for the generation, use and application of S&T; and to advise their governments on national science policy. The S&T institutions range from the pioneering Council for Scientific and Industrial Research(CSIR) which was established in Ghana in 1958 to the most recent Directorate of National Science and Technology which was established in 1994 in South Africa.

S&T institutions are also charged with the establishment of national information systems for science and technology. The national information systems promote computer technology and information systems and services, as well as collect, process, analyze and organise information sources for dissemination to users.

In addition to national S&T institutions described above there are a number of regional institutions dealing with the promotion of S&T in SSA. They are, namely: ARCT, PADIS, UNESCO Regional Office for Science and Technology in Africa(ROSTA), African Centre for Technology Studies, The African Technology Policy Studies Network(ATPS), and the African Science and Technology Exchange(ASTEX). Appendix IV lists these institutions in more detail.

Based mainly on secondary sources the foregoing gave an overview of SSA, the next section reviews the existing situation in SSA on the basis of primary data.

### 3.2 MARKETING OF INFORMATION SERVICES AND PRODUCTS IN SCIENCE AND TECHNOLOGY INSTITUTIONS IN SUB SAHARAN AFRICA

In order to get information on the existing situation in SSA a survey was conducted. The

method of data collection was a forty four item questionnaire (Appendix V), designed to get information on the existence of marketing strategies, products and services offered by the LIS, category of users served, information management and retrieval software used, bibliographic formats used and the frequency and importance of user studies.

Out of the 31 questionnaires sent to S&T institutions in SSA 25 responses were received from Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, Djibouti, Ethiopia, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Niger, Nigeria, Rwanda, Senegal, Seychelles, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia and Zimbabwe. Appendix III lists the addresses of the 31 S&T institutions that were contacted. One questionnaire from Rwanda was discarded because according to the Director of Scientific and Technological Research, Mr Albert Batanage Mutesa who completed the questionnaire, the LIS has not operated ever since it was disrupted by the civil war in 1994. Thus only 24 questionnaires were considered in this analysis.

Out of the 24 respondents only the Council of Scientific and Industrial Research in Ghana has a marketing plan and a marketing budget. Though according to William Anim Dakwa, the Science Information Officer in charge of publicity and information marketing, the utilisation of the services is low, this could not be attributed to lack of marketing strategies. Rather the location of the institution on the outskirts of the capital could partly be affecting the level of utilisation, a point that he admits. Furthermore, while there is a marketing plan its implementation could prove difficult in the absence of user studies which are said to be conducted irregularly.

Despite the fact that all the other 23 respondents said they did not have any marketing plans, they, however, said that they marketed their products and services through the press, brochures and newsletters. These conventional tools used in advertising and public relations do not constitute a full marketing program. Mr Tonderai

Chandimhara, a respondent from the Scientific and Industrial Research and Development Centre in Zimbabwe wondered whether all types of LIS needed marketing strategies, and concluded thus: *Basically marketing of government/public services is not conceived as a necessary venture and is costly for little returns.* It would appear that most respondents do not understand marketing and its objectives in a LIS environment. In most cases marketing was confused with promotion.

The conducting of user surveys before introducing a service or product was not at all important to 95.8%(23)<sup>3</sup> of the surveyed institutions. User studies are rarely done. Table 3.1 below summarizes how frequent user studies are carried out in the LIS of S&T institutions in SSA.

Table 3.1: Regularity of user studies.

Once a year	Irregularly	Never	Total
5	14	5	24
20.8%	58.4%	20.8%	100%

The ESTC falls in the 20.8% (never) category, it has never carried out any user studies ever since the establishment of the LIS in 1978. Five of the institutions that carry out user studies annually have staff on their establishment that have some training that involved a component of LIS marketing. There are also four other institutions having staff with such training, but who do not regularly carry out user studies. Only 6 out of all the surveyed institutions maintain user profiles. The culture of ignoring user studies is not only peculiar to SSA. Even in the West where there has been acceptance of the marketing concept in the LIS world in the past 20 years (James 1993, 3) ..... *there is no substantial culture of information gathering and evaluation regarding users in the UK information world* (de

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<sup>3</sup> Percentages in this section are rounded up to the nearest decimal point.

Sáez 1993, 98).

All surveyed LIS of S&T institutions in SSA have services and products of benefit to the users and could answer users' needs. Gifts, donations, purchase and photocopies from other libraries are the general sources of LIS information services and products in SSA.

The products and services include: literature searches on databases, interlibrary loans, lending services, selective dissemination of information, document delivery, current awareness services, reports, abstract and digest services, patent information, newspaper clipping services, reprographic facilities, referral services and reference services. Most LIS surveyed produce publications such as accession lists, abstracts, bibliographies, indexes, conference proceedings, handbooks, newsletters, directories, and research and annual reports.

Mostly used services and products are literature searches from CD-ROM discs and bibliographic databases, reference services and question and answer services, accession lists and research reports. The least used services and products are reprographic services and selective dissemination of information. According to 95.8% (23) of the respondents the full length original document is the commonest form in which information is disseminated to users.

The users of these products and services are research scientists, technician and engineers, lecturers, students, administrators and consultants. The respondents said the research scientists were the major users of their LIS followed by administrators and students.

Before testing the hypothesis relating to the average rate of utilisation of LIS in

SSA the mean (the measure of central tendency) and the standard deviation<sup>4</sup> (the measure of variability) were applied to the data. These procedures gave some initial insights into the relationships between and among variables. Using differences in the mean the hypothesis to be tested is that the average monthly rate of utilisation of LIS at the ESTC in Ethiopia is not different from the average monthly rate of utilisation of the LIS in SSA. The sample of n=24 countries from SSA has a sample mean of 205 and a standard deviation of 198. The null(H<sub>0</sub>) and alternative(H<sub>A</sub>) hypotheses are:

$$H_0: \mu = \mu_0 \text{ (The means are the same) (Equation 3.1)}$$

$$H_A: \mu \neq \mu_0 \text{ (The means are different) (Equation 3.2)}$$

To test this hypothesis we use the t-test statistic because it is recommended for situations in which the sample size is small (Dillon et al 1994, 420):

$$t = \frac{(\bar{X} - \mu) \sqrt{n}}{s} \text{ (Equation 3.3)}$$

where in this case ( $\bar{x}$ ) is the sample mean (205) and  $\mu$  is the mean monthly utilisation rate of the ESTC and is equal to 150. The calculated t-value is :

$$\frac{(205 - 150) \sqrt{24}}{198} = 1.361 \text{ (Equation 3.4)}$$

Number of degrees of freedom = 24 - 1 = 23. For 23 degrees of freedom at 5% level of

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<sup>4</sup> The standard deviation is considered as the most powerful measure of dispersion and it is by far the mostly used (Srivastava et al 1989, 85; Kothari 1990, 168).

significance, the critical value of  $t=1.714$ , the calculated value of  $t$  is less than this and, hence, we can conclude that the mean rate of utilisation of LIS in SSA and Ethiopia are not different, and reject the alternative hypothesis ( $H_A$ ).

Thus based on the sample data, we are confident that 95 out of 100 cases, the average rate of utilisation is 150 users per month. Using the user population of 4345 at ESTC enumerated in Chapter One the average rate of utilisation is 3.5%, a figure which is by far below average. If the calculated mean(205) is taken as the SSA standard of the rate of utilisation of the LIS the summary in Table 3.2 below is yielded.

Table 3.2: Utilisation rates of LIS in SSA compared to SSA standards.

Countries below SSA standards	Countries within SSA standards	Countries above SSA standards	Total
10	9	5	24
41.6%	37.5%	20.9%	100%

As can be seen only 20.9% of the countries in SSA have a utilisation rate above the SSA standard. As these represent a minority, it could be fairly concluded that the rate of utilisation is generally low. Other studies (Lundu 1988; Villars 1995) has shown that the utilisation of LIS in SSA is low.

Therefore the SSA standard is not a true reflection of the satisfactory level of utilisation. Among the countries with LIS which are being utilised above the SSA standard are Zambia, Nigeria, Tanzania, Burkina Faso and Cameroon. Of these Zambia, Nigeria and Tanzania carry out user studies at least once a year and they have some people on their establishments whose training included a marketing component.

The enumerated rates of utilisation are far much below average. The location of the LIS does not seem to be affecting the level of utilisation at all as all surveyed institutions reported that they are centrally located, except in the case of Ghana. In the case of Ghana, as the Science Information Officer indicated, the LIS' location on the

outskirts of Accra, seem to be negatively affecting it.

Pricing of information services and products does not seem to inhibit utilisation as most surveyed LIS do not charge for most of their services except for reprographic and E-Mail services.

The survey revealed that most LIS in SSA do not have clearly stated objectives. Other than Ghana and Sudan who have general and specific objectives all the other surveyed countries have verbatim objectives stated in terms like:

*to collect, select, store and disseminate S&T information; to serve scientists, researchers, technologists and policy makers; to acquire, collect, organise and disseminate S&T information; to provide S&T information to ensure sustained growth; and to provide adequate and timely information in appropriate packages.*

In principle where objectives are stated in such general terms it is difficult to position the LIS in a clearly defined path (Andreasen and Kotler 1991, 72). The statements about the scope of the LIS activities need to be clear, otherwise it would be difficult to set standards and targets which is the essence of management objectives. The weaknesses of most surveyed institutions was shortage of professional staff and antiquated collections with few current titles.

All the surveyed institutions have computers and in general use them for word processing and bibliographic database management. Of the surveyed institutions 87.5% use CDS/ISIS and 8.3% use CDS/ISIS along with MINISIS and 4.2% use MINISIS only. MINISIS conforms to ISO 2709 formats and is compatible with CDS/ISIS. No institution reported that it was using any of the bibliographic formats such as MARC, CCF, MIBIS or PADIS. Most answers to this item on the questionnaire gave the name of the classification scheme used. This is an indication of the low level of awareness of the

bibliographic formats used for data exchange, a fact which points to the fact that compatibility issues are not seriously considered in LIS in SSA.

Despite the grim picture of the information use environment gleaned from literature and portrayed in the first part of this Chapter, the survey revealed that LIS in S&T institutions in SSA have services and products that they can offer their users. The existing problem is not the availability of resources though they are limited. According to the findings of the survey the issue is, the existing services and products are rarely matched to actual user needs. The conclusions of the study of national information systems in India and China by Baark in 1986 are presently equally applicable to the situation in SSA:

*Most libraries and documentation centres still operate on the notion that when the information is available it will be utilised, without sufficient consideration to the intrinsic (source, delivery modes, channels, time factor, language factor, retrieval efficiency, coverage), and extrinsic limitations (socio-political framework, economic infrastructure, motivations to seek information). Too much emphasis of services and too little mobilising demand..... Users studies are conducted only occasionally. Little effort has been put into positive marketing of services ..... (Baark 1986, 55).*

The product and production oriented marketing which focuses on how to make a better mousetrap is still evident in SSA. LIS in SSA only pay attention to coming up with products and services. There is need to adopt strategies that would ensure that they provide what the users want. This would ensure a reasonable rate of utilisation if the users are appreciative of the benefits they would be getting from the LIS. The undue attention paid to product and service development at the expense of user studies (market research) and positioning the services and products to meet the users' needs could partly be

attributed to lack of awareness of the benefits that could accrue to an LIS that adopts the marketing concept.

Having discussed the prevailing situation in SSA in this Chapter, the next Chapter deals with the prevailing situation at the Ethiopian Science and Technology Commission.

## CHAPTER FOUR

### MARKET RESEARCH AND ANALYSIS OF THE RESULTS

#### 4.0 INTRODUCTION

A market research was carried out in order to get information on the current capabilities of the ESTC, to identify the segmentation variables, to evaluate the potential and attractiveness of each segment, and to select and develop the marketing mix strategy.

Data was gathered through literature survey, interviews and informal discussions, informal observation and two self administered questionnaires. A twenty four item questionnaire (Appendix VI) was used to gather information about information management and current capabilities of the ESTC. An eleven item interview schedule (Appendix IX) was used to collect complimentary information. The information needs of both actual and potential users were collected using a twenty six item questionnaire (Appendix VII). There were 136 responses out of the 291 questionnaires sent to actual and potential users.

This represented a response rate of 46.7%<sup>5</sup>. In order to deal with the research topic, two working hypotheses were formulated. The hypotheses were: (1) Users are not aware of the services and products offered by the LIS at the ESTC and (2) The number of users who are not utilising the LIS at the ESTC is not significant.

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<sup>5</sup> *All percentages in this chapter are rounded up to the nearest decimal point.*

## 4.1 THE ETHIOPIAN SCIENCE AND TECHNOLOGY COMMISSION: FURTHER BACKGROUND

### 4.1.1 Establishment

The Ethiopian Science and Technology Commission (ESTC) was established by Proclamations No.62/1975 and No.91/1994 in order to bring about social and technical changes and sustained science and technology (S&T) capacity building in Ethiopia (ESTC 1994). It is a central body in charge of initiating, organising, directing and promoting scientific and technological research and development activities in the country.

The objectives of the ESTC are to accelerate agricultural and industrial productivity; to facilitate the means for a rational conservation and use of natural resources and the provision of basic necessities of life (food, clothing, shelter, education, energy, health etc.); and to modernise communication networks.

Based on the country's development policy directives (Ethiopian Government 1993, 8; ESTC 1994, 2), the S&T policy accords priority to the following sectors and programmes: agriculture and environmental protection, mines, water resources and energy, industry, construction, transport and communications, health and population planning and education.

It was believed that, among other things (ESTC 1993, 6) the establishment of a national science and technological information (STI) network to acquire STI relevant to national development needs, and suitably process it for dissemination to potential users in government and private sectors, would lead to the realisation of the goals of S&T in Ethiopia.

Recognizing the vital role of S&T for the development process as well as the value

of information as a strategic resource, the Ethiopian Government established the National Scientific and Technological Information and Documentation Centre(NASTIDC) in 1987. NASTIDC's objective was to establish a national S&T information system and to develop a national capability to collect, store, process and disseminate S&T information.

In 1994 NASTIDC was merged with the National Computer Centre into the National Computer and Information Centre(NCIC) in recognition of the important role information technology plays in the handling of information (ESTC 1994).

Some of the stated (ESTC 1995) objectives of NCIC are to undertake studies, develop and revise policy on the utilisation and directives of computer technology and information systems and services; organize STI sources so as to provide library and information services; and to develop, strengthen and coordinate national information systems and network to ensure information resource sharing.

#### **4.1.2 Organisational structure**

The organisational structure of the S&T system in Ethiopia has four functional levels. The National S&T Council is the highest decision making body for S&T policy, and it is chaired by the Prime Minister with the Commissioner of S&T as its secretary. The National S&T Council is advised by the Technical Advisory Committee of the National S&T Council which comprises of renowned and experienced scientists and engineers drawn from different branches of S&T.

At the third level is the ESTC which is headed by a Commissioner who is accountable to the Prime Minister. The S&T operational institutes and centres are on the fourth level and are comprised of institutes which are responsible for the actual performance of S&T activities. The NCIC falls under the office of the Commissioner of

the ESTC. The organizational charts of the ESTC and NCIC are presented in Fig. 3.1 and 3.2 below respectively.

The National Computer and Information Centre of the ESTC is in the information business. The information services and products it provides include S&T digests, press clipping services, Ethiopian Union list of periodicals, database search services, E-Mail services, library services such as reading and lending, and interlibrary loans, information services such as selective dissemination of information, document delivery and data and information analysis services.

Apart from providing these information products and services the NCIC organizes workshops and conferences, and a National Information Day every year. The NCIC also offers training in CDS/ISIS, printing, thesaurus application, patent information and information management.

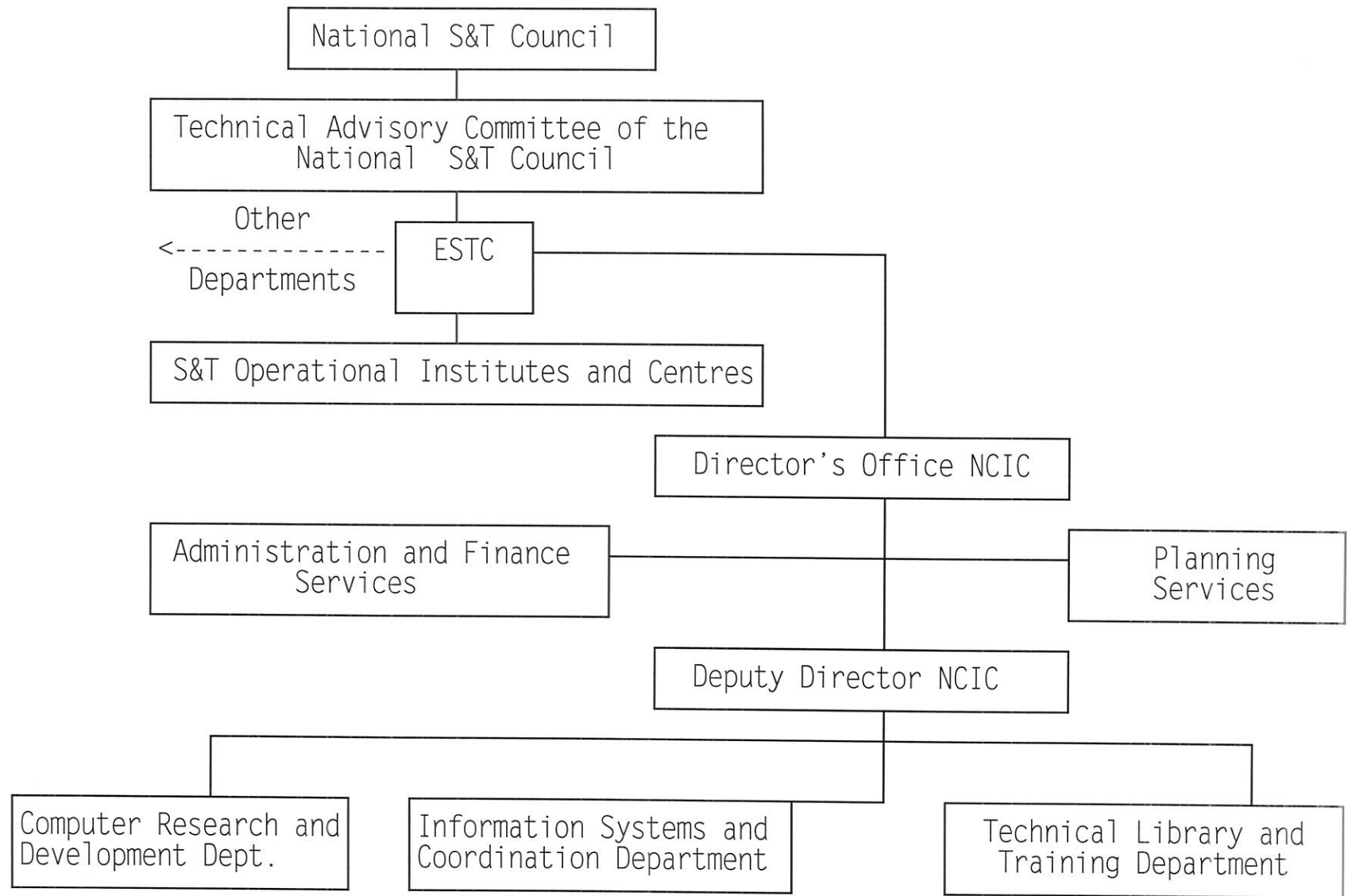


Figure 3.1: Organisational chart of science and technology in Ethiopia.

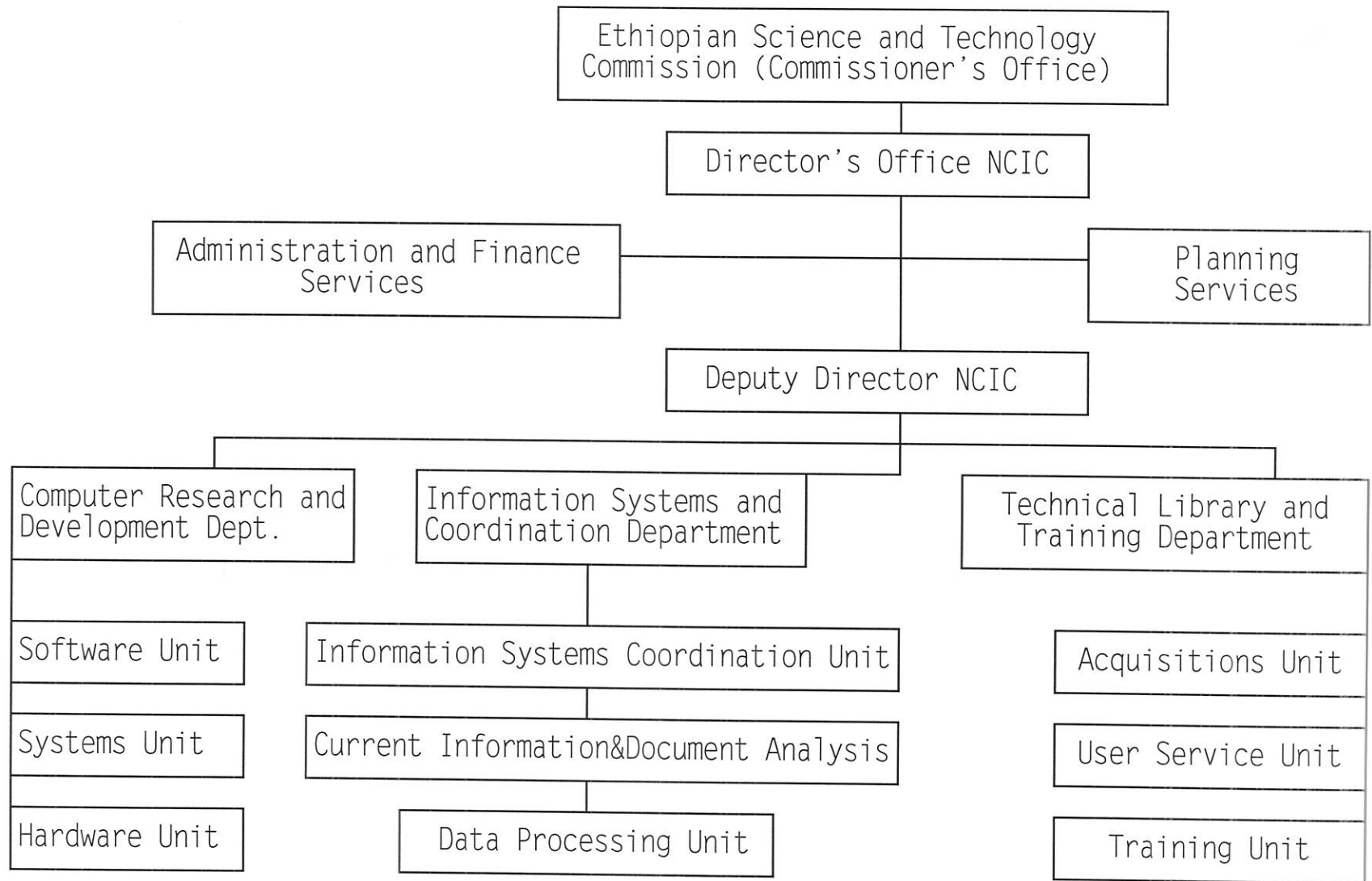


Figure 3.2: Organisational chart of the National Computer and Information Centre (NCIC)

### **4.1.3 Facilities and services at the National Computer and Information Centre (NCIC)**

#### 4.1.3.1 Hardware and software

The NCIC has six dumb terminals connected to an HP 3000/XE minicomputer, and four intelligent terminals which are within the LIS and are exclusively used for LIS work. Most of the equipment was procured between 1990 and 1996. The microcomputers are used for word processing, spreadsheet, desktop publishing and bibliographic database management. One microcomputer has a CD-ROM drive. The operating systems software in use are MS-DOS and Windows 95. The application software in use are Word Perfect, Microsoft Word, dBase, MINISIS and CDS/ISIS. The NCIC is connected to E-Mail and a local area network.

#### 4.1.3.2 Databases

The survey revealed that the NCIC has 22 CD-ROM databases and 6 home grown databases. The home grown databases include: NASTIDC, a bibliographic database on in-house collection; REFERAL, a bibliographic database on S&T referral information; EULOP, a bibliographic database on some periodicals; EXPERT, a non-bibliographic database on information on some Ethiopian experts; GRANT, a non-bibliographic database on information on grant application to ESTC; and RESPRO, a non-bibliographic database on information on S&T research projects in major research institutions in Ethiopia.

CDS/ISIS was used in developing the NCIC's bibliographic database for in-house

collection in 1989; the EXPERT database in 1991 and the GRANT database in 1995.

#### 4.1.3.3 Library collection

NCIC's collection policy is such that it does not duplicate materials that are available in other institutions in Ethiopia. While this is the official policy there seems to be no strategy to practically effect this policy. Its collection focuses on animal breeding, agricultural machinery, equipment and tools, crop research, energy, rural development, information and computer science, technology, S&T policy, planning and management.

From the survey results it was established that the library collection at the NCIC is composed of 17 318 volumes of books, 312 periodical titles, 3 746 other documents including research and technical reports and government publications, 18 maps, 2 460 microfiches, and 820 theses and dissertations. Like in most SSA, information products and services are obtained through interlibrary loans, donations, exchange, purchase and subscriptions.

The library materials are catalogued and classified according to Universal Decimal Classification System. SPINES thesaurus is the vocabulary control device in use, that is, it is used for selecting the appropriate terms for each bibliographic record. Indexing is by author, title and subject.

#### 4.1.3.4 Staff

The NCIC has a staff establishment of 3 librarians, 2 documentalists, 1 cataloguer, 1 data processing specialist, 1 systems analyst and 2 programmers. The documentalists, data processing specialist, systems analyst and programmers were seconded to the NCIC from

other departments to assist in the application of IT and document analysis.

Five members of staff received training in CDS/ISIS and dBase IV. Though the training could be regarded as elementary the survey revealed that the staff members in question have gained reasonable hands-on-experience in using the software. Two members of staff seconded from other departments did some component of marketing as part of their professional training.

#### 4.1.3.5 Budget

From the annual budget for the 1988 (Ethiopian Calendar) fiscal year NCIC received 90 000 Birr (approximately US\$14 063) (ESTC 1994, 10). This accounted for 7.7% of the whole institutional budget. The budget of the NCIC is also supplemented by a budget item called *contribution to S&T development and promotion activities* (ESTC 1994, 16). This item was allocated 125 020 Birr (approximately US\$20 837) in the 1988 (Ethiopian Calendar) fiscal year.

## 4.2 THE ESTC MARKETING ENVIRONMENT IN ETHIOPIA

Marketing environments shape market opportunities and guide the development of the marketing mix. LIS managers must monitor environmental factors, assess their implications for user needs, identify market opportunities and select those that the LIS would pursue.

Environmental monitoring includes all activities aimed at estimating changes in external forces that are likely to have impact on the LIS, its markets, and the demand for its current and future services and products. As such the environmental changes

encompass government policies, users and other institutions that are in the same business (competitors). Each of these environmental changes are discussed in the following sections.

#### **4.2.1 Government policies towards science and technology**

The fact that the Commissioner of the ESTC is appointed by the head of state and that the Prime Minister chairs the highest policy making body of the Commission shows the importance that the government attaches to S&T activities. In pursuit of its S&T objectives, the government established the National Computer and Information Centre (NCIC) to coordinate a national S&T information system in Ethiopia.

The envisaged national information system at the NCIC is one that would use IT capabilities to establish information networks that would enhance the scientific and technological awareness of Ethiopia as well as making S&T systems productive, efficient and development- oriented. The government's position regarding S&T information is working to the NCIC's advantage (ESTC 1995).

Funding is the only major hurdle facing the NCIC. The government has committed itself to the privatisation of the economy on the basis of the World Bank's structural adjustment programme (SAP). SAP emphasizes on reducing on government expenditure. The level of government expenditure is now at a point where inefficiency and ineffectiveness can no longer be tolerated. There is a trend towards smaller government involvement. This and other economic factors are going to adversely affect how much the NCIC can spend on collection building and other LIS related activities.

The purchasing power of the NCIC is also going to be largely affected by the fluctuation in rates of the major currencies. The fluctuations in currency rates would

affect the supply and purchasing of materials being ordered from abroad.

#### **4.2.2 Other institutions in the information provision business in Ethiopia**

Traditionally, libraries have been the major suppliers of information and information services. The library as an institution has evolved into different types, such as academic libraries, designed to serve institutions of higher learning; public libraries, serving a wide range of the general public; school libraries; and special libraries, serving the needs of specialised user groups, such as, researchers, planners, decision makers and others in institutions of different types.

LIS in Ethiopia, though not in their present day sense, began in the fourth century. The introduction of Christianity into the country around 330 AD brought about religious texts into the country (Nordstrom 1995). The national library which was inaugurated in 1944 has a research division, public division and a museum.

Some of the academic and college libraries comprise of AAU Libraries made up of 15 branches, Alemaya University Library, Police and Airforce College, Ethiopian Management Institute, Awassa Community Development Training and Demonstration Centre, Jimma Agricultural Institute, Kotebe College of Teacher Education, Arba Minch Water Technology Institute and Jimma Institute of Health Science (Harfoush 1990, 7).

Though the public library system is very poor some of the public libraries include the Addis Ababa Library, British Council Library, Goethe Institute Library and Alliance Francaise Centre. School libraries lack adequate book stocks and qualified staff.

Special libraries comprise the International Livestock Research Institute Library, ECA Library, Institute of Agricultural Research, Institute for Curriculum Development and Research, Debre Zeit Agricultural Research Centre, Ethiopian Mapping Agency,

Biodiversity Institute, Forestry Research Institute, Ethiopian Institute of Geological Surveys, National Meteorological Services Agency, Ambo Plant Protection Research Centre, Ethiopia Health and Nutrition Research Institute, National and commercial banks and other government agencies libraries (Nordstrom 1995).

Archives and museums are also important components of the country's information provision system. Museums in Addis Ababa and in the northern part of the country preserve cultural and historical materials which are also of value to the country's information source. The National Archives contributes to the preservation of information source materials, information dissemination and use.

Most academic and special libraries are sectorial information centres designated by the ESTC. According to Harfoush (1990, 7) most academic, college and special libraries have computers, databases and database management software. The majority of them use CDS/ISIS.

These institutions in the information provision business are the competitors of the ESTC. According to general observations their competitive position is not very strong because their collections are not comprehensive and are rather antiquated.

#### **4.2.3 Users (the market) of the library and information services**

According to the survey results, 71 (52.2%) of the 136 respondents are working as researchers at their respective institutions. Of the seventy one 60 (84.5%) are currently conducting some research work. Out of the 136 respondents 18 (13.2%) are involved in management and administration and of these 6 are currently involved in research work. Thirty two (23.5%) of the respondents are involved in teaching and research and of these 21 (65.6%) are currently conducting research. Ten (7.4%) of the respondents are

postgraduate students currently involved in research activities. The remaining 5 (3.7%) respondents out of the 136 are involved in production work and indicated that their priority information requirements are in industrial production and national economic indicators.

The priority information requirements of 89 (65.4%) of the respondents are in research. All the respondents can read and understand English and Amharic. Thirteen (9.6%) of the respondents are PhD degree holders, while 30 (22.1%) are master's degree holders and 93 (68.4%) are bachelor's degree holders. All respondents are affiliated to institutions with LIS. Fifty (36.8%) of the respondents use the LIS everyday, 33 (24.3%) use it once a week, 8 (5.9%) use it once a month and 45 (33.1%) once in six months.

The institutions of all the respondents have computers. Fifty eight (42.6%) of the respondents are familiar with CDS/ISIS, while 78 (57.4%) are familiar with dBase. One hundred and twenty six (92.6%) of the respondents are willing to pay for reprographic and document delivery services as well as computing time. Ten (7.4%) felt that since the information is not always for personal use the question of payment was very difficult to deal with. When asked to rate the services they receive from the LIS at their institutions 26 (19.1%) said they are adequate, 54 (39.7%) said they are average and 56 (41.2%) said they are poor.

Ninety one frequencies showed that inadequate information hindered their work as it delayed the timely completion of research projects as well as compromising the standard and quality of the research reports, 27 frequencies showed that it hindered planning and 5 frequencies indicated that it led to duplication of research efforts. Responses with a single frequency were ignored as their strength was considered to be insignificant as far as the variable was concerned. The respondents also use other information sources to meet their requirements as summarized in Table 4.1 below.

Seven (5.1%) of the respondents get materials requested from other sources other than their LIS between 1 and 7 days, 29 (21.3%) get it between 8 and 15 days, 37 (27.2%) get it within one month and 64 (47.1%) get it after more than a month. Table 4.1: Sources of information for the users.

SOURCE	FREQUENCY	PERCENTAGE
Other institutions	71	52.2%
Colleagues (invisible college)	19	14.0%
Workshops and conferences	16	11.6%
Indexes and abstracts	15	11.1%
Newspapers and magazines	10	7.4%
Radio and Television	3	2.2%
Internet	2	1.5%
Total	136	100%

Table 4.2: Information preferences of the users.

Information service	Users in favour
Database giving information about location of research materials in Ethiopia	34 (25%)
Selective dissemination of information	23 (16.8%)
Current titles	19 (14.0%)
CD-ROM searches	15 (11.1%)
Newspaper clipping services	15 (11.1%)
Reprographic services	15 (11.1%)
Research management information services	11 (8.1%)
Reference and referral	4 (2.8)
Total	136 (100%)

The respondents have diverse information preferences. Table 4.2 above summarizes the information services and products preferred by the respondents. The chi-square technique was used for hypothesis testing. The first null hypothesis to be tested was:

$H_0$ : Users are not aware of the information services and products offered by the ESTC.

$H_A$ : Users are aware of the information services and products offered by the ESTC.

The chi-square statistic (Srivastava et al 1989, 243) was employed as follows:

$$X^2 = \sum \frac{(o_j - e_j)^2}{e_j} \quad (\text{Equation 4.1})$$

The substitution into the equation 4.1 was:

$$\frac{(78-68)^2}{68} + \frac{(58-68)^2}{68} = 2.94 \quad (\text{Equation 4.2})$$

The degree of freedom = 2-1=1. For 1 degree of freedom at 5% level of significance, the value of  $X^2=3.84$ . The calculated value of  $X^2$  is less than the table (critical) value and hence there is no evidence that users are aware of the information services and products at ESTC. Statistically people who are aware are not greater than those who are not aware. Thus the null hypothesis is accepted.

The second hypothesis to be tested was:

$H_0$ : The number of users who are not utilising the information services and products offered by the LIS at the ESTC is not significant.

$H_A$ : The number of users who are not utilising the information services and products offered by the LIS at the ESTC is significant.

The chi-square statistic was employed to get equation 4.3. below:

$$X^2 = \frac{(87-68)^2}{68} + \frac{(49-68)^2}{68} = 11.19 \quad (\text{Equation 4.3})$$

For 1 degree of freedom at 5% level of significance, the value of  $X^2=3.84$ . The calculated value of  $X^2$  is significantly more than the table (critical) value and hence the null hypothesis is rejected and the alternative hypothesis is accepted on the grounds that there is no evidence that the number of users not utilising the information services and

products at ESTC is not significant.

A further test for statistical independence between awareness and utilisation was made. To make the test a two way classification or contingency table was set up as shown in table 4.3 below.

Table 4.3: The user's utilisation and awareness of LIS.

	aware	unaware	Totals
utilize	49	0	49
do not utilize	29	58	87
Totals	78	58	136

The null hypothesis assuming independence between awareness and utilisation was:

$H_0$ : There is no relationship between awareness and utilisation.  $H_A$ : There is a relationship between awareness and utilisation.

To investigate the relationship between the two variables the following statistic test (Srivastava et al 1989, 245) was used:

$$X^2(\text{corrected}) = \frac{N(|\Delta| - \frac{1}{2}N)^2}{N_1N_2N_A N_B} \quad (\text{Equation 4.4})$$

Substituting in the formula<sup>6</sup> yielded the following results:

$$\frac{136 (49 \times 58 - 0 \times 29 - \frac{1}{2} \times 136)^2}{78 \times 58 \times 49 \times 87} = 54.26 \quad (\text{Equation 4.5})$$

For 1 degree of freedom at 5% level of significance, the value of  $X^2=3.84$ . The calculated value of  $X^2$  is significantly more than the table (critical) value so the null hypothesis is rejected and the conclusion reached is that utilisation is dependent on awareness.

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<sup>6</sup> A correction is appropriate because the exact distribution of  $X^2$  in a 2x2 table is discrete.

The users were asked about their attitude<sup>7</sup> towards (1) getting full text information after searching a database, (2) getting bibliographic details indicating where the document could be found irrespective of its location, (3) the capability of computers in retrieving records as a factor, and (4) getting the bibliographic details of a record including an abstract. The Likert type scale<sup>8</sup> or the summated rating scale was used in assessing the user's attitudes. Responses indicating the least favourable degree of importance was given the least score (1) and the most favourable was given the highest score (5). The raw scores were computed as presented in Table 4.4 below.

Table 4.4: Attitude of users towards information services.

ATTRIBUTE	SCORE				
	1	2	3	4	5
1. Getting the required full text information after searching a database	-	-	-	208	420
2. Getting details of a document and its location	-	-	-	168	470
3. Speed of retrieval of information as a factor in using computers	-	-	-	124	525
4. Getting bibliographic details including the abstract	-	-	-	-	680

Legend for table and scores:

1: Not at all important; 2: Somewhat unimportant; 3: Neither important nor unimportant; 4: Somewhat important and 5: Very important.

The sample size is 136 and the following score values would be revealing: (1)  $136 \times 5 = 680$  very important; (2)  $136 \times 3 = 408$  neither important nor unimportant and (3)

<sup>7</sup> *Attitudes play a pivotal role in consumer behaviour (Churchill 1988, 336; Dillon 1994 et al, 328).*

<sup>8</sup> *Mostly widely used attitude scaling technique in marketing research (Churchill 1988, 339).*

136x1=136 not at all important. This means the score for any attribute would fall between 136 and 680. If the score happens to be above 408 it shows that the attribute is important and a score of below 408 shows that it is not at all important and a score of exactly 408 would be suggestive of a neutral attitude. The highest computed score for each attribute in Table 4.4 above is more than 408 suggesting that all the attributes are important to the respondents.

#### 4.3. WEAKNESSES AND STRENGTHS OF THE LIS AT THE ESTC.

According to the survey results the financial, technical, human and information resources available is very limited. The government is moving away from a centrally planned economy to a market oriented one; and self-sustaining state institutions. This means that state funding is going to be minimal.

The NCIC has few marketing resources in terms of skill as only two members of staff had some training that involved a marketing component. Production resources are optimal as there are documentalists, data processing personnel and other IT related staff in various sections and units illustrated in the organisational chart in Fig. 4.2 above. Technological resource and skills are in place though some attention needs to be paid to hardware procurement. The NCIC does not have printers exclusively for its own use and the photocopiers broke down some time ago. According to users this militates against document delivery. Information retrieval packages are not compatible with other institutions in the information business. The collection is rather antiquated.

The strengths of the ESTC derive from the fact that while the government has limited funds, it has direct interest in promoting research and the dissemination of research results. Furthermore, the fact that the ESTC has library interloan agreements

with other institutions in Ethiopia could supplement the rather antiquated collection and enhance resource sharing. Also important is the co-operation with the Swedish Agency for Research Cooperation with Developing Countries, UNESCO and IDRC which could provide a framework for funding information provision activities.

#### 4.4 SUMMARY OF THE FINDINGS

From the survey results it could be concluded that the LIS at the ESTC is in the information provision business, and is offering various information services and products. The four mostly used products and services are database searches, reference services, accession lists and interlibrary loans. The reprographic services are the least used service. The users of the LIS are research scientists, students, managers and administrators and ordinary citizens. They use the information for research, planning and daily activities. The users are not utilising the LIS in a significant way.

The information products and services they prefer include: up to date databases on research information, selective dissemination of information, current titles, reprographic services, CD-ROM searches and newspaper clippings. The users get information from their institutional LIS, other institutions, colleagues, workshops and conferences, indexes and abstracts.

The information market comprises of the following segments: researchers, managers and administrators and ordinary citizens. The researchers constitute a lucrative market because researchers do not only assure modernisation of various fields of knowledge, but they also build scientific and social literacy among the people. The benefits for the promotion of research are: a citizen that is better informed about policies related to S&T research, S&T production and productivity and a large body of young

people who are familiar with basic concepts of research and aware of their practical applications.

While the information provision philosophy is based on networking and resource sharing there is competition among the various institutions in the information provision business because marketing in such an environment aims at increasing awareness and utilisation of the LIS.

The product attributes important to users are getting the required full text information after searching a database; getting bibliographic details of research materials and their location irrespective of their physical location; and fast and efficient retrieval of the required information.

In order to satisfy the outlined information needs and address the requirements of the identified market segments, there is need to adopt a marketing plan. By adopting a marketing plan the ESTC is going to increase the utilisation rate of the LIS and provide services and products that meet users' needs. The marketing plan would help in allocating scarce resources and translate the weaknesses of the LIS into strengths.

The following Chapter presents a marketing plan model that the ESTC could adopt to realise its objectives.

## CHAPTER FIVE

### THE MARKETING PLAN

**People would rather live with a problem they cannot solve than accept a solution they cannot understand (Wentz 1979, 61).**

#### 5.0 INTRODUCTION

The assumptions in using this marketing model are that an organisation has carried the fundamental tasks of monitoring environments and assessing opportunities, and now is concerned with marketing planning. The market research presented in Chapter Four is the basis of this marketing planning.

Marketing planning is a process and its immediate result is a marketing plan. Although the contents and formats of marketing plans vary according to the organisation's needs marketing plans have a common set of components (de Sáez 1993, chap 8; Sowter 1995, 219). For the purpose of this discussion a marketing plan is a written document containing guidelines for the ESTC's marketing programmes over the planning period.

The contents and structure of the plan derives from literature (de Sáez 1993, chap 8; Sowter 1995, 219) and the market research findings in Chapter Four. Since there are no standard marketing plans in LIS literature this plan does not conform to any convention. Its further review should be done against this background. The structure of a marketing plan which is presented in this Chapter comprises: the executive summary, the mission statement, the present situation, portfolio analysis, marketing objectives and goals, marketing strategies, budget requirements, timetables, implementation strategy and evaluation methods.

## 5.1 EXECUTIVE SUMMARY

The purpose of this marketing plan is to set a direction and to delineate the tasks that will help ESTC achieve its goals. The plan was the result of a synthesis of interviews, responses and suggestions of a wide scope of individuals both at the ESTC and the community about ESTC's past, present and future. This plan details these responses and its goals and objectives reflect the broad consensus that was reached.

The main objectives of this study were to: (i) analyze the ESTC's mission, objectives and goals to which the marketing strategy must constitute; (ii) assess the external environment in order to evaluate the ESTC's strengths and weaknesses to respond to threats; (iii) analyze the marketing environment; (iv) determine the marketing mission, objectives and specific goals for the planning period; (v) formulate the core marketing strategy to achieve the specified goals; and recommend a plan/ strategies for implementation and monitoring.

The plan which is recommended in this study would ensure that everyone at the ESTC is working to the same objective; and understands the commitment to the marketing effort and expenditure which the programme requires. This plan would be the yardstick against which progress could be monitored during the plan period. The following paragraphs give a brief summary of what the marketing plan would entail.

The NCIC's mission statement has been revised to more adequately focus its purpose and direction. The major objective would be to improve the LIS image and reputation by providing timely and current information as well as having access to a comprehensive collection of scientific and technological information(STI).

The situation analysis revealed that although there are economic and technological threats to the LIS, with little additions, the existing facilities could support a marketing

plan suggested in this study. The implementation of these marketing strategies could satisfy users, attract more resources and make the *future happen*(sic). The portfolio analysis was used to determine the attractive markets that the ESTC could venture into.

The product/services concept is based on databases that would give researchers access to all research materials in Ethiopia as well as giving information on researchers in different fields in the country. The network analysis model gives details of the procedures for controlling the execution of the plan.

Marketing is not primarily a series of separate, specialist and cost activities; it is a way of running an organisation and a management style. As such in the first instance the expenditure need not be high. The salaries and expenses of the staff concerned are already being paid. Marketing expenditure would be initially limited to training, procurement of extra equipment and promotion.

Plans are only useful if they are implemented and monitored. Implementation is going to involve data collection, data inputting, training of personnel and procurement of equipment. For the purpose of control, evaluation would be a continuous process during the execution of this plan. Evaluation would involve analysis of variance and instigating corrective actions and instituting an overall marketing audit.

## 5.2 MISSION STATEMENT

The ESTC through the National Computer and Information Centre (NCIC) strives to be the gateway to STI resources and (S&T) capability building by; (i) establishing a national S&T information system in Ethiopia and developing a national capacity to collect, store, process and disseminate STI in all forms to individuals, groups and organisations involved in research, planning and decision making; and (ii) initiating the wider use of

and build up national capabilities in the efficient utilisation and development of IT and STI.

The mission statement shows what business the NCIC is in. The present situation is presented in the next section in order to answer the common marketing question, viz, *Where are we now?* (Sowter 1995, 219; Weingand 1995a).

### 5.3 THE PRESENT SITUATION

Ever since its establishment in 1975 the institutional position of the ESTC is continuously changing. New challenges are coming up. The challenges range from technological developments, shrinking budgets to economic retrenchment. The government is moving away from a centrally planned economy to a market oriented one; and self sustaining state institutions.

It means that sources of funding for the ESTC would be limited. The resources available in the next decade will be limited as they are today. A willingness to plan and adopt new strategies for the marketplace is essential for survival. The information provision practices brought about by changes in IT are aggravating the situation.

Developments in IT are making a global information system a reality. Many avenues of information are becoming available to information seekers. If new strategies are not mapped out the LIS could end up failing to fulfil its mission statement as the users would be opting for other sources of information.

The ESTC is offering a very indispensable information service and yet fiscal policies and budgetary constraints are threatening its existence. It offers current awareness services, selective dissemination of information, reference services, database search services and other information products and services. The availability of such a wide

scope of information services and products is indicative of what has been ploughed into capacity building. However, the market research revealed that the utilisation rate of these services is far below the desirable levels.

The users and potential users of the LIS are research scientists, students, managers and administrators, and ordinary citizens. The market share of the ESTC is most profound among the research scientists than other sectors. The interest of government, as the funding body, on research makes this a lucrative market. The national need for more research means that this market would not shrink in the foreseeable future. Serving this target market would be consistent with ESTC's mission statement. According to the survey results 92.6% of the respondents are willing to pay for the reprographic and document delivery services as well as computing time.

The market research results revealed that the information services and products preferred by the users and potential users are; databases giving information about access to all research materials in Ethiopia irrespective of their physical location, selective dissemination of information, current titles, newspaper clipping services, reprographic services, CD-ROM searches and references and referral services.

The market research also revealed that the important attributes that users could value in an information service are; (i) getting the required full text information after searching a database; (ii) getting details of a document in a database including its location irrespective of its whereabouts in the country; (iii) the speed of retrieval of information as factor in using computers; and (iv) getting bibliographic details including an abstract of the content of a document. Attribute (i) seems to be also valued throughout S&T institutions in SSA. The survey results of SSA showed that the full text original document is the commonest form in which information is disseminated to users.

The ESTC is not alone in the information services business in Ethiopia. There are

other LIS in the country that could be regarded as competitors. Due to resource constraints the NCIC cannot build a collection that would push out these LIS from the market. In any case this would be against the ESTC's objective of building a national information network.

The competitive position of the ESTC could be enhanced by having a mechanism that would promote co-operation with other LIS in the country. This would not only encourage resource sharing, but it would minimize duplication of effort in collection building, thus ensuring the optimum utilisation of scarce resources.

The inventory of current capabilities revealed that the ESTC would need very little additional budgetary requirements to implement the proposed marketing plan as most of the equipment and manpower are in place. In order to determine the market attractiveness and opportunities available portfolio offerings of the LIS were examined and are presented below.

### 5.3.1 Portfolio analysis<sup>9</sup>

The first step in portfolio analysis was to divide the LIS's best four offerings discussed in Chapter Four into strategic marketing units. The survey results determined where the leading services and products of the LIS fell in the two by two BCG growth share matrix grid of question marks, stars, cash cows and dogs. Even if reprographic services are least used they could not be classified as dogs because the low level of their use could not be attributed to a weak market share. Rather it could be due to the shortage of such facilities, for example, the photocopying machine has been out of order for almost two

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<sup>9</sup> *A detailed discussion of portfolio management is given in Chapter 2 sub section 2.5.1 of this report.*

years now. This meant that the dogs grid could not be considered.

The cash cows grid was also ignored because the survey results did not reveal any service or product that had a high share in a declining market. Therefore the grid was only used to define the stars and question marks. The reference services, accession lists and interlibrary loans were regarded as stars because according to the interview results they have a high market share and a high market growth.

Although the database searches are among the four mostly used services, they were classified in the question marks grid because according to the survey results this service/product has not fully realised its potential and it has a low market share. Furthermore, this service/product is still at its introductory phase in the context of the product life cycle. It has a potential to grow to maturity.

While a question mark has a potentially high demand on resources it is recommended to invest in it because the return on investment is potentially high if it grows into a star. With current trends in IT developments this question mark has a promising future.

The BCG approach assisted in determining the attractiveness of the market while Ansoff's(1957) two by two product/market opportunity matrix helped to identify which opportunities the LIS could nurture. Interviews and other survey instruments helped in applying the rationale of the product/market matrix. The Director of NCIC, Ato Eshetu Alemu believes that the overall strategy for the LIS to achieve its goals is to penetrate the market of researchers. The strategy of market penetration is the safest of all the strategies in the Ansoff(1957) model as the LIS would be promoting existing products in existing markets. However, the situation analysis revealed that the users could prefer a new product. Since the aim is to satisfy user needs in order to increase the rate of utilisation of the LIS the user's view is condoned in this plan. The product development

strategy is therefore recommended. It is equally safer as it offers new or improved products in the existing markets.

The adoption of these marketing strategies would ensure the utilisation of the investment that went into capacity building; and funding bodies would appreciate the value of money being achieved. Marketing decisions are going to positively shape the LIS's future because the essence of marketing is marking the future happen through planning.

In order to make the future happen the ESTC should be willing to ask itself the question: *Where do we want to go?* (Sowter 1995, 219; Weingand 1995a). This question is best answered by considering the marketing objectives of the ESTC.

#### 5.4 THE MARKETING OBJECTIVES

In line with ESTC's mission statement the future is going to be determined by the achievement of the following goals and objectives.

##### 5.4.1 Goals

The aim of these goals is to give direction to the NCIC staff and describe pathways for the future and progress is going to be measured against these goals.

The goals are (i) to serve as the first point of enquiry about STI which users may need for research; (ii) to encourage the use of information and awareness of the community of the existence of the LIS services; (iii) to increase the utilisation rate of the LIS by more than one half of the current potential user population per year; (iv) to monitor the collection building of other LIS in the country; (v) to increase the knowledge

base about the users of the LIS; (vi) to concentrate on a specific group of potential users who at present make either little or no use of the LIS; and (vii) to conduct a continuous marketing development and testing program designed to enhance the LIS's long term position in the market place.

#### **5.4.2 Specific objectives**

The aim of these objectives is to maximize the number of users of the LIS services by providing a one stop information centre. To that end the NCIC is going to: (i) establish a national information system and network; and (iii) develop a comprehensive collection of STI and provide timely and current LIS which supports R&D and decision making.

Once goals and objectives are set the question that remains to be answered is: *How are we going to get there?* The means by which this would be achieved is through a marketing strategy.

### **5.5 MARKETING STRATEGY**

The marketing strategy involves selecting key target segments and coordinating the marketing mix elements which comprise product, price, distribution and promotion.

#### **5.5.1 Market segment strategy**

The survey results showed that ESTC's resources are limited. This makes it difficult for it to relate to the whole information market. Under the circumstances, target marketing

is the most feasible marketing strategy. In this approach the LIS would concentrate<sup>10</sup> on one market segment and develop the ideal offer and marketing mix. This strategy is going to make it possible to serve one of the several potential segments of the market and less expensive than other strategies in marketing literature.

In order to identify the segments the market was divided into market groups. The segments consisted of people who have relatively similar product/services need. This helped to design a marketing mix that matches the needs of the individuals in the selected segment. The main segmentation variable used was demographic<sup>11</sup>. The market segments identified by the survey consist of three distinguishable groups.

The first group comprises scientists and research workers, who need complete and up to date information about research results, and numerical data in their respective fields of research. This group generates most of the research materials. Researchers are interested in minimizing the probability of unwittingly duplication of work, and to save time and effort.

The second group that is identifiable is composed of practitioners, which is a broad heterogenous group of users constituting of managers, decision makers, technicians, engineers, consultants, academicians and teachers. This group is interested in the application of knowledge and data. To some extent this group also generates knowledge, although it is not its main preoccupation. The rest of the other citizens constitute the third group which uses the LIS to satisfy their general interests and to carry out their daily activities.

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<sup>10</sup> *Concentrated marketing is sometimes referred to as niche marketing (Andreasen and Kotler 1991, 197; Bryson 1990, 129).*

<sup>11</sup> *One of the most popular methods of distinguishing markets in LIS (Bryson 1990, 126).*

The researchers are the market that would pay dividends for the ESTC. Promoting research would in the long run benefit society as the knowledge base expands. While there are competitors in the market the information needs of this segment are not being adequately addressed. In order to fulfil its corporate objectives of promoting research the ESTC should in the first instance develop a product that would satisfy the needs of the researchers. Such a product should have those attributes that the researchers consider as important. The required attributes were determined by the market research.

### **5.5.2 Product strategy**

The survey results and the portfolio management strategies point towards the design of a product that should employ the capabilities of IT. The introduction of a new product is vital for the health of the LIS, particularly given the technological changes taking place in IT. The product/services concept is based on databases that would enable researchers to retrieve bibliographic records that indicate the location of any materials in the country as well as information about other researchers in the user's subject area of interest. In addition the product should be able to provide information of newly acquired materials in S&T operational institutes and centres in Ethiopia.

The creation of databases have long-term implications, but this makes it possible to repackage the information in different ways. A central problem that follows closely after searching a database is access to the documents themselves. Access to bibliographic details and indexes without the materials indexed is like providing dishes and cutlery, but no food. The solution to access to documents lies in developing a product that would address the document delivery side.

The product life cycle would be characterized by a late growth, but the dividends

from the identified market are promising to be high given the market base and favourable technological factors. Based on the network analysis in Fig 5.4 below the development and delivery of the product is expected at most to take 15 months. The product is expected to augment the client base.

The suggested brand name of the product is ETHIO DATABASE. The ETHIO DATABASE would be composed of user profiles and bibliographic databases; and a text file of current titles that would be updated from time to time as details of new materials arrive.

For the purpose of demonstrating the features of the product the prototype bibliographic and user profile databases were created using Micro CDS/ISIS (UNESCO 1989). The CDS/ISIS PASCAL programs interface the databases. The field elements for describing documentary materials have been selected from the Field Definition Table(FDT) of the PADIS (UNECA 1996b)<sup>12</sup> bibliographic format of information exchange. The user profile database was created using the ABNCD FDT (Abebe et al 1992).

Micro CDS/ISIS is recommended for implementing the proposed system because it is provided and maintained free by UNESCO. It is a menu driven generalised information storage and retrieval system software designed specifically for the computerised management of structured textual databases.

One of the major advantages offered by the generalised design of the system is that CDS/ISIS is able to manipulate an unlimited number of databases each of which may consist of completely different data elements. Also important CDS/ISIS has flexible fields (Geethananda 1991; Niewenhuisen 1991). According to literature (Villars 1996) and the

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<sup>12</sup> *The ABNCD FDT was used because the PADIS FDT for user profiles could not be secured.*

survey results most S&T institutions in SSA use CDS/ISIS and it has become a *de facto* standard. Its use might promote uniformity and compatibility and therefore facilitate information transfer and data exchange.

The primary objectives of the proposed ETHIO DATABASE is to provide improved access to STI resources in Ethiopia. The system should be capable of satisfying, initially, the information needs of researchers through the provision of timely and relevant information. Depending on the success of the ETHIO DATABASE it could be later extended to other segments of the community.

The proposed ETHIO DATABASE should (i) provide retrospective search in specified database or type of record using CDS/ISIS search language capabilities or index based searches; (ii) provide concurrent search and retrieval of different types of records (documents, profiles of experts, etc.); (iii) provide a printed union list and catalogues; (iv) provide details of the location of all documents in the database; (v) provide information on experts, development projects and patents; and (vi) provide information on all newly acquired LIS materials in Ethiopia (current titles).

The search interface of ETHIO DATABASE should offer the following facilities:

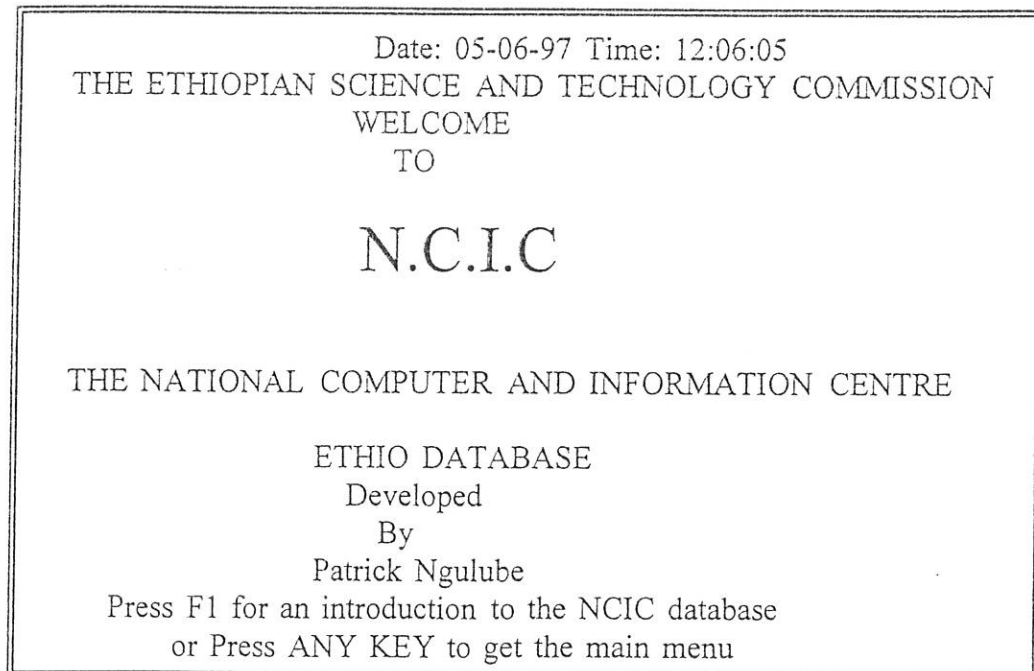
- Easy access to the database through several access points, namely, title of document, dictionary terms, country of production, location of document, descriptors or keywords, bibliographic indicators, project name, conference/meeting name, patent classification and expert subject area;
- Help messages at every stage in the search;
- Displays the number of records retrieved;
- Options for browsing or printing or downloading the search output; one record at a time;
- Retrieve and displays abstracts, thus making it easy for the user to decide the

relevance of the record before either downloading or printing or requesting for it;

- Ability to terminate the search at any stage and go back to where one stated; and
- Ability to ensure economy in the use of resources, since only relevant records are downloaded or printed.

The screen features of the ETHIO DATABASE search interface are characterised by the welcome, main menu and output screens. From the main menu various option screens could be accessed. The welcome screen (Fig. 5.1) is the first screen which gives an introduction to the system. It contains the name system, the developer and instruction to press F1 or any key.

Figure 5.1: The Welcome Screen.



The main menu (Fig. 5.2) has the systems processing options. It comes after the welcome screen (Fig. 5.1). By selection of the desired option, the user is further taken to the desired sub area. This figure assumes that the cursor is highlighting the *Document Title*, hence, the message at the bottom of the screen.

Figure 5.2: Menu Options Screen.

```
*****DATABASE OPTIONS MENU SCREEN*****
T. Document Title
A. Personal Author
C. Corporate Author
D. Dictionary search
S. Country of production
N. Location of document
K. Descriptors/Keywords
L. Bibliographic indicator
I. Development Project
M. Conference/meeting name
R. Document or report number
P. Patent classification
B. Newly Acquired Materials
H. Help
Q. Quit
Use cursor to highlight and <CR> to select
Or Enter your option letter
Search by title of document
```

The output screen (Fig 5.3) displays the retrieved record(s) and gives the user the options to download or to print the record(s).

Figure 5.3: Output Screen.

```
3 of 3
MFN:012
Personal Author: Kaniki, Andrew. M. Department of Library
Studies, university of Zambia, Lusaka
Corporate Author: Nil
Document title: Meeting the information needs of agricultural researchers in Africa:
the role of unpublished
reports. In Information development 8(2).
Location of document: Ethiopian Science and Technology
Commission. 00-83-00987
Country of production: Zambia
Date of publication: 1992
Collation: p83-89/refs.
Document or report number: Nil
Descriptors: Information dissemination/information needs
Development project:Nil
Abstract: Edited version of a paper presented at the Pan
African Institute..... looks at unpublished reports and ways in which information
professionals can assist information needs.
[C]ollect [S]ave [P]rint Esc to exit
```

### **5.5.3 Pricing strategy**

In the early stages of the product life cycle the objective would be to grow both in terms of utilisation and market share. This means that initially the service would be provided free of charge. When the product moves to maturity emphasis should be placed on cost recovery measures. Pricing should be introduced in phases. Prices would have to be established for staff and computing time, reprographic services, print outs and other overheads. The pricing strategy should not aim at profit making. rather the emphasis should be on recouping costs.

### **5.5.4 Distribution strategy**

The opening times of the LIS have to be extended to include lunch breaks so that ETHIO DATABASE would be available at all convenient times. The services would be initially only be available at the ESTC. In line with the ESTC's objectives the product/services could be extended on-line to other S&T operational institutions and centres. Researchers would access the databases from terminals in the reading room.

### **5.5.5 Promotion strategy**

The initial aim must be to maximize the take up of those services to ensure the greatest return on investment. There is need to inform actual and potential users of the totality of information available. Promotion would be more important during the introductory phase. In the growth stage the word-of-mouth process would supplement the LIS' promotional efforts.

The promotion objectives would be to (1) provide information to broaden overall user awareness and understanding the product; (2) accentuate the value of the product; (3) generate immediate trial among the researchers; and (4) enhance the product image through quality promotion that would aid in stimulating repeat usage and loyalty. The ETHIO DATABASE would be identified as a new product from the ESTC. Promotion would highlight the advantages offered by ETHIO DATABASE, viz: (i) lack of restrictions as who can use it and the absence of bureaucratic formalities; (ii) the wide range and depth of resources means that most users can find what they require in one place; and (iii) timely and relevant information would be offered.

The recommended promotion tools are advertising, short By-lined articles, direct mail, press releases, conferences and seminars. Advertising include electronic and print media. Direct mail include letters, newsletters, flyers, postcards and brochures. Short By-line articles, press releases, conferences and seminars could be regarded as public relations.

The primary promotion media to introduce the product would be conferences and seminars. Other tools mentioned above are going to be also exploited because of their cost effectiveness. According to Duncan (1993): *The press release is one of the easiest to produce, unlike advertisements, it costs very little and you do not have to tear your hair out trying to out do your competitors with witty one-lines.* Press releases are closely related to short By-line articles. Publication of short articles about the aspects of ETHIO DATABASE in Ethiopia would not take any of the marketing budget, although it would be expensive in terms of staff time.

Despite the cost that could be involved advertisements could be used. In the case of the ESTC there is a standing agreement with the Ministry of Information that allows a weekly 15 minutes air time of Radio Ethiopia. Advertisements during this time would

cost nothing in terms of the marketing budget. Free exchange advertisement could be initiated with the editors of target professional journals. Paid advertisement could be expensive and they should be used sparingly.

Direct mailings should be used to inform users on a regular basis of the ETHIO DATABASE. The mailing list should include names from the EXPERT database and conference proceedings which pass through the hands of the staff. This strategy is based on the assumption that those individuals who are active in research and publishing are more likely to influence opinions in their respective circles. More so, the survey results showed that 14% of the respondents get information from colleagues.

In order to exploit conferences and seminars, at the beginning of every year an overview of conferences and seminars which would be of interest to the ESTC should be made. Depending on budget constraints a decision could be made as to which conferences should have personal representation and exhibition stands, and where the mailing of brochures, newsletters or special information sheets would suffice. Depending on technological developments in the country the web page in the Internet could be used as promotion media.

## 5.6 FINANCIAL BUDGETS REQUIRED

Once the marketing strategies have been formulated financial resources are needed to translate them into action plans. This financial budget is based on the objective and task method model (Andreasen and Kotler 1991, 367), that is, it is based on defined objectives, tasks to be performed and estimates of performing the tasks. This model could be, however, complimented by the Zero-base budget(ZBB) (Seetharama 1990, 190) which advocates that every fiscal year the previous sums appropriated are *set to zero* and each

proposal is justified afresh.

The effectiveness of marketing expenditure would vary at different phases of the product life cycle. The budget estimates of expenditure are summarized in Table 5.1 below. Estimated costs are not included because this would depend on procurement policy and governing regulations. When the marketing strategies have been formulated and budget approval secured the implementation of the plan would depend on proper scheduling.

Table 5.1 Budget estimates for the marketing plan.

ITEM	DESCRIPTION
Database creation	(1) data collection, (2) inputting data
Equipment	(1) workstations(PCs), (2) printer, (3) server(PC), (4) photocopier
Training	(1) staff at ESTC, (2) staff from S&T institutions, (3) users
Promotion	(1) advertising, (2) exhibitions, (3) mailing
Evaluation	(1) surveys (2) marketing audit

## 5.7 TIMETABLING AND SCHEDULING

The scheduling procedure ensured that all the needed tasks are due in time and done on time. The activities in the marketing planning process are presented both at a macro (strategic) and micro (tactical) level in order to facilitate adaptability and expandability as the environments change.

Table 5.2 below presents the activities involved at a strategic level while Table 5.3 below presents the activities at tactical level. While the activities in Table 5.3 derive from the strategic level, the actual events and duration of activities are the results of the survey conducted at the ESTC. The scheduling techniques were derived from networking

literature (Srivastava et al 1989, 585; Mustafi 1993, 151).

The 33 activities presented in Table 5.3 below were used to construct the scheduling model presented in Fig. 5.4. The following guidelines were used in combining the activities in a network analysis:

- (i) Each activity is shown as a separate branch of the network.
- (ii) Branches show relationships among activities

Table 5.2: Steps in marketing planning (strategic level).

Acti- vity	Description	Duration (months)
1	Preliminary activities	1-3
2	Internal assessment	2
3	External assessment	3
4	Target opportunities	1
5	Build consensus, mission and goals	2
6	Draft strategic plan	1
7	Gain consensus for draft plan	2
8	Management approves the strategic plan	1
9	Implement the plan	12-18
10	Evaluate the plan	annually

(iii) Arrows indicate general progressing through time. An arrow-head represents the point in time at which an *activity end* event takes place; the tail of an arrow represents the point in time which an *activity start* event occurs.

(iv) When more than one activity ends at one event, no activity starting from that event may begin before all activities ending at this event have been completed.

(v) If one event takes precedence over another event that is not connected by a specific activity, a *dummy* activity joins the two events. Dummy activities have no duration or cost and they are denoted by a broken line, for example events (18-19, 20-21, etc).

Table 5.3: Steps in marketing planning (tactical level).

Acti- vity	Description	Duration (days)
1	Set up marketing committee	10
2	Review the marketing research report	15
3	Define specific objectives (assumptions regarding the future/primary markets/ overall strategy)	11
4	Define functional objectives(product/ manpower/budget/promotion/personnel training/distribution/price objectives)	15
5	Management approval of activities 3 and 4	14
6	Define marketing strategies and action programs(new product development/pricing/ distribution channels/promotion tools/budget)	17
7	Approval of activity 6 by management	5
8	Draft marketing plan	15
9	Approval of plan and budget by management	10
10	Review marketing plan for practicability	3
11	Allocate budget for activities/tasks	2
12	Train staff for database creation	20
13	Prepare and submit progress report to management	3
14	Select and order hardware and equipment	5
15	Allow shipment time	2
16	Prepare site and install	2
17	Create databases	120
18	Prepare and submit progress report to management	3
19	Create user databases	20
20	Train personnel in marketing concepts	21
21	Receive and integrate databases of documentary materials from S&T operational institutions and centres	15

Table 5.3: Steps in marketing planning (tactical level) (continued).

Acti- vity	Description	Duration (days)
22	Create user interfaces	40
23	Edit user database	5
24	Edit documentary materials database	5
25	Prepare and submit progress report to management	3
26	Test prototype product	5
27	Prepare promotional materials	20
28	Train staff on the new system	30
29	Test promotional materials	10
30	Test marketing the new product	30
31	Approval of product by management	10
32	Prepare for launching and conduct publicity for the event	30
33	Launch on World Information Day	1
	Total number of days according to table	517

(vi) Events are identified by circled numbers. Generally the higher the number is, the later that event will be performed.

(vii) Activities are identified by the numbers of both starting events and ending events (1-2-3, etc).

After the construction of the network diagram (Fig. 5.4) the earliest starting time(ES) and the latest completion time(LC) for the activities coming into each node was computed using equations from literature (Srivastava et al 1989, 585; Mustafi 1993, 151). This analysis classified the activities of the marketing plan into critical and non critical activities. Where the earliest and latest events times are the same for several events, for example, events (0-1-2-3-4, etc). These events define the critical path, and it is marked by a heavy black line in Fig. 5.4.

Figure 5.4: Scheduling model of a Marketing Plan

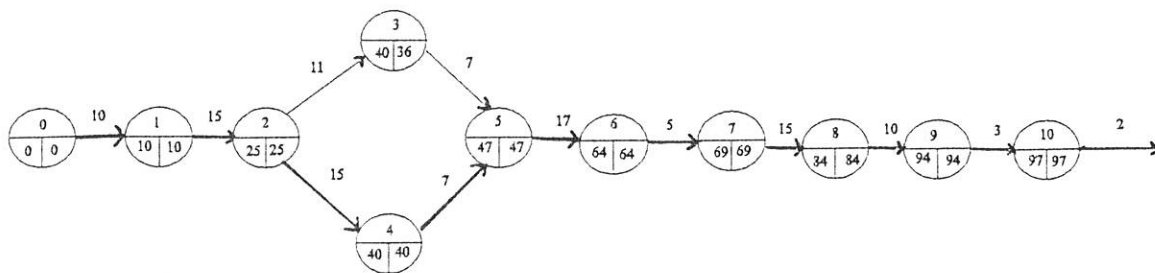
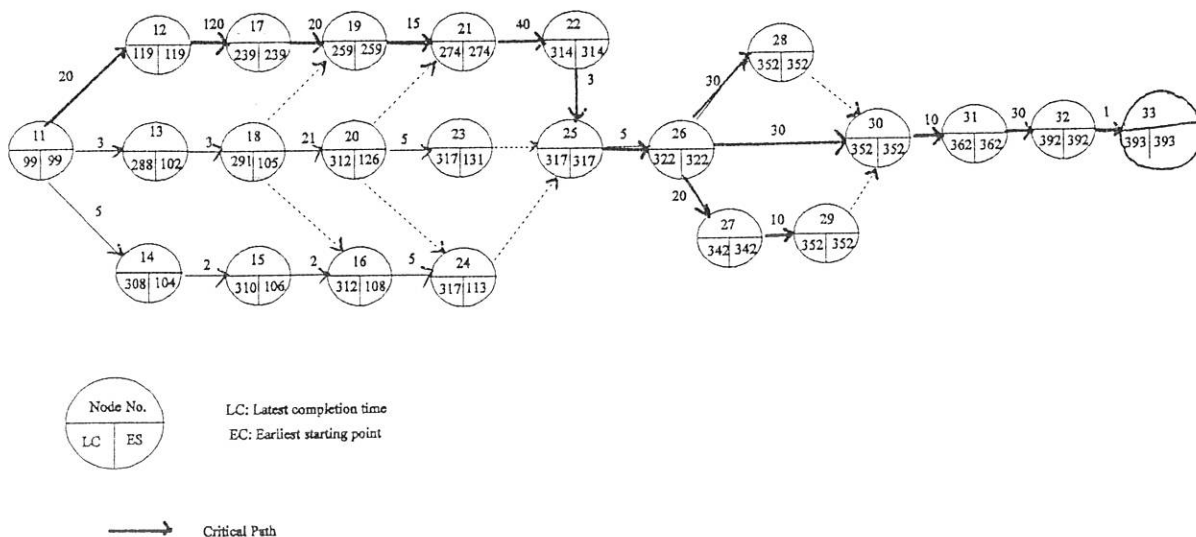


Figure 5.4: Scheduling model of a Marketing Plan (Continued)



If the marketing plan is to be completed on time the critical activities must begin in time and they must not require more than their estimated durations. No slack time is allowed for critical activities.

The events that are not on the critical path can start late or exceed their estimated schedule without seriously affecting the schedule. The duration of the plan is generally the sum of duration of the critical activities, and this is the shortest possible time to complete the marketing plan.

Most marketing decisions are done under uncertainty in terms of time estimation (Srivastava et al 1989, 594). In order to estimate the probability of completing the marketing plan at an estimated the expected duration and the standard deviation from the critical events were calculated using figures from the critical path of PERT in Fig. 5.4. Using the equations below, the time estimates were averaged to derive a single time estimate for the activities. In addition, standard deviations and variances were calculated to determine the probability of meeting time schedules. It is assumed that the probability distribution is continuous, unimodal with two non-negative intercepts.

The expected duration of the marketing plan( $t_e$ ) and the standard deviation of the duration of each activity can be approximated (Srivastava et al 1989, 594; Mustafi 1993, 192) by equations (1)  $t_e=1/6(a+4m+b)$  and (2)  $\sigma=1/6(b-a)$  respectively. In the context of PERT calculation ( $a$ ) is referred to as the optimistic time, that is, the least time that an activity would take. All systems must operate perfectly if optimistic estimates are to be realised. Most likely estimates are represented by the modal value ( $m$ ) (normal or usual time needed to complete an activity). And ( $b$ ) represents the pessimistic time (a situation in which everything goes wrong). The values of  $a$ ,  $m$  and  $b$  are usually assumed from survey results. Using the activities on the critical path of the PERT network in Fig. 5.4 Table 5.4 summarizes the activities along with the optimistic times( $a$ ), most likely

times( $m$ ) and pessimistic times( $b$ ).

Table 5.4: Summary of the optimistic( $a$ ), most likely( $m$ ) and pessimistic times( $b$ ).

Acti- vity	a(days)	m(days)	b(days)	$t_e=1/6(a+4m$ $+b)$	$1/6(b-a)$
0-1	5	10	15	10.00	1.67
1-2	10	16	22	16.00	2.00
2-3	8	12	15	11.83	1.17
3-5	4	6	10	6.33	1.00
5-6	15	17	20	17.17	0.83
6-7	2	4	7	4.17	0.83
7-8	2	3	7	3.50	0.83
8-9	10	12	17	12.50	1.17
9-10	1	3	5	3.00	0.67
10-11	1	2	3	2.00	0.33
11-12	15	20	30	20.83	2.50
12-17	90	120	150	120.00	10.00
17-19	15	20	30	20.83	2.50
19-21	10	12	20	13.00	1.67
21-22	30	35	45	35.83	2.50
22-25	1	2	5	2.33	0.67
25-26	1	3	7	3.33	1.00
26-28	15	20	30	20.83	2.50
26-27	10	15	20	15.00	1.67
27-29	3	5	10	5.50	1.17
26-30	21	30	35	29.33	2.33
30-31	2	5	15	3.67	2.17
31-32	20	30	45	30.83	4.17
32-33	1	1	1	1.00	0.00

The project duration of the PERT network is 409 days(1 year and 44 days).

Looking at the activity durations for the critical activities the standard deviation of each

activity was computed. If the activity times on the critical path are statistically independent, the standard deviation of the earliest finish time of the network is given by the square root of the sum of the deviations of all critical activities. The standard deviation of the critical path is 16.168.

In order to compute the chances of completing the marketing plan at a given estimated time it was assumed the time lies between the PERT network time (409 days) and the total activities time (517) calculated in table 5.3 above. The interest became knowing the chances of completing the marketing plan in 424 days (1 year and 59 days). Since the PERT assumes that the distribution of the total marketing plan is normal, this permitted the use of statistical tables to derive the distribution of the marketing plan completion time.

The distance from the mean of 424 days is given by:

$$\frac{424-409}{6.81} = 2.202 \quad (\text{Equation 5.1})$$

Using the statistical table, the area under the curve of a standard normal distribution from the left hand-tail to a point 2.202 above the mean, the answer is 0.98. This is indicative of the fact that there is 98% chance that the marketing plan would be completed within 1 year and 59 days. Having completed the network analysis/PERT and having determined the probability of completing the marketing plan within the time frame of 1 year and 90 days the next logical step is to briefly discuss the implementation issues.

## 5.8 IMPLEMENTATION PLAN

Implementation is the key stage in achieving a successful new system. It must be carefully planned and controlled. It requires organising and coordinating people, resources

and activities. The project would start with the appointment of the marketing committee by management and ends with the launching of the product. The network diagram of the project is presented in Fig 5.1 above.

It would be the duty of the committee to coordinate all the marketing activities during the plan period. The committee would submit progress report to management; and there would be continuous feedback between management and the committee during the planning period.

To meet the database requirements of the proposed system staff from the ESTC and S&T operational institutions and centres should be trained in data inputting and document analysis using the PADIS format on a CDS/ISIS platform. This should be followed by the creation databases. The progress of database creation at S&T institutions should be closely monitored and there should be feedback from time to time. A phase by phase approach is recommended for retrospective conversion. Initially the thrust would be on materials acquired during the last 5 years as these years were characterized by aggressive collection building with the easing of foreign currency restrictions.

Additional hardware could be acquired stage by stage as the creation of databases progresses as it would not be immediately required. Programs to interface the system should be created as a matter of priority.

The survey results revealed that staff had deficiencies in marketing principles. Staff should be given in-house and other specialised training in marketing principles in order to implement the marketing plan. If deemed feasible a person with marketing as a major component of training should be recruited to be in charge of the implementation program.

When retrospective conversion for the projected period is over the system should be test marketed to determine acceptance by users in a realistic marketing environment.

this would also help to measure the level of utilisation and the potential that the product could achieve. The time of test marketing is also the ideal time to test the effectiveness of the promotional strategies. If the market testing is successful preparations should be made for the launching of the product on the occasion of the World Information Day, which is organised annually by the ESTC.

To achieve the objectives and benefits expected from the new product it is essential for people involved in implementation to be confident of their roles in the new system and its effects on the organisation in being able to carry out effectively their specific tasks.

The probable risks for product development are the need for capital investment, increased development, design and production costs. To minimize the risks evaluation of progress and alternative sources of funding for the program should be actively pursued. However, the risks involved (Ansoff 1957) in product development for existing markets are moderate to high. If the implementation is successful the long term impact of the plan would be a high return on investment for the organisation.

## 5.9 EVALUATION AND CONTROL.

Once all components of this plan are in place and functioning the question to ask is: How is this plan working? Evaluation and control are important components in a comprehensive marketing plan. An ongoing control system should exist to examine performance. Marketing audits are highly recommended for this purpose, and it would involve a systematic, critical and unbiased review and appraisal of the basic objectives and policies of the marketing function and of the ESTC, methods, procedures and personnel implementing the plan and achieve objectives.

The basis for performance evaluation would be the objectives. Through them the validity of achieved performance during the planning period could be evaluated. Variance in projected utilisation rate and expenditure should also be considered. Actual utilisation rate is not only a reflection of the LIS' marketing activity, but also a reflection of the environmental conditions within the market.

Utilisation should also be assessed in terms of the LIS' share of the total information market. Market share analysis would give an indication of whether the LIS is gaining or losing ground. Expenditure analysis would involve the review of total expenditure versus budget and review of expenditure/utilisation rate. A complaint and suggestion system would also be in evaluating performance and quality of service.

By way of concluding this report a word of caution is in order. A marketing plan is not a strait jacket, it is a framework of action. The planning process is not a one trip through the steps. Planning is circular, progressive and interactive procedure. As such, it requires regular reviews and monitoring by management. Revisions and updates should be expected, and the goals should be a workable plan that would improve the marketing performance.

Good planning begins by using detailed information and forecasts about each part of the LIS' activities, to generate new ideas. These ideas are then consolidated, generalised and processed upwards through the hierarchy. At the top level they will form part of the input into the setting of broad strategies. These strategies would then be expanded into increasing detail and gradually worked back down the hierarchy with a few iterations on the way.

## CHAPTER SIX

### CONCLUSION AND RECOMMENDATIONS

#### 6.0 INTRODUCTION

Having presented the statement of the problem, objectives of the study and scope and limitations in Chapter 1; discussed the literature review in Chapter 2; portrayed the existing situation in LIS in SSA in Chapter 3; presented the market survey results and the marketing plan model in Chapter 4 and 5 respectively this chapter gives the conclusion and recommendations drawn from the study.

Several broad conclusions can be drawn about the application of the marketing concept in LIS in SSA in order to increase awareness and utilisation of existing information services and products. No serious controversy remains among marketing scholars as to whether or not nonprofit marketing belongs in the general field of marketing. It is clear from the literature that the concept can be adapted for strategy development in nonprofit organisations like the LIS.

In this study it has been stated that the marketing concept in LIS is not only applicable to the developed world, but it is also applicable to SSA. The general conclusion is that, it is desirable to apply the marketing concept to LIS in SSA. The other conclusions, and recommendations of this study are presented in following sections of this chapter.

#### 6.1 SUMMARY AND CONCLUSIONS

The survey findings revealed that most of LIS in SSA neither have marketing plans nor

any marketing strategies. This is partly explained by the fact that most LIS in SSA are manned by people with little or no training in marketing principles. This could explain the lack of the integration of the marketing concepts in the management of LIS in SSA. The situation is aggravated by lack of documented examples of LIS marketing that management could draw from. The literature review done during this study revealed that most of what has been written on LIS marketing does not draw from concrete examples.

The lack of training in marketing concepts seems to explain why there is little appreciation of marketing and, hence, the lack of any marketing plan in most LIS in SSA. It seems the training in this discipline has a bearing on the understanding of marketing. Most respondents failed to see marketing as anything beyond producing brochures, newsletters and a bit of public relations. Promotion and other aspects of marketing are confused with the marketing plan and hence the marketing related work done in LIS in SSA has concentrated on elements of marketing.

The study also found out that most LIS in SSA have information products and services that could be offered to actual and potential users, despite the fact that some collections are small and rather out dated. These information products and services are under-utilised. The fact that users studies are not conducted regularly suggests that user needs are not a central concern to the management of LIS in SSA. The scenario in LIS in SSA begs the conclusion that most investment in the information sector has gone into capacity building at the expense of addressing the utilisation factors.

The study revealed that the problem is not the availability of users. The survey of the users and potential users of the ESTC LIS revealed that their information needs are not being adequately met at their respective institutions. Lack of adequate information is hampering the work of most surveyed respondents. So the adequacy of information and level of self sufficiency among the actual and potential users does not seem to be the

explanation for the low level of utilisation.

Furthermore, the utilisation factors seem not to be largely affected by the location of the LIS. In any case given the budgetary constraints in most SSA countries, it would be difficult to address the physical location of the LIS without incurring some costs.

The survey of the information infrastructure in SSA revealed that a lot of technological changes are taking place. These changes have opened more avenues for accessing information. This threatens to erode the role of LIS as information providers. This threat comes at a time when many governments in SSA, as funding bodies, are cutting down on public expenditure.

For LIS to survive in these turbulent times there is need to adopt new strategies. As resources are limited, marketing could help in their allocation as well as justifying the existence of the LIS.

The case study results suggest that the level of utilisation is positively related to the level of awareness of the existence of the LIS. In the absence of any user studies and marketing strategies in most LIS in SSA it means that the users are not fully aware of the information products and services being offered by the LIS and if they are aware the probability is that they do not match their needs is very high, hence, they do not utilize these services.

## 6.2 RECOMMENDATIONS.

From the findings of this study some recommendations are made. The recommendations are divided into those that are generally applicable to SSA and those that are specific to the ESTC. The recommendations for SSA are:

- (1) If the resources are to be fully exploited and the needs of legitimate users of the

service met in the most effective way, then proper marketing plans and strategies must be developed.

- (2) User studies should be the hallmark of the LIS' operations. This would enable the information professionals to determine the information needs of the users and then tailor the available information to their needs.
- (3) The use of marketing models should be encouraged as this would help the information professionals get information needed to keep the LIS users and upper management aware of the value of LIS<sup>13</sup>.
- (4) The LIS should be improved through restocking with current and relevant materials. The development of a huge library collection would be, however, expensive and should be discouraged, instead co-operation with other S&T operational institutions and centres in making timely information available should be actively pursued.
- (5) To avoid duplication and a waste of resources, a policy should be set on what materials should be acquired and indexed by each LIS in the country.
- (6) The effect of the technological changes in IT are evident in SSA. For LIS to survive they have to offer products that would not be overtaken by developments in IT.
- (7) The staff establishment of LIS in SSA should have at least one person with a strong component of marketing in their field of specialisation.
- (8) Realistic budgets should be provided for the LIS to cover all regular and irregular expenditures.
- (9) Depending on the conditions in each country it is recommended that the marketing model suggested in this study be applied with some applicable adjustments.
- (10) The idea of charging for information services and products should be actively

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<sup>13</sup> *The use of models would give birth to the idea of a marketing information systems in the LIS world.*

pursued so that LIS can operate on a cost recovery basis and, hence, survive in these turbulent times.

The recommendations for the ESTC are:

- (i) The formation of a marketing committee, a body which has been proposed for implementing the marketing plan at the ESTC, should be expedited.
- (ii) Legislation should be put in place to ensure that all S&T operational institutions and centres submit details of all their newly acquired materials.
- (iii) A courier service should be introduced at the ESTC for the physical delivery to users of original or photocopies of full texts of required materials and holdings to the ESTC.
- (iv) The idea of pricing information should be actively pursued once the marketing plan is in place.

What should be borne in mind is that as with other managerial tools marketing planning is not a panacea-it does not cure all ills. Indeed in itself it does not solve any problems, but it does provide tools that focus on the client's needs and the strategies to be adopted by an organisation to meet those needs. In a nutshell marketing should be adopted because of its:

- (i) orientation to overall satisfaction of user needs; (ii) usefulness in identifying actual and potential users of the LIS (iii) usefulness for providing diagnostic information; (iv) usefulness in providing a basis of comparisons across a range of LIS; and (v) usefulness in predicting overall variance in the performance of the LIS.

If the LIS in SSA are to be a responsive organisations, one whose primary objectives relates to satisfying the information needs of its real or potential users, then information professionals would do well to consider the contribution which a marketing programme could make to the achievement of that objective. Such an approach would ensure that LIS are not left out of the emerging Africa's information society.

### 6.3 IMPLICATIONS OF THE STUDY

Most of LIS literature discusses marketing planning in generic terms. Most literature concentrates on the need to implement marketing and very little at all is mentioned on what approach to follow and what resources would be needed to implement a marketing plan.

Most models and plans in literature do not use the project planning and control techniques currently in use, viz, network analysis/PERT. Building upon previous studies, this study used a combination of portfolio management techniques and networking analysis to suggest a practical marketing model. Given the paucity of documented examples of LIS marketing in SSA, it will go a long way in filling some gaps.

It is hoped that these findings have provided a conceptual framework for a better understanding about the marketing strategies in LIS in SSA. It is also hoped that the model suggested in this paper will serve as a basis for future research in the area of marketing strategies for LIS in SSA.

It should, however, be pointed out that future studies should try to cover all types of LIS in SSA if time and resources allow. This would give comprehensive information as opposed to the generalisations presented in this study. In the first instance a region by region approach is recommended. Since the marketing concept seems to be new in the LIS in SSA, any future studies should consider the possibility of making site visits to some of the LIS in order to get a more informed picture of the situation and to be able to explain new and confusing concepts to the prospective respondents. Future studies should also consider some other approaches to modelling that can be used to test the robustness, feasibility and desirability of marketing plans, such as marketing experimentation and programming .

For the purpose of the case study, that is, ESTC any future study should try to get up to date databases to use as the sample frame. This could help to confirm or refute the general conclusions of this study.

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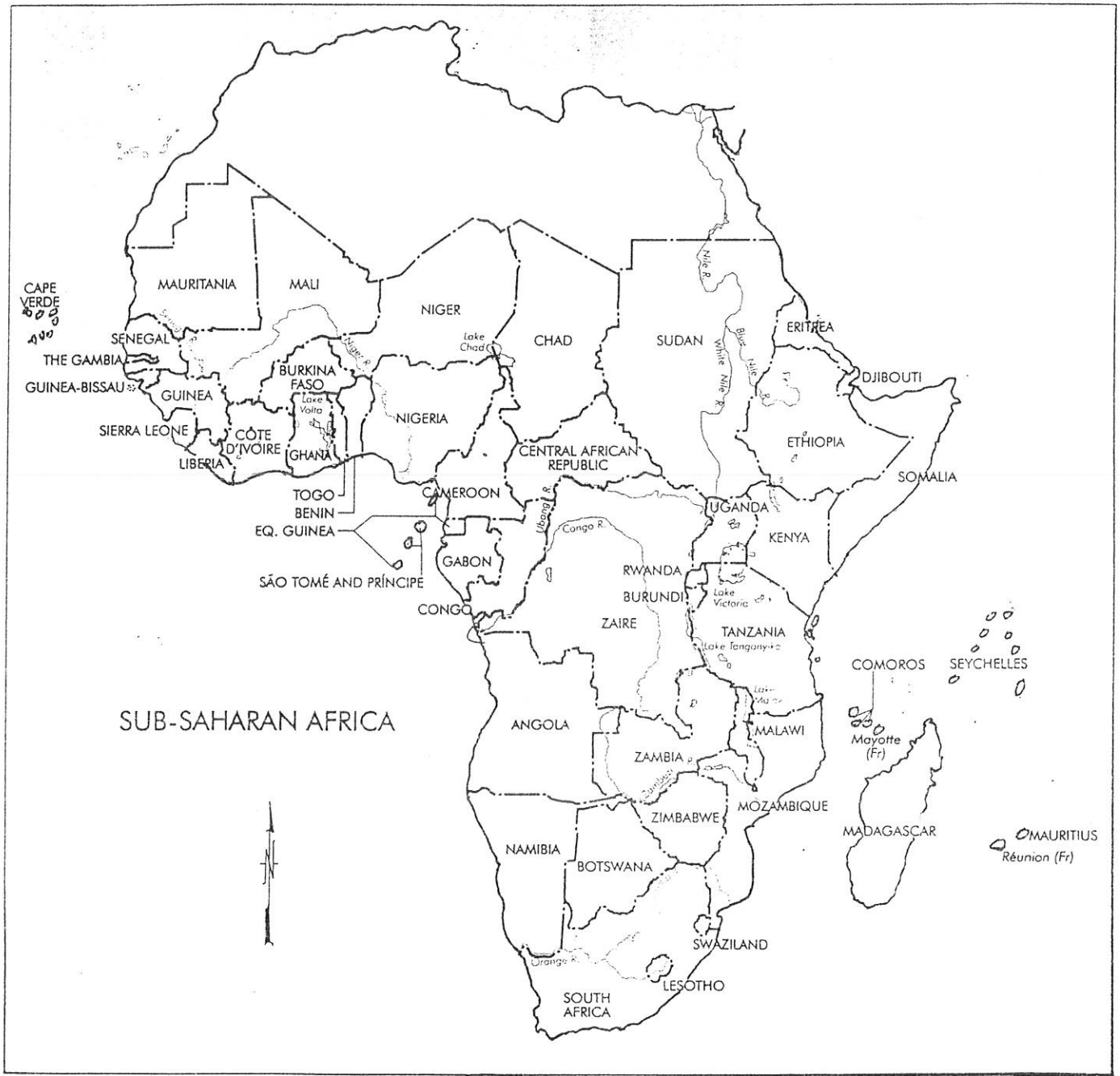
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APPENDIX II: MAP OF SUB SAHARAN AFRICA

IBRD 22922R3



WORLD BANK (1996)

APPENDIX III: ADDRESSES OF SCIENCE AND TECHNOLOGY INSTITUTIONS  
IN SUB SAHARAN AFRICA THAT WERE SURVEYED

1. National Council of Scientific and Technological Research (CNRST), Centre beninois de recherche scientifique et technique, B.P. 03-1665, Cotonou, Benin.
2. Direction générale de la recherche scientifique et technologique, Ministère de l'enseignements superieur et de la recherche Scientifique, B.P. 7192, Ouagadougou Burkina Faso.
3. Center National de la Recherche Scientifique et Technologique, Bujumbura, Burundi.
4. Ministry of Scientific and Technical Research, P.O.Box 1457, Yaounde, Cameroon.
5. Centre National d'Appui a' la Recherche, B.P. 1228, N'Djamena, Chad.
6. Centre National de Recherche et de Documentation Scientifique(CNDRS), B.P 169, Moroni, Comoros.
7. Direction Generale de Recherche Scientifique et Technique, Republic du Congo, B.P. 2499, Brazzavile, Congo.
8. Ministere de la recherche scientifique, B P V 151, Abidjan, Côte D' Ivoire.
9. Institut Superier D' Etudes et de Recherche Scientifiques et Techniques(ISERST), B.P. 486, Djibouti.
10. Ethiopian Science and Technology Commission, P.O.Box 2490, Addis Ababa, Ethiopia.
11. Council for Scientific and Industrial Research, Ministry of Economic Planning and Industrial Development, Central Bank Building, Banjul, Gabon.
12. Ghana Scientific and Technological Information Network(GHASTINET), Council for Scientific and Industrial Research, P.O. Box M.32, Accra, Ghana.
13. National Guinean Institute for Research and Documentation, Secretariat d'Etat, de la

- culture et de la recherche scientifique, Division of Scientific and Technological Co-operation (DMRST), B.P. 561, Conakry, Republique de Guinne.
14. National Council for Science and Technology, P. O Box 30623, Nairobi, Kenya.
  15. Director of Science and Technology, Private Bag A23, Maseru, Lesotho.
  16. Ministère de la Recherche Scientifique et Technologique pour le Développement(MSSTD), B.P. 694, Antananarivo, Madagascar.
  17. National Research Council of Malawi, P.O.Box 30745, Lilongwe 3, Malawi.
  18. Centre national de recherche scientifique et technologique(CNRST), B.P.3052, Bamako, Mali.
  19. Science and Technology Division, University of Namibia, P.B. 13301, Storchstreet, Windhoek, Namibia.
  20. National Council for Scientific and Technological Research(CNRST), Centre d'information et de documentation economique et sociale(CIDES), Ministere du plan, B P 862, Niamey, Niger.
  21. Nigerian Council for Science and Technology, PMB 12793, Lagos, Nigeria.
  22. Directeur, Recherche Scientifique et Technologique, Ministere Enseignement, Superieur Recherche et Culture, B.P. 642, Kigali, Rwanda.
  23. Centre national de documentation scientifique et technique(CNDST), Ministere du plan et de la cooperation, B.P. 3218, 141, rue de Bayeux et Emile Zola, Dakar, Senegal.
  24. Centre for Industrial, Scientific and Technical Information and Documentation, National Development Council, P.O.Box 656, Victoria, Seychelles.
  25. Director, Department of Arts, Culture, Science and Technology, Science and Technology Branch, Directorate of Meta-information, Private Bag X894, 0001 Pretoria, South Africa.
  26. National Documentation Center, National Council for Research, P.O. Box 2404,

Khartoum, Sudan.

27. Director General, Tanzanian Commission for Science and Technology, P.O.Box 4302, Dar es Salaam, Tanzania.

28. Institut National de la Recherche Scientifique(INRS), B.P 2240, Lome, Togo.

29. Executive Secretary, Uganda National Council for Science and Technology, P.O.Box 6884, Kampala, Uganda.

30. Director, National Council for Scientific Research, P.O.Box CH 158, Chelston, Lusaka, Zambia.

31. Scientific and Industrial Research and Development Centre(SIRDC), P.O.Box 6640, Harare, Zimbabwe.

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#### APPENDIX IV: REGIONAL SCIENCE AND TECHNOLOGY INSTITUTIONS IN SUB SAHARAN AFRICA

1. African Centre for Technology Studies(ACTS), P.O.Box 45917, Kenya, Nairobi.

2. African Regional Centre for Technology(ARCT), B.P 2435, Dakar, Senegal. E-mail: ARCT@Sonatel.Senet.net.

3. African Science and Technology Exchange(ASTEX), P.O.Box 10382, Kampala, Uganda. Email: ASTEX@mukla.gn.apc.org.

4. Pan African Development Information System(PADIS), P.O.Box 3001, Addis Ababa, Ethiopia. E-mail: eca@padis.gn.ap.org

5. United Nations Educational and Scientific Organisation Regional Office for Science and Technology in Africa(ROSTA), P.O.Box 30592, Nairobi, Kenya. E-mail:uhdla@frunes21.earn.

6. The African Technology Policy Studies Network(ATPS), IDRC Regional Office for

APPENDIX V: QUESTIONNAIRE FOR COLLECTING INFORMATION ABOUT THE MARKETING OF SCIENCE AND TECHNOLOGY INFORMATION IN SUB SAHARAN AFRICA.

INTRODUCTION.

I am a graduate student of the School of Information Studies for Africa at Addis Ababa University in Ethiopia, carrying out a research project, as a requirement for the successful completion of a Master of Science degree program. The study is on "The marketing of science and technology information products and services in sub Saharan Africa: A case study of the Ethiopian Science and Technology Commission." Marketing aims at understanding the needs of the users and adjusting the services and products of the library and information service(LIS) to meet the identified needs in order to ensure the survival and viability of that LIS. The application of the marketing concept in library and information services would lead to better utilisation of information and information services by the society.

The information that you give in this questionnaire would help me to appreciate the extent to which information services and products are marketed at your institution. I would appreciate it therefore if you could take a few moments of your valuable time to answer the following questions. Thank you in advance in anticipation of your cooperation.

Instructions to filling the questionnaire.

- i) Use the spaces provided to write your answers to the questions. You may use additional paper where the space provided is not enough.
- ii) Do not leave blank spaces. Where the question is not applicable please indicate.

I BACKGROUND DATA.

1. Country:.....
2. Name of institution/department.....
3. Year of establishment .....
- 4 Is there a library/information centre? If yes give details of its name and year of establishment if different from 2 and 3 .....

5. Objectives and subject coverage of the library/information centre .....
6. Name of sponsor/parent body .....
7. Mandate of parent institution .....
8. Name and title of person filling this questionnaire.....
9. Present address:  
Office(including E-Mail).....
10. Date.....

## II. MARKETING OVERVIEW.

11. Does your library/information centre provide any of the following services? (Tick one or more choices where appropriate).

- Current Awareness Services (Informing users in general of new publications received) through:
- Display or circulation of new items received.
  - Display of list showing new items added to the collection.
  - Selective dissemination of information (i.e giving specific information to individuals about new developments in their field of specialisation).
  - Circulation of Contents Page.
  - Literature searches of databases on CD-ROM discs.
  - Literature searches from local bibliographic databases.
  - Question and answer services (where one asks questions for specific required information).
  - Reprographic services such as.
    - Photocopying/xeroxing documents.
    - Microfilm/fiche reproduction.  Photography.
  - Newspaper clipping services.
  - Reference services.
  - Translation services.
  - Others(Specify) .....

12. Does your library/information centre use any of the following bibliographic information formats?  Yes  No. If YES tick the appropriate from the list

- Machine Readable Catalogue(MARC).
- The Common Communication Format(CCF).

- The Microcomputer Based Bibliographic Information System(MIBIS).
  - The Pan African Documentation System(PADIS).
  - Other(Please specify) .....
13. Indicate institutions or individuals whom you share information resources with at
- (a) National level .....
  - (b) Regional level .....
14. Does your institute have any computer facilities?
- Yes       No
15. If yes for what purposes are computer facilities used?
- Bibliographic/library database management.
  - Word processing.
  - Others (please specify) .....
16. Which of the following software is available at your institute? Tick the appropriate.
- CDS/ISIS    Dbase    Rbase    Fox Pro    Paradox
  - Others(Please specify) .....
17. How often do you carry out user needs assessment? Tick the appropriate answer in the provided box.
- once a year                       more than once a year
  - once in two years               irregularly
  - never                               other specify .....
18. Do you market your information services and products?.....
19. Do you have a marketing plan? If yes give details .....
22. Does your organisation appreciate how marketing can influence the use of services?  
.....
21. Do you see the need to market your services? Explain your view.  
.....
22. How many members of your staff have training in marketing? Please give details of their training if there are any. ....
23. Do you have a marketing budget? If yes what percentage of the total institutional budget is allocated to marketing? .....

### III. PRODUCTS AND SERVICES.

24. What are the principal publications produced by your institution/library? Please fill

in the details in the table below.

<u>Publication</u>	<u>Frequency</u>	<u>Intended recipients</u>	Research Reports
Annual Reports			
Newsletters/Journals			
Accessions Lists			
Directories			
Bibliographies			
Other (Specify) .....			

25. What is the commonest form in which you disseminate information to users?

- Full length original document.
- Abstract of original document.
- Bibliographic citations from databases.
- Critical review of original document.
- Other (Specify) .....

26. Before introducing a product or service, marketing requires that a user survey (market research) be conducted before any product is introduced. How important is this consideration in introducing new products at your institution?

- Not at all important  somewhat important
- neither important nor unimportant  somewhat important
- very important

27. Among the products/services you have ticked in question number eleven and twenty four list four mostly used ones? .....

28. Which product/ service is least used? .....

#### IV. USERS AND POTENTIAL USERS.

29. Who are the users of your library/documentation Centre?

- Research Scientists.  Consultants.
- Administrators.  Industrialists.
- Teachers.  Lecturers.
- Students
- Others (Please specify) .....

30. List in order of priority the three major users of your library/information centre from the categories above. ....

31. Do you maintain user profiles?  Yes  No. If yes give details of items of information included in a user profile. ....
32. Approximately how big is your user population?  
 Between 1 and 100  Between 101 and 1000  
 Between 1001 and 5000  Between 5001 and 10 000  
 Any other please specify .....
33. Indicate approximately how many people use the library/information centre facilities in any given month .....
34. What are the sources of information for your library/information centre (indicate the appropriate answers).  
 Gifts.  Inter-library loans (National/international).  
 Photocopies from other libraries.  Purchase and subscription.  
 Other (Please specify) .....

#### V. COMPETITIVE ANALYSIS.

35. How well is the library or information centre performing in contrast to other information centres in the country? .....
36. What do other information centres do better than you? .....

#### VI. PRICE, LOCATION AND PROVISION PRACTICES.

37. Do you charge for any of your library/information services?  Yes  No. If yes please give details .....
38. How do you establish prices? .....
39. How does the location of your information centre affect the level of usage? .....

#### VII. STRENGTHS AND WEAKNESSES.

40. What is your information service strong at? .....
41. What is your information service weak at? .....

#### VIII. ADVERTISING AND PROMOTION.

42. How do you promote your information services? .....
43. Do you have an advertising and promotion budget? If yes what percentage of the

whole marketing budget is it? .....

44. Please furnish any other information or comments you might want to draw my attention to concerning your marketing activities. ....

Thank you for taking your time to complete the questionnaire.

Please mail the completed questionnaire and any information to: Mr Patrick Ngulube, SISA, Addis Ababa University, P.O.Box 1176, Addis Ababa, Ethiopia. E-Mail PNgulube@padis.gn.apc.org.

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## APPENDIX VI: SURVEY OF INFORMATION MANAGEMENT AT ETHIOPIAN SCIENCE AND TECHNOLOGY COMMISSION.

### INTRODUCTION.

This questionnaire was designed to collect information about the capabilities of your institution. The information you give would supplement the questionnaire you completed on the marketing of science and technology information in Sub Saharan Africa.

The information you provide would give me a picture of how you manage your information products and services. This would help me in designing an appropriate marketing model that could be applicable to an African environment. I would appreciate it therefore if you could take a few moments of your valuable time to answer the following questions. Thank you in advance in anticipation of your cooperation.

### Instructions for filling the questionnaire.

1. Use the spaces provided to write your answer to the questions. You may use additional paper where the spaces provided is not enough.
2. Please print your answers or tick in the box where necessary. If the question does not apply, do not leave it blank, please indicate N/A for 'not applicable'.

### I IDENTIFICATION DATA.

1. Name and position of Respondent:.....
2. Name of Information System (Library\Documentation and Information Centre) .....

## II. INFORMATION SERVICES.

3. Indicate the size of the information system collection in the table below:

ITEM	1994	1995	1996	1997
a. Books				
b. Periodicals				
c. Reprints				
d. Research and technical reports				
e. Maps				
f. Microfiche/microforms				
g. Patents				
h. Standards				
i. Government documents				
j. CD-ROM databases (international)				
k. Ethiopian Publications				
l. Theses and dissertations				
m. Other (specify)				
TOTAL COLLECTION				

## III. STAFFING

4. Indicate the size, qualifications and responsibilities of the professional staff in the table below.

Category of Professional staff	Numbe-rs	Qualifica-tions	Responsib-ility
a. Librarians			
b. Documentalists			
c. Information Scientists			
d. Computer/Data processing specialists			
e. Others (specify)			
.....			
.....			
.....			
TOTAL NUMBER			

5. Classification scheme used.

Library of Congress       Dewey Decimal Classification

Colon Classification       Other(specify) .....

6. Vocabulary control device used.

Library of Congress       Sears List       Thesaurus (specify name) .....

Other (please specify) .....

7. Method of indexing

Subject       Title       Author

Other (please specify) .....

IV. INFORMATION AND COMMUNICATION TECHNOLOGY.

8. Describe the information/communication facilities that are available in your institute in the table below

ITEM	No.	Model	Date	Main memory	Oper-Syst.	Remarks
Computers						
Laser Printers						
Dot-matrix Printers						
CD-ROM drive						
Microfiche readers						
Stabilizer						
UPS*						
Scanners						
Generator						
Telephone line						
Fax machine						
Telex						
Radio						
Modem (E-Mail)						
Other (Specify)						

\* Uninterruptable power supply

9. Where are your computer facilities located?

Within the library/documentation/ information centre and used exclusively for library work.  Within other departments in the parent institution and are shared with other department(s).  Within other departments in the parent institution and cannot be shared.

Other (please specify) .....

10. Have you or any of your library staff received any training in library application software?  Yes  NO. If yes indicate below the names of staff and nature of training received.

Name

Type of training

1.

2.

11. Is your institution/library on E-Mail?  Yes  No

V. CO-OPERATION/NETWORKING

12. Does your library participate in any co-operation/networking activities?  Yes  No.

13. If YES what type of co-operation do you undertake? Tick the most appropriate

- Information transfer through publications
- Resource sharing      Networking
- Sharing information from databases
- Information exchange      Selective Dissemination of information
- Interlibrary loans      Union catalogues
- Reprographic services      Bibliographies

14. What kind of information do you exchange/share? .....

15. If your library does not participate in a network, would you wish this to happen?

Yes      No

16. Do you think that the use of E-Mail to connect your institute to others would facilitate in dissemination and sharing of information?  Yes  No Please briefly explain. ....

VI. DATABASES

17. Describe the home grown databases in use in your library/documentation centre (if any) in the table below

Name of database	Date Developed	Software	No. of records	No. of searches per month

18. Describe the CD-ROM databases in use in the table below.

Name of Database	Years Covered	Subject Scope	Search per month	Any Remarks

19. If you have databases, how often do you conduct literature searches for your users?

- Never      less than 5 times a month
- 6-20 times a month      21-40 times a month

- more than 40 times a month
20. Do you face any problems when disseminating information from databases?  Yes  
 No Explain your answer .....
21. How do you rate the methods that your library/documentation centre is using to disseminate information to users?
- Effective     Efficient     Very effective     Very efficient  
 Partially effective                       Fairly efficient  
 Ineffective                                       Inefficient
- Please indicate the reasons for inefficiency and ineffectiveness in any .....
22. Do you face any problems when disseminating information to users?  
 Yes     No. Please explain your answer .....
23. If YES how would you propose to alleviate these problems? .....
24. Thank you once more for taking your time to complete this questionnaire. Is there any other information or comment you would like to make in connection with information management at your institution? .....

Please mail this questionnaire to:

Patrick Ngulube. Addis Ababa University, SISA, P.O. Box 1176, Addis Ababa. Ethiopia.

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APPENDIX VII: SURVEY OF THE INFORMATION NEEDS OF THE USERS OF THE LIBRARY AND DOCUMENTATION SERVICES AT THE ETHIOPIAN SCIENCE AND TECHNOLOGY COMMISSION (ESTC).                      USER NEEDS  
 No.[ ]

INTRODUCTION.

I am a graduate student of the School of Information Studies for Africa, at Addis Ababa University in Ethiopia, carrying out a research project, as a requirement for the successful completion of a Master of Science degree program. The study is on "The Marketing of Science and Technology Information products and services in sub Saharan Africa: A case study of the Ethiopian Science and Technology Commission(ESTC)."

The information you provide in the questionnaire will give me a picture of your information needs. This would help me to design an appropriate marketing model that could be applicable to an African environment. I would appreciate it therefore, if you

could take a few moments of your valuable time to answer the following questions. Thank you in advance in anticipation of your cooperation.

Instructions for filling the questionnaire.

1. Use the spaces provided to write your answer to the questions. You may use additional paper where the spaces provided is not enough.
2. Please print your answers or tick in the box where necessary. If the question does not apply, do not leave it blank, please indicate N/A for 'not applicable'.

I IDENTIFICATION DATA.

1. Name of Respondent: .....
2. Present Address of the institution you are affiliated to:  
Office (including phone and E-Mail) .....
3. Main Subject Field: .....
4. Educational qualifications. Please indicate in the appropriate box.  
 PhD. degree.     Master's degree.     Bachelor's degree.  
 Diploma         Certificate  
 Other level (Please specify) .....
5. Name the language(s) in which you are able to:  
a) Read and understand .....
- b) Translate from .....
6. Which of the following describes the category of work you are currently involved in at your institution?  
 Research.     Consultancy.     Management or Administration.  
 Production.  
 Teaching & research     Extension and liaison.  
 Others (Please specify) .....
7. Are you currently conducting any research?  Yes     No.    If yes, please briefly give details .....

II USE OF THE LIBRARY/DOCUMENTATION CENTRE.

8. Does your institute have a library or information centre?     Yes     No
9. How often do you use the library or information centre to search for information related to your work?     Everyday.     once a week.     once a month     Once

in six months.  Never.  Others (Specify) .....

### III. INFORMATION SERVICES.

10. How would you rate the services that your library/information centre at your institution provides in relation to your information needs?

Adequate  Average

Excellent  Good  Average  Poor.

11. What other source of information do you use to meet your requirements? Tick the most important source.

Reading newspapers and magazine  Attendance at conferences, seminar  Reading brochures  Radio and television  Browsing through publications  Communication with experts/fellow researchers  Use conference proceedings/workshop/seminar papers  Use bibliographies, indexes and abstracts  Other institutions

Others(specify) .....

12. Please indicate the extent to which inadequate information hampers your work. ....

13. Please use the space below to describe your priority information requirements.

Purely research(Specify discipline(s).....

Agricultural Production.  Industrial Production

Health  Environmental Protection

Others(Specify) .....

14. Are you aware of the information services offered by the Ethiopian Science and Technology Commission(ESTC) National Computer and Information Centre?  Yes  No.

15. Do you use the services available at the ESTC National Computer and Information Centre?  Yes.  No. If you do not use them explain why .....

16. After searching the database, how important is it to you to get the required (full text) information?

not at all important  somewhat unimportant

neither important nor unimportant  somewhat important

very important.

17. Some databases provide bibliographic details of a document as well as the location of the full text document irrespective of whether it is in the library collection or not. How important would be such a database in meeting your information needs?

- not at all important     somewhat unimportant
- neither important nor unimportant     somewhat important
- very important.

18. One of the advantages of a computer database is that it can provide many bibliographic references in a short time. How important is this factor in your decision to use a computer database?

- not at all important     somewhat unimportant
- neither important nor unimportant     somewhat important
- very important.

#### IV. INFORMATION SOURCES.

19. If you get materials from other sources through your library/documentation centre, how long does it take?

- 1-7 days.     8-15 days.     Within a month     More than a month.

20. What type of information services do you prefer (Tick your highest preference).

A national database giving information about the location of research materials in Ethiopia.

Reference and referral ( e.g through use of directories).

Current titles (A regularly published list of documents currently received in the library).

Selective dissemination of information, that is, current awareness information based on user interest/ project file.

Research management information services (provide managers with information for decision making, planning evaluating performance of institution and individuals).

Newspaper clipping services.     Reprographic service.     CD-ROM search services.

Other(specify) .....

21. If you were satisfied with the information services given to you would you be willing to pay for some of these services?     Yes     No

22. If yes, which services would you pay for? .....

#### V USE OF INFORMATION TECHNOLOGY.

23. Does your institute own computers?     Yes     No.

24. Are you familiar with using the computer?  Yes  No

25. Which of the following software are you familiar with?

CDS/ISIS  Dbase  Fox Pro  Paradox  Other database management and retrieval software(Please specify) .....

OTHER INFORMATION.

26. Thank you for answering the questionnaire. Please furnish any other information or comments you might want to tell me concerning your information needs and attach on separate sheet if the space provided is not enough  
.....  
.....

Please use the enclosed self addressed and stamped envelope to mail this questionnaire to:

Patrick Ngulube, Addis Ababa University, SISA, P.O. Box 1176,  
Addis Ababa. Ethiopia.

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APPENDIX VIII: REMINDER LETTER TO RESPONDENTS.

School of Information Studies for Africa, Addis Ababa University, P. O. Box 1176,  
Addis Ababa, Ethiopia.

E-Mail: PNgulube@padis.gn.apc.org.

Date.

Dear Respondent,

A few weeks ago I mailed you a questionnaire concerning the " \_\_\_\_\_ ." (Blank space filled according to the subject matter of the questionnaire). Having failed to get a response I would assume that either you have not received the questionnaire or it was lost. I am therefore, sending under different cover a copy of the questionnaire I sent to you a couple of weeks ago. I hope you will be able to receive it and mail it back to me before 15 April 1997.

Thank you in anticipation of your cooperation.

Yours faithfully, Patrick Ngulube.

APPENDIX IX: INTERVIEW SCHEDULE FOR COLLECTING INFORMATION ABOUT THE MARKETING OF SCIENCE AND TECHNOLOGY INFORMATION IN ETHIOPIA.

I BACKGROUND DATA.

1. Name and position of interviewee .....
2. Name of institution/department.....
3. Date of interview .....

II. MISSION STATEMENT

4. a) What are the objectives of your information service?  
.....
- b) Who are your main users? .....
- c) What you want your main markets or users to be.  
.....
- d) Do you have marketing objectives?  Yes  No. If yes please state them .  
.....
5. What do you offer the users?  
a) product/ service 1 ..... 2 ..... 3 .....  
4 ..... 5 ..... 6.....
- b) How are the respective products obtained?  
1 ..... 2 ..... 3 ..... 4 ..... 5 .....  
6 .....
6. Target markets(list and briefly describe in the table below).

Your product/service	Benefits it offers (wants/needs fulfilled)	Possible target markets or users
1		
2		
3		

7. Market potential(what size and potential use or other advantages do each of these have).  
.....

8. Which market segment do you think hold some promise for your organisation?  
 .....
9. How will you attain/realise your goals?
- a) Overall strategy .....
  - b) Competitive strategies.
    - i) We need to improve our competition position in these areas
      - 1 ..... 2 .....
    - ii) We need to build our competitive strengths in these areas.
      - 1 ..... 2 .....
  - c) Promotion strategies .....
  - d) Pricing, location and provision practices(Brief statement of pricing strategy,  
 location, hours and provision practices) .....
  - e) Marketing and advertising budgets .....
10. Potential problems .....
11. Any other information .....

## GLOSSARY OF SELECTED TERMS.

**Advertising:** all activities involved in presenting to a group, a sponsor identified message regarding a product or organisation through verbal or visual means.

**Critical value:** region of rejection.

**Database:** an organised collection of facts and information.

**Distribution:** a set of mechanisms involved in the flow of products from the producer to the ultimate consumer or user.

**Evaluation:** the process of determining what happened, why it happened and what to do about it.

**Experts:** persons working in those capacities, that is, as persons with scientific or technological training in any field of science who are engaged in professional work or R&D activities, administrators and other high level personnel who direct the execution of R&D activities. Gatekeepers: the people who control the flow of information within the organisation and between those who want to use it and potential users.

**Information:** data that have been put into meaningful and useful context and communicated to a recipient who uses it to make decisions.

**Information services:** all the services that the information service provide, irrespective of whether it is traditional library services or the modern information services.

**Information products:** all the information services acquired and produced by libraries and information service units to be used by their patrons.

**Infrastructure:** the institutional, physical and other supportive elements that enables science and technology to be conducted. It includes buildings and laboratory space and their maintenance, equipment and information resources, including information and documentation centres.

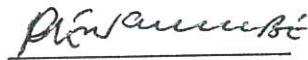
**Situation analysis:** the stage in the marketing research study that involves obtaining information about the organisation and its business environment by means of secondary and primary data.

**Standard deviation:** the square root of the average of squares of deviations, when such deviations for the value of the individual items in a series are obtained from the arithmetic average.

**Strategy:** a broad plan of action by which an organisation intends to reach its objectives.

DECLARATION

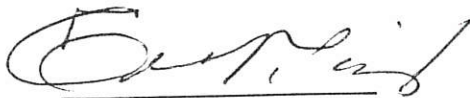
The thesis is my original work and has not been presented for a degree in any other university.



Patrick Ngulube

May 1997

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



Ato Tesfaye Biru

May 1997.