UNIVERSITY OF STIRLING

BUSINESS AND MANAGEMENT DEPARTMENT

PH D   THESIS

MUSTAFA M. NAILI

INFORMATION SERVICE PROBLEMS IN THE LESS DEVELOPED COUNTRIES WITH SPECIAL REFERENCE TO LIBYA

SUPERVISOR: PROFESSOR   T. CANNON

OCTOBER 1987

ProQuest Number: 13916364

ProQuest 13916364

A B S T R A C T

The literature on information availability and services in the
Less Developed Countries (LDCs) shows that information services
in most, if not all, of these countries suffer from many
problems such as the shortage of resources and the scarcity of
skilled and trained personnel in information and computer
disciplines. Libya as one of these nations is no exception;
planners and decision makers in Libya not only suffer from the
non_availability of data needed for planning and
decisionmaking, but defects such as poor and unreliable data
are commonly experienced.

However, literature on information services in the LDCs is quite
limited. Most of the available sources result from individual
research initiative;coordinated efforts are rare and comparative
reviews in different LDCs do not exist. The available literature
covers only some of the LDCs; many information service problems
in the LDCs may not have been identified. In addition, it is
extremely likely that the countries not yet researched will have
location specific information service problems.

Due to the absence of comprehensive research in the information
services sector, information problems in Libya have not been
identified. Accordingly, the objective of this study is to
explore the information service's problems in Libya, and to
draw some solutions to these problems.

Since the mid_seventies, a socio_economic system has dominated
economic life in Libya. Accordingly,during the last decade all
domestic organizations and establishments are owned by the

public sector. Therefore, the primary sources of the required data of this study are limited to the users of manpower data from the public sector in the country.

The findings of this study revealed that the information services sector in Libya not only suffers from many similar problems which handicap the same services in many other less developed countries, but is also impaired by some other unique problems which, so far, have not been recognized as problems in any other LDCs.The low priority and the delay of information services sector development, and the lack of utilization of the available computer facilities are examples of these unique problems.

Factors such as the shortages of resources and the lack of recognition of information importance to development by high authority personnel in many LDCs are considered as major obstacles to the information services in these countries. However,in Libya, as this study found,such factors do not cause any serious problems.

With respect to the present conditions of the information services sector in Libya, and the problems that this sector faces, the establishment of a new national body for the reorganization and the development of the Country' s information services network is needed.

ACKNOWLEDGEMENTS

C O N T E N T S

LIST OF TABLES

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION

Information, as Bentley (1982) argued, has always been a vital
resource for all forms of life. Throughout history man has
improved the facilities and the techniques of handling
information. In the early days of development, information could
be sent using methods such as drums and smoke signals, with
human memory being the main storage facility for all
information.

Gradually man's ability to handle information and to communicate
over long distances improved. This has continued until the
present when information in the developed countries are
stored in a variety of computer facilities and can be received
instantaneously from the other side of the world. Nevertheless,
there are still many countries, particularly the less developed
countries (LDCs) suffering from the lack of sufficient and
reliable information, especially information needed for the
planning and decision_making functions in these countries.

The basic premise of this research proposal is an
investigation of the information services problems in the
less developed countries with particular focus on manpower
information services in Libya. In order to carry out this work
certain steps had to be undertaken. These steps are briefly
outlined in this chapter. The aim of this chapter therefore is
to state the problem being researched and to outline the
organisation of the remainder of the thesis.

1.1 BACKGROUND TO THE PROBLEM

Before the eighteenth century there were two primary reasons
for processing data: (a) the desire by individuals to provide

an account of their possessions and wealth, and (b) governmental requirements (Burch et al, 1979). As the time passed, interest in information was enhanced by the constant growth of personally and family owned and managed firms. The developments of telegraphy, energy resources and railroads in the first half of the eighteenth century fostered the growth of family firms and built the platform for modern enterprises.

In the second half of the same century, the first modern enterprises were created to administer the operation of the new railroad and telegraphy companies (Chandler, 1977). In that period, technology permitted several processes of production to be carried on within a single factory. The new process capability led to mass and diversified factory production which subsequently led to manufacturers building their own sales and distribution networks. In these multifunction firms, the modern industrial enterprises began. The emergence of such manufacturing and services enterprises saw ownership held by scattered stock holders with the owner no longer directly managing the enterprise. On the other hand, a managerial hierarchy had to be created to supervise, coordinate and monitor the activities of these enterprises.

The career managers who were beginning to make decisions in such enterprises were beginning to look on themselves as professionals. To effectively organize and control such large and complex enterprises, managements had to build sophisticated accounting and other control systems. The construction of these control systems emphasized the need of data processing functions in the modern enterprises. Accordingly, organizations have always required systems for

collecting, storing, retrieving and distributing information. Until the early 1950's most of these information functions (Senko,1975) were performed mechanically or manually. This changed with the advent of the computer and information technology.

Computer science is a scientific discipline which has been developed as a result of war time discoveries in the first half of this century (Davis,1983). Computers, Ligon (1978) argued, were not originally planned for information processing (the ENIAC, the first electronic computer was designed for military purposes), but revolutionary changes were not seen in information services until the advent of computers. The beginning of computer implementation in business in the mid 1950's triggered the present computer_based information systems revolution. However the first generation of these systems which were developed in the late 1950's and early 1960's were characterized by the individuality of applications. As knowledge of computers and their utilization increased, organizations began to select particular aspects of the business for conversion to computerization. Wages and salary preparation, and inventory control are examples of early computerized applications. These separate computer_based systems were known as data processing systems. The early data processing applications were made to operating information systems by simply substituting electronic data processing for the older and slower electromechanical or manual data processing systems (Alexander, 1974).

Practically, separate systems are costly and time_consuming, especially from the computer programming point view. The more progressive businesses seriously considered integrating

3

the separated computer applications particularly as computers were becoming more efficient. These businesses, therefore, attempted to bring the total system concept to fruition by constructing in the late 1960's the information systems which are known as Management Information systems (MIS) (Prince, 1975).

In late 1970s the cost of computer hardware fell and at the same time, software technology improved remarkably especially by the provision of special software programmes for handling database systems (Ligon,1978). For example, the cost of the semiconductor devices that are the back bone of modern computers has declined dramatically over the past 20 years. In fact their cost has droped 99.9 per cent (Diebold,1985,p. 7). Diebold also indicated that over the past decade alone, the speed of handling transactions has increased tenfold every four years, while the cost of handling has declined by a factor of ten every four years. Along the same lines, Davis (1983) argued that the speed and reliability of electronic devices such as the computer have risen tremendously, while the size and, more important, the cost of these devices has tended to drop just as dramatically.

With the new developments of computer technology in the 1970's, more advanced information systems with unique characteristics and capabilities emerged. These systems have been referred to as Decision Support Systems (DSS). These systems focus on the use of decision models to support decision making (Watson et al,1981), and as Raho and Belohlav (1982) comment, the DSS are a vehicle to help managers to make more informed decisions.

The constant improvement in database software, the steady decline of computer hardware cost, and the potential of direct access of computers by users have combined to inspire the implementation of distributed information systems as an advanced technique of information systems implementation. During the last ten years, the implementation of the advanced models of information systems (DSS, Distributed systems and database systems) along with the use of modern computer facilities (remote terminal and mass memory) and telecommunication technology (national and international telephone networks and satellite systems), have enabled most of the industrialized countries to develop huge and complex information systems. These systems serve a wide variety of different purposes on both the national and international level. It has to be emphasised however that such developments are not found in other parts of the world, especially the LDCs.

1.2 STATEMENT OF THE PROBLEM

Information not only describes a problem and / or decision, but also serves another function for problem solver and decision maker. This function (Burch et al, 1979) is to reduce the variety of choices and the uncertainty related to these choices. Therefore, information, as Holloway (1986) argues, has always been one of the main ingredients of business processes and forms the basis for all decision_making. Menou (1984) pointed out that the value of goods and services tend to incorporate a predominant and growing share of information. He also stated that " the survival of any nation as an autonomous entity and a partner in international exchanges will depend on its capability to strengthen, expand and keep

up to date its information sector " (Menou, 1984, p.87).

There has been growing awareness in the industrialized nations,

(Galinski, 1984) that information has a value in itself. It

is considered as one of the new non_scarce raw materials for

the economies of these nations. This view of the importance of

information has led to a high demand on information and its

sources in these nations. This high demand has, in its turn,

encouraged both private and public sectors in these nations

to construct, during the last decade, many large and

technologically_ based information systems providing sufficient

and reliable information to users in different sectors of

these counries. Examples of these systems, are for instance,

the national cashline service systems in the banking sector, the

electronic bond markets, and the library and information

centre systems. As illustrated in chapter three, the Lending

Division of the British Library deals yearly with more than

two million requests from Britain alone, and a further

half_ a_million from 4000 users in over 100 other countries. The

daily transactions of the electronic bond market in Denmark

averaged in 1985 DK 10 million.

The various implementations of these systems on the national

and sectoral levels in most of the developed countries are

designed to provide planners and decision makers with the

sufficient and reliable information they need. The availability

of information to assist planning and decision making has

increased while the costs of integrating information systems

and plans have fallen.

Despite the success of many developed countries in developing

the different national and sectoral information systems, very

few developing countries have been able, as Shio (1981) pointed
out, to establish these systems. For instance, most African
countries, as Nyagn (1983) indicated, do not have formal
information systems, and Arab countries as found at the end of
the seventies have not yet considered the importance of
scientific and technological information, or the role of
information in development [Salem, 1980]. The consequence is
that most, if not all, of the LDCs have suffered and still are
suffering, as many studies have found out, from shortages of
information and the unreliability of data. For instance, Unesco
in one of its studies of information service problems in the
LDCs, found that the local basic information necessary for
formulating and applying development plans (consisting mainly
of statistical and other data on population) is either
unavailable or unused (Salman, 1981). In Nigeria, as Modum (
1983) pointed out, the Ministry of Education has no real
knowledge of the number of teachers they employ, and the
percentage increase of students registered has always been
unknown. Even though the available literature on information
services in the LDCs is limited, these examples show that the
LDCs are still suffering from the lack of sufficient and
reliable information needed for planning and decision_making
functions in these countries. The problems associated with the
poor information services in these countries are especially
acute in those LDCs in which the need to effectively mobilize
scarce resources is linked to commitment to central planning.

1.3 THE OBJECTIVES OF THE STUDY

Since the mid 1970's, the information services situation in
a number of LDCs has been researched either by international
organizations such as Unesco and United Nations or by

7

individual researchers such as Rosenberg (1982), Perez (1980) and Nyagn (1983). Most of these research efforts are devoted to problem identification and only a few of them have suggested solutions to the problems which handicap the progress of information services in the LDCs.

In the 1950's Libya was one of the poorest countries in the World. Until, the early 1970's more than 60 percent of the Libyan population were illiterate (see chapter four).Therefore Libya is without doubt one of the Less Developed Dountries, and that its information service sector may be expected to suffer from similar problems to the problems facing information sectors in many other LDCs. To my knowledge, Libya has not been researched for the same purposes and there is no study on information service provision in Libya. In particular there has been no study of the potential matching of solutions to the problems existing in Libya.

Generally speaking, information services in the majority, if not all, of the Less Developing Countries are still suffering from many serious problems, such as the poor perception of information importance in planning and decision making, the shortage of educated personnel in information field and the poor organization of information services. These problems will however vary in depth from one country to another, because different countries with different economic, political and social conditions will always have different problems. Unfortunately, research efforts that have been devoted to information services in many LDCs such as Libya are minimal, and many problems of this field have not been explored. Therefore the main objective of this study is to explore the

information service problems in Libya and to identify possible solutions to these problems. This will be achieved by both secondary and primary research. The secondary research consists in part of the gathering and classification of information service problems in the LDCs generally and a comparison of Libya to these.

The basic hypothesis is that the information services in Libya suffer from the same type of problems which are found by researchers in other LDCs.

1.4 THE LIMITATIONS OF THE STUDY

Every country needs data about its main resources and activities that enable its planners and decision makers to plan effectfely for the future development of its resources and the welfare of its people. The usefulness of available data depends on its accuracy, coverage, form and time lines. Modern societies are changing their characteristics at an accelerated rate. The quantity of information is increased as well; its flow to leaders and planners must be increasingly selective. Therefore, sophisticated information systems are required to supply key people in the society the right information. Accordingly, in the last view decades of this century, many countries, especially the industrialized nations, have developed several national and sectoral information systems which suit their resources and serve their information needs. This is especially apparent with information concerning national resources and services, such as health and education services, and manpower resources. Information concerning the national resources and services are often the most important types of information in any country, but even this is still too wide to be researched in one project. Therefore, the scope of this

study is limited to manpower information services in Libya as a special case.

The labour force is one of the major resources in any country. In each society, there are many social and economic activities that are directly affected by the availability of sufficient and reliable manpower data. For example, the future education programmes in any country can not be planned effectively unless there is enough information about the future needs of manpower; likewise to raise the quality and utilization of labour resources, reducing the cost of searching and industry staffing, sufficient and up to date manpower information is needed. At the present time, the unemployment problem in many developed and less developed countries emphasises the need of more accurate and up to date manpower information. The shortage of educated manpower in some countries, such as Libya also requires sufficient information to help these countries utilize their national manpower resources effectively, and to properly manage their resources invested in foreign employment.

Therefore, the availability of reliable and up to date information on these resources is very important to planners and decision makers of any country.

Since the mid seventies a particular social and economic system has dominated the economic life in Libya. The government nationalised all private organizations and the public sector has taken over the vast bulk of their activities since then. In Libya, education is provided to all Libyan citizens free of charge. Each Libyan after he or she finishes education is obliged to work in the public sector, and the public authority has to allocate them certain jobs. Therefore, the main user of

10

manpower information in Libya, at the present time, is the public sector and its sub_departments. Accordingly, the scope of this study is limited to the users of manpower information from the public sector.

1.5 THE METHODOLOGY IMPLEMENTED

In order to achieve the objectives of this study and to keep its scope manageable certain types of primary information have to be gathered. The source data of this information should be collected from the users of manpower information in the public departments in Libya. Because the total number of public departments is not large, a census_type investigation was carried out to cover the specified population elements (all public departments in the country) for the purpose of data collection in this study.

There is no published information which can be used to identify the officers who are directly involved in using this type of information in each public department. Therefore, the " SNOWBALL " sample technique was employed for this task.

Information gathering was built around unstructured_direct techniques. Indepth interview and open_ended questionnaires were implemented for data collection in this study. The respondents's comments in the interviews were organized and classified into several distinct topics, such as information services organization, information perception by individuals and the shortage of educated personnel in information field. On the other hand, the respondents's answers to the question_ naire were classified into a number of points such as the effect of political events on information services units and their personnel, the relation between manpower data user and provider and the availability of manpower information. These

11

points were then coded and analysed by the SPSSx programme to
tabulate and crosstabulate the respondents's comments on these
points. From the analysed respondents's views and comments,
the study hyphothesis were investigated and the conclusions
were drawn.

1.6 THE STRUCTURE OF THE RESEARCH

The contents of this thesis are organized in ten chapters.
These chapters and their contents are briefly presented as
below:

Chapter one introduces the study and is mainly concerned with
the basic issues, that is, the illustration of the research
problem, the objectives of the study and the organization of
its contents.

As with the first stage in the research, it was necessary to
have a full grasp of the theoretical issues involved in the
development of the subjects which are concerned in this study,
such as information systems and information technology.
Therefore, information, data, communication and systems concepts
are illustrated in chapter two. This is followed by the
discussion of the information systems concept, the evolution
of information systems and information systems theory. The role
of information technology in information provision is also
discussed in this chapter. Chapter two provides the back ground
knowledge necessary for understanding the implementation issues
of information systems.

From this, in chapter three the implementation of information
systems and information technology models and techniques are
discussed. This chapter includes the discussion of the national
information system concept and its role in the provision of

information in the country. Depending on the surrounding environments, individuals as well as nations vary in their perceptions of the values of any issue. Hence, developed nations see the value of information in different ways from that of the LDCs. Alternative methods for implementing and making available information services in both developed and less developed countries are discussed in this chapter. Since computer technology is both the base on which the information revolution is built and the means by which information services are being improved, computer implementation in both developed and less developed countries is also discussed in this chapter.

The review of the literature on information services in the LDCs, highlights two key factors. The first concerns the nature of problems of the information services in the LDCs, and the second reviews the solutions to these problems. From the literature two lists were prepared; one brings out the problems and the other the solutions which are open to information services in the LDCs.

Chapter three describes the present situation facing information services in developed and less developed countries in general, with attention paid to the information services in the LDCs.

The situation facing the information services in the LDCs is discussed in chapter three. The barriers to effectiveness in information systems design and implementation in these countries are identified. A structure for the analysis of these is proposed.

Based on the methodology as explained in chapter seven, and with respect to the study objectives and limitations, manpower

information services in Libya is the core subject of this research. Hence, learning about the general foundations of this resource is a prerequisite step to the subsequent stages in this research. Therefore, chapter four explains the structure of the labour force sector in Libya, and manpower development, supply and demand in the same country. Briefly this chapter explains the characteristics of labour force sector and manpower market in Libya. Beside the characteristics of manpower resources and the manpower market in Libya which are illustrated in chapter four, there are some other important characteristics, such as the availability of data and information on this resource, to be considered. Manpower is one of the major resources in any country, and information of it should constitute an important part in the national information services of any country. The secondary sources of information are used in chapter five to explain the situation facing information services in Libya in general and manpower information services especifically. Accordingly, the components and organization of the national information services network in the country are discussed.

The discussion up to the end of chapter five provides the overview of current theory, recent research by others and background information around which the present project is specified and organized.

Different countries have different problems and they need solutions which reflect their unique circumstances. Accordingly, the information services problems in the LDCs, as built up in the literature on the information services in these countries, are not necessarly found in each one of these countries. To

investigate such issues, chapter six reviews the available research methods and techniques, while chapter seven explains the method, the techniques and the tools that are needed for gathering the data needed to investigate such issue as well as assist with its analysis and the formulating of conclusions. This is needed so that the specified hypothesis of the study are tested and its objectives are investigated.

Chapter eight provides the primary source of information for the substantial empirical study of this project. This chapter seeks to explain the problems which directly impair the information services in Libya. The comments were gathered from the interviews of manpower data users in Libya were analyzed, and a number of problems concerning information services are identified. These problems are mainly of organizational, educational and planning type(s). From the same respondents, solutions to these problems were gathered.

The question to be asked now is how much do these problems vary from those found by other researchers in some other LDCs? The answer on this question, is illustrated by testing the hypothesis in chapter nine. In chapter nine, the difference between the information services problems in Libya as found by this study, and the information problems in the other LDCs as presented in the literature, is underlined. This chapter also explains how these problems can be solved within the present social and economic conditions in Libya.

Finally in chapter ten, the last chapter in this study, conclusions were drawn and further research in the field of study was suggested.

CHAPTER 2

INFORMATION SYSTEMS
CONCEPT AND EVOLUTION

In chapter one, the problem being researched by this study was stated and the organization of this thesis was outlined. As specified in the structure of this research in chapter one, the main objective of this chapter is to review the theoretical issues of the subjects concerned this study. Therefore, the clarification of information, related terms and the development of information systems as a distinct field of knowledge are the focus of study of this chapter. Hence, the contents of this chapter are organised as follows:

In section one, the key concepts of data, information and communication are clarified. A theoretical basis for the systematic communication of information functions is developed and the way in which information systems are organised is explored in section two. Information systems evolution and the emergence of information systems theory are reviewed in section three. Modern computers and telecommunication technologies have played a major role in information systems development and information services availability during the last two decades. Therefore, computer, telecommunication and data base technologies are discussed in section four.

2.1 BASIC CONCEPTS OF INFORMATION

To be able to understand and contribute to a certain discipline of knowledge, the main terms and concepts of the discipline should be first realized. Information, data, communication and systems are the main terms in the information field. Therefore, these terms are illustrated below.

2.1.1 COMMUNICATION. Human beings have developed many ways of
----
exchanging messages with each other. In early days, these were
limited to the use of tools and physical marks as means of
communication. Later, languages were devised to communicate and
latterly, mankind has added machine languages as other ways to
exchange messages. Briefly, the very character and fortune of
people lives are determined by their ability to communicate
their ideas and feelings, and to receive and appraise the
writing and speech of others.

" Communication occurs when at least one person perceives
another's words, action, or the result of these " (Nelsen, 1980,
p. 12). Communication is the process of transfering information
or data from one point to another either within an
organization or to users of information outside an organiztion.
All of the other techniques of data processing are useless
unless this one is performed adequetly. For this reason, most
data processors consider communication to be their most
challenging problem. Whether the communications within an
organization are performed via the flow of paper forms,
telephone lines, face_to_face contact, or some combination of
these, developing an effective communication system as part
of the information system is a goal toward which the major
portion of the work of the systems department strives
(Brightman and et al, 1968).

People vary in their knowledge and physical capabilities.
No one person knows everything or can do everything. Therefore
people have used each other to get things done. Thus,
successful communication is fundamental to satisfactory human
relations. Communication, and its effect on human relations

has been one of the most widely discussed problems in the world of business and industry during the last two decades (Leyton, 1968).

Good communications in fact support and strengthen any sound organisational system. " More or less communication is not the panacea for all ills, but without communication most other disciplines might fail (Leyton, 1968, p. 40).

A basic communication system may be defined as two or more distinct information_generating subsystems operating in series with each other. These subsystems may be human beings or electronic data processing equipment. Under the subsystem arrangement, the output of the first subsystem becomes the input to the second. The interface between the two is linked by the message that is transmitted [Alexander, 1974]. The emergence of large national and international organisations during the last four decades has focussed attention on communication. The consequence is that a lot of research work has been undertaken and tremendous developments have been made in this field since the work of Norbet Weiner in cybernetics in 1948 (Meetham, 1969).

During the last four decades communication methods and means have been developed tremendously, from a limited amount of messages carried by a massenger at the speed of a horse or steam locomotive to an enormous volume of data and information transmitted accurately by electromagnetic impulses at the speed of light.

2.1.2 DATA AND INFORMATION CONCEPTS. " Data and information are
----
clearly distinguishable from each other " (Holloway, 1986, p. 195). Data has definite form and has to be looked at so that information can be obtained from it. That is, data are merely

individual facts that must be combined or processed in some way in order to give them meaning.

Data, the raw material for information, has been defined by many authors as well. For instance, Davis defines data as " groups of nonrandom symbols which represent quantities, actions, things, etc." (Davis, 1974, p.32). Data is formed from characters; these may be alphabetic, numeric, or special symbols such as $ and % . Burch et al (1979, p. 4) define data as " language, mathematical, or other symbolic surrogates which are generally agreed upon to represent people, objects, events and concepts ".

Data, therefore, are merely individual facts or objects that are regarded as raw material and are combined or processed in some way so that information can be obtained from them. Briefly, information is produced from data. Data is viewed as being by nature objective, whereas information is subjective and exists only relative to a recipient.

The term "information" has been defined by many authors in different areas of knowledge. for example, Attneave (1959), as a psychologist, defined information as something which we gain by reading, or listening, or by directly and subjectively observing the world about us. In his opinion, a statement or observation is informative if it tells us some thing we do not already know. He also added that in any case people can gain information only about matters in which they are, to some extent, ignorant, or uncertain. Within this perception, Attneave defines information in another way, as that which removes or reduces uncertainty. Burch et al (1979, p. 4) defined information as " the result of modelling, formating, organizing,

or converting data in a way that increases the level of knowledge for its recipient ". Davis (1974) believes that information is an imprecise term as commonly used. He also indicated that a useful definition of information for information systems purposes is as follows: " Information is data that has been processed into a form that is meaningful to the recipient and of real or perceived value in current or prospective decisions" (Davis, 1974, p. 31).

Directly or indirectly, the above definitions of information indicate that there should be data, and the data should be analysed in a certain way so the necessary information can be obtained. Therefore, information can be defined as a subjective thing that is the result of the combining or converting of data, and which increases the knowledge of its receipient.

2.1.3 THE ROLE OF INFORMATION. " Information has always been a
----
vital resource for all forms of life " (Bentley, 1982, p. 11).
The developments in communication methods and facilities have stemmed from man's need for information in order to survive and develop his life. As time passed information was transmitted and received about many activities apart from the basic survival need. Holloway (1986) argued that information has always been one of the main ingredients of business processes and forms the basis for all decision_making. At the same time, Bentley (1982) indicated that every organization requires information in order to survive and grow, particularly when the organization is concerned with making a profit in a competitive environment. This is because information is used to reduce the risk attached to making decisions, and to increase the knowledge of the decision maker. Bentley (1982) also believes that

20

information is becoming one of the most vital resources available to the modern organisation.

Hence, organisations have always required systems for collecting, processing, storing, retrieving, and distributing information. Therefore to serve the information needs of our modern complex organizations, information systems must be well designed and implemented to support the operation, management, and decision functions of an organization.

In addition to requiring information which clearly describes a problem and/or decision, information, as Burch et al (1979) pointed out, serves other functions for problem solver and decision maker. This function is to reduce the variety of choices and the uncertainty related to these choices. Beside this, historical information helps decision makers in illuminating their perception of the future so that they can make better decisions, and helps them to criticise the accuracy of their previous decisions as well.

2.1.4 CATEGORIES OF INFORMATION. Information can be classified
----
in many ways. Two are especially relevant when one deals with information systems [Salmona,1980]. These are:

 a_ formalized versus non_formalized, and

 b_ quantitative versus non_quantitative information.

Formalized information, as Burch et al (1979) pointed out, includes, for instance, legal requirements, governmental legislation, accounting procedures and organisational budgets. Such information is found in specific internal and external information systems, manual or automated. Government agencies and financial institutions are examples of external systems. Personnel, machines and materials systems are examples of the

21

internal system from which the organization can derive
formal information.

Non_formalized information includes,as an example,judgements,
intuitions and personal experience (Stamper, 1973). The
nonformalized information flows from external sources (systems)
as well as from internal sources (the organization resources).

The classification of information as quantitative and
nonquantitative is important,because the organization, storage,
processing and dissemination of quantitative information seem
more affected by the development of computer technologies than
non_quantitative information.

Regarding information manipulation with computer, quantitative
data systems. store the data and provide means of processing
the data. Computerization has increased the capacity of storage
and processing the data, and the speed of updating and access.
At the same time, it has made it possible to link records from
different files relating to the same activity.

Non_quantitative information is generally stored separately
from its references and its abstract as in library systems. So
far, only the references of qualitative information can be
stored in automated documentation retrieval systems
(bibliographical system).

2.2 SYSTEMS CONCEPTS

The word "system" is used in many different ways, and mostly
in some specific context which provides a definition, such as
payroll system and inventory system. Because of the many uses
of the word "system", some of which are quite specific in a
scientific sense, it is difficult Bentley (1982) argued, to
produce a generally applicable definition.

Therefore, systems, as Tricker and Boland (1982) indicated,

22

have been defined in many ways, each useful in context. For instance, Higgins (1976) defines a system as a set of connected things or parts. At the same time, Atwood specifies systems as follows: " A system is a group of interrelated parts, elements, processes, functions, etc., which together accomplish some specific objective." (Atwood, 1977, pp 2).

Basically, however, every system is a conceptual way of grouping entities and functions together to enable relationships to be seen and thus understood. Therefore, systems, as Davis (1974) pointed out, can be abstract or physical.

A system, therefore, is a conceptual way of grouping functions and objects together to accomplish some specific objective (s). Systems nest together with some systems as component elements of higher order systems. This means that systems are made up of sets of components that work together for the overall objective of the whole.

Thus a systems approach, Churchman (1973) argued, is simply a way of thinking about these total systems and their components. Systems relations can be identified simply by seeing any organization as one whole system. Within this type of system, a person will find that many internal systems are subjectively interrelated. For instance, a manufacturing company as a whole system, basically is composed of small systems or subsystems. Even though these subsystems are designed for different types of purposes within the same organization, ultimately, they serve the overall objective of the same organization.

Different sciences are, as Daniel and Knapp (1974) indicated, very well developed in the way they have implemented systems for their particular disciplines. To date however the

same sciences have been poor in developing or adapting systems that are of interdisciplinary use.

Systems applications are categorised by the interest of the subsystem instead of the whole system (e.g., usually we find in one firm separate systems such as personnel and payroll systems, even these systems have many factors in common). The consequence is that many systems designed prior to the 1970's (before the implementation of integrated systems) were suboptimal, because independent systems were designed for independent activities. The lack of mathematical techniques, Bertalanffa (1974) pointed out, was the main reason in the past that helped systems to be philosophical and not scientific.

2.3   INFORMATION SYSTEMS CONCEPT AND THEORY

Every organization requires information in order to survive and grow. Accordingly, every organization should have an information system which converts the data collected from routine transactions into information which directly aids the decision making ability of the organization managers. Although simple manual models of information systems have been in use for a long time, the conceptual foundation of information systems as an area of practice and academic pursuit were first expressed in 1958 by H. Leavitt and T. Whisler (Dickson et al, 1982). Information systems (management information systems) as an academic area, only started in the second half of the 1960's (Davis, 1982, p. 10). During the last three decades research work in this field (information systems) has grown remarkably and knowledge in the field is well developed.

From the many definitions of information systems that can be found in the literature in this field, the following definit_ ions are selected:

1_ the ISAC research group (Lunderberg et al, 1979, p. 1) defines information system as " a system that has been developed to create, collect, store, process, distribute and interpert information ".

2_ Langefors defines information systems as " those systems which provide information services " (Langefors,1977, p. 207).

3_ Burch et al (1979) define an information system as analogous to a production system that takes raw material and converts it into a product which is either utilized by an ultimate consumer, or becomes a raw product for another conversion phase. Likewise, an information system converts raw data into either a consumable report or an input for a latter phase of the processing cycle. Therefore, information system is a system that is designed to manipulate data and produce information required.

With regard to the concept that the transformation of data into information is the primary function of an information system,a simple model of an information system can be depicted as in figure 2.1 (Wetherbe, 1979, p. 35).

FIGURE 2.1

Information System Model
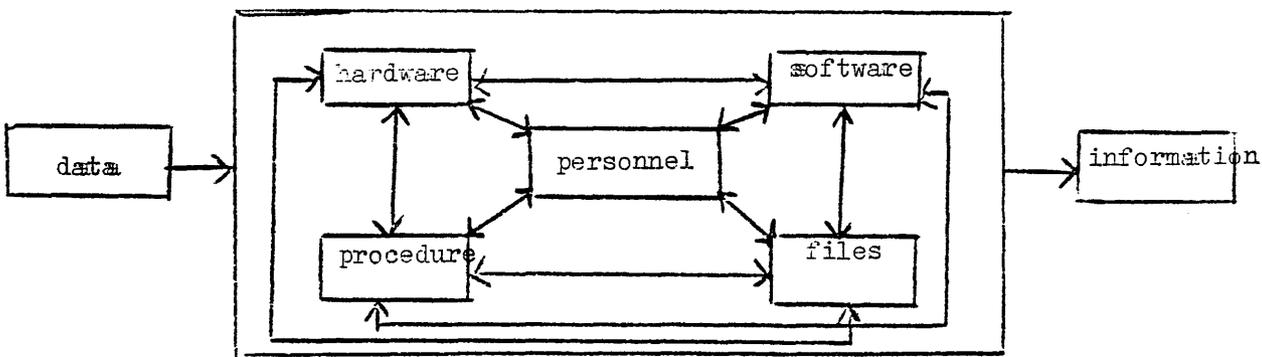
Given that a system is " a network of related procedures, the sum of which result in the accomplishment of the organization's goals " (Brightman et al, 1968, p. 59), and refering to the above definitions of information and information systems, information can be provided only if there are organized information systems that produce such information. For the information system to be able to submit the required information, it must receive data / and / or information and store, access, transform, transfer, process and evaluate them so as to produce the required information. Therefore, information systems, as Salmona (1980) illustrated, are made up of:

1_ a set of information and / or data , and

2_ the resources and methods for entering, controlling, organizing, storing, retrieving, processing and providing the information.

In this sense, a newspaper, a library and the payroll system in an enterprise are information systems. At the organization level, however, the basic task of the information system is to provide the organization's decision makers with the information they need to make decisions.

Data processing, (Bentley,1981),takes raw, unrelated data in large quantities, merges, calculates, accumulates and sorts the data, with the objective of producing information. Data processing,therefore,is the functional part of the information system which provides the tools and techniques used to achieve the information tasks of the information system. Data processing, Brightman et al (1968) argued, is not the entire system and has no proper decision_making function outside of

the information system.

2.3.1 THE EVOLUTION OF INFORMATION SYSTEMS. Information systems,

as a distinct field of knowledge, are quite a new discipline. Even though this new discipline emerged during the 1950's, information systems concepts with different levels of complexity and for different types of purposes, have been in use for a long time.

People lived on earth for many centuries before they felt the necessity for keeping records. However, development of trade and commerce and the growth of cities brought the need for more details coupled with a system for recording these details.

Before the eighteenth century there were two primary reasons for processing data: a natural desire by individuals to provide an account of their possessions and wealth, and governmental requirements (Burch et al, 1979).

In the mid_eighteenth century, when the industrial revolution took place, modern factory production emerged, and large organizations in coal, iron and machinery production, and the transportation (railroad) and communication services developed. The need for more information and formally processed data, (Burch et al, 1979), was strongly felt. These large organizations began in the 1880's (chandler, 1977, p. 247) to analyze unit costs for their specific production, and such cost data became managerial tools in these organizations.

With the passage of time, however, a systematic, orderly method of collecting vital information evolved, such as the utilization of the double_entry system of recording business information for future references.

In the past, and before the invention and implementation of

27

modern information systems techniques and computers, manual methods were the predominant techniques for data recording. Clerks were the data processors and their tools included pencils, rulers, work sheets, journals and ledgers. The complete reliance was on manual methods. Consequently the information produced was relatively inaccurate and the information service was often delayed and incomplete (Davis, 1983).

With the advent of the large factory systems and mass production techniques, the need for more capital investment forced the separation of investor from management. The consequence is that management needs more information for internal decisions, while investors need information about the organization and management performance. Accordingly, the growth of data and information processing is related directly to the growth of organizations.

Under the pressure of the organization's internal and external demands for information, the organizational view of information services has been (Burch et al, 1979) sharply changed. Information and data processing activities were not perceived, as before, just as a matter of historical data collection and report writing to face specific requirements, but as a requisite to survival and efficiency improvements.

The development of the punched card machine in the 1890's provided a major progress in arithmetic power and accuracy. Development models of these machines have been utilized by business firms as an aid in collecting, summarising and analysing data. However, the use of these facilities removed part of the burden in data processing, but implementation did not dramatically improve information system efficiency

(Senko, 1975).

Early in the 1950's data processing procedures were manually implemented and, Senko (1975) indicated, not widely used by organizations. In addition, financial accounting systems, Prince (1975) points out, represented the only formal information system. However, the development of other fields of knowledge, such as management sciences and technology was occuring. The progress of such fields has enhanced the evolution of the Management Information Systems concept.

Computers were not originally planned for information processing. Charles Babbage, as one of the computer poineers, developed a machine to compute and print mathematical tables. The ENIAC (Electronic Numerical Integrator and Calculator) as the first electronic computer was designed and implemented for military purpose in 1945 (Davis, 1983, p. 84). However, Ligon (1978) argued, no revolutionary changes were evident in information collection and dissemination until the advent of computers.

However, the first applications of computers in business were no more than a conversion of the manual method to computer processing. The consequence, is that such applications did not lead to significant improvements in the information system, or the Data Processing Systems (DPS), as they were called at that stage. The main emphasis of DPS was on processing data for specific applications, such as wages computation and inventory follow up reports. The output of these systems consisted mainly of position reports and summary reports which are often useful to operational levels only.

Late in 1950's appeared a movement toward the theoretical idea

of the " Total Systems ". Much of the literature of this era, Ligon (1978) indicated, extolled the virtues of an integrated system which combined all the elements of a business. These systems (Integrated Data Processing Systems) combine data processing jobs into integrated systems. Many of the tasks use more than one data file, and the same data often are used in more than one application. Most of the data processing activities involve the processing of transaction data, and the reports generated primarily support lower management (Watson et al, 1981).

The 1960's brought decreased costs of hardware and improvement in software. For instance, the UNIVACI computer sold for over one million. dollars in 1950's. Today, it is possible to purchase, for less than $ 1000, a complete computer system more powerful than the UNIVACI (Davis, 1983, p. 88). The national Committee on Trade and International Distribution representing more than 200 companies in the US, has estimated that its new electronic system will reduce the cost of one transaction from $ 400 to as low as $ 30 (Diebold,1985, p. 49). Early in the 1960's, the " systems " concept began to creep into literature listings. By 1964, the term " total system " and " integrated system " appeared in numerous literature (Ligon, 1978).

By the mid sixties, organization_wide information systems studies were conducted by management. At the same time many companies, as Prince (1975) indicated, recognized the need for change in their information systems. Therefore, many companies attempted to bring the total system concept to fruition. The systems designed by these companies were usually called Manag_ ement Information Systems (MIS).

The term MIS is defined by many researchers in this field. For instance, Davis defines MIS as, " an integrated, man / machine system for providing information to support the operations, management, and decision_making functions in an organization " (Davis,1974, p. 5). Demand as well as scheduled reports are, therefore, generated by these systems. These reports, however, serve only some of the information needs of middle and top management.

As late as 1971, the development and implementation of total systems,(Ligon, 1978), had not become reality. However, several attempts had been undertaken that were quite close to this goal. These attempts include, for instance, the American Airlines Reservation system, the Central Management Staff Record (CMSR) in Britain, and capital budgeting and sales forcasting systems in many large organizations in the industrialized countries.

The 1970's brought still lower hardware costs coupled with the initiation of special software (database management systems and data dictionary) for handling data bases. Along with these innovations, the possibility of integrated systems seemed to emerge. Consequently, new information systems with unique characteristics and capabilities emerged early in this decade. These systems are known as Decision Support Systems (DSS) and they focus on the use of decision models to support decision making. In another way, DSS, as Raho and Belohlav (1982) commented, is a vehicle to help managers to make more informed decisions. The information produced by a DSS consists mainly of interactive_iterative reports and unstructured reports.

Most of the research work in the information systems area,

during the decade 1965_1975, was devoted to the design, development and implementation of actual operating computerized information systems (Senko, 1975). That is the focus during this period, Barros et al (1979) indicated, was mainly on the interior component (data processing system). This work has succeeded in building a major economic base for supporting and encouraging the systematic study of information systems at the research level.

Before 1970, software developers attempted to design and implement increasingly complex systems, often seeking to make innovative use of computers and information technology. However, most of their complex systems were not successful in practice, because of reasons such as the intellectual complexity of the applications themselves, the lack of systematic organization with the end user, and the poor communication between the system developer and user (Wasseman, 1980). Consequently, the result was that the entire software and system develoment process was out of control. The proliferation of these problems made it apparent that a major cause of difficulty was the lack of a systematic approach of information systems design and development.

2.3.2 INFORMATION SYSTEMS THEORY. In the early 1970's, software
----
engineering was largely a research activity. From this software foundation came some of the most important notions of modern software development techniques, including Top_Down Design, Stepwise Refinement and Structured Programming (Wasseman, 1980). The situation of the information systems art, as it was in the early 1970's therefore, can be summarized as follows. Computer hardware was well developed and its cost was quite reasonable: computer software was improved by the emergance of modern

32

software techniques, such as data base systems and structured programming; the total systems concept was fairly well understood, and strongly demanded by businesses; and the theoretical foundations of the information systems science entered the research province. Within these conditions and with respect to the steady evolution of computer technology and its spreading implementation in the information services area, the need for a systematic approach to the specification, design and development of information systems has been expressed by both practitioners and researchers in the field (Langefors,1977; Landry and Moigne,1977; Leveson et al,1983).

The massive and spreading invasion of computers into the communication networks of social organizations,in the seventies, has stressed the importance of gaining a better understanding of those human organizations with which the computer is coupled. As mentioned above,the focus of interest had been on the technological side of these man/machine systems. However, many researchers have recognized the limitation of technology_based orientation as a guide for the conception and development of information systems compatible with the requirements of social organizations (Landry and Moigne, 1977).

Fortunately, at the same time, a new stream of research, concerned with the current state of the information systems art,has gained the significant interest of more and more people. This new type of literature is characterised by the importance given to the interdisciplinary aspect of information systems and by an attempt, if not to build a theory, at least to identify conceptual dimensions to be taken into consideration in its future elaboration (Davis, 1974; Langefors, 1977;

Stamper, 1973). These concepts include, for instance, the Economic Quantity of Information in the information system which has been discussed by Langefors (1977) and Burch et al (1974); the concept of users contribution in systems development which has been developed by the ISAC research group (Lunderberg,Goldkuhl, Nilson 1979); the Barros et al (1979) study of the interrelation between management functions and information systems in the organization; the " Systemography " approach (the process of building a model out of an object by following the rules of General System Theory) to information system development by Landry (1977); the necessity of human communication methods in the information systems development methods by Lunderberg (1977); and the "Infological" approach to information systems design task by Langefors (1977).

These conceptual dimensions are not a theory, but steps towards a theory. Yet in a world characterized by accelerated technological developments and complexity of organizations,the need for such theory is strongly felt. Such feeling has been supported by many scholers in the information discipline. For instance, in 1970 Auerbach gave a speech under the title of " The Need for an Information Systems Theory ", and Lagefors (1973) addressed a large section of his book, Theoretical Analysis of Information System,under the title of "Information Systems Theory "; the same author published in 1977 another work under a title of " Information Systems Theory ".
In the last three decades, information systems, have developed (in theory and practice) from simple Electronic Data Processing systems which process data for individual applications, and produce processed transaction data and limited summary reports, to highly integrated systems that are decision models and data

base_based constructed, and which serve all management levels with the information needed.

Computers which process and analyze data, and produce information, and telecommunication facilities which transfer data and information, are two major information technology drives in information systems progress.

2.4 INFORMATION TECHNOLOGY

Following the industrial revolution, large business enterprises, such as the Western Union which dominated the nation's telegraph network in the US, and many similar railways corporations have emerged since the 1850's. In these large national corporations, (Chandler, 1977), the administrative tasks were too numerous, too varied, and too complex, therefore, the employment of managers and specialized staff was required, and ownership and management were separated. Without communicating internal information, managers of such national enterprises could not carry out their various complex functions efficiently. Also the competition between business organizations has increased and been considered seriously by management. The consequence is that the role of the decision_making function become more serious and difficult to handle, because much data and information was required to be evaluated before decisions could be taken. Unfortunately, human information_absorbing power is notoriously limited, and the manual systems tired under these high volume conditions. Therefore, the only way of overcoming this problem is to use machines, rather than humans, with greater capacity to digest coded information. All mechanical, electro_mechanical and electronic machines (including calculators, punched card machines and all computer generations_ hardware and software)

that are used in maintaining, processing, storing or disseminating information, together with telecomunication facilities (telex, telephone, telegraph, satellite, TV cable) are what is known as " Information Technology ". Therefore,the term Information Technnology is used these days to represent a wide range of electronic means which are used in the acquisition, storage, processing, retrieval, and display of information (Gillaman, 1984).

The first contribution to information technology development took place in the 1850s when electricity was used for the first time in sending messages from one place to another close to the speed of light by telegraphy (DosWell, 1985). The second contribution was the punched card machinery which was devised by Herman Hollerith in 1890s. This machine helped in narrowing the gap by providing major improvements in arithmetic power and accuracy.

2.4.1 INFORMATION SYSTEMS AND COMPUTER TECHNOLOGY. As a result
----
of the requirements of War II, many scientific discoveries, such as operation research and technology changes, were developed. Computers are one of the scientific products that have been developed as a result of peaceful application of that discoveries. The first serious attempt to build the forerunners of today's computers was undertaken in the late 1930s by John Atanasoff in the US (Davis,1983). The machines developed in that attempt were able to perform arithmetic operations far faster than could be done by any other means available at that time.
Throughout the 1940s and early 1950s computers using vacuum tube switches (the ENIAC_ Electronic Numerical Integrator and Calculator),were developed for military and then for business

purposes.

Computers, Davis (1974) indicated,were not originally planned for information processing, but this is now the major use to which they are applied. Accordingly, the use of the first computer was in 1947, but the first computer installed for business application was in 1954 (Ligon, 1978; Davis, 1974). In the 1950s, the transistor break through made a dramatic change in computer technology development, especially by the development of large_scale integrated circuits.

In software, the Hardwire programming which accompaned the 1940s computers, was relatively quickly replaced by stored programming. In stored programming, instructions telling the computer what to do are stored within the computer itself. The 1960s brought decreased costs of hardware and improvements in software through the appearence of computer programming languages (Fortran, Cobol) and magnetic tape peripherals. There is a continual development of computer technology devices. The 1970s brought still lower hardware costs, mainly by the development of microprocesser technology which has brought about large scale reductions in the physical size of computers, and the development of special software (data base management systems) for handling data bases. Along with these innovations, computerized total information systems began to take over accompaned by sophisticated computer hardware and software such as remote job entry terminals and data base management systems. The 1970s have also seen the application of information technology to the manipulation of alphabetic rather than numeric symbols, that is Word Processing Technology as is termed.

The steady and substantial improvement in computer technology
has led to the increasing availability of convenient computing
services, on one hand, and on the other the cost of digital
processors has been decreasing for the past two decades at a
rate of about 25 percent per annum, and the cost of memories
by nearly 20 per cent (Slamecka, 1985).

Since the early seventies two new important schemes of
information systems have gained wide research interest. These
are data base systems and distributed systems. Distributed
systems, Walsh (1981), imply distributed files or data bases
to some people; distributed CPUS to others, and both to still
others. The implementation of these systems (distributed) has
been, Davenport (1978), inspired by the continuous decline of
computer hardware costs and the potential for direct access of
computer facilities by users.

The implementation of these information systems techniques,
along with the modern computer and telecommunication
technologies, has played a remarkable role in the development
of many national and international information systems, such
as manpower information systems, airline seat reservation
systems, and cash_line service systems in banks.
In practice, these systems, Walsh (1981) commented, are
combinations of computer technology, data base management
systems and teleprocessing technology. Therefore, in the rest
of this chapter telecommunication and data base technologies
are discussed.

2.4.2 TELECOMMUNICATION SYSTEMS

Data can be transported from one place to another in many
ways. One possibility is by foot messenger. This way of data
delivery is still common in today's business world, although

38

the distances are shorter. In every organization data and reports of all types are delivered to managers by messengers from other parts of the organization. However, automated office information systems have the potential to substantially reduce such personal data delivery within organizations. The other means of data transportation are electronic. These ways can be classified into two types, Line_based Telecommunication systems, and the Non_line Telecommunication systems.

I_ LINE_BASED TELECOMMUNICATION SYSTEMS. Electronic transmission has long been one form of data transportation. This mode originated with the telegraph system which has existed for over a century. The telephone which was invented by Alexander Graham Bell in 1876, has been mainly used for voice communication (Mayo, 1985), but can also be used for data transportation. Science and technology have transformed telephony into telecommunications as the network began to interconnect machines as well as people and to carry pictures and data as well as voice.

In the 1930s and 1940s, development of carrier modulation techniques led to multichannel coaxial cable and microwave radio transmission systems which dramatically lowered the cost of long distance calling. With the introduction of direct distance dialing in 1951, and the Teletypewriter service in 1931, Mayo (1985), it became possible for users to transmit information from outlying points to a central computer installation and to distribute the results. The invention of the transistor in 1977 made possible modern telecommunication as a result of its impact on solid_state, integrated circuits, digital computers and satellite communications. These recent

developments and many others in electronic data transmission have greatly increased the data traffic over electronic transmission systems. In these systems, telecommunications lines are the common carriers of data.

While traditional telephone services help conquer distance, its new services help conquer time. The services have already allowed calls to be received when a recipient is not at the telephone. It is also expected, Mayo (1985) argued, that the new telephone services allow calls to be placed and recieved even at times when the caller and the recipient are not at the telephones, that is, users could record voice messages for delivery at specified times to specified numbers.

Data transmission can be on_line, with a computer directly recieving the transmitted data by, for instance, a remote typewriter terminal transmitting data directly to a computer at a distant location. However the fastest way to transmit data, Scott (1986) pointed out, is from one computer directly to another. Modern communication and computer technology enables businesses to deliver information more quickly to the people who need it and at lower cost than ever before.

Television Cable is another telecommunication line systems which is in use at this time. This technology began to expand in the mid 1970s. The commercial implementation of space satellites has offered the cable industry an opportunity to establish its own national networks, and to cablecast programming that broadcast TV _ that the established networks either could not or would not offer. Cable programming was linked to satellite transmission for the first time in 1975 [Kahn and Ernst, 1985].

II_ NON_LINE TELECOMMUNICATION SYSTEMS. Other than telephone

and TV cable networks,there are still other types of high_speed
data transmission which are now in use or under development.
Microwave, Satellite and Laser data transmission systems are
the most important high_speed data transmission facilities.
None of these are line transmission type of technology.

a_ MICROWAVE COMMUNICATION: as an alternative to the telephone
system, data can be transmitted between two points via radio
waves. Microwave technology has a very high transmission speed
in the range of about one million bits per second [Scott,1986].
When microwave is used, transmission is restricted to a " line
of sight ". In other words if any large solid object gets in
the way, microwave transmission will not work. Microwave
channels may be leased or privately owned. Therefore many
organizations undertaking, Davis (1983) pointed out,a signifi_
cant amount of data communication have installed private
microwave relays.

b_SATELLITE COMMUNICATION: in an attempt to circumvent the
obstruction of microwave "line of sight" transmission problem,
satellite communication facilities are placed in orbit. These
facilities allow earth microwave stations to broadcast
microwave signals to each other through orbiting satellites
which receive signals from one station and transmit to another.

When the situation allows only radio transmission of data,
and the distance between the sending and receiving stations is
long (hundreds or thousands miles), satellites are the only
way capable of sending high volumes of data long distances
with few errors Scott (1986).

At the present time, a considerable amount of data is
transmitted via satellite. The future of this technology,Davis

(1983) indicated, promises only growth. Accordingly, satellite service businesses have already established in the US, such as Satellite Business Systems (SBS) with the express purpose of developing and operating a private, leased satellite service.

c_ LASER DATA TRANSMISSION : a laser is a concentrated beam of light capable of carrying tens of thousands of times as much data as a micro wave signal [Scott, 1986]. So far laser communication has been used only for short distance transmission of data.

III_ THE IMPLEMENTATION OF TELECOMMUNICATION SYSTEMS.

Telecommunication has become so critical to the world's economy (Mayo, 1985). At the same time a nation's telecommunication infrastructure is becoming essential to maintaining a good business climate. Without reliable and competitively priced communication facilities, a country runs the risk of slowing overall economic development, if not stopping it all together. Thus, the investments in communication plants and equipments by such industrialized countries as the US, France and Japan already represent as much as 9 per cent of their total gross domestic products (Mayo, 1985). Therefore, in these countries there are, at present, numerous commercial data networks providing such services as data transmission, remote processing, and access to many specialized programmes for special_purpose data processing tasks. General Electric (G.E.) MarkII, is one of the largest commercial services networks. It originates in southeastern Europe, spans North America, crosses the northern Pacific Ocean to Japan, and continues down to southeast Asia and Australia. The entire G.E. ystem embraces over 100 computers. A major feature of the G.E. system is that subscribers, wherever they are located, have immediate access

to thousands of programmes for such special data processing tasks as statistical and engineering analysis [Scott, 1986].

In computer_based data processing systems, computers process data and produce information, while telecommunication facilities transfer data and information to users, inside the organization and out side at national and international levels. The data that are processed by computers and transfered by telecommunication facilities are often organized and stored in data base systems. Therfore, data base systems are discussed in the next section.

2.4.3 DATA BASE SYSTEMS

Data base systems, generally, are computer_based record keeping systems; that is, systems whose overall purpose is to record and maintain information.

I_ EVOLUTION OF DATA BASE SYSTEMS. The data processing systems used in the 1950s were mostly simple payroll subsystems designed in isolation, that is independent of other related subsystems. Each subsystem of a typical application, such as personnel or inventory would consist of a large number of small programs with many files each containing fragmented data. For about ten years (1955_1965) most organizations followed the same evolutionary approach in the implemetation of information systems. In this approach, every time a firm discovers a high priority information need it implements a new subsystem to fulfil that need (Ligon, 1978). By the mid sixties computer technology in both hardware and software, gained enough improvements to encourage organizations to further computer implementation in different applications. The implementation of independent subsystems was accompanied by a constant

43

increase of time and cost for maintaining such these systems.

Some practitioners, Ligon (1978) indicated, felt the impracticality of the increased maintenance work of these systems.

Therefore, the integrated file concept was introduced. These files can be shared by a number of programs in more than one subsystem. The introduction of magnetic discs in the mid 1960s gave a further boost to this concept (integration).

Since the mid 1960's, organizations' attention has been attracted towards the integrated systems concept. Such interest highlighted the need for still greater integration, and led to an outstanding product of that time, the introduction of Integrated Data Store (IDS) by General Electric in 1965 (Dean, 1984). IDS was used to create large integrated files that can be shared by a number of applications. It was a forerunner of the modern database systems and can support a number of data structures. Soon after the emergence of the IDS, it was realized that what was needed was a database containing a generalized integrated collection of data for all the systems of an organization serving all application programs. Such a database, Date (1981), is a repository of stored data which is both integrated and shared. It was also recognized that such a database should be program_and language_independent if it was to serve all applications; that is, a change in the data should not require a change in the application program. This concept of a database, Deen (1984), was crystallised only in the early 1970s, although the term database or databank had been used loosely since the mid sixties to refer to almost any integrated file.

The set of software programs which manages the data base,

controls access to the data files of the data base, and provides data base security is known as the DBMS (data base management system).

II_ DATA BASE MANAGEMENT SYSTEMS. The basic duties of most information systems have always been to create files and maintain them by adding, deleting and changing records in files, and also to prepare reports about the transactions processed and the current status of the files. In application after application, programers have been required to write programs to load a database, devise procedures for retrieving specified records from the database, and prepare reports from subjects of the database. It has been realized that their labour could be reduced by a systems program package, which would consist of the following (Withington, 1981):

(1) a data definition language to be used to define a database,

(2) a retrieval language so that individual records or subsets of a database could be accessed,

(3) a language to prepare written reports, and

(4) utility programs to perform housekeeping functions.

Such a systems program package came to be called a " Data Base Management System " (DBMS). In addition to the capabilities for defining a file and maintaining data in the files, DBMSs provide a mechanism for linking the data to programs. The DBMSs are also able to link the database to people through a terminal control system and an associated inquiry language, which allows users to select and process subsets of the database in an online mode independent of any normal procedureoriented programming languages. Such inquiry languages are generally designed to be as easy to the user as possible.

The developments of DBMS started early in 1960s by Green and his natural language system. Since 1964 full_scale families of DBMSs, such as Backman / IDS and CODASYL / DBTG have emerged (Fry and Sibley, 1976).

The majority of DBMS which were developed by these software families during the sixties and early seventies are related to one of the two data models_ Hierarchical or Network. However, during the last ten years a number of relational Data Base Management Systems (system R, RAPORT system, as an example) have been developed and implemented as well (Kim, 1979; Krass and Winer, 1981).

Since the late 1960's, DBMSs have been growing tremendously in number and quality, and their implementation has become increasingly important. For instance, in 1977 there were about 500 systems available on the market (Supper,1977). By the end of 1979,the number of DBMS instalations had reached eleven thousand (Krass and Wiener, 1981).

There are three main approaches to the design of a DBMS, these are, the hierarchical, the network and the relational.

III_DATA MODELS. Since the early 1970s until the present time, computer technology has seen many computing data base management systems (DBMS). Each one of the developed DBMSs falls naturally into one of the three categories of data models. What is ment by data model is the possible database schema structure that is implied by the architecture of the system,its data_description language (DDL) and its data_manipulation language (Fry and Sibly, 1976).

Theoretically there is a spectrum of data models ranging from the COBOL_like " flat_file " model to the complex extended_set model. Practically speaking, data models have been classified

into three categories: Hierarchical, Network and Relational models (Glaser, 1982).

a_ Hierarchical Data Model : a hierarchical data model is one of the most common and simplest structures. This model has developed from the data storage and handling techniques commonly used for sequentially organized files [Wiederhold, 1983].
The hierarchical data model is defined as the data model which organizes data logically according to the structural relationships of hierarchical trees. Therefore, the hierarchical database is a collection of trees called database trees where recorded occurences appear as nodes (Tsichritizis and Lochovsky, 1976). The most famous data base management systems which are constructed based on hierarchical tree structure are IMS and DL/1. Both systems were developed by IBM.

b_ Network Data Model: the network model is the approach embodied in the CODASYL Data Base Task Group (DBTG) proposal. The initial role of the DBTG was to recommend language and system specifications for database processing in the COBOL programming language [Taylor and Frank, 1976]. Within the subsequent development of the database technology, many Data Base Management Systems (DBMS) have been developed based on DBTG's outline. Therefore, the DBTG proposal have been considered, generally, as an example of the network model.
The network model allows the modeling of many_to_many relationship, the lack of which is considered as a disadvantage of the hierarchical model (Cohen, 1981). IMAGE / 300 and IDMS are examples of the network_based data base management systems.

c_ Relational Model : In 1970, Codd (1971) proposed a model for a generalized relational database system, chiefly to provide

data independence and data consistency, which are difficult to
achieve in the formated database systems (hierarchical and
network). Subsequently, the model was improved and expanded by
Codd and is now regarded by many as the future of all database
systems (Upham, 1982).

The relational model is based on tables or relations containing
a fixed_length record. All data, both attribute and relationship,
are conveyed by means of data items in tables.

Data structures in the hierarchical and network models are
designed to meet access requirements and if the access
requirements change the data structures need to be changed as
well.   However, the relational model is free from such
conditions. That is, the relational model is a purely logical
model, and provides no clues as to how the database would be
physically implemented [Brookers et al, 1982].

SUMMARY.

The theoretical foundations of any discipline constitute the
bases on which the practical implementations and values of the
discipline are totally dependent. Therefore, reviewing the
theoretical foundations of information systems and information
technology fields in this research is crucial to the realization
of information   systems implementation and the information
services availability.

The survey of the theoretical bases of information systems
and information technology in this chapter indicated that even
though the information systems discipline is quite young (
especially, in research and academic province) compared with
many other disciplines such as economics, management and
organization, the field is widely researched and theoretically
well structured. In two decades, from the late fifties to the

late seventies,the progress of information systems leapt from a simple and individual application base_data processing systems to an early stage of a theory. Yet, information technology achieved much more success. For instance, data is now processed by computer hundereds of times faster than its old manual manipulation; it is stored in electronic mass memories instead of paper files; and data is now transported electronically at the speed of light through national and international communication networks, instead of being send on paper records with the speed of a steam locomotive.

It must be known that all these scientific and technological developments are invented, developed and mainly implemented in the developed nations. With respect to all these theoretical progresses in information systems and information technology, the questions to be raised now are how far these developments are implemented,and how much information is available through implementations? The answer on these questions are illustrated in chapter three where information services in both developed and less developed countries are discussed.

CHAPTER 3

INFORMATION SYSTEMS IMPLEMENTATION
AND INFORMATION SERVICES AVAILABILITY

Chapter two reviewed the theoretical issues of information
systems and information technology. From the theoretical point
of view, the two disciplines (information systems and
information technology), as illustrated in chapter two, have
achieved remarkable progress during the last three decades.
Many of the achievements in the two disciplines, such as data
base management systems, random access memory and satellite
communications, have been implemented for a decade or so. The
implementation of such theoretical achievements and its role
in information provision is the focus of this chapter.
The availability and use of information depends on society's
realization of the importance of this resource. Hence, the
availability of information and the efficiency of its services
vary from one country to another, and in particular from the
developed to the less developed countries. Therefore, the
contents of this chapter are organized as follows:

In part one, the importance of information for managing and
developing both private and public organizations is discussed,
and the issues of national information systems and
implementation are illustrated. Information is now considered
as a vital resource both for national development and
international relations. Therefore, in part two, information
services in the developed nations are discussed. In part three,
information services in the less developed countries are
reviewed.

Human resources are the most vital and precious element in any
committed development activity (Neelameghan, 1984). Thus, the

availability of accurate and timely information about the
manpower resources is a crucial factor to planners and decision
makers in any society. Hence, manpower information services, in
developed and less developed countries, are discussed in the
fourth part of this chapter.

3.1 NATIONAL INFORMATION SYSTEMS: CONCEPT AND APPLICATION

Rapid changes and increased complexity are hallmarks of any
modern society. To find solutions to the many problems, such
as shortages in energy resources, and unemployment, countries
must do a much better job in the planning and management of
their national resources, backed up by effective systems of
information collection, analysis and dissemination. Shuman (
1982), as many others, believes that without adequate
information, all planning is an exercise in day dreams. Donald
Shirey (1978), the secretary of the manpower consortium for
the information professions, USA, indicated that few large
institutions in the public and private sectors of the economy
can exist or remain competitive these days without some kind
of management information systems.

It appears from these comments that information has become an
essential base for the progress of human civilization and
society. This has been recognized in most countries, and in
those with large investments in research and development,
complex information systems have been constructed to meet the
special needs of scientists, engineers, administrators, and
those working in the social and economic fields.

As a result of the increase in the importance of information,
the volume of information, as showed by chemical abstracts, is
increasing by 13 per cent per year, which means that the total

amount of information in the world doubles every 7 or 8 years
[Valls, 1983]. This growth rate in information volume has
dramatic consequences on the information services industry.
As a result, many countries have been examining the need for
some systematic planning of their information infrastructures
so as to utilize fully the information accumulated at the
national level and to be able to participate in, and benefit
from, existing and future world information systems.

In many industrialized countries it has been accepted that
information networks must be planned and coordinated centrally
if they are to exercise their function as important elements
in the nation's educational, cultural and scientific progress.
Examples of this trend of information systems organization
include the Electronic Bond Market in Denmark, the National
Library of Medicine in United States, the online automated
library network (PICA) in the Netherlands, and the national
manpower information systems, such as the Manpower Service
Commission database system in Britain and the DATA STREAM in
Canada.

The interest in national information systems has been
assured by the intergovernmental conference on the Planning of
National Documentation, Library and Archive Infrastructures, in
September 1974 [Unesco, 1975]. This conference recognized that
information has become an essential basis for the progress of
civilization and society. It also considered the importance for
both developing and industrialized countries of concerted
action at the national, regional and international levels to
ensure full use of existing information facilities.

The national information system concept postulates the idea
that all countries should establish or develop national

information systems capable of meeting the information needs

of all sectors and categories of users within the country,

and the information required by international organizations,

such as the United Nations.

For the development of a national information system, Unesco

(1975) recommended the existence of a national information

policy which reflects the needs of all sectors of the community

and of the national community as a whole. Such policy should be

formulated to guide the establishment of a national information

plan, whose elements should be fully incorporated into the

national development plan, especially in the case of many LDCs

who implement development programmes.

There is a growing need for information processing policies

in the public sector. This is due to the increasing extent and

complexity of government activities and to growing expenditure

on information processing [Brussaard and Tas, 1980]. In

addition, the effectiveness of public administration, as Brussard

indicated, is largely determined by the effectiveness of its

information processing. With these factors in mind, and with

respect to the issue that information is an essential national

resource that should be administrated by the establishment and

implementation of a national information policy, national

information systems have come to be an obligation and objective

of governments.

Consequently, all countries in the World, though at various

paces and from many different starting points, are undergoing

a far_reaching transformation into an " information society. "

[Menou (1), 1984]. In the majority of the developed countries,

information systems, especially at the sectoral level, have

been implemented in many public service areas such as education, health, and manpower information services.

To what extent information services have been established by both developed and less developed countries, is the focus of discussion in the next two sections.

3.2 INFORMATION SERVICES IN THE DEVELOPED COUNTRIES

During the last decade the importance of information for the econmies of the Western World and many other developed countries, has become a fact (Rosendaal, 1984). It has been suggested that information is now considered as one of the few non_scarce raw materials for the economies of these countries (Rosendall, 1984, p.15). A person could therefore, say, as Galinski (1984) believes, that information is a new " raw material " like coal or iron. It only needs to be processed and turned into a marketable product. The growing awareness in these countries, therefore, is that information has a value in itself, at least it is so in the view of the Japanese who believe that scientific technological information and other specific information is one of the basic requirements for any organization to remain competitive.

In the developed nations, these days, jobs involving the creation, processing and distribution of data account for a large per cent of the total available jobs in these countries. For instance, over 60 per cent of the United States workforce has been involved in information_related jobs during the last decade. At the same time, the commission of the European Community estimates that 56 per cent of the community work force is in services, a high proportion being in information_related occupations (Feketekuty and Aronson, 1984). As a consequence, the timely and inexpensive availability of

information in these nations makes it a motor for innovation and therefore a driving force for economic and social development. Constructing the many large information systems and maintaining a high level of information services in most of the developed countries is a result of the involvement of their governments in planning, financing and developing information services and their related areas.

Virtually, in most, if not in all, developed countries the library and information education service is very well established. For example, in Britain there are seventeen library and information science schools. Also in these countries plans and policies for formulating and developing national information systems have been seriously considered and carried out by governments. For instance, in Japan a " science information system " was established in 1981 (Golinski, 1984); in 1971, the government of the Netherlands set up the NOBIN (Dutch Organization for Information Policy).

The use of information technology for the collection, storage and dissemination of information is affecting profoundly all aspects of the information services industry in the developed nations. Therefore, information technology will be a major factor in the development of both public and private sectors. As a justification to this issue, the Industrial Structure Council in Japan, Galinski (1984) indicated, designated information technology as one of the priority technologies for the 1980s.

The implementation of advanced information technology in which satellites render distance irrelevant, fibre optic cables offer vastly increased capacity for information transfer,

microprocessors (chips) make possible economic computer storage
of tremendous amounts of data and the emergence of
" userfriendly " software greatly expanding the availability of
computing power, helps organizations as well as individuals to
maintain at least the minimal required information for making
reasonable decisions. The implementation of such technology
has also enabled the institutions in these countries to provide
an acceptable level of information service to their customers.
In recent years,for instance,the implementation of information
technology has gradually been changing the library scene and
enables these institutions to offer services they never
considered before. For example, the setting up of the Blaise
Automatic Document Request service in Britain in 1978 enabled
users to check references online on the Blaise files and
request them from British Library's Lending division
automatically (Thompson, 1983). In the US, the conversion of
the National Library of Medicine Service from offline to online
in 1971, increased the library service from 20,000 searches a
year to 20,000 searches a month (Thompson,1983).
The Dutch government has sponsored since 1976 a PICA (Project
Integrated Catalogue Automation) for the realization of an
online automated library network in the Netherlands, based on
a centralised bibliographic database in which information is
stored only once (Bossers and Muyen, 1984).

Within the more industrialized countries, the provision of
information services is demanded by users as a consequence of
their realization of the importance of information. Such high
demand can be seen, for instance, in the activities of the
Lending Division of the British Library which deals annually
with more than two million requests from Britain alone, and

some half_a_million from 4000 users in over 100 countries
(Thompson, 1983).

The high demand for information and its sources in the developed
countries has encouraged both private and public sectors
to develop huge and technological_based information systems.
The national cash line service systems of 4000 Automated Teller
Machines which provide cash service to the customers of four
banks (the Royal Bank, Bank of Scotland, LLOYDS, and Barcleys
Bank) and the holders of American Express Cards, and the
national and international flight reservation systems of many
airline companies are good examples of private sector
participation in the development of information systems and
the provision of information in the developed nations. Yet,
the public sector has a greater role to play in this scheme.
For instance, Denmark (Frenchman, 1985) has the world's first
totally electronic bond market. The market is a private
selfgoverning institution established in 1980 to modernise the
existing manual bond trading market in the country. The new
system, which has been in operation since January 1983, has done
away with printed paper bonds entirely as well as the dozens of
forms and other documents required for each transaction. In
1985 the daily transaction of this market averaged DK 10 billion
a day. The market data processing centre is linked to 800
dedicated bond trading terminals through 33 special subcentres
which form the data network. Another 20,000 terminals used by
the 28 principal banks in the country can also access the system
(Frenchman, 1985).

In 1957, Japan established JICST (Japan Information Centre of
Science and Technology). JICST is responsible for collecting,

processing, and disseminating scientific and technological information and documentation from all over the world.

There are also the international information systems through which energy experts from Tokyo to Athens trace oil shipments by consulting a computer database in Houston. Lawyers in the United States consult a computer database containing abstracts of American law cases summarised in South Korea, and a computer in San Francisco schedules global movements of engineers, bags of cement and construction cranes that are needed to build airports in Saudi Arabia (Feketekuty & Aronson, 1984).

From this brief review of information services in the developed countries, it appears that in these countries information resources, products and services have been realized as vital components of their societies, economic productivities, government operations, and of their individuals well being. With this growing awareness of the importance of information, governments of these countries have played a significant part in funding and organization of information services both nationally and sectorally, in that, governments have (a) established information research bodies and funded research programs, (b) built establishments for gathering data, documenting sources and providing free access to sources of information for peoples, (c) established information institutions and recognized information profession associations, (d) above all, in many developed countries, governments formulated information policies and set up the agencies to coordinate the information service organizations and direct the development of their information sectors.

The outcome that most of these countries have gained from their investments in the information field is the development of many

sophisticated information systems which are capable of providing reliable information services to their peoples.

With respect to the remarkable interest paid to, and the tremendous achievements made by, the developed countries in information services, the question now is, where are information services in the LDCs standing as a result of such interest and achievements in information made by the developed countries? The answer on this question is clarified by reviewing information services in the LDCs in the next section.

3.3 INFORMATION SERVICES IN THE LESS DEVELOPED COUNTRIES

" Governments, especially those of the developing countries, are realizing that economic and social advance is dependent on the rapid imporovement of existing national resources and that the related science and technology policy is heavily dependent on a fast flow of socio_economic information of all kinds "
(Unesco, 1975, p. 22 .

The growth and complexity of modern business and public administration emphasises such awareness among the political, economic and professional leadership in these countries (Menou (1), 1984). That is because managers in developing countries need facts on which to base their decisions, just as their counterparts in the developed nations. But in a developing country, where numerous short and long range plans need to be formulated, where these plans are to be regularly appraised and adjusted to a rapidly changing environment, and where such work depends on the examination of numerous related and unrelated data, planners reliance on information cannot be overemphasized and the need for information systems starts to be crucial. Nevertheless, computer_based information systems

are not always the panacea for the lack of reliable
information, especially in the Less Developed Countries where
demand on information services is low and the proper users of
information are scarce.

However in many LDCs, non computer_based information systems
(manual systems) such as banking service systems and the
customs and excise system in Libya, could be reviewed as
appropriate, because these manual systems seem to provide the
minimum data service to the administration of the concerned
institutions.

The need for information systems and information services in
the LDCs has been recognized by international institutions and
researchers as well. For instance, the Intergovernmental
Conference on the planning of National Information Systems
(NATIS), Salman (1981), invited member states of Unesco to
take suitable action to create or improve national information
systems in accordance with the economic, social structure and
cultural heritage of each country, and within the framework
of the national overall and sectoral development plans and
communication policy of the same country. Also, member states
of the same conference stated that the state tasks of planning,
decisionmaking and administration are increasingly dependent
on the availability of reliable information which can only be
obtained through a systematic organization of this resource.
Songhurst (1982) agrees very much with the member states
opinion, as he believes that nearly all national development
tasks of planning, decision making and administration are
increasingly dependent on the availability of fast and accurate
information.

Information systems as the networks of communication methods

within an organization,(Nyang,1983), are needed for collecting, organizing and disseminating information to users throughout a society. Because of the size and complexity of organizations, managers in public and private sectors cannot possibly have full knowledge of all the necessary sources of data.Therefore, the development of information systems, (ChapmanWardy,1973), is becoming very important in many public organizations and for many government functions. Hence, information systems can play a very large role in the social and economic development in the less developed countries. Information systems, for instance, might help in identifying documents that could analyse social, cultural and political problems in these countries (Nyang, 1983). Maintaining the information systems which can guarantee sufficient and reliable data about the society's resources surely would help planners and decision makers in these countries to encourage the development of their societies. Information becomes a powerful force in the development of any society. Hence, the construction of information systems in the developing nations could enhance the social and economic progress in these countries.

As explained in part one of this chapter, most of the developed countries have been able to develop many efficient national information systems. Despite these successes in the industrialized nations, very few developing countries, (Shio, 1981), have been able to establish national information systems. In most African countries, for instance, formal information systems do not exist (Nyang, 1983).
Arab countries until, the end of the last decade, have not considered the importance of scientific and technological

information,the importance of having sound plans in that field
and understanding the role of information in development (Salem,
1980). Unesco and United Nations, Salman (1981),found in one
of their studies of the information problems in the LDCs, that
the local information necessary for preparing and applying
sectoral and national development plans, consisting mainly of
statistical and other quantitative data on population, is
either unavailable or unused. The implementation of databases
and database management systems has been rare in developing
countries, because of the difficulties experienced. In Nigeria,
the ministries of education have very little knowledge of the
number of teachers they employ;student registration is normally
expected to rise but the percentage increase is always unknown,
as Modum (1983) indicated. However, some developing countries
such as India, Israel and Brazil,have made significant progress
in this aspect,although at a slow pace (Ghosh and et al,1979).

Information is a new raw material, Galinski (1984) argues,
because it has been recognized as an important resource in
development. Unfortunately, in many less developed countries
information has not been recognized as a resource. This is
because, firstly, the low level or even lack of recognition of
the potential value of information for development among many
decision makers is still a major obstacle to the widespread
and beneficial use of information in development. Secondly,
even where such recognition exists, resources for information
activities cannot be allocated as needed, because the strictly
limited resources need to be apportioned among many vital
competing priorities (Saracevic and et al,1984). Sharif also
commented that in all Arab countries there is no body existing
at the national level with the authority and ability to accept

responsibility for the overall coordination of documentation, library and archive services (Sharif, 1980).

Ultimately, management of information, (Slamecka, 1985), is not a concept common to the Third World. The ignorance of this concept is a clear indication of the lack of information systems existence in the less developed countries.

3.3.1 PROBLEMS OF INFORMATION SERVICES IN THE LDCs. During the
----
last decade information systems and services in some developing countries have been researched by international organizations such as Unesco and the United Nations, as well as, individual researchers. However, most of this research work is not well_ documented. Specifically, the scope of each study, its sources of data and methodology, are not specified explicitly as a part of the published work. A review of this work indicates that information services in the less developed countries are suffering from many serious problems. These problems are illustrated below :

1_ The lack of national information policies: a national information policy is a decree or a formal document stating the goals of the national systems and giving appropriate mandates to the central agencies. This policy, Slamecka (1985) indicated, has been considered as a necessary prerequisite and one of the main requirements of a national information system, as stated in the recommendations of the intergovernmental conference on planning of NATIS. Nevertheless, there has been a general lack of national information policies in the LDCs, as Shio (1981) pointed out.

2_The shortage of specialized organizations in information services provision:the fundamental function of a national

63

information system is to provide for the effective transfer of information to meet the needs of the whole community. For such a function to be undertaken, there should be, (a) specialized national bodies in planning and organization for the national information system and its components, and (b) specialized information centres which are in charge of screening,selecting, analyzing, digesting and repacking the considerable amount of information available on specific topics so as to make information readily accessible to users in ways suits their needs.

Yet, in many developing countries, collecting, storage and dissemination of accurate and relevant data are still considered a striking problem in planning. This is mainly because of shortage of the specialized information establishments, Vally (1983), and the absence of national bodies in charge of the organization and coordination of the information service organizations and their activities. For instance,El_Hosh (1985) in a national conference on information services in Libya, in 1985, questioned the reasons for delaying construction of the national information services network in Libya. In the early eighties, Sharif (1980) emphasised that none of the Arabic countries has a national body or structure which organizes and coordinates the institutions providing the information services and the user of these services.

Whilst Adimorah, Sharif and El_Hosh are concerned with the nonavailability of national information systems, Shio (1981) argued that, even where these systems are in existence,control measures and evaluative criteria have not been included in their design.

3_ The shortage of information personnel : any serious

development activity requires inputs of human, physical (
materials and equipments), financial and knowledge resources.
In such activities, human resources are as important as any of
the other inputs or probably more. Thus the availability of
information personnel of adequate quality in an adequate
number is a prerequisite to the development, management and
productive utilization of information systems and services.

The inadequate availability of qualified and competent
information personnel has been, Neelameghan (1984) commented, a
matter of concern and urgency in many developing countries. For
instance, Keren and Harmon (1980) indicated that the lack of
trained and qualified staff is always cited as one of the
principal factors impeding science and technological information
development in the less developed countries.
Unesco and the United Nations Interim Fund for Science and
Technology for Development undertook a study in 1981 to
determine the real needs and options for the access to
information in eight developing countries (Colombia, CostaRica,
Republic of Korea, Malaysia, Marocco, Nigeria Kenya, and Jordan).
Shortage of skilled manpower, as Salman (1981) pointed out, is
one of the problems found by this study. The study also
indicated that the existing information services employ
inadequately trained staff, and recently created services run
into discouraging recruitment difficulties. Woodward (1980)
also argued that the lack of trained staff is one of the
constraints that hampered the development of information
services in the LDCs. In most developing countries, Ghosh et al
(1979), there is a serious shortage of capable personnel in
database technology and modern information systems. Saracevic

et al (1984) pointed out that a shortage of information professionals is universally recognized as the main problem in building a stronger information infrastructure in most, if not all, developing countries.

4_ Lack of organization and recognition of information specialists and their profession: if we wish to have good people with high qualifications in information services organisation then it is necessary, as Valls (1983) argued, that they should be well paid and respected. Accordingly, a new profession of information handling has evolved in many developed countries. In these countries information specialists are part of a distinct profession. Unfortunately, in most of the developing countries, information specialists as a distinct profession have not yet been recognized and the information specialists have not been organized in a distinct body like many other professions. The lack of recognition and organization of information specialists in the LDCs have been recognized by many research works in the literature. For instance, Salman (1981) indicated that the Unesco study of the needs for the access to information in the LDCs in 1981, concluded that the information specialists and trainees are discouraged by the low pay and often poor job status in the information field.

Because of the lack of recognition of the information profession, govermental institutions in the LDCs are not competitive with industry at the salary level for qualified individuals in information as well as in some other specialist areas, Ghosh et al (1979) argued.Along the same lines,Adimorah (1976) commented that information workers in the LDCs have not yet been organized into a distinct separate profession, and such lack of organization has led information workers to low

pay and poor work status.

5_ Resources limitation: in its first recommendation, the intergovernmental conference, Unesco (1975), stated that national information systems should be supported by the prerequisites of appropriate legislation, finance, qualified manpower, and use of modern information technology and provided with appropriate national coordination of the various components of the systems. That means financial resources are a crucial factor to any information service establishment. Except for a few rich countries (especially oil producers) in the LDCs group, information systems in the LDCs are handicapped by the scarcity of financial funds. For instance, many of these countries are reluctant to use scarce, hard foreign currencies to obtain information resources such as books and journals (Eres, 1981). Therefore, currency exchange, as Unesco (1977) expressed, is one of the main factors which hampers the acquisition of scientific and technological information from abroad by many developing countries. Woodward (1980) also pointed out that the shortages of finance have hampered the development of information services in these countries. In budgetary matters, Adimorah (1980) believes that most information centres in less developed countries are not allocated a core budget that could enable them to carry out their work as fully fledged units of their parent organizations.

6_ Lack of adequate organization of information services: sound management of national information systems increase the flow of information available for the final users, provide information to the users at a lower cost and enable potential users to start using information. Coordination among the various

67

components of an information services network is a prerequisite

for a workable national information system, as the

intergovernmental conference recognized [Unesco ,1975].

Data, as Holloway (1986) argued, has to be regarded as a

commodity that requires management in the same way as materials,

money or people. But management of information, (Slamecka,

1985), is not a concept common to the Third World, because

the importance of information as a resource has not yet been

recognized in the LDCs.

The consequence is that dissemination of the available

information to the users is inadequate, and there is an acute

shortage of the proper equipment for acquiring and storing

information. Accordingly, research findings in many LDCs have

been lost because they were not documented anywhere (Shio

1981). The absence of an adequate infrastructure for

information storage and processing, and use and absorption by

users are another symptom of the poor organization of

information services [Keren et al, 1980].

7_Lack of coordination between information providers and users:
the objectives of a national information system will usually be

formulated with national policy objectives and the needs of

certain information users in mind. Even so, the failure of

recognition of the needs of information users has been

experenced, because some of the national information systems in

the LDCs have been designed without first determining the

information needs of the potential users. Such systems, Shio

(1981),have been rendered useless by not being able to supply

their needs. Widespread data redundancy may be due primarily to

lack of coordination and communication between data providers,

Ghosh (1979) argued. There are many indications (Salman,1981),

of under_utilization of the available information services in the LDCs. One of the best known reasons of the under_utilization is the discrepancy between the services provided and real needs, as a result of the lack of coordination between information providers and users; scientific and academic research in most LDCs does not follow the way prevailing in the industrialized countries, which constitute the major users of information; access to locally produced information is not as satisfactory as it should be, because of the lack of systematic collection of reports produced by government, for instance (Salman, 1981).

8_Lack of recognition of information importance in development: it has been recognized that development is an organic process which involves in addition to economic, technical, physical, and human factors information as well. Therefore, the industrialised countries, Slamecka (1985) indicated, tend to think of technical information and data banks as resources that improve or optimize problem_solving and decision_making, and otherwise " improve productivity." But, Saracevic et al (1984) pointed out that there are two critical problems in recognizing the importance of information as a resource in developing countries. These are: the low level or even lack of recognition of the potential value of information for development among many decision makers, and the lack of resources allocated to information activities. Keren and Harmon (1980) pointed out that national decision makers in the LDCs still do not appreciate the role of scientific and technical information in development.

Kabesh (Unesco, 1977) blames governments for failing to

appreciate the importance of information in the pattern of modern economic progress.

9_ The instability of public administration systems: under the stress of poor economic and cultural conditions, many LDCs have been involved in political problems both internally and externally. The consequence is that such political involvements have, in many ways, disrupted the development programmes in these countries. For instance, Keren and Harmon (1980) believe that one of the more difficult problems of information work in the LDCs concerns the organizational and personnel changes that result from political events. That is, in many countries, especially in Latin America and Africa, it is quite usual for public service employees, even at rather low levels, to be changed when a new administration comes in.

The lack of adequate organizational continuity is wide_spread in governmental institutions as a result of changes in presidents, ministers and high level officials. This phenomenon constitutes,(Ghosh et al,1979) one of the major obstacles of information services development in the LDCs.

Because most of the LDCs suffer from wars and constant changes of government, information work, (Admorah ,1976), is directly affected by the constant political instability of most developing countries.

10_ Lack of adequate communication systems : the use of new technology for collecting, storage and dissemination of information is profoundly affecting all aspects of information transfer in the industrialized world. The new technology is essentially based on advances in two interrelated fields. These are: firstly the development in microprocessors (chips), and secondly advances in telecommunication technology. The latter

has made possible the reliable and efficient, high_speed transfer of data around the world (Thorpe, 1984). However, most of the developing countries suffer from inadequate and unreliable telephone and postal services even where they constitute the main, if not the only, components of the communication systems in their countries.

Communication services in the LDCs are very well known problems as shown by many researchers in the information services field. For instance, Woodward (1980) commented that poor and inadequate postal and telecommunication systems are one of the major constraints which hamper the development of information services in the LDCs. Adimorah (1976) also believes that communication systems such as telephone, telex, teletypewriters and postal services are poorly managed in most developing countries. The consequence is that such poor communication facilities and associated factors have made data gathering and information dissemination an onerous task.

11_ **Poor information education**: education for a discipline depends directly on the social recognition and support for that discipline. One of the main problems of information education in the LDCs is the low level of recognition of the value of information; another problem is the low amount of resources provided for information education even where recognition is exist. The formal academic teaching of information science in the LDCs is provided almost exclusively within the framework of library schools and library curricula. When information science is taught it is represented mostly by one or two survey courses. The Bachelor's degree is by far the most prolific professional library degree in less developed countries. In

most if not all LDCs, (Vally, 1985), there is a crucial need for information science faculty.

12_ Lack of computer technology implementation in information services: Salman (1981) illustrated that Unesco's study of the real needs and options for access to information in the LDCs found that the introducing of new technology into information services in the LDCs still has not been accepted by the majority of these countries. This is because the cost of a connection with foreign networks does not in most cases seem to be warranted by the low level of use. In addition, the staff responsible for information are not yet trained in the design and use of computerized systems. Furthermore, telecommunication facilities are often unreliable in most of these countries.
The encouragement for using modern information technology by less developed countries has been undertaken by various international organizations. For instance, the intergovernmental conference on NATIS development, Unesco (1975), recommended the less developed countries to use modern information technology in their national information systems. In 1973, United Nations, (Smyth and Jayasiri, 1980), recommended that each developing country should formulate a broad national policy, consistent with its national goals, on the application of computer technology.

In view of the acute scarcity of capital resources in many developing countries, the optimisation of asset utilization is probably the most justifiable application of computers (Baron, 1976). For instance, Baron (1976) argued that a report from the Singapore National Productivity Centre urged the use of the computer to promote faster transit and reduce the investment in warehousing and other facilities in transport organizations

handling international traffic.

Therefore, developing countries do need information technology when looking for increased productivity and better living conditions, Perez (1980) argued.

Significant numbers of computers have already been installed in developing countries. For instance,it was found in 1971 that the number of computers in developing countries was 2500 (Baron, 1976). The growth rate of computers in these countries, as Baron pointed out, is high. For instance, in India the 16 computers the country possessed in 1966 increased to 140 in 1971, and by 1977 800 or more computers might come into use.

Modern computerized techniques of economic and social planning and administration are being transfered to developing countries. One example is government statistical services. Computers are also employed in other government departments for accounting activities such as payroll, inventory control, billing and tax collection. Social security schemes are one of the more common computerized applications in the LDCs, as a result of the International Labour Organization assistance in computerizing this scheme. The consequence is that in 1971 there were 18 computer installations specialising in this application in developing countries (Baron, 1976).
With respect to the important economic role the computer has played in the developed countries and the extent these countries have implemented computer technologies, computer installations in the LDCs (Nyang, 1983), are very few and applications are very minimal,especially in information services provision.

The problems which confront computer implementation in the

less developed countries, as cited in the literature, include the following:

1_ In developing countries, where managerial skills are especially scarce, investment in computers, as Baron (1976) argued, is risky and the benefit of such investments is uncertain, but the cost of learning how to use the machine and its output is undoubtedly high. Hence,the high cost of computer technology and the low availability of capital resources have discouraged many less developed countries from building information networks based on computers (Nyang, 1983; Eres et al, 1981).

2_ Poor telecommunication systems not only discouraged LDCs from using computer technology, as Nyang and Eres indicated, but it is also unwise for these countries, Smyth (1980), to embark on computer use until they have first ensured that adequate telecommunication facilities will be available.

3_ Todays information technology requires an enormous variety of expertise not only in the application but also in the evolution and selection phases. It is difficult and expensive for developing countries to produce all the specialists they require, and it is difficult to keep up with technology because of lack of resources (Perez, 1980). Therefore, the shortage of experienced staff is found as one of the factors inhibiting information technology transfer by the LDCs, as Eres et al (1981) and Nyagn (1983) commented.

4_ There is a lack of awareness of the relationship between organizational management systems and computer_based information systems; the degree to which the effectiveness of the former are becoming dependent upon the efficiency and the effectiveness of the latter ones is something that is not in the minds of

74

many Third World administrators. Evidence of this obstacle, as Perez (1980) argued, is the fact that many of the LDCs top administrators decide on the type, mode, and brand of their new computer configuration without or against the advice of their technical staff included; there are many cases in which computer selection committees in the middle of their deliberations have been told their final decision by top administration. The problems of information services in the LDCs are summarised in the following list:

1_ lack of implementation of information service policies,

2_ the shortage of national organizations specializing in information services organization and provision,

3_ the shortage of information specialists,

4_ lack of organization and recognition of information specialists and their profession,

5_ the limitation of resources,

6_ lack of adequate organization of information services,

7_ lack of coordination between information providers and users,

8_ lack of recognition of information importance in development by decision makers,

9_ the instability of public administration systems,

10_ lack of adequate communication systems,

11_ lack of implementation of computer technology in information services provision,

12_ the lack of sufficient information education,

13_ under utilization of the locally produced information,

14_ restrictive import controls on information sources, and

15_ poor information dissemination.

These problems constitute the most comprehensive list of

its type that has been compiled in one study. There is no guarantee however that this list contains all the possible problems of the information services in the LDCs, because there is no complete survey concerning information services undertaken of all LDCs. Therefore, this study argues that further problems such as (a) the cultural and educational structures in the LDCs and their role in information provision, and (b) the people's perception of information, its importance, and its effect on the demand of information might be crucial problems of information services in many LDCs,even though they have not been emphasised by any of the studies in this subject refered to above. These problems are some elements of the topic that this study is designed to explore.

To these elements, however, will be added any other problems that might be derived from the research of information services in Libya. The first objective of this study is concerned with information service problems in the LDCs, while the second objective is interested in the solutions to these problems. Therefore, in the next section, the literature concerned with the solutions of information problems in the LDCs,is surveyed.

3.3.2 RECOMMENDED SOLUTIONS TO THE INFORMATION SERVICE'S

PROBLEMS IN THE LDCs. Most of the research work that has been
----
done in the field of information services in the LDCs, is devoted to problem identification. Only a few works have examined solutions. With regard to the identified problems of information services in the LDCs, the related solutions that are recommended by researchers in the field are as follows :

1_ The need for formulating a national information policy has been emphasised by international committees as well as by individual researchers. For instance, the Intergovernmental

conference on NATIS planning Unesco (1975), considered the
formulation of a national information policy as a prerequisite
to any national information system. Importantly, some of the
LDCs which still have not formulated their national information
policies, such as Libya, were members of that committee. Shio
(1981),introduced in 1981 an approach to the design of national
information system for developing countries. In his approach,
Shio suggested a number of recommendations which it is believed
if followed will help developing countries to design workable
national information systems and enable these countries to reap
the benefits. Of his recommendations Shio believes that there
is an urgent need for developing countries to set up national
information policies.

2_ Concerning the lack of national information systems, the
intergovernmental conference on NATIS planning in 1974 invited
member states of Unesco to take suitable action to create or
improve a national information system or an infrastructure for
information services in their countries. As a solution to the
poor construction of national information systems, Shio (1981)
commented that many developed countries fascinated with the
idea of national information systems, have embarked on projects
that are too ambitious. Very often some of these projects have
been abandoned or have taken too long to complete. To avoid
such problem LDCs should follow Axelrod's rule " moving the
mountain one teaspoonful at a time " in building information
systems (Axelrod,1970). Therefore,the aim should be to design
an easily attainable system that has the possibility of
producing quick and significant results, Shio (1981) and Ghosh
et al (1979), recommend. Both groups of countries, the ones

who have experience of failure in constructing their national information systems and those who have not yet started,should consider that the analysis of the existing information resources and the assessment of information needs are essential requirements of sound national planning for the development of national information systems.

3_ The case study which was undertaken by Unesco and the United Nations in eight developing countries, Salman (1981), suggested a proposal for future action concerned with the improvement of information services in the LDCs. One of the elements in this proposal is that the supply of professional information workers should be considered urgently by high level authorities in these countries, and that the consideration of this matter should be entrusted to statisticians,the education authorities, personnel officers and those responsible for vocational training. The intergovernmental conference on NATIS planning, Unesco (1975), considered the analysis of manpower resources as one of the requirements for national information systems construction and implementation.

4_ Concerning the financial problem, Kabesh suggested that countries seeking to avail themselves of information assistance should be persuaded to liberalize foreign exchange, import controls, mailing tariffs and communication rates hampering information transfer (Unesco, 1977).

The future action proposal by the Unesco and UN case study on the needs for information services improvements in the LDCs, Salman (1981),suggested that promoting of resource commitment by administrators and persuading them of the importance of information for development are prime requirements for the construction of a proper national information systems and

achieving better information services.

5_ The major objectives for information services in developing countries as Woodward (1980) specified, include the following:

(a) the systematic organization of the information already available in each country, especially the locally_generated information,

(b) the improvement of access to internally available information, and

(c) the coordination of existing and future information services to make the maximum use of the limited resources available. This coordination may be at the national, regional or international level.

With respect to these objectives, the solutions recommended for the problems of information services organization include the following :

(a) Shio (1980) argued that information requirements should be clearly determined at all levels as a prerequisite for a workable national information system. He also commented that if an information system is to be effective it must have efficient methods of disseminating the information that has been acquired and stored.

(b) Concerning data redundancy which comes as a result of the lack of coordination and communication between the bodies responsible for information services provision, Ghosh et al (1979) recommended that management must be aware of this problem and participate in bringing about the necessary organizational and political changes,and environment to achieve the potential benefits of database technology.

(c) As one of the proposed actions for information services

improvement, the Unesco case_study, Salman (1981), suggested that access to information produced in the country can be improved in various ways. Efforts should be concentrated on three main types of information: unpublished reports relevant to their development, national statistics, and inventories of current research and of development projects.

6_ The lack of sufficient continuity in the personnel with whom and for whom information systems are being developed is a major force working against these systems. Ghosh et al (1979) argued that if this problem is understood by authorities in these countries then the establishment of a professional nonpolitical cadre is the ultimate solution which can provide the required continuity.

7_ The lack of recognition and professional organization of information specialists have been considered by some researchers as a serious problem which affects the availability of appropriate manpower (in quality and number) in the information services area. To this problem, Sharif (1980) has recommended that professional association should be created to support and professionally recognize the people involved in information transfer processing, such as librarians, documentalists and information specialists.

8_ Information technology implementation in the LDCs has been inhibited by many problems.

One of the ways for solving such problems, Perez (1980) suggested, is scientific and technological transfer that has taken the classical form of " try to learn as much as possible from developed nations. " This approach has proved valid and successful in the past.

As a new direction for solving the problems of information

technology implementation in the LDCs, Perez suggested (a)
homegrown information technology, (b) the development of an
information technology policy at the national level in the
country, (c) entertaining and participating in international
conferences in which developed countries present their
experience in applications of interest to developing users.
The findings of a study by Khailany (1981), indicated that
various methods were used to introduce and establish computing
systems in developing countries without any systematic approach.
However, many of the governments in these countries have
realized the need for a central agency to regulate and monitor
computing systems and their usage.
Khailany (1981) also believes that the central government
computing agency should be an independent agency, perhaps a
ministry by itself, with enough authority to monitor and
regulate the establishment of new computing systems and the
usage of the current ones.
In considering the LDCs's limited resources and the fast
developing nature of the computer industry itself,Chapman_Wardy
(1973), argued that a developing country will be advised to set
up a central data processing service to cover the following
objectives: (a) all automatic data processing utilization, (b)
data transmission from one department or organization to
another, and (c) education required by the users and others.

In this chapter, so far, information services in the
developed and less developed countries have been discussed. In
the survey of information services in the LDCs, information
problems and solutions were given a special attention. The
identified information problems in the LDCs are mainly

concerned the information service sectors in these countries. Investigating an information sector as a whole might not be possible by oneperson_research, such as the study in hand. Since the objective of this study is to explore the problems of the information services sector in Libya, the research of this sector will be conducted through one of its national information systems (manpower information system).

Manpower, especially educated manpower is one of the important resources in any country. Therefore, most of the countries (developed and less developed) have established education systems and training programmes to develop their respective manpower resources. For better planning and organization of manpower resources, many countries, especially the industrialized nations,have already established specialized manpower organization and manpower information systems. How far the developed and LDCs have gone in manpower information provision is the subject of analysis in the next section.

3.4 MANPOWER INFORMATION SERVICES

Labour is one of the inputs which contributes to the production of goods and services. Therefore,the preparation and employment of human resources for productive purposes are the focal points of manpower planning. In a free society, manpower planning aims to enlarge job opportunities and improve training and employment decisions, through the power of informed personal choice and calculated adjustment to rapidly changing demand [Lester,1966]. Hence, a good manpower information service is essential for directing vocational education and training programs, for sound employment counseling, for employer manpower planning, and for worker career selection.

Manpower planning is often defined as the attempt to match the

supply of people with the jobs available for them. This problem
may be posed at the national or regional level in which case it
is likely to be an aspect of planning undertaken by government
(Vassiliou, 1980). Consequently, measures of utilisation and
non_utilization of labour are of interest to the country's
analysts and policy_makers alike. These measures are needed to
answer such questions as: How serious is the employment problem
in the country? What are the levels of unemployment and
underemployment? Are the levels increasing or decreasing over
the years?
While sufficient answers to these questions can be made at any
time in the most of the developed nations,satisfactory answers
to such questions cannot be given in the majority of the LDCs,
mainly because of the lack of data on manpower statistics
(Kpedekpo and Arya, 1981).
    Thus, manpower and employment information has to be
comprehensive to meet the needs of a variety of users, and it
has to be made available regularly and promptly. Regarding
the importance of manpower resources and its data, and with
respect to the governments responsibilities as the biggest
manpower employer, governments in all countries, especially in
the developed nations, have established different public
departments and organizations such as employment committees
and statistical departments to carry out the manpower related
functions such as the manpower planning and manpower
information services functions.
Accordingly,the subsequent discussion is focused on two issues,
manpower information services in the developed countries, and
manpower information services in the less developed countries.

3.4.1 MANPOWER INFORMATION SERVICES IN THE DEVELOPED COUNTRIES.

The organization and development of manpower resources, traditionally, is a government responsibility. For effective organization and development of manpower resources, ample manpower and employment data must be maintained. Such data has to be comprehensive to meet the needs of a variety of users. It will also be most useful and effective if it is available in the right form at the right time. Beside this the potential users must be instructed in the ways that the information can be applied to achieve the greatest benefit from it.

With a potential of such manpower information services,however, governments of many developed countries have developed during the last three decades huge computer_based manpower information systems which suit their manpower situations and serve their needs of manpower information. Some of these systems mainly serve the supply and demand in the labour market by matching unfilled jobs with unemployed people. Others serve as stock keeper of the employees personal records and as a fact finder by retrieving the data of these personal records. However, both kinds are very important in manpower information services. Of the many implemented manpower information systems in the developed countries these days, some examples of these systems are illustrated as follows :

A_ PRISM : The initiative stage of building a central personnel record system in the civil service in Britain was taken in 1945. The main objective of that stage was to introduce a personal record for each individual civil servant which would be kept permanently up_to date. It was maintained centrally by the Treasury and was kept up_to date by recording any changes as they were reported by employing departments.

The record was transfered to a computer in 1968. Before 1975 and for almost 30 years the individual personnel records system was seen as the basis for statistical forecasting and as a guide towards formulation of policy. Indeed,it remained as a principal source of civil service statistics until it was superseded by the Personnel Record Information System for Management (PRISM) in 1975 (Marks, 1976).

The second construction stage of the personnel systems took place in 1970. The objective of the intended system in this stage is to provide essential personnel information, particularly for specialists. For that a new Central Management Staff Record (CMSR) was set up to help improve personnel management, particularly of the most senior staff.

CMSR was designed as a special system to assist personnel managers in the selection of officers to fill the most senior management posts and is not a general purpose personnel information system. Later on, the system was modified so it can serve a number of useful manpower planning needs.
The third personnel system in the civil service was initiated by the Organization and Methods Division 2 of the Treasury in 1967. In 1969 authority was given to proceed with the system that since has been known as PRISM. The key features of PRISM, Marks (1976) are:
1_ it is an integrated pay and personnel record system,
2_ it operates on a two_level database system, serving both levels of management, central and departmental,
3_ the central record is maintained as a collection of 500,000 individual personnel records and no attempt is made to hold any form of summary records,

4_ it is maintained on true database principles, database recording and multiple outputs.

Operationally, the system is organized on two_level of databanks, central databank and ring databanks. There are ten peripheral computers maintaining an integrated pay and personnel record system for the various departments, and they feed information to the central databank. There is a central computer whose main task is the maintenance of a central database of personnel information on all non_industrial staff, kept up to date with information from the peripheral departmental computers.

B_ The second British experience in manpower information systems is undertaken by the Manpower Service Commission (MSC). The MSC was set up in January 1974 to run the public employment and training services. To maintain its objectives the MSC was incorporated with nine Regional Manpower Intelligence Units (RMIUs), and in 1978 the MSC embarked upon a program of improving the way trends in the labour markets within the regions were monitored. In the same year MSC agreed to fund a pilot information system for the 70 local employment office areas that comprise the Northern Region of England. In 1980 the pilot database was extended into a nationwide system. By the end of 1982 the statistics of employment, vacancy and unemployment for the 923 employment office areas, that cover Great Britain, are systematically integrated and inter_actively interrogated by the users at any employment centre.
Originally, the database was set on the computer system shared by the Universities of Newcastle and Durham known as NUMAC (James, 1982).

C_ In the United States, the Executive Inventory System in USA

government was listed in the literature during the late sixties. This system, as Marks (1976) indicated, is similar to the Central Management Staff Record in the Civil Service in Britain. D_ The Canadians have a national manpower information service system which is known as the National Job Bank. The main objective of this system is to match unfilled jobs with unemployed people. The system uses direct telephone lines to connect the 400 employment centres throughout the country with a national computer control centre. Between 400 to 600 searches a day are carried out for jobs by this system. About 80 per cent of these result in potentially suitable jobs being found for clients.This databank system is similar to the MSC manpower database in Britain (Messer, 1981).

E_ DATA STREAM (Data System for Training, Research, Employment and Appraisal of Manpower), is a manpower data bank that was built in Canada during the sixties. The system was built and implemented under the control of the Public Service Commission in the country.

DATA STREAM is an information management system which provides information to all management levels to assist them to discharge their functions. The system holds 63000 personnel information records relating to administrative, foreign service, professi_ onal, scientific and technical employees of the public service of Canada. Each record contains information relating to basic characteristics, education, skills and aspirations. The data files are held on_line on disk files, and can be interactively interrogated on a real_time basis by staffing and planning officers from remote consoles distributed across Canada. The data bank must permit the retrieval of meaningful statistics

both for management planning and coordination as well as for manpower planning and optimum utilisation of manpower (D'Avignon and Guruprasad, 1971).

F_ In order to reduce the costs of unemployment insurance and to gain more exact knowledge of the structure and trends of the employment market, the Federal Ministry for Social Administration in Austria set a computer_based data processing system for the administration of unemployment problems in 1974. The dialogue_oriented system using lists of data from business concerns,factories, etc.,vacancies available,and data on those seeking employment incorporated key_word classification, was regionally based throughout Austria and provides for direct interrogation from a central databank on a matching_list basis (Computer and Control Abstract,1980).

The above examples of manpower information systems in the developed countries shows that the provision of manpower information has been seriously considered, especially by the governments of these countries. Such concern in manpower information services can be seen in the many sophistecated computerized manpower information systems that these countries have developed during the last three decades. The PRISM in Britain and DATA STREAM in Canada are examples of the manpower information systems that the Civil Service Departments of these countries have developed to maintain personal records of all civil servants or some important sectors of the public sector employees, and to provide the data that planners and decision makers might need for planning and organization of manpwer sectos in their countries. On the other hand, many developed countries have also set up the specialized manpower information systems such as the MSC data base system in Britain,

the National Job Bank in Canada and the Dialogue_Oriented system

for the administration of unemployment problems in Austria. The

main objective of these systems is to serve the labour market

by matching vacant jobs with unemployed people.

In the presence of these types of manpower information systems

in most of the developed countries, the availability of

sufficient and reliable manower information in these countries

might not be a problem.

To know where manpower information services in the LDCs stands

from the achievements the developed countries have made in

manpower information services, the next section reviews the

manpower information services in the LDCs.

3.4.2 MANPOWER INFORMATION SERVICES IN THE LDCs. In order to
----
formulate and successfully monitor a realistic manpower

development programme, some basic manpower data, such as the

supply of manpower distributed by age, sex, economic activity,

occupation and educational attainment should be maintained.

For these data to be properly utilised, it should be

systematically collected and classified. Because of the large

volume and numerous types of manpower data that is often needed,

the proper utilisation of manpower data can only be maintained

by constructing technological_based manpower information

systems. This is what has been proved by the developed nations

experience in this matter during the last three decades.

The development of effective scientific and technical

information systems is of vital importance to the plans and

progress of developing countries. The growth of such service,

as Woodward (1980) indicated, is hampered by problems, such as

the financial constraints and the shortage of professionally

trained personnel. Therefore, manpower information services in the LDCs, as specified in the literature, is even worse than the situation of information services in some other areas in these countries. For instance, one of the main conclusions of the evaluation of past ILO manpower planning projects in the Asian region, is that the available information base for various manpower planning operations was wholly inadequate (ILO, 1979).

In Egypt, Sayed and Hassan (1984) commented that there are noticeable shortages of information, especially for the activities concerned with manpower policies,such as employment planning information, demand and supply information, and vocational training information. The same persons therefore, argued that there is a need to design and introduce a new manpower management information system as a primary step to help in the formulation of a policy for manpower in Egypt.

In most developed countries, ILO (1979) reported in the late 1970's,the information available about employment,unemployment, training, wages and related subjects is roughly comparable in coverage and detail with information about other economic and social phenomena. This is rarely true for developing countries, where until recently,the emphasis has often been on information about products rather than people.

In practically all developing countries, as Richter (1978) commented, available information on the patterns and trends of manpower supply and demand does not fully meet the requirements either of the planners or of those who have to implement their decisions. Richter also added that even in the best of circumstances where specific labour market information programs have been instituted, the reliability, representativeness and

usefulness of the relevant statistical data are impaired by differences of definition, gaps in coverage, lack of disaggregation, overlong intervals between surveys, and delays in publication.

Consequently, the availability and quality of manpower data is still one of the most serious problems facing the manpower planners in the developing countries (Arousi, 1981). Hence,an improvement of present labour market information programmes is badly needed.

However, labour market information ought to be a part of wider national manpower data and information systems in the country. The essential objective of such a system is to throw light on the current and prospective patterns of manpower supply and demand for the national work force as a whole as well as for particular groups.

SUMMARY

Literature of information services in the LDCs during the last ten years consists of many research works which have been undertaken in different less developed countries, at different times and by different individuals and institutions. For instance, Adimorah (1976) concentrated on the problems of scientific work in the LDCs, Salman's (1981) work focused on the information needs of the developing countries by analysing case_studies of 8 developing countries from different continents, Nyagn (1983) tackled information systems situation in the LDCs in Africa, Salem (1980) studied the role of information in science and technology transfer in Arab countries, and Perez (1980) concentrated on information technology application in the LDCs by using Chelie as an

example.

Most of these studies found in the literature are not well_
documented, especially with regard to their data sources
and the research methodology used.

By putting together the conclusions of these studies and many
others in the same literature,two themes seem to be developing
in this field. The first and the broadest is concerned with
information services problems in the LDCs, and the second is
concentrated on the solutions to these problems.

It is clear from many of these studies that some of the
identified problems of the information services in the LDCs,
such as the poor organization of information services and the
shortage of information specialists, are common obstacles in
many developing countries. But,other problems identified, such
as the lack of financial resources and the shortage of computer
facilities might not be considered as major constraints of
information services in some of these countries. Because
different countries have different economic, cultural and
social conditions,therefore,mostly they have different problems
(or priorities to certain problems) and they often require
different types of solutions to suit their unique problems.

With the convention that information services in each
developing country might have different problems and needs
certain types of solutions to its problems, the main objective
of this study is to explore the problems which handicap the
development of information services in Libya as one of the
developing countries.

There are many types of information that are very important
to the planners and decision makers in each country. Of these,
for instance, information about national resources such as

manpower,the public services information such as education and
health services information, and the trade and finance
information.

Manpower is one of the most important national resources in
Libya, because of its small population and the intensive
development programmes that have been undertaken since the early
1970's. Accordingly,in this study manpower information services
in this country is used as a measure to identify the main
problems of its information services sector.

Economic progress, population characteristics and education
availability, are some factors which affect manpower resources
and information services in any country.Therefore,these factors
and their effect on manpower resources and information
availability in Libya, are analysed in the next chapter.

CHAPTER 4

THE ECONOMIC, POPULATION, EDUCATION
AND MANPOWER DEVELOPMENT IN LIBYA

In the last chapter, the discussion is mainly concentrated on
the application issue of information systems and its rule in
information availability and services in both developed and
less developed countries.

Of the important factors which affect the availability of
information and its services in any country, are the level of
economic progress, and the availability of resources and
educated manpower in the country. Accordingly, the discussion
in this chapter, is mainly concentrated on the following:

The economic progress and the development achievements that
Libya has seen during the last three decades, are reviewed in
the first section. In section two, the population growth and
labour force development in Libya are reviewed. The economic
role that the labour force of any country plays is dependent
on the quality of the labour force members. The more highly
educated and better trained the labour force, the greater the
role it can play in economic development. Hence, the provision
of education services, and their role in manpower development
in Libya are described in section three. Regardless of the
scale or nature of the resources of a country, the failure to
use them effectively will lead to wastage. In the last section
of this chapter, manpower organization and allocation in Libya
are illustrated.

In this study, labour force is defined as the " sum of the
numbers of people employed (for pay or on their own account
or as unpaid family workers) or unemployed (commonly defined

as people who are not at work but are seeking work or are available for work) (Kpedekpo and Arya, 1981, page 116). Also the terms " economically active " and " productive " labour force mean the number of people who are formally registered as employees. They are exchangeably used in this study.

4.1 ECONOMIC DEVELOPMENT

Libya is an Arabic state. It lies on the south coast of the Mediterranean Sea in north Africa. It has a small population (3,237,160 in 1984), and a large land mass of more than 1.7 million square KM. Independence was attained on the 24 of December, 1951.

From the first decade of this century, Libya was an Italian colony. By the end of the Second World War, however the country was in a sorry state. The people were politically undeveloped. Anglo_French control was established in 1943, and the country was divided for administrative purposes into three regions. The south part of the country (Fezzan) to be controlled by French military force, and Tripoli in the north west and Benghazi in the north east to be both controlled by the British.

Most of Libya is desert with an average rainfall of less than 50 millimetres per year. About 5 per cent of the total area of 680,000 square miles is judged fit for economic use. Farming is possible on less than 1.5 per cent of the country's total area, mostly on the coast lands. Only about 0.5 per cent of the country is actually under crops.

In 1951, annual income was estimated at 15 British pound per capita. Dr Adrian Pelt (the UN commissioner in Libya in 1950_51) commented, that Libya was an underdeveloped area with a marginal agricultural economy, handicapped by inadequate rainfall and

poor soil (Wright,1983). The Libyan people were undereducated and untrained; between 1911 and 1943 an Italian colonial education was imposed and the Koranic schools (the traditional education system in the country) were destroyed.

Enrolment of Arabs in the Italian schools was low. By 1943, at the end of the Italian colonial period, the number of Arabic pupils had risen from 340 students in 1921 to 1800 students in 1943 (Birks and Sinclar, 1980).

In the early 1950's, Wright (1983) indicated, that there were between 16 to 18 Libyan university graduates in all. There was practically no secondary schooling for Arabs, and illiteracy was estimated at 90 per cent.

At the time of independence (in 1951),there were a number of small factory industries clustered, for the most part, around Tripoli, established and managed by Italians. They included flour_milling, olive_oil_refining,tobacco and salt manufacture, foot_wear and clothing, vehicle repairs, printing, fish processing, soap and soft drinks manufacture.

In 1950, the country's income from exports amounted to $ 6.35 million. This amount was less than the cost of imports ($ 14.19 million). The deficit was made good by the British, American and French military expenditures inside Libya, beside the grantsin_aid from the same countries.

Data for the financial year of 1954 / 5, indicated that half of the country's total revenues, of some 11 million Libyan pounds (LP), came from external assistance. Apart from external assistance, the main other sources of state income were income taxes, customs duties, tobacco and salt monopolies and payments for military base rights.

The lack of political stability prior to independence in 1951

meant that Oil exploration was not possible in Libya before 1953. The enactment of the minerals law in 1953 led the country to permit eleven international oil companies to start running geological surveys of the country. The first oil find was made in 1955 (Waddams, 1980).

The commercial production of oil and the inflow of its revenue started in 1962,although the expenditures of the oil companies on exploration had increased the country's income from the industry as shown in table 4.1.

TABLE 4.1

The Libyan Government Revenues
From Oil (1955 _ 1965)

Fiscal year	Revenue(LP000)	Fical year	Revenue(LP000)
1955/56	51	1961/62	2000
1956/57	62	1962/63	7200
1957/58	77	1963/64	23800
1958/59	91	1964/65	56000
1959/60	97	1965/66	116000
1960/61	115		

Source : Waddams, Frank C. (1980), table 6.3, p.118.

At the end of the 1960s,there was little industry, although developing programmes in housing,education and agriculture were in effect, and some of positive results, such as the improvement in education services and the construction of new houses, were emerging.

The population which was estimated in 1969 to be 1.84 million, was characterised, at that time, as unskilled and heavily reliant on foreign labour expertise. In education,it was found that one Libyan in every six was a full_time pupil, with over a quarter of million children enroled in state and private schools. At the same time,over three quarters of the population were still illiterate in the early 1970's.

4.1.1 ECONOMIC DEVELOPMENT SINCE 1970. Because of the oil boom
in the 1970's, the Libyan income from oil production had
increased each year during the 1970's, as shown in table 4.2.
For example, the revenue from oil in 1976 was LD 2,220 million.
Accordingly, the main national attention since the early 1970's
has been focused on speeding the development process and
improving the people's health, education and welfare. Four
development programmes have been undertaken in the period
1970_1985, and the fifth was started in the beginning of 1986.

TABLE 4.2

The Libyan Oil Production And
Revenue From 1970 to 1979

Year	Oil production (Thousand barrels per day)	Oil revenue (LD million)
1970	3,318.0	482.6
1971	2,760.8	593.7
1972	2,239.4	514.0
1973	2,174.9	663.6
1974	1,521.3	1,776.0
1975	1,479.8	1,510.3
1976	1,932.6	2,220.4
1977	2,063.4	2,620.0
1978	1,982.5	2,486.8
1979	2,090.1	3,848.7

Source : R.I. Lawless and A.M. Findlay (1984),
         table 8.5, P. 249.

In the four completed development plans, a large percent of the
investments were allocated to the physical construction of the
principal economic sectors in the country such as Agriculture
and Housing, and the provision of urgent services such as
Education and Health. For example, in the economic development
programme (EDP) of 1973-75, about 21 percent of the total
investment was spent on agriculture, the housing sector was
given second priority, and the mining and industrial sector
was allocated the third largest share of the investment, as

shown in table 4.3.

TABLE 4.3

Investments Allocation In The Economic
Development Programmes (EDPs) Of 1970_72
And 1973_75.

Economic sector	EDP 70_72 LD million	%	EDP 73_75 LD million	%
Agriculture	153.400	17.7	441.285	20.9
Housing	124.553	14.4	294.991	13.9
Communication	113.944	13.1	199.003	9.4
Mining & industry	100.628	11.6	261.845	12.3
Local administration	88.293	10.2	141.068	6.7
Education	78.757	9.1	185.919	8.8
Electricity & water	71.910	8.2	220.000	10.4
Petroleum	53.258	6.2	189.039	8.9
Health services	36.734	4.3	69.793	3.3
Labor & social affairs	14.705	1.7	22.439	1.0
Information & culture	11.017	1.3	31.978	1.5
Economic & tourism	10.504	1.2	9.630	0.4
Project reserve	4.803	0.6	23.000	1.1
Planning	4.57	0.5	5.000	0.4
Youth & social affairs	0	. 0	17.000	0.8
Administrative develo_ pment	0	0	2.515	0.1
T o t a l s	866.963	100.	2,115.00	100.

SOURCES: Central Bank of Libya ,Sixteenth Annual Report
of the Board of Directors, Tripoli, Libya, 1972,
p. 112; and central bank of Libya, Eighteenth
Annual Report of the Board of Directors,
Tripoli, Libya, 1974, p.115.

In the EDP (1976_80), in which a total investment allocation
of LD 8813 million was specified, the agriculture sector was
given the highest priority (20.6) per cent of total investment,
heavy industry was given the second highest (16.9) per cent,
and communication was given third priority, as shown in
table 4.4.

As indicated in tables 4.3 and 4.4, it seems that sectors which
did not provide urgent services or need large physical
constructions were not allocated important development funds in
the completed development plans.   Information and Planning are

examples of such sectors.

<div align="center">TABLE 4.4</div>

<div align="center">Investments   Allocation In   The Economic
Development Programmes 1976_80 and 1981_85</div>

Economic sector	EDP 76_80 LD million	%	EDP 81_85 LD million	%
Agriculture & land ref.	1817.8	20.6	3100	18.2
Light industry	38.7	0.4	1200	7.0
Heavy industry	1485.2	16.9	2730	16.1
Petroleum & gas	350.2	4.0	200	1.2
Electricity	858.3	9.7	2000	11.8
Education	588.6	6.7	1000	5.9
INformation & culture	124.5	1.4	150	0.9
labour force	57.1	0.6	150	0.9
Health	310.1	3.5	560	3.3
Social security	23.0	0.3	130	0.8
sports	76.6	0.9	100	0.6
Housing	954.5	10.8	1700	10.0
Public utility	748.1	8.5	1300	7.6
Communication	1051.0	11.9	2100	12.3
Economics	87.5	1.0	500	2.9
Planning	26.0	0.3	80	0.5
Justice	52.5	0.6	0	0
Projects reserve	164.5	1.9	0	0
T o t a l s	8813.1	100	17000	100

SOURCE : The secretary of Planning, The Economic And Social

Development Plan (1981_1985). Tripoli, Libya, 1981.

The main examples of development achievements by the completed

development plans,   are the building of 300,000 houses,   the

construction of 16000 KM of roads, and the installment of

300,000 telephone lines. In education, the number of pupils in

schools amounted to 1,129,683 in the academic year 1983/4,

whilst this number was 312,709 only in 1968/9 [Secretariat of

of General Education, Libya, 1984].

By the late 1970's, Libyans were amongst the healthiest people in

Africa. Health been much improved by better subsidised eating,

and better understanding of the basic rules of diet and hygiene.

Medical care is free, and such indicators as the ratio of

hospital beds to population (five per thousand, rising to a planned seven per thousand in 1980) and physicians (one to 1,124 residents in 1975 rising to one per 750 in 1984) approach European and North American standards (Wright, 1983).

TABLE 4.5

The Achieved Growth Rates By Economic Sectors

Sector	yearly compound rate of growth (1970_1984)
Agriculture	14.9 %
Manufacturing	22.5
Electricity	20.0
Construction	17.7
Transportation	18.6
Ownership of dwellings	10.5
Public services	17.5
Education services	15.5
Health services	18.1
Oil and natural gas mining	11.2
Sectors other than petroleum & gas	17.7

Source: Peoples General Committee, Development's Achievements in Fifteen Years (1970_1984), Tripoli, Libya 1985.

Other sectors of the economy have achieved remarkable growth rates in the last fifteen years, as shown in table 4.5.

By the mid 1980's, the achieved economic progress in all sectors elevated the average personal income in the country from LD 642 in 1970 to LD 2058 in 1984.

Planning without sufficient reliable information is, as Shuman (1982) argued, " an exercise in day dreaming ". Unfortunately, planners in Libya still suffer from a lack of the adequate information needed for formulating and following up development plans. Because the information services sector in Libya is still poor, the secretariat of planning stated " The coverage, reliability and time lines of statistical information in Libya are not adequate to meet the requirements of comprehensive planning and efficient evaluation of actions taken " (

Secretariat of Planning, 1981, p. 119).

While appreciating the progress that each programme might have made in the country, follow_up reports of the execution of these plans have indicated some critical comments that are worthy of recognition in this part of the study. For example, the follow_up report of the third development program (76/80) showed that in most sectors, the achieved rates of growth vary from the planned or expected ones. For instance, in agriculture the planned annual rate of growth was 15.8 per cent, while the achieved rate was 3.9 per cent only; in the construction sector the planned rate was 12.5 per cent, but the achieved rate was only 3.2 per cent; and in the manpower sector the planned rate was 3.7 per cent and the achieved rate was 3.7 per cent.

The reasons which are most likely affect the success of the development programmes's execution, include the following:

(1) the lack of complete and up to date data about national resources and on the follow up of the executed development programmes,

(2) this shortage of sufficient and up to date data has led to lack of accuracy in the planning and execution of the formulated development plans,

(3) the shortage in skilled personnel is a well known problem in all sectors, but as the Secretariat of Planning (1980) indicated, the lack of meaningful manpower statistics has made the manpower problem even worse.

Therefore, to solve at least some of the problems that confront the execution of the development programmes, and to achieve a better outcome of such programmes, formulating and organizing sectoral information systems is strongly required.

With regard to the special priority that has been given to

the physical development of the main sectors, and with respect
to the present poor situation of information services in the
country, the information services sector seems to be in need
of much more attention in the form of investments and
organization.

4.2 POPULATION GROWTH AND CHARACTERISTICS

Libya like many other countries, has, since its independence
in 1951,undertaken censuses of its population, once each decade.
The first census was conducted in 1954; and its results showed
that the total Libyan population was 1,088,873 inhabitants. Ten
years later, the second census took place when the country's
population reached 1,564,369 persons. The third population
census was completed in 1973. Its results indicated that the
total population of the country was 2,249,237 inhabitants. With
one of the highest growth rates in the World (4.2 %) (
Secretariat of Planning, Libya, 1984), the Libyan population
has climbed to 3,637,488 persons, as the fourth population
census in the country indicated in mid_1984. This census showed
that Libyan citizens comprised 89 per cent of the total
population, while the non_libyan residents (mostly foreign
workers, their spouses and children) accounted for the other
11 percent.
Improved living conditions, and the increase in personal income
in Libya, during the last two decades, have led to an increase
in the number of live births and a decrease in the number of
deaths among people in the country. The number of Libyan births
has increased from 108,355 in 1975 to 115,358 in 1979. At the
same time, the crude birth rate per 1000 Libyan population,
averaged,in the second half of the 1970's, 47.7 children, while

it was 45 in the first half of the same decade (Showers,1979).
The number of Libyan deaths decreased from 16,147 in 1975 to
14,326 in 1978 (Libya, Secretariat of Planning, 1982). As
illustrated in table 4.6, the number of Libyan females has
always been less than the number of males during the last three
decades.

TABLE 4.6

The Distribution Of Libyan Population
By Sex In The Last Four Censuses

Yer	Total Population (Nationalist)				Total
	Male		Female		
	n	%	n	%	n
1954	540,364	52	501,235	48	1,041,599
1964	788,657	52	726,844	48	1,515,501
1973	1,057,919	52	994,453	48	2,052,372
1984	1,653,330	51	1,583,830	49	3,237,160

Sources: Secretariat of Planning, Census and Statistical
          Department, Statistical HandBook. Tripoli,Libya 1982.

TABLE 4.7

Distribution Of Libyan
Population By Age Groups

AGE GROUP	CENSUS OF YEAR			
	1954	1964	1973	1984
0_14 years	38.5 %	44.1 %	51.4 %	50.2 %
15_64 years	55.4	50.8	44.6	*
65_ and older	6.1	5.1	4.2	*

Note: * not available

Sources: Secretariat of Planning, Census and Statistical
         Department,Statistical HandBook. Tripoli,Libya,1982;

         Secretariat of Planning, Census and Statistical
         Department,Preliminary results of the 1984 Population

         Census. Tripoli,Libya, Nove. 1984.

In common with many other Third World countries, Libya was, and still is, a young country. For example, it was found that in Libya in 1964 the median age was 19 years, and about 44 per cent of the Libyan population was under 15 years of age (Wright, 1983). The subsequent decade (1964_1973), as shown in table 4.7, showed even greater increase in the youth percentage of the population. The results of the 1984 census indicated that more than 50 percent of the Libyan people are younger than 15 years. In Britain, in comparison, the same age group (0_14) constitutes only about 20 per cent of the total population (United Kingdom, CSO, 1985).

The results of the 1984 population census showed that the number of Libyan nationalist workers amounted to 663,990 individuals. This means that the number of people who are economically productive count for only 41.2 per cent of the total population whose age is not less than 15 years, or 20.5 per cent of the total Libyan population. However, the other 947,699 inhabitants who are 15 years old or above and not productive are mainly either full time students or houses wives.

In Libya, as well as in some other Arabic countries, female participation in economic activities is very limited, because of taboos and some other religous customs in these countries. In Libya, for example, the population census of 1984 indicated that of the 778,869 females of age 15 years or older, only 90,760 females are economically productive. That is, only 11.7 per cent of the female labour force (of age equal to or greater than 15 years) are productive (registered as employees). This means that only 5.7 per cent of the total female population in the country are productive.

The results of the same census showed that of the 832,820 Libyan males whose age is not less than 15 years, 573,230 persons are productive. That is 68.8 per cent of the male labour force are economically active, or 34.7 per cent of the Libyan male population are productive, as shown in table 4.8.

TABLE 4.8

Sex And Age Distribution Of Labour
Force In Libya As In 1984

Description	MALE		FEMALE	
	n	%	n	%
Total Libyan population	1,653,330	51	1,583,830	49
Population of age olderer than 14 years	832,820	50.4	778,869	49.2
Productive labour force	573,230	68.8	90,760	11.7
Non_productive labour force	259,590	31.2	688,109	88.3

Source: Secretariat of Planning,Central Statistical Department, Preliminary Results of the 1984 Population Census.

Tripoli, Libya, Nove. 1984.

It is true that the percentage of the productive personnel in the Libyan population (5.7 of the total female population and 34.7 of the total male population), as was in 1984, is quite small. Nevertheless, the number of productive people, compared with the 1973s' statistics, has increased by 130,000 workers (70,000 males and 60,000 females).

The percentages of the productive persons (68.8 for males and 11.7 for females) are very low,especially within the conditions of the Libyan population, and the high demand for manpower during the last two decades. The high youth percentage in the Libyan population is a major factor in the low percentage of productive population in the country during the last decade.

However, education, as illustrated in the next section, is another factor which has affected the availability of educated manpower in the country.

4.3 EDUCATION SERVICES PROVISION

Due to its previous hard economic and political conditions, the traditional education system in Libya was based upon Koranic (Kutab) schools. However, during the period of Italian rule, an Italian colonial education system was imposed, and the domestic system was impaired. At the end of Italian colonial period, in 1943, the number of Arab pupils was only 1800 (Birks and Sinclair, 1980).

Under Anglo_French control, the education service was slightly improved. Therefore, in 1951 there were 194 primary schools and a total enrolment of over 32,000 pupils. Despite the emphasis of education being at the primary level, during the time of military control, over 90 per cent of the Libyan population in 1952 was illiterate (Birks and Sinclair, 1980).

TABLE 4.9

Pupils And Students Enrolment By
Education Level As Was In 1963

Education level	enrolees		
	male	female	total
Primary school	128,086	30,875	158,961
Secondary school	19,774	2,055	21,829
Technical school	1,669	425	2,094
Teaching training	1,725	682	2,407
Higher education (university & tech	—	—	1,239

Source: Statistical Office, UN, Statistical Year Book (1966).
        New york, 1967.

Between 1952 and 1962, education services were modernised, because at that time the country was still suffering from

economic and organizational problems. However, this small population with its very limited resources made respectable education achievements in the decade followed the country's independence, as the United Nation statistics showed in table 4.9.

By the early 1970's, over three quarters of the population were still illiterate. Therefore, the government proposed within its development programmes to achieve full literacy by 1980. To achieve this ambitious objective, the government took the decision in the early 1970's that primary and elementary education were to be compulsory for all Libyan children; besides this, the education sector has consistently been awarded ample development funds in all completed development programmes (see tables 4.3 and 4.4). However, from the sum of LD 20459.2 million that was spent in economic development programmes over the period 1970_84, the education sector was allocated LD 1334.1 million with a relative importance of 6.5 per cent from the development's investments (People General Committee, 1985). Accordingly, the emphasis on education services development has shown, in the early 1980's, remarkable progress. For example, the numbers of teachers in general education has risen to 73,865 in the academic year of 1983/4, a more than 386 per cent increase compared with their number in 1969/70. University and higher education, relatively, have seen more progress in the second half of the 1970's and beyond. The number of students in universities, for example, amounted to 40,000 in 1983/4, compared to 3663 in 1969/70. And by 1976, the country started to have, for the first time, two large universities (El_Fatigh University of nine colleges, seven of them in natural science and two

in social science; Garyounis University,comprises ten colleges, five in natural sciences and the others in social sciences). At the same time,five high technical schools were established; electricity and petroleum high technical institutions are examples of these education schools.

TABLE 4.10

Enrolees By Education Level As In 1983/4

Education level	Number of Students
Primary school	757,661
Preparatory school	252,766
Secondary school	68,259
Teaching schools	29,916
Secondary technical	21,081
University & higher tech	39,611

Sources: Secretariat of General Education, Education Achievements from 1970 to 1984. Tripoli,1984; People General Committee, Development's Achievements in Fifteen years. Tripoli, 1985.

In 1980, a third university was established in the biggest industrial area in the country, (Elbrega). By 1983,the fourth university,the University of Sabha,was established. These four universities have covered the provision of the important knowledge areas in both natural and social sciences. The situation of enrolees for the academic year of 1983/4 is illustrated in table 4.10.

Concerning the out of the country education programmes,the secretariat of General Education (1984) reported that between 1970 and 1977, 2096 students were sent abroad for college degrees, and 1483 students for post graduate programmes.In the same period, 1032 from the college level and 486 post graduate students attained their qualifications and returned back home. In the first four years of the 1980's, the country sent

overseas 258 students for college level studies, 283 for master programmes and 284 for Ph.d degrees. During the same four years, 306 college students, 324 from Masters programmes and 196 doctoral candidates successfully completed their programmes and returned back home. However, the breakdown of political relations between Libya and United States in 1980, and between Libya and Great Britain in 1984, has severely handicapped the development programmes of highly educated personnel. This is because Libya, so far, has been completely dependent on British and American universities in qualifying its post graduate candidates.

Because of the limited education apportunities that were available to the Libyan people before the mid 1960's, and the high percentages of its youth and students populations, Libya has been facing a manpower shortage problem, especially, in highly educated personnel (see table 4.13) since the early 1970's.

4.4 MANPOWER RESOURCES

In the 1950's, and the first half of 1960's, Libya was an underdeveloped area with a marginal agriculture economy. Irregation and dry farming, animal husbandry, craft and small factory industries (mainly in food and clothing) constituted the main sources of living to the Libyan people. Factory industries employed, at that time, 15 to 20 thousand people. The starting of oil production in the mid_1960's, and the expansion of this industry since then have created a large demand for manpower, especially educated workers. Within a small, young and illiterate population, Libyan manpower resources have not been able to meet the Libyan economy's needs of manpower since the late 1960's. Therefore, much of the demand

for additional labour and expertise of all kinds has to be met by foreigners.

In this study, high_level manpower is defined as those workers with secondary level certificates and those workers with university and higher technical degrees.

As a result of the oil boom in the early seventies, the income from oil had increased substantially. Accordingly, the emphasis on the development programmes was growing and the investments in developments, in turn, were increasing. Therefore, in the first half of the 1970's two short development plans of about LD 2,981 million were undertaken. Accordingly, the demand for high level manpower in all fields of specialisation grew remarkably. For example, the total high level manpower in Libya in 1973 was 28,474 persons, of whom 18,990 workers are nationals and 9,483 are from abroad. That is, 33 per cent of the total high level manpower are expatriate. By the end of the three_year development programme (1973/5), the numbers of high level manpower rose to 48,690 workers; while the expatriate workers counted for 41.4 per cent, as shown in table 4.11.

TABLE 4.11

Nationals And Foreign High Level Manpower In Libya

Year	total	nationals	foreigns	% foreigns
1971	18,885	10,644	8,221	43.5
1973	28,474	18,990	9,483	33.3
1975	48,690	28,523	20,167	41.4
1977	55,855	36,844	19,011	34.0

Source : A. Gummed, 1979, table 12, p.58.

To satisfy the growing demands for manpower, and to minimize

the dependency on foreign manpower, the " Libyanization" issue
was given a great deal of interest by the country's decision
makers. For example, the movement toward replacing expatriates
with Libyans in the oil industry was strongly accelerated after
the revolution, and by the end of 1971, the aim of placing
Libyans in all administrative positions such as services,
personnel, accountants, and training had been accomplished in
the oil field.

TABLE 4.12

Employment (Libyans And Non_Libyans)
By Occupational Status, 1975

Occupation status	total employees (thousand)	non_libyan employees n	%
Professional&managerial	27,7	16,1	58.1
technical&supervisors	58,1	20,4	35.1
Clerical workers	37,5	6,2	16.5
Skilled & semi_skilled	346,6	95,2	27.5
Unskilled workers	207,2	85,1	41.1
Total	677,1	223,0	32.9

Source: Ministry of Planning and Scientific Research, Census
and Statistical Department, Year Book(1976). Tripoli,
Libya, 1977.

Libya's chief economic problem, as Morgan (1980) commented,
is its manpower shortage. Consequently, since the late 1960's,
there has been a willing acceptance of non_Libyans working
throughout the economy, and specifically, skilled, professional
and senior administrative personnel. Therefore, in the mid
1970's, immigrants,as shown in table 4.12, provided two_fifths
of the country's unskilled labour, 27 per cent of skilled and
semi_skilled, over one_third of its technicians, and 58 per
cent of management and supervisory staff.

With a population of 2.5 million inhabitants or less,of whom
50 percent were younger than 15 years, three_quarters of a

million of them were full time students and not less than 60 per
cent of them were illiterate, the government began a $ 23,750
million five_year (1976/80) social and economic development plan
envisaging annual average increases of over 10 per cent in the
Gross National Product.   Within these conditions of the
population in Libya and the ambitious development plan, the
demand for manpower,   especially skilled personnel would be,
undoubtedly,   very large and far from being accomodated by
indigenous labour force.

TABLE 4.13

Nationalist And Foreign High Educated
Employees By Education Qualifications As In 1980

Education Qualification	Nationalist Workers		Foreign Workers	
	n	%	n	%
Secondary School certificate	9320	35	17489	65
Diploma in Education	35328	89	4179	11
Diploma in Nursery	1618	27	4335	73
Qualification Higher Than Secondary School Certificate and Lower Than College Degree	3347	37	5673	63
College Degree and Higher Qualifications	11586	27	32135	73

Source: Secretariat of Planning, Census and Statistics
         Department,Manpower Survey, 1980. Tripoli,Libya,1980.

The consequence was that in 1977 the expatriate workers counted
for 59 per cent or more of the high level manpower with
university degree (Gummed,1979). As shown in table 4.13, the
1980's manpower survey indicated that in the highly educated
manpower, expatriate workers made up a large percent in almost
all fields of employment.

   In 1980,the national population as a main source of manpower

in the country, was 2.8 million inhabitants. With a compound annual rate of growth of 3.9 per cent, the national population increased by about half a million between 1975 and 1980. Just as before, the rate of population increase still outstripped the productive labour force percentage of increase, which was 3.2 per cent, although the planned rate was 3.7 per cent.

TABLE 4.14

Population And Productive Labour Force's
Annual Rate Of Growth As In 1975 And 1980

Description	1975 number	1980 number	yearly rate of growth % planned	% achieved
Total population	2,698,100	3,245,800	5.2	3.9
National population	2,316,500	2,804,600	3.9	3.9
Non_Libyan residents	366,600	441,200	12.0	3.8
Total employment	677,100	812,800	6.5	3.7
Indigenous workers	454,100	532,800	3.7	3.2
Expatriate workers	223,000	280,000	11.5	4.7
Productive national females......	35,400	58,900	6.6	10.7

Source: Secretariat of Planning, The Economic and Social

Development Plan (1981_1985). Tripoli, Libya, 1981.

Therefore, the indigenous productive labour force increased by only 70,000 workers in 5 years (1976_1980). However, the rate of increase of expatriate workers was 4.7 per cent, much less than the planned rate, although still higher than the rate of increase in the national workers, as shown in table 4.14. Moreover, the foreign workers' share of total employment in the country increased from 32.9 per cent in 1975 to 34.4 per cent in 1980. The remarkable achievement in the national labour force

during the 1970's, was the increase in the number of productive women, whose share in the national labour force rose from 35,400 workers in 1975 to 58,900 in 1980. The 10.7 per cent annual growth rate that was achieved in female workers was not only the highest achieved rate in all population and labour force parameters, but also was higher than the planned growth rate (6.6 %). Nevertheless, the 11.7 (see table 4.8) per cent female share in the national productive labour force is still very low in view of the national measures (in United Kingdom, for example, female's share of the working population was estimated in 1982 to be about 39 per cent) (Annual Abstract of Statistics No. 120, UK,1984).

In 1980, the national productive labour force accounted only for 19.0 per cent from the total population (in Syria, the working population in 1979 was about 22 per cent of Syria's population) [Wilson, 1984].

With a 5 per cent planned rate of growth, the national productive workforce was expected to total 687,000 workers in 1985, of whom about 100,000 are productive women. This is, 14.7 per cent of the Libyan productive work force in 1985 was expected to be female. However,the total demand for labour was expected to be 1,061,800 workers in 1985,of whom about 375,000 workers (36.1 per cent) should be expatriate.

4.5 MANPOWER ORGANIZATION AND ALLOCATION

Education services in Libya are part of the major functions of the public service sector in the country. Schools and other education institutions are all fully supported by the government. The Secretariat of General Education is the main public body responsible for organizing and providing education

services to the people of Libya.

Education services in Libya are provided at all levels free of charge and the government sponsors all Libyan students inside and outside the country. Moreover, primary and preparatory education are, by law, compulsory for all Libyan children.

The main source of indigenous high level manpower is the educational institutions inside the country, and the education and training programmes abroad. Pupils who successfully finish elementary school can attend secondary school if they are not older than sixteen years; otherwise they are sent to the intermediate technical institutions. For those who are able to pass the secondary level with a minimum point grade of 65 per cent, they can attend colleges or high technical institutions inside or outside the country. Whoever completes the secondary school level with point average less than 65 per cent, they are sent to high technical education only.

All Libyans, except for those who completed their studies on their own accounts, after they finish their education programs are obligated to work under government control, either in the public service departments or with the public organizations.

It is the responsibility of the central office of the civil service department (C.S.D.) to allocate all new graduates to job vacancies all over the country. Accordingly, all colleges, and high and intermediate technical schools are obligated to send to the civil service department complete lists of the names of all graduate students at the end of each term. At the same time, all public service departments, Libyan establishments and public corporations write, usually once a year, to the civil service department stating their needs for high level manpower. Based on the number, qualifications and specialities of the new

116

graduates on one hand, and the public sector demand of educated manpower on the other, the CSD completes the placements of the new graduates, with the first priority given to the public service departments, because CSD is the only channel through which the public service departments can get their needs of manpower. Public corporations are allowed to recruit through some other channels, such as employing national qualified personnel who completed their education on their own account or recruit foreign workers from abroad.

SUMMARY

In this chapter, economic development, population, education and manpower resources in Libya were discussed. The important economic development programmes in Libya were started in 1970. In 15 years (1970_1985), four development programmes were completed. Investments and attention in these programmes were mainly devoted to the physical construction of the main sectors of the economic infrastructure, especially those which directly provide or contribute to the provision of some of the people's major needs, such as housing, health and education services.

After 15 years of intensive development programmes, remarkable progresses have been achieved in the main economic sectors, especially in housing, education, health, and electricity. However, some other sectors, such as information services and technology, have made very limited progress, because these sectors were not allocated enough resources, on the assumption that, so far, the services provided by these sectors are less important to the people compared with housing or health , for example.

Until 1984, when the last population census was undertaken, the total population in Libya was less than 3.5 million. One of the main characteristics of the population in Libya, as found by the last two censuses in 1984 and 1973, is that the percentage of people younger than 15 years, is more than 50 per cent of the total population. That is, compared with other nations such as Britain, Libya has a young population. Because of its small and young population, and the large development investments, Libya has faced, in the last two decades, a drastic shortage of educated manpower.

In the early 1950's, Libya was a very poor country, and more than 90 percent of its population were illiterate. Following its independence in 1951, and the start of oil production in 1962, education services in Libya have improved and the numbers of students in all education levels have tremendously increased. For example, the number of students in higher education (university level) has risen from 1,239 in 1963, to 3,663 in 1969/70, to 39,611 in 1983/4. In 1983, Libya had four universities which provide higher education services in many natural and social sciences areas.

The population of any country is the main source of its labour force. As shown in tables 4.6, 4.7 and 4.8, the characteristics of the Libyan population (small and young) are a major factor in the manpower shortage problem that Libya has been facing since the late 1960's. The delay of education services provision in Libya has also contributed to the problem of educated manpower shortages.

In the past, proper manpower planning in Libya was not available, because of the lack of sufficient and reliable manpower statistics. This is because, in the past, information

services, at all levels (national, sectoral and organizational)
were not a major issue.   To examine how good the information
services   are   in Libya,   the next chapter is devoted to the
specific study of the national information services system.

CHAPTER 5

INFORMATION SERVICES IN LIBYA

In the last chapter, the discussion is mainly concentrated on the economic development in Libya, especially population, education and manpower resources, and the effect of these resources on manpower and information sevices in the country. In this research study, manpower information services in Libya are used as a means of investigating information services problems. Accordingly, manpower information services is covered in this chapter as a part of the discussion of the national information services in Libya.

Therefore, the main objective of this chapter is to review the availability and organization of information sources and services in Libya. Accordingly, the contents of this chapter are organized as follows:

In the first section, the national information system's objectives and components are briefly specified, the perception of information by the Libyan people and their realization of the importance of information for development are discussed, the efforts that have been made in respect of the construction of the national information network in Libya are explained, and the present state of this network is reviewed.
The second section explains the situation of the main components of the national information services network in the country. Here, therefore, the organization and the services of libraries, and documentation and information centres are discussed. Information publication and dissemination are crucial functions in the information service industry. Therefore, in section three, a review of the available publication and dissemination

facilities is performed, and the problems which hinder the services of these facilities are specified, while in section four, attention is focused on bibliographic control, its efficiency and drawbacks.

The steady increase in the type and volume of published and disseminated information led to the explosion of the information technology revolution, which was crowned by the emergence of sophisticated computers and communication facilities. Therefore, computer implementation and needs in Libya are discussed in section five. Finally, in section six, attention is focused, in particular, on manpower information services in Libya.

5.1 THE STRUCTURE OF THE NATIONAL INFORMATION SERVICES NETWORK IN LIBYA.

The degree of structure of the information systems network and the level of its services in Libya are critical, not only because information is an important resource for society, but also because the nature of the implemented political system in Libya demands more information for many of its people to be able to carry on their responsibilities (El_Hosh, 1985). On the other hand, information provision in Libya, at present, is a matter of challenge to the country; because of the high rate of illiteracy, many people in Libya still do not realise the importance of information for economic and social development; therefore, they neither appreciate nor respect information. The systematic management of information services is absent, and the implementation of modern information technology is still remote from the majority of information providers and users.

The term " National Information System ", as defined by the governmental committee in 1974, comprises all the organizations

and activities that are associated with information sources and services provision (Unesco,1975). More precisely,the national information system as a complete network, includes cultural centres, public school and university libraries, documentation centres, data processing centres and the national archive of the country. Therefore, the objective of the national information system is to provide information users, in all sectors of society, with their required information.

According to the governmental committee's recommendations, national information systems (NATIS) should be supported in the following ways, Unesco (1975):

(a) NATIS must be formally organized and the required legislations and controls for its operation should be formulated and enforced,

(b) the necessary financial funds and skilled personnel should be allocated so that reasonable operation and development achievements can be maintained,

(c) advance information technology should be implemented to carry on the operations of this system, and

(d) NATIS must be integrated with other existing systems in the same country.

The question now is what Libya has done, so far, regarding the construction and development of its national information services network. The first practical step Libya has undertaken towards the formulation of its national information services network was in 1975, when the cultural department prepared reports about the organization of information sources in the country. At the same time, the department consulted Unesco for assistance by sending information specialists to perform the necessary studies on improving library, documentation and

archive services in the country. Accordingly, Unesco signed a
two_year contract with G.C. Baker to undertake an evaluation
study on the situation of library and infomation services in
Libya.

In May 1976 Baker started his mission and later, he submitted
the report to Unesco. Unfortunately, Baker's recommendations
of how to improve library and information services in Libya
have never been considered (El_Hosh, 1985).

In 1982,the National Academy for Scientific Research sponsored
a project to establish a national information centre.As a step
on the way to constructing the proposed centre, the academy
collaborated with experts from the USA to help in developing
the project. At the end of 1982, one of the American experts
visited Libya and wrote his report about the information serv_
ices situation in the country. One of the conclusions that the
American experts came up with, as El_Hosh indicated, is that,
in Libya,there exists strong foundations upon which a national
information centre can be built. For instance, there is the
feeling that the importance of information among scholars is
improving, and the facilities that might be needed can be
managed,especially through the educated personnel, who already
have or will be qualified through computer and library and
information departments at El_Fatah University.

   With respect of these studies in 1976 and 1982, it is clear
that the national information services network in Libya is not
complete.In the same regard, Sharif (1980) argued that, in all
Arab states there is no body at the national level with the
authority and ability to accept responsibility for the overall
coordination of documentation,library and archives services in

the Arab states. There is a great need for a national plan for library and information services in each state.

5.2 LIBRARY AND DOCUMENTATION SERVICES

Information, in a broad sense, and with various definitions,is now considered as a vital resource both for national development and in international relations. All societies, though at different paces, are moving towards a new state called the " information society " (Menou (2), 1985). Consequently, organized efforts to develop and plan all activities related to the provision, distribution and utilization of information,and to establish national information policies, deserve increased attention at the national and international levels.

One of the consequences of the information explosion has been the need to have centres in charge of screening, selecting, analyzing, digesting and repackaging the considerable amounts of information available on specific topics so as to make information readily accessible to users in ways which suit their requirements. Libraries,documentation and information centres are the most needed centres for information handling in any country.

I_PUBLIC LIBRARIES AND CULTURAL CENTRES. During the last twenty years, the authorities in Libya have shown an interest in developing library and cultural centres' services. For example, the number of public libraries and cultural centres has increased from 16 in 1964 to 172 in 1978, as shown in table 5.1. The Secretariat of Information is the public department which organzes, operates and supports all public libraries and cultural centres. The number of books that each centre possesses has increased remarkably during the last fifteen years, as shown in table 5.2.

TABLE 5.1

Public Libraries And Cultural Centres
Development During The Period (1964_78)

Year	Number of public libraries	Number of cultural centres	Total
1964	8	8	16
1966	11	28	39
1968	12	45	57
1970	15	58	73
1972	16	75	91
1974	26	101	127
1976	27	130	157
1978	27	145	172

Source: Secretariat of Information (1979), Characteristics

Of Cultural Development in Libya, Tripoli, Libya.

table 3, page 50.

TABLE 5.2

Number Of Books Allocated To The Public
Libraries And Cultural Centres (1969_75)

Year	Number of public libraries and cultural centres	Yearly distributed books
1969	68	33940
1970	73	39731
1971	76	54535
1972	91	64712
1973	113	110000
1974	127	137000
1975	144	154000

Source: Secretariat of Information (1979) Characteristic of

Cultural Development in Libya, Tripoli, Libya.

Table 5, page 53.

II_ SPECIALIZED LIBRARIES AND DOCUMENTATION CENTRES. The need

for specialized information centres exists all over the world,

but is particularly acute in the less developed countries where

priorities have to be given for proper utilization of limited

resources (Valls, 1983). Along the same lines and under the

pressure of the intensive and vast development programmes in

Libya during the last fifteen years, different departments and

organizations in the public sector have established their

unique specialized information centres. For instance, in 1977

a research centre specialising in the Libyan struggle against

the Italian invasion of Libya during the period 1911_1932, was

established. Its objective is to gather, classify, publish,

document and disseminate all the attainable sources published

and unpublished that are related to Libyan history and,

especially, the stage concerning the war between Libya and Italy

from 1911 to 1932.

In September 1984, the People General Committee issued a

decision to establishing a new documentation centre (Markez

Attotheg Eljamaheri). The main objective of this centre is to

document the art of the revolution and the people's democracy

which has been written by the revolution leader. Accordingly,

the centre should gather, classify and document all the related

sources and make them accessible to readers. To this centre,

has been added (in 1985) an already_established library (Dar

Elkutop Elwatanea). The main objectives of this library can

be summarised as: controlling and monitoring the implementation

of the depository law number 7 of 1984; publishing the Libyan

bibliography; maintaining copies of all research works

completed inside the country and enabling users access to these

sources; performing and documenting reliable translated copies
of the scientific research works published in languages other
than Arabic language; organizing and coordinating the sources's
borrowing among libraries inside and outside the country;
constructing the principles and foundations, and performing the
required research needed for developing library services;
preserving the historical national and international archives
according to the implemented law and regulations. Below is a
list by the specialized information centres in Libya (
Secretariat of Information, 1979):

> _ The Central Bank Library
> _ The Library of Agricultural Research Centre
> _ The Library of Industrial Research Centre
> _ Library of Dams and Water Resources
> _ Library of Arabic Development Academy
> _ Educational Documentation Centre
> _ Planning Department Library
> _ The Department of Commerce Library
> _ Agriculture Sector Library
> _ Secretariat of Justice Library
> _ Supreme Court Library
> _ Secretariat of Treasury Library
> _ Foreign Affairs Department Library
> _ Institute of General Management Library
> _ Historical Archive Library.

However, this list does not include all information centres
that might exist in the country. For instance, most colleges in
each university have specialized libraries beside the university
main library. On the other hand, some of these centres do not
exist at this time as separate units, because some of the public
departments, such as Dams and Water, which established some of
these centres were merged into other departments.

III_ DRAWBACKS OF LIBRARY AND DOCUMENTATION SERVICES. The
service of information centres in Libya, like in many other
developing countries, are subjected to many constraints.
Refering to the work by Sharif (1980), the work by Elfazzani
(1985) and the librarians interviewed in this study, the main

obstacles of information centres'services are: the lack of library national planning as a consequence of the absence of the organizational structure of the national information services network; the absence of proper planning for the library service, and development, as a part of the education and cultural development plans, in the past; the absence of cooperation and coordination among information centres regarding the acquiring and borrowing of sources; services by most libraries are limited to traditional role of acquiring books and periodicals, and borrowing these sources while facing great difficulties in obtaining these sources back as a result of the lack of proper control of this service; the specialized centres do not yet possess the modern means of acquiring scientific and technological information; poor postal, communication and transportation services make the acquisition of foreign materials very difficult; the shortage in information specialists, as a result of the low prestige and the lack of recognition of librarian as a competent profession, is one of the serious problems which affects the evolution of information centres'services.

5.3 PUBLISHING, PRINTING AND DISTRIBUTION SERVICES

Before 1975, publishing and distribution services in Libya were carried out by both the private sector and public sector. Since 1975 all private organizations in publishing, printing and distribution businesses have either been repealed or nationalized. All these information_related functions are performed by public institutions, such as the National Institution for Publishing and Distribution, the Ministry of Information and the universities.

5.3.1 PUBLISHING SERVICES. The National Institution for
----
publishing and Distribution was established in 1974, and since
then this institution has been the main public organization in
charge of publishing and distribution nationwide. Accordingly,
publishing of any work (books, research or translation) is
either completed locally by the institution itself, or performed
abroad with its, permission. The magnitude of the publishing
activities of this institution has increased remarkably in the
last ten years. For instance, in 1975 the institution's
publishing work was limited to only 5 books, whilst its 1985
programme for the same activity composed of 161 books (meeting
with the institution's management personnel, December, 1985).
The other public bodies involved in publishing activities are:
the Secretariat of Information, University of Guarunis,
University of El_Fatah, Eddar El_Arabea Lilketab and some other
organizations, such as Dar El_Cotob El_Watanea and Arab
Development Academy.
There are many factors that inhibit the growth of the indigenous
publishing industry in Libya as well as in many other Arabic
countries Sharif (1980). The lack of adequate copyright
protection, lack of trained personnel, lack of printing and
binding equipment, and the absence of professionalism in the
book industry are examples of such constraints in Libya.
5.3.2 DISTRIBUTION ACTIVITIES. Distribution of all types of
----
sources of knowledge all over the country is another major
function that the National Institution for Publishing and
Distribution has. To be able to handle the distribution function
properly, the institution owns and operates many distribution
centres throughout the country. Beside books, the distribution
activities include news papers, magazines and periodicals. The

list of distributed sources in January 1985 comprises of the following:

the journal	frequency of publishing	number of journals
Libyan newspaper	daily and weekly	13
Libyan magazines	monthly and periodically	15
Arabic and nonlibyan newspaper_____	most of it daily	10
Arabic and nonlibyan magazines_____	monthly and periodically	94
Non_Arabic journals	daily,weekly,mon.,period.	140

Concerning the number of copies that are distributed from each type of these sources, a sample of daily newspapers' sales is as follows:

Name of the journal	duration of each issue	number of copy sold	
El_Fager El_Jaded	daily	30,000	copies
El_Zahf El_Agdar	weekly	63,000	,,
El_Jamaherea	weekly	58,000	,,
Arreada El_Jamaherea	twice_a_week	80,000	,,

Source: National Institution for Publishing and Distribution, unpublished statistics, Tripoli, Libya, 1985.

Most of the journals are printed in the Arabic, English or Italian languages (26 journals in French,24 in Italian and 71 in English). A respondent from the National Institution for Publishing and Distribution indicated that distribution activities are impaired by some problems. These are,namely: the area of the country compared with the small number and volume of the distributed sources as a result of the country's small

population; the centralization of the printing work, most of the domestic printing is completed in two cities (Tripoli and Benghazi); the lack of sufficient reliable transportation facilities in the country; and the instability of the local journals's printing time. That is, the time at which local journals are printed, is often, not stable. This phenomenon disturbs distribution schedules and impairs its facilities.

5.3.3 PRINTING SERVICES. Printing is one of the main functions in the information service industry. Administratively, the printing sector in Libya lies in the domain of the Secretariat of Culture and Information. The main objective of this sector is to undertake the printing of all types of works and sources such as books, newspapers and magazines, as well as printing the forms and work_sheets for the public sector's departments and organizations.

The availability of printing facilities is not a problem in the printing industry, and, as a respondent from this sector commented, the main problem which handicaps the progress of this sector, is the shortage of skilled personnel, especially, Libyans. The absence of education and training programs for the printing profession is the main reason behind the shortage of indigenous printing specialists, as a senior officer from this sector commented.

5.4 BIBLIOGRAPHIC CONTROL IN LIBYA

The Libyan bibliography emerged in 1972 when the first issue was published by the Department of National Culture. In 1981, the national library (Dar E_Lkotob) took over the national bibliography, and published (in 1981/2) the latest issue of this bibliography [El_Hosh, 1981].

As indicated in the introduction of this issue of the

bibliography, one of its major drawbacks is the lack of comprehensiveness, because of the absence of depository law in the country. A second problem is its lack of consistency as a result of the instability of its publishing bodies.

So far, the steps towards the improvement of bibliographic control in Libya, have been:

(1) the establishment of the Libyan Arab Centre for bibliographic control in 1979. The main objective of this center is to systematically check on all printed sources and provide bibliographical information to researchers within and outside the country, and cooperate with similar international bibliographical centres. This center has paved the way for the bibliographic control needed, and only needs legal support to perform its function,

(2) the issuance of the depository law number 7 of 1984. Even though arrived late, it is one of the most remarkable achievements and milestones in the history of scholarship and learning in Libya. However, although, depository law opens the road to bibliographic control, it has not yet been implemented in practice (Ahmed, 1985).

However, the situation of the bibliographical service in Libya depends upon the availability of suitable manpower in both number and quality.Yet,as it has has been in many other fields in the economy, manpower is very likely be, in the near future a serious constraint to potential progress in this field. For example, it was expected at the end of the 1981/5 development plan, that the number of graduates from the library and information department at the university of El_Fatah, would be 500 nationalist scholars. Unfortunately, only 344 Libyans have

graduated from this department during these five years. Such a number of skilled workers, Ahmed (1985) indicated, is far below the planned number and requirements of the country for this profession.

5.5 COMPUTER POSSESSION AND IMPLEMENTATION

It is now twenty years or more since computers were first brought to Libya. The early users of these facilities were from the Petroleum sector and the public service departments. IBM computer machines were the first to enter the Libyan market and still dominate the information service.

In the late 1970's IBM decided to withdraw from the Libyan market and other computer companies, namely NCR and CMC started to fill the new demands for computer facilities. Most of the implemented IBM equipment is leased. On the contrary, all the other computers in the country are now owned by their users.

5.5.1 NATIONAL ORGANIZATION OF COMPUTER SERVICES. The Census

and Statistics Department at the Ministry of Planning is the public organization who first imported computer facilities (1964). This department has been the first, and is still the biggest, computer user in the public service sector. In 1974 the planning department started the establishment of an electronic data processing centre for serving the sectors affairs and providing data analysis services to the other public departments and organizations. The objectives of this centre are the following [Secretariat of Planning_ EDP, 1980]: providing electronic data processing services to the other public departments and organizations; undertaking a research scheme concerned with the enhancement of, and expansion in, computer implementation; following up the developments in computer technology and its implementations, and directing the use of

133

this technology in the country; undertaking the necessary steps for establishing a data bank for scientific and statistical data. Tabulation of census and statistical data, allocation of secondary school graduates among the higher education institutions, and salary preparation for some public departments are, the major computerized applications which have been, so far, considered by this centre.

To avert the unorganized expansion of computer implementations, which might lead to negative results of this technology's use, a national committee for directing computer implementations in the country was established in 1971 (meeting with a member of this committee, November, 1985). Administratively, this committee lies directly in the domain of the Prime Minister.

In 1983, the committee was reformed and the new one, which is called the " Higher Scientific Committee for Computer Implementation ", operates under the secretariat of planning. Its main objective is to study the need for computer services and implementation by all public sectors, and formulate the strategy and policies which organize and control computer implementation, and present the necessary regulations that assure proper acquirement and implementation of computers so that successful investments in this technology will be guaranteed.

In January 1985, the People's General Committee passed its decision number 27 for establishing a national information and documentation centre under the supervision of the secretariat of planning. The outlined objectives of this centre consist of the following (copy of the decision : collecting, acquiring and depositing information and documentation according to

modern techniques and methods, and making all these sources accessable to users; constructing the unified principles, and formulating the organizational procedures for, coordination and complementation between the related organizations in the area of information services; undertaking all possible actions which enhance the development of information, documentation and publishing services; constructing domestic bases and sources of information related to manpower, technological services and other fields of knowledge which help the country's development; directing the country's investments in computer technology and in the related facilities for information provision and documentation services; organizing and providing training programmes in information related activities.

The aforementioned computer and information services organizations are national establishments. However, there is another type of establishment on the regional level (municipality level).

The law number 184 of 1983 for municipality organization specifies that in each municipality, with 100,000 inhabitants or more, the secretariat of planning should have a computer and statistics section. By the same law these units should be organized and directed towards the following objectives:

(1) Gathering data and statistics related to vital statistics, social services' statistics such as education and health service's data, factors related to manpower such as wages and cost of living, and cooperating with the national Sensus and Statistics Department in performing national censuses.

(2) Paying more attention to computer implementations and the expansion of computer use in the public sector.

(3) Coordinating between the available computer centres in the

relevant municipality.

(4) Directing and controling computer instalments in the relevant municipality.

(5) Developing the national skills in the computer field.

(6) Constructing a centralized computer service centre to facilitate information and data provision and provide computer services needed for performing jobs of the other public sector units within the municipality's limits.

It must be noted that most of these organizations are not really active and their objectives exist as decisions on paper only.

5.5.2 AVAILABILITY AND USE OF COMPUTER FACILITIES. Computer
----
facilities, especially, hardware equipment, have increased remarkably during the seventies in Libya. Most of these facilities are IBM equipment as shown in table 4.3. It must be also noted that the number of computers could have been much bigger if IBM had not frozen its business in Libya since the mid 1970's. Nevertheless, the available computer facilities in the country are still sufficient, as the chief of the computer centres at Justice Department argued. These facilities could provide much more services than they presently do if they are properly utilized.

Computer facilities in the Petroleum corporations are utilized much better compared to the utilization of the corresponding facilities in the public service departments, because oil corporations have greater funds and flexibility to attract experts and computer skills. Beside this, management systems in these corporations are constructed by western experts and they are still operated partially by western experts. In contrast, computer facilities in the public service departments are

operated only a few hours per day, as some respondents from

TABLE 5.3

COMPUTER INSTALMENTS IN LIBYA

Name of the public department	Type of computer
I_ OIL SECTOR	
1_ AWASIS	IBM 370 / 135
2_ ESSO	IBM 370 / 135
3_ MOBIL OIL	IBM 370 / 135
4_ Public Oil Institution	IBM 370
5_ AGOCO	IBM 370 / 135
II_ PUBLIC SERVICE DEPARTMENTS	
1_ Planning Department	IBM 370 / 135
2_ Justice Departmet	IBM 370 / 135
3_ Municipality of Tripoli	IBM 360
4_ Electricity Department/ Tripoli ..	IBM 370
5_ Electricity Department/ Benghazi ..	IBM 370/ 115
6_ Social Security Department	CMC (Reality)
7_ Education Department.............	CMC (Reality }
8_ Civil Service Department	CMC (Reality)
III_ PUBLIC ORGANIZATIONS	
1_ Atomic Power Institution	SEMENS
2_ University of El_Fatah	IBM 370
3_ National Telephone Company	SEMENS
4_ Libyan Airlines Company	BABS
5_ National Meat Company	NCR
6_ National Supermarket Company	NCR
IV_ BANKS AND INSURANCE ORGANIZATIONS	
1_ Libyan Central Bank	SEMENS
2_ El_Jamaherea Bank	NCR
3_ El_Mochtar Insurance Company	DEC 11/30

computer units in this sector indicated. For instance, a
respondent from one of the computer centres commented that the
average operating time of the computer in his department is 36
hours per week. That is 6 hours per day for six days a week (
working hours per day in the country are 7, and the working
days per week are 6 with friday off).
The same respondents also indicated that only 80 percent or

less of the available software is utilized.

Apart from the computer implementation by the oil corporations, the computer implementation by public service departments, so far, has been limited to topical applications, mostly in wages analysis and bills preparation.

The above list, however, is not inclusive of all organizations who might have computer installations, because complete information could not be acquired about the computer facilities in some other organizations, such as the National Cement Company and Ports and Lights.

5.5.3 PROBLEMS OF COMPUTER IMPLEMENTATION. From the above illustration of computer availability, use and organization, it appears that the implementation of computer technology in Libya suffers from the following problems:

(1) Shortage of skilled personnel in the computer field: the main reasons behind this problem, as most of the interviewees indicated, include: the lack of computer education and training programmes in the country. Presently, there is only one computer department at the University of El_Fatah which teaches computer courses and qualifies individuals in the computer field. Graduates from this department joined the labour force for the first time in the early 1980's. Most of the skilled workers who have been running the services in the country, so far, are either foreigners or nationals trained abroad; the absence of professional organization and the lack of recognition of the computing profession; the lack of appropriate incentives for people who specialized and work in the computer field. That is because employment regulations in the public sector treat employees' salaries and posts on this basis of their educational qualifications with no discrimination regarding the area of

specialization. By the same law all graduates from natural sciences departments are treated similarly and are given the same salary and allocated jobs at the same level in the employment ladder. Hence, many trained people leave their jobs in the public sector to move to the semi_public sector, especially, the oil sector where salary and work conditions are much better than in the public service sector. However, the scarcity of computer experts has constrained the acquisition and implementation of computers by some public departments, such as health and treasury, as the interviewees from these departments commented.

(2) Lack of familiarity with computer technology : some of the public sector organizations who acquired computer facilities for a short period, or still maintain such facilities, did not buy the proper computer machines. This is because often, the decision makers in these organizations lack knowledge in the subject, and the chance to be advised locally is very slim. The consequence is that these organizations have suffered from serious problems. For instance, a few departments bought very specialized or poor competent machines which are operated by unique and very specialized software such as CMC equipment. Others acquired computers with a very limited ability of software handling such as the organizations who bought the NCR equipment with one compilor (cobol).

(3) The lack of an effective national organization of this service: a few organizations, as indicated above, have completely failed in their computer projects, while others suffer from poor planning to maintain these facilities. All this happens because these organizations have not been led and controlled

by a specialized body in this field. Above all, the country still, with all these problems, has plenty of computer power, whilst many other organizations from the same sector are very much of need to the services of such facilities.

The national committee, which formally existed during the last fifteen years, has had practically no effect, because the committee's members are full time employees in different organizations in addition to their committee obligation. Therefore, many public organizations and departments do not even know about it. Surprisingly, the researcher himself was a member of a similar committee in the municipality of Benghazi during the years of 1980/1/2 and during these three years no contact took place between the two committees.

The other public bodies such as the statistics and computer sections at the municipality level, as yet, exist only as a decision on paper, even though that decision was passed four years ago.

(4) Low demand for computer services: in many public departments and organizations management does not have the ambition to maintain computer services. Firstly, because of the aforementioned problems (shortage of computer specialists, lack of familiarity with the field and the lack of effective national organization of the service). Secondly, management in the majority of the public organizations are not under strong pressure to provide complete and accurate information about their businesses which they can't handle manually. It is commonly accepted in public administration these days, to find that a public organization, which might operate a business worth millions, has not prepared the financial statments of its business for the last three or more years. This phenomenon

strongly reinforces the fact of the low demand for information which, besides the other factors, constitute the main reasons behind the reluctance of many public organizations toward computer service attainment.

5.6 MANPOWER INFORMATION SERVICES

Manpower is one of the most valuable and critical resources in any society. However, its value and role in the country's economy depends very much on how this resource is developed and organized. But high standards of manpower development and organization can't be achieved in the absence of sufficient reliable manpower information.

A commercial service, to provide the necessary information to all who need it throughout the country, would not be viable. Workers generally would not be in a position to demand,and pay for, such a service, and the same would be true for many employers. Only a central unit(s), supported by government, can collect all the necessary data, subject it to analysis and research, and package and distribute the processed information effectively to all parts of society (Lester, 1966).

There are two main sources of manpower data in Libya. These are, the Central Statistics Department which operates under the control of the Secretariat of Planning and is responsible for performing censuses and vital statistical surveys,and the Civil Service Department which controls the employment of foreign workers, allocates graduates from all education institutions in the country, and is in charge of maintaining a personal file for each public sector employee.

5.6.1 THE ROLE OF CENTRAL STATISTICS DEPARTMENT IN THE

AVAILABILITY OF MANPOWER DATA. Typically,every country has a

certain body responsible for carrying out different types of censuses such as population, labour force, and households.

In Libya, the Central Statistics Department is the body which is in charge of undertaking such statistical jobs. The role of this department in manpower data provision, so far, is limited mainly to population censuses, manpower surveys, the annual survey of large manufacturing establishments, and the monthly survey of employment and production in selected large manufacturing establishments.

A_ POPULATION CENSUSES: in Libya, 4 population censuses have been undertaken since the country's independence in 1951. The four censuses took place in the years of 1954, 1964, 1973 and 1984. The last three censuses were completed according to the rules and regulations of the census and survey law number 16 of 1963.

Concerning the manpower data that is collected within population censuses, a complete section in the data collection forms, used in the 1973 and 1984 population censuses, is allocated to labour force characteristics, such as whether the person is working, looking for a job, retired, or disabled; the type of profession each individual in the labour force has: and the educational qualification he holds (Ministry of Planning, census regulations, 1973).

However, the output statistics of population censuses, as found in the results book of the 1984 census, contain some important data relating to the labour force situation. For instance, the population growth rate, sex and age distribution of population, economically productive individuals, female participation in manpower resources, expatriate workers and their share of the total employment in the country and the population density and

geographical distribution.

B_ LABOUR FORCE CENSUSES: during the last thirty years, the labour force in Libya has been surveyed twice only; the first one was completed in 1956 and the second was undertaken in 1980. The labour force survey carried out in 1980 is the most comprehensive labour force census conducted by the Central Statistics Department in Libya. This census collected data relating to all workers in the civil sectors, including public agricultural projects and establishments. Data was collected directly from workers, and the data collection forms are of two types, one for nationals and the other for the nonLibyan workers. In this census, the collected data covers the major characteristics of the labour force in the country such as sex, age, type of work and occupation, level of education and employment status, nationality, marital status, experience, salary gained and geographical location. The collected data were organized, tabulated and analysed by the statisticians in the census department. Finally, the tabulated results were published and distributed by the same department.

The analysis of both population censuses and manpower surveys's data is limited to the very basic analytical techniques such as comparing ratios and the tabulation of results. More importantly no light is thrown on the future, that is no analysis and intelligence forecasting for the future.

C_ ANNUAL SURVEYS: three major sectors are covered by the annual surveys. These are, large manufacturing establishments, large construction organizations and petroleum industry organizations.

The large manufacturing establishments were surveyed first in 1965, with the report being published in 1966. Between 1965 and

1979,the central statistics department has conducted 15 surveys.
The data of the 1979 survey was published in 1984,5 years later.
The annual survey covers all the establishments that are allowed
to employ 20 or more workers. The first section of report number
15 (1984) is concerned with the monthly data regarding
employment and the salaries paid at each establishment over 12
monthes. Employment data is collected in two separate
categories: operatives and others. From these data,results such
as the seasonal nature of employment in these establishments,
and the number of workers engaged in these establishments by
categories and major industry groups, are drawn (Central
Statistics Department,manufacturing establishments report 1984).

Concerning large construction organizations, the central
statistics department has conducted thirteen annual surveys
between 1969 and 1981. Based on the contents of the thirteenth
report,the data consist of: number of employment by nationality
and occupation, and the percent of foreign and nationals
workers employed in these organizations by broad occupational
categories and the nationality of the institutions.
The survey conducted in 1981 refers to the data of 1980, with
publication in June 1982 [report on the annual survey, large
construction organization, 1982].

The third type of annual survey is implemented in the
petroleum industry. By refering to the contents of the 1981
survey which covers the 1980 data, manpower information in the
petroleum sector is presented on the number of employees and
their pay, employment distribution by major occupational and
nationality categories,and statistics of total employees in the
sector for the last five years. Conclusions concerning issues
such as the total number of employees (nationals and

foreigners) and the total values of their compensations, compared with previous years, are drawn.

D_ MONTHLY SURVEYS: Since 1970,the Central Statistics Department has been carrying out a monthly survey of employment and production in selected large manufacturing establishments. At the same time a quarterly report of the results of the collected monthly statistics is published. However, the figures in these reports, as indicated in the fourth report of 1982, are not reliable and should be considered only as indicators to the general magnitudes of industrial activities rather than parameters of the exact situation. The unreliability of the statistics presented in these reports is due to the inadequancy in the quality of the figures reported by the establishments, as a result of their limited facilities.

Apart from the other statistics concerning production, the published reports present some data that are concerned with the total of employment by production categories, the monthly average number of operative workers in each one of the selected establishments, and the monthly total man_hours worked by the operative employees.

5.6.2 THE ROLE OF CIVIL SERVICE DEPARTMENT IN THE PROVISION OF

MANPOWER DATA. In many countries, especially, those whose
----
economy is dominated by government,public sector is the biggest manpower employer. Therefore, the public employment service is in a unique position to gather, process and distribute much labour market information. The significance of the informational activities of the public employment service is evident from the range of material at its command and the facilities it can have as the biggest employer in the country.

In Libya, like many other nations whose economy is heavilly dominated by government, the public sector employs about 73 percent of the total manpower in the country, as the 1980 manpower survey indicated (Secretariat of Planning, Central and Statistics Department, 1980).

Being responsible for a large percentage of the country's employment, the public employment service must be operated out by an appropriate, well organized body which must also be supported by a well formulated legislation system, and provided with the necessary facilities and qualified personnel.

5.6.3 INSTITUTIONS RESPONSIBLE FOR PREPARATION OF THE CIVIL

SERVANT DATA. Civil service's laws and their regulations, as
----
they have authorized certain departments and offices to take decisions concerning civil servants all over the country, have also charged these authorities and their offices with the provision of certain levels of manpower information services. Below, is an outline of the public offices and the role of each in the provision of manpower data in the public sector.

The civil service law NO. 36, which was enforced from 1956 to 1964, gave full authority to the central Civil Service Committee in administering civil servants. The same law obligated the central committee to keep a personal file for each civil servant in the country. This personal file must contain personal information records, such as birth, health and nationality certificates, and all records concerning changes in his employment situation, such as the records related to his placement, promotion, and transfer decisions. This file is called " the principle file ". At the same time, the department or the institution, in which the person is working, should also keep an identical copy of the principle

146

file for each one of its employees.

Being the only authoritative body to take decisions concerning employment affairs of civil servants,the central committee was able to maintain an accurate and up_to_date personal file system. Within the second civil employment system, implemented during the period 1964_1975, the governer law of this system gave part of the central committee's authority to the personnel committees in the other sectors and organizations. But having a powerful delegate in each one of these committees, the civil service department was still in control and has the power to collect, through its delegates, all the documents needed for maintaining a reliable personal file system. A similar personal file should be maintained by the body that the employee works for. According to the civil service law NO. 55, which is in force since 1976, the new organizational structure of the civil service department (named Ministry of Labour and Civil Service) has for the first time, a separate main office for manpower information [Beeri, 1977]. The objectives of this office, as stated by the law NO. 55, were :

specifying the required manpower data and formulating the appropriate system(s) for collecting, recording, analysing and documenting these data; undertaking the appropriate actions which would help users of manpower data to satisfy their needs of this data; performing periodical surveys of the manpower sector in the country; undertaking the appropriate actions to improve its information system up to the modern standards.

The other important unit in the organization structure of the civil service department, is the personnel record section. Under the regulation of the same law (55),the objective of this

section is to maintain reliable and classified personnel files on all public sector employees (i.e. all employees in the civil service departments,public institutions and corporations). The information function that law NO. 55 charges to the Civil Service Department,has also been emphasized by the decision NO. 947 of 1984,which was taken by the People General Committee for reorganizing the Civil Service Department. Based on this decision, the main objectives of the manpower studies and information office in the Civil Service Department are:

Formulating the strategy for constant flow of the manpower data from all sectors, and formulating periodical statistics of manpower resources supported by the necessary analysis and instructions which help the users of these statistics in planning and policy formulation; gathering, classifying and analysing manpower statistics at the national level and, by using computer technology, accommodating and updating these data. The other major responsibility that is allocated to the Civil Service Department, by both law NO. 55 and the decision NO. 947, is the allocation of new graduates from all educational institutions to the service and production units in the public sector.

In contrast, the same legislation has totally banned the civil service department from participating in, or taking decisions related to, civil service servants at any level.

The question now is how can, under these legislative measures (law 55 and decision 947), the civil service department carry out these statistics and information responsibilities ? From the legal point of view this department can carry out its information function; because the enforced regulations since 1976 have given the Civil Service Department the right to ask

for manpower data from any other department or organization in the country. The same regulations have also obligated personnel committees, in the other departments and organizations, to provide a copy of all decisions regarding any change in the employment situation, of any one of their employees, to Civil Service Department (CSD). Besides this, this department allocates new graduates, in order that some basic data can be maintained with regard them.

It is clear from the implemented legislation during the last ten years that the CSD should maintain a personal file for each employee in the public sector. This means that hundreds of thousands of files must exist. There is no doubt that maintaining and updating such a large number of files manually, will not be an easy task, especially with the acute shortage of the endigenous skilled personnel. Therefore, early in 1977, the CSD started to computerise the personal file system by using the computer facilities at the planning department. By the end of 1978, more than 90 per cent of the maintained personal files were stored on computer, as a respondent from the computer section in the CSD pointed out. Early in 1979, the CSD established its own computer facilities (CMC) and transfered the computerised files to the new computer system. By the end of 1985, the number of the computerised personal files was 350,000, as stated by one of the programmers in the computer unit.

Each computerised personal file has 41 records of information about each employee. For the purpose of making a number of useful reports from the stored personal data, the implemented software package has 22 different programs for report

generation, other than the maintenance programs for the personal files. Of the reports that can be produced, are for instance, the number of employees by sex, nationality, or by occupation, by sector or at the national level.

With the use of computer facilities, and in view of the implemented civil service regulations, how successful has the CSD been in maintaining reliable personal file system for the public sector employees ? The answer is outlined in the following section.

5.6.4 PROBLEMS CONFRONTING THE NATIONAL PERSONAL FILE UPDATING.

By law, personnel committees in all departments and organizations should report to the CSD any change in the employment situation of each one of their employees. Unfortunately, the most serious problem the CSD has been faced with during the last ten years, is poor feedback from the other public units. This poor feedback is mostly represented by the delay of the other units to respond to the CSD enquiries, and the incomplete data which are usually reported by them.

However, the CSD has tried two ways to solve this problem. In the first, the CSD installed a computer in one of the large municipalities (Musrat) to undertake the personal files of the public sector employees in this municipality as the first objective, and to systematically pass the updated data to the national personal file system. Unfortunately, this technique, as a respondent from the CSD computer centre indicated, did not succeed, because of the following two problems: the shortage of computer specialists who can operate the municipality computer system, and the unreliability of the implemented communication system (telephone lines) used in connecting the two computers together.

Since this failure, the CSD has embarked on passing a survey form to all public departments and organizations to fill out three to four times a year. This form should convey the personnel situation in each organizational unit in the public sector.

From the completed forms, the CSD can update the computerised file system. But, even with this method, the CSD still faces delay and incomplete data problems, because many public units either delay their response or they send back incomplete data. Consequently, as one of the respondents from the CSD commented, the national personal file is neither complete or updated.

5.6.5 REGIONAL PERSONAL FILE SYSTEM: According to the People

General Committee's decision NO. 184 of 1983 for municipalities reorganization, in each municipality, (a) there should be a personnel committee which approves the placement of new employees in the public department in the related municipality, (b) decisions concerning the transfer and promotion of the public sector's employees, other than the senior officers, should be taken by the authorities in the related departments and approved by the People General Committee within the municipality (c) the civil service department should carry out the secretariat job of the personnel committee in the municipality, and prepare the new placements's decisions and have them approved, (d) the civil service department is in charge of performing the following information_oriented functions: granting permissions to the other departments to recruit foreign workers, and keeping a record of all foreign employees within the municipality; maintaining a reliable and updated personal file for each civil servant within the municipality; maintaining a list of job

titles to each public department and organization in the municipality, and passing copies of these lists to to the national CSD; monitoring the changes in the organizational structures and job lists of all public departments and organizations in the municipality; reporting the changes to the national CSD; maintaining up to date, classified statistics on public sector's employees in the municipality, and sending reports on such data to the national CSD.

The question to be asked now is how much success has the regional CSD achieved in performing its functions and in main_taining its objectives? Respondents from a regional CSD in the municipality of E_Zawia indicated that, so far, not much success has been achieved, especially, in maintaining the required personal file system, monitoring the changes in the employment situations of the other departments's employees and providing enough manpower statistics, because, as the same respondents argued, (a) the CSD has no qualified personnel who can perform all the department's functions, and (b) the response by the other departments concerning the data about their employees is neither consistent or efficient.

Ultimately, the regional personal file system is in a much worse situation compared with its corresponding system at the national level. According to the interviews the researcher made in the municipality of E_Zawia, it is believed that there are other serious problems that impair the performance of public sector employees's activities.
These are, the lack of ambition and the carelessness of many public sector employees. Add to this is the poor administrative system in the public sector. If the public administrations are really serious about maintaining good records of their major

152

functions, especially manpower information, they can maintain
this because, most of the public departments are located in a
walking distance from each other,so that, management personnel
can visit each other and sort out many problems.

On the other hand, employment decisions in each municipality
are taken by its Personnel Committee or approved by the
Secretariat of the General Committee in the same municipality.
The first body is under the CSD control, and the second,if it
is not in the same building, will not be that far away.
Therefore, the problem of not getting enough data about the
employees's situation is not a real problem, and the failure
of the national CSD's personal file system during the last
three years is mainly due to the failure of the regional CSD
in meeting its objectives, even with the strong legislation to
back up the regional CSD.

5.6.6 THE PROBLEMS OF THE CSD PERSONAL FILE SYSTEM. The
----
personal file system which has been organized by the central
office of the Civil Service Department during the last three
decades is, as stated above, neither complete nor updated,
because of the following problems:

1_ Organizational Problems: the CSD Office of Manpower Studies
and Information which is responsible for developing and updating
the biggest manpower information system in the country,
could not acquire all data that are needed for updating the
maintained files. However,employment regulations in the public
sector (law NO. 55,Dec. NO. 947,Dec. NO. 184) have clarified
the authority that the CSD has,and the obligation of the other
public departments concerning manpower data provision and
acquirement in the public sector. But, the lacuna is in the

implementation and enforcement of these regulations. Employees in the public sector are not afraid to break or ignore part of these administrative rules, because, often, they will not be penalized. The other major cause of the problem is that the administrative system in the public sector is not organized in the way where it considers properly the flow of information as a part of its functions.

2_ Information Perception Problem: there is no doubt that the issues of laws and regulations concerning manpower data, is a clear indication of the realization of information importance by the high authorities in the country. But, the implementation side of these rules, which mainly depend on middle and low level management and personnel, is the problem. In view of their low_level of education and culture, public sector employees, at the operational level, do not realize the importance of information in decision making. The consequence is that they do not understand the role of their information jobs. Such a lack of understanding has led to underestimation and low performance of information functions.

3_ Shortage of Qualified Personnel: the wrong perception and misunderstanding of any subject is, naturally, a result of a lack of knowledge of the subject. Accordingly, the shortage of skills in the information and computer fields is a major problem that handicaps the development of the CSD personal file system.

4_ Instability Problem: the constant change of laws and regulations which govern public sector employment, the authorities which organize the public employees's affairs, and the organizational structures of public sector departments, have impaired the efforts devoted to the development of the

CSD personal file system.

SUMMARY

In this chapter, the structure of the national information services system in Libya has been reviewed. From the components of this system and their organization it is believed that these components are neither complete nor well organized, because specialized national establishments that are capable of carrying out the proper planning and organization of the information sector do not exist. The Secretariat of Culture, the highest authority in this sector, is no more than an administrative body, and its role in the development and control of this sector is limited, due to the lack of specialized information bodies under its domain, and the limitation of its control over the existing information service organizations. At the present time, the main organizations for information provision in the country (Central Statistics Department, universities' libraries and the personal file system of public sector employees) are totally independent from the Secretariat of Culture. The consequence of the present organization of the information sector is that library services are poorly coordinated; the information service is not recognized as a profession; the depository law is not implemented; and the Libyan bibliography is neither constant or comprehensive.

The lack of national organization and planning of the information services has led to a situation where many public departments and organizations do not carry any information service functions; whilst the others, which have information service units, each organizes their unit differently and direct their services to serve their own purposes. Thus, the

information services of these units are often provided to users on demand only.

Computers were first brought to Libya in the mid 1960's. Nevertheless, the scope of their use and applications is still very limited. Many public departments, as well as the majority of the public organizations, have not possessed or used computers. Of the departments which maintain computer facilities only a few (Planning, Petroleum and the Civil Service Departments) have used these facilities for information preparation. On the other hand, most of the computer facilities available in the public sector are not fully utilized. The shortage of education and training in computing, the lack of organization of computer specialists in a unique profession, the poor organization of computer technology at the national level, and the limited demand for information, are the main problems affecting the progress of computer implementation in Libya.

At the sectoral level, information services, as illustrated by the manpower example, are a little better than those services at the national level. From the legislative point of view, manpower information services are well structured; nevertheless these services are still impaired by a number of obstacles. Most of these obstacles are environmental problems, such as the poor administrative system in the public sector, and the carelessness of low and middle managements and their employees, in public departments. In addition to these problems, the shortage of information specialists is especially important.

The above review of the information services sector in Libya, in general, and its manpower information services in particular, reveals that, information services in this country seem to

suffer from many similar problems to those which impair the same services in many other LDCs. The lack of proper information service's organization, the poor perception of information by low level employees in the public sector, the shortage of trained personnel in information and computing, and the lack of computer implementation in information provision, are examples of the problems which impair information services in Libya.

In this study, the conclusions drawn, so far, concerning information services in the LDCs, in general, and Libya in particular, are mainly based on secondary sources of information. Empirical evidence is therefore needed to confirm these conclusions. How such evidence has been achieved in this study is explained in the next two chapters.

CHAPTER 6

RESEARCH METHODOLOGY:
AVAILABLE TECHNIQUES

In chapter one of this study, the research problem and objectives were identified. In chapter two, the theoretical foundation of information systems and information technology were reviewed. Chapter three examined aspects of the implementation information systems, with particular emphasis on the importance of information to the development of any nation, and information availability in both developed and less developed countries. Chapter four discussed the development of some factors (economic, population, education and manpower) and their effect on information services in Libya, and in chapter five, information services in general and manpower information service in specific in Libya, were reviewed.

In chapters three and five, the literature review of information services in the LDCs revealed that information services in these countries (including Libya) suffer from a number of problems. The problems which hinder the development of the information sector in Libya are the focus of this study. The alternative ways of achieving the objectives of this study are analysed in the next chapter. This analysis is based on the research techniques reviewed in this chapter.

Accordingly, this chapter is devoted to a discussion of research techniques available, starting from topic selection to the presentation of research findings. This chapter is organized as follows:

In section one, research definition, classification and process are discussed.

In section two, topic selection and hypothesis are reviewed.

Section three explains research approaches.

Section four reviews data collection techniques available.

Section five explains the analysis techniques open to the researcher.

Section six reviews the reporting research findings.

6.1 RESEARCH DEFINITION, CLASIFICATION AND PROCESS

Research has been defined by many authors in the research methodology field. For example, Howard et al define research as " seeking through methodological process to add to one's own body of knowledge and, hopefully, to that of others, by the discovery of non_trivial facts and insights " (Howard et al, 1983, p. 6). Bennet defined research as " a systematic careful inquiry or examination to discover new information or relationships and to expand / verify existing knowledge for some specific purpose " (Bennet, 1983, p. 24). Kerlinger defines scientific research as " a systematic, controlled, empirical, and critical investigation of natural phenomena guided by theory and hypotheses about the presumed relations among such phenomena " (Kerlinger, 1986, p. 10). In one way or another research is typically seen as being carried out through a systematic process with the purpose of giving the researcher new knowledge and / or for the purpose of adding to a certain body of knowledge. In terms of research purposes and contribution to knowledge, research can be classified by different aspects, such as the field of research, the purpose of research, the approach to research, and the nature of research.

" Research is most frequently classified by field " (Howard et al, 1983, p.11), but this is of limited use beyond just

classification. Fields are often grouped for administrative purposes into categories such as the social science, life sciences, and physical sciences.

There are many different purposes of a research project. Four common ones are (Howard et al, 1983): (a) to review existing knowledge, (b) to describe some situation or problem, (c) to construct some thing new, and (d) to explain. Along the same lines, Kidder et al (1986) specify the research purpose as (1) discovery, (2) demonstration, (3) refutation, and (4) replication. If discovery is the prime purpose of research, the researchers gather data to attempt to discover what might be responsible for some phenomenon or behavior. When conducting research for this purpose, the researcher is operating in what is called " inductive " manner, attempting to move from observation to the development of hypothesis.

However, research, such as the study on hand, often serves more than a discovery function. That is, a research might be carried out for inductive as well as deductive purposes.

A deductive research is the research that is designed to demonstrate a hypothesis, rather than the other way around (developing hypothesis).

The main research methodology used is another way of classifying research. The laboratory experiment, the field experiment, the case or field study, and the survey, are some approaches that are frequently used by researchers (Bennett, 1983).

Deeper understanding of research will come from consideration of the process by which it is conducted and of course from embarking upon an actual study. Several conceptual models designed to serve as a basis for a systematic approach to research have been proposed. For example, Howard et al (1983,

p. 14) proposed this model:

(1) identify a broad area of study,

(2) select the research topic,

(3) decide the approach,

(4) formulate the plan,

(5) collect the data or information,

(6) analyse and interpret the data,

(7) present the findings.

Bennett (1983), proposed a similar model; the research process based on this model consisting of the following steps:

1_ Research problem or question: for specifying a research problem or question, the researcher should review the related literature and/or undertake a preliminary (pilot) study. From the literature review, the researcher builds a conceptual framework or model for his research.

2_ Within the constructed framework or model, the research's hypotheses are framed and solutions or answers for the hypotheses are assumed.

3_ Hypothesis testing: once hypotheses are framed, the researcher then seeks information or data to test their validity. In this stage, therefore, testing techniques and strategy are formulated, the data and information needed are collected, and the analysis of collected data and information is undertaken.

4_ Evaluation of hypothesises, drawing the conclusions and recommendations.

5_ Accept / reject hypothesises as tentative answer, stating limitations of tests, and suggesting further hypotheses or solutions, and

6_ Repor the study findings.

With respect to these approaches and other aspects of the
research process,the review of research techniques undertaken in
this chapter follows the process model depicted by figure 6.1.

FIGURE 6.1

Research Process Model

```
┌─────────────────────────┐
│ selecting the research   │
│ topic and setting up     │
│ research hypothesises    │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│ deciding on the          │
│ research approach        │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│ collecting the data and  │
│ information needed,       │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│ analyzing the collected  │
│ data and drawing         │
│ conclusions              │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│ reporting the research   │
│ findings                 │
└─────────────────────────┘
```
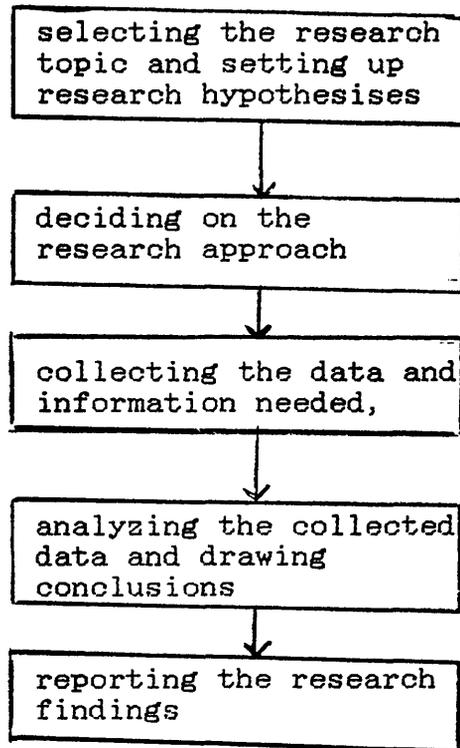
6.2 SELECTING OF RESEARCH TOPIC AND SETTING UP HYPOTHESIS

The research process usually starts with a problem or
question. The prospects of selecting a suitable topic will be
enhanced if a systematic approach adopted, such as the approach
depicted by Howard et al (1983) and illustrated by figure 6.2.
With respect to the process illustrated by figure 6.2,the first
step in selecting a research topic is the embarking on a
certain area of study which seems to have potential. Within the
selected area, the researcher should identify an apparently
novel topic, and be able to convince himself and others of the

novelty of the topic.

There are a number of factors that a researcher should consider to make sure that his selected topic is feasible for research. The availability of and access to data and information is of prime importance. The researcher must make sure that the facilities, resources and the approval of the related authority are attainable. In the respect of technical skills needed, the researcher should consider very carefully whether the topic has chosen matches the skills he posseses.

Having satisfied himself that the topic is feasible, the researcher next needs to consider whether it has sufficient value. The research might be important because of its potential contribution in the related body of knowledge if it is acknowledged by an academic person or research specialist.

Given that the research is feasible and potentially valuable, the researcher still has to consider the alternative outcomes of the study. In advanced research two or more outcomes may be possible. For instance, a hypothesis may be proved or disproved. Preferably each of the outcomes should represent acceptable findings in which case the risk involved in the research will be reduced.

The final test of a research topic as suggested by figure 6.2, is that of assessing whether sufficient scope exists. In large part scope will be related to work already completed in related areas. As a result of previous work, prior beliefs will be held and these will affect the reaction to the research outcome in terms of novelty and surprise. Scope should be seen as the opportunity to increase, reduce or even confirm current believes. As illustrated in chapter seven, this issue is well demonstrated in the assessment of the scope of this research topic.

FIGURE 6.2

The process of Topic Selection
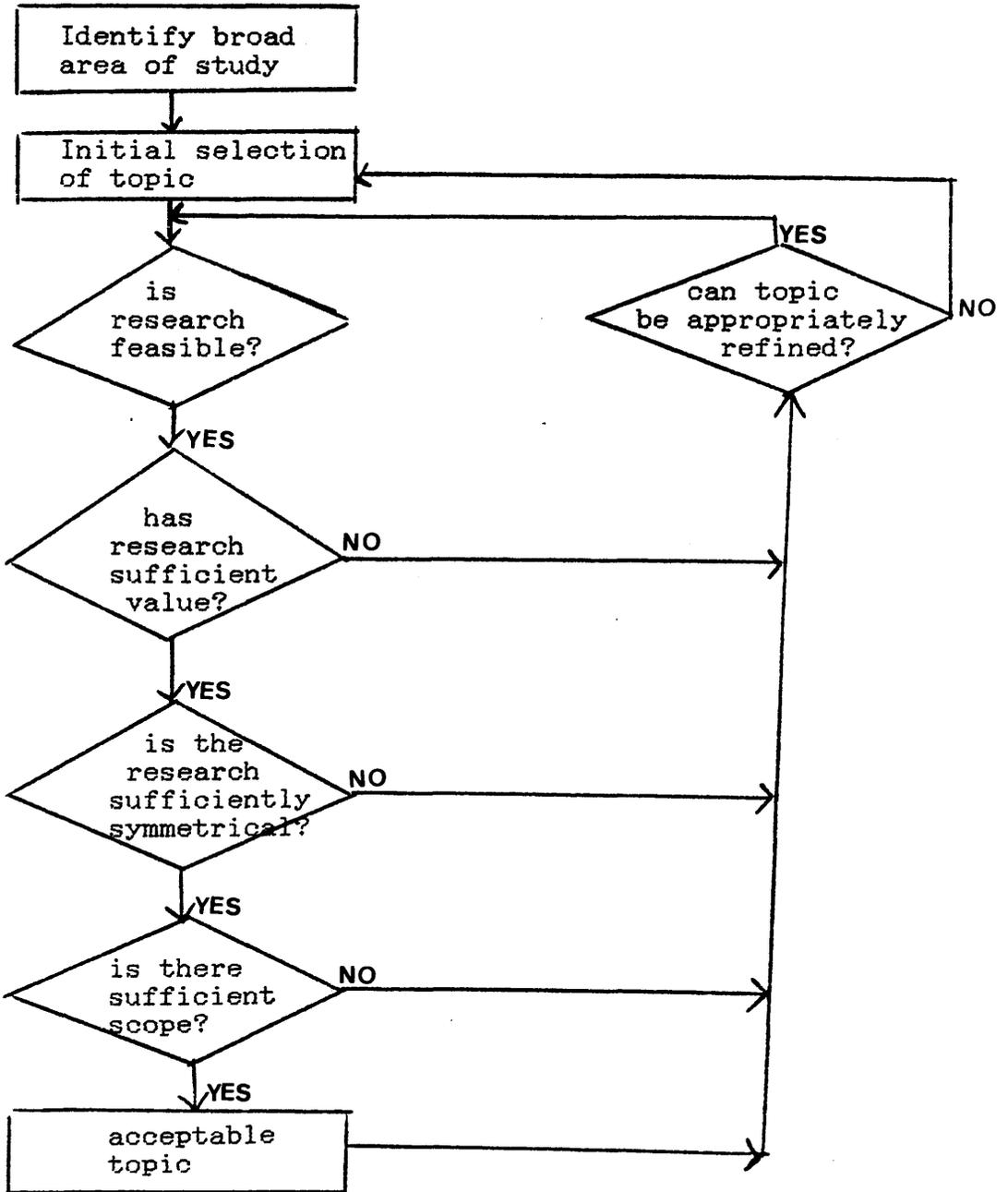
To develop an acceptable topic, the researcher normally needs to carry out a literature survey. There are two main reasons for conducting a survey of the literature (Howard et al, 1983): (a) as part of the process of topic selection, (b) as part of the research project proper.

The two reasons were considered in undertaking the research on hand (see chapter 7).

The broad review of reported work in a field might reveal the previous authors' suggestions of fruitful studies to be pursued by others.

Assessing the novelty of promising ideas will normally involve the researcher checking the literature to ensure that his proposed topic has not been tackled before and to define an area of study that he can consider his own. Having selected his topic, the researcher will normally need to carry out several surveys of relevant published literature in rather greater depth. For this, most researchers are likely to rely on books and journal articles, because these types of sources are familiar items and need no further comment (Howard et al, 1983).

Having selected the research topic or problem of interest, the researcher may carry out a preliminary study. This study will help him to set out the parameters of the problem and to gain some idea of the essential information to be sought. From this work the researcher may well set up the hypothesis or a series of hypotheses to test against reality.

" An hypothesis is an imagined answer to a real question " (Bennett, 1983, p.26). Hypotheses are always in declarative sentence form, and they relate, either generally or specifically, variables to variables, as is clear from this definition:

" a hypothesis is a conjctural statment of the relation between two or more variables " (Kerlinger, 1986, p. 16). Kerlinger indicated that there are two criteria for a good hypothesis and hypothesis statment. One, hypotheses are statments about the relations between variables. Two, hypotheses carry clear implications for testing the stated relations. There is little doubt that hypotheses are important and indispensable tools of scientific research, because hypotheses can be tested and shown to be probably true or probably false. Hypotheses are powerful tools for the advancement of knowledge (Kerlinger, 1986) because they enable scientists to get outside themselves.
Once hypotheses are framed, the researcher then seeks information or data to test their validity. Before the data required can be collected, the researcher should select a certain research approach (es) to carry out the empirical part of his research. Therefore in the next section, research approaches are discussed.

6.3   RESEARCH APPROACHES

   Many different methods can be employed in exploring a problem situation, in helping solve a problem, or in establishing whether a hypothesis is acceptable or not. Four common research methods are discussed below. Two of these methods (the field study and the survey) were implemented in this study.

6.3.1   THE EXPERIMENT. The classical method of the physical
----
sciences is the experiment. Most physical science researchers aim to set up a situation in which all the variables can be controlled or varied at will. They usually try to hold all variables constant except one. By varying this one and monitoring changes in the output, the relationship between variables can be carefully studied and documented. Such an approach clearly meets the requirements of scientific method. It does not,

however,meet all the requirements of social research (Bennett, 1983).

Experimentation is a particularly desirable method where research questions take the form of a hypothesis which states that " if (a) then (b) follows ", rather than those hypothesis which seek to describe a phenomenon or where the primary purpose of the research is to develop or verify theory. It is not especially useful in exploring a field, describing phenomena, or suggesting or generating hypothesis for testing (Bennett, 1983).

Experiments are broadly of two types: the laboratory experiment and the field experiment.

A_ Laboratory Experiment. The laboratory experiment has the inherent virtue of the possibility of relatively complete control. It can, and often does, isolate the research situation from the life around the laboratory by eliminating the many extraneous influences that may affect the independent variables. Precise laboratory results are achieved mainly by controlled manipulation and measurement in an environment from which possible contaminating conditions have been eliminated.

Since laboratory situations are for special purposes,it can be said that the effects of experimental manipulation are usually weak. Although laboratory experiments have relatively high internal validity, they lack external validity.

Laboratory experiments have three related purposes (Kerlinger, 1986): they are a means of studying relations under sure and uncontaminated conditions,they enable the testing of predictions derived from theory, and they refine theories and hypotheses to formulate hypotheses related to other experimentally or

nonexperimentally tested hypotheses.

B_ The Field Experiment. " A field experiment is research study in a realistic situation in which one or more independent variables are manipulated by the experimenter under as carefully controlled conditions as the situation will permit " (Kerlinger, 1986,p. 369). Through the use of replication (i.e., repeating the experiment on several groups), randomisation (i.e., assigning participants be a random process), and certain statistical control, field experiments can be carried out with little interference from the normal activity and with several variables being manipulated at once.

The use of experimental and control groups is the most common approach to controlling a field experiment.The contrast between the laboratory experiment and the field experiment is not sharp (Bennett,1983); where the laboratory experiment has a maximum of control, most field experiments must operate with less control, a factor that is often a severe handicap. Field experiments are admirably suited to many of the social and educational problems.

Field experiments are well_suited both to testing theory and to obtaining answers to practical questions. Whereas laboratory experiments are suited mainly to testing aspects of theories, field experiments are suited both to testing hypothesis derived from theories and to finding answers to practical problems. Flexibility and applicability to a wide variety of problems are important characteristics of field experiments (Kerlinger,1986).

6.3.2 FIELD STUDIES. Field study (case study) is " a
_____
nonexperimental scientific inquiry aimed at discovering the relations and interactions among sociological, psychological, and educational variables in real social structures   "

(Kerlinger, 1986, p. 372).

Field studies are often implemented for intensive examination of a single unit, such as a small group of people or a single organization. Field studies involve measuring and studying what is there and how it gets there. Results from one case study can not be generalised or applied to other similar case studies, because the case looked at may be unique and therefore not representative of another instances. Two types of case studies can be carried out (Bennett, 1983): Exploratory studies and hypothesis testing.

Exploratory studies have three purposes (Kerlinger, 1986): to discover significant variables in the field situation, to discover relations among variables, and to lay the groundwork for later more systematic and rigorous testing of hypothesis.
In testing hypotheses, the researcher would seek data, perhaps from many different situations aimed at proving or disproving the validity of the hypotheses. Field studies do not attempt rigorous control, this is both a strength and a weakness. The strength is that a greater realism in the research can be obtained; the weakness is that things may get out of hand, for example, sudden incidents erupt and destroy the validity of the research.

The field study method has four steps (Bennett, 1983): (a) determining the present situation, (b) gathering background information about the past and the key variables, the research often consists of a list of possible causes of the current situation, (c) testing the hypothesis, and (d) checking that the hypothesis tested actually works in practice.
The field study method is extremely useful in exploratory

studies where the main interest is in developing a rich variety
of suggestions.

However, field study method can be a time_consuming approach;
it is also inefficient in researching situations which are
already well structured, that is where the important variables
have been identified.

6.3.3 THE SURVEY. " Survey research studies large and small
----
populations by selecting and studying samples chosen from the
populations to discover the relative incidence, distribution,
and interrelations of sociological and psychological variables"
(Kerlinger, 1986, p. 377). Survey researchers typically gather
their data as verbal responses to predetermined questions asked
of most or all the research subjects. In the planning of
surveys, careful attention is given to both wording of questions
and the way questions are presented to respondents. As survey
questionnaires are planned before the data collection begins,
surveys cannot explore feelings of interpretations of
individual respondents in great depth as could be done in
participant observation.

On the other hand, the systematic data collection from each
respondent allows the exploration of relationships among
variables that are measured; such relationships cannot be
explored if each respondent or situation is not measured in the
same way. Surveys produce much information; thought must
therefore, be given before data collected and as to how they
will be analysed.

Only rarely, however, do survey researchers study a whole
population, instead they study samples drawing from populations.
From these samples they infer the characteristics of the defined
population. The study of samples from which inferences about

populations can be drawn is needed because of the difficulties of studying whole populations. Random samples can often furnish the same information as a census (study of an entire population) at much less cost, with greater efficiency, and sometimes greater accuracy (Kerlinger,1986).

The survey can be used for two quite different purposes (Bennett,1983). The first,is to describe current practices and events,such as termed polls. The purpose of a polling survey is mainly to describe responces or answers to an issue, and they can be used to determine the extent to which certain practices are common or the extent that certain trends are becoming apparent.

A second use of the survey is for analysis; analytical surveys go beyond simply describing the current state or practice. A polling survey of one organization may show that all managers exercise an authoritarian style of management, but it enables us to say little else of importance. For example, why do all managers exercise such a style and how does that style influence the performance of the organization? Analytical surveys may help in answering such question.

In any research project, data are gathered to generate hypotheses (inductive) and probably to test the generated hypotheses, so that the research is inductive / deductive,(or just to test the hypotheses deductive only). How data can be collected, and what are the available techniques for data collection that can be used by this study, for example? The answers on these questions are the subject of analysis in the next section.

6.4 DATA SOURCES AND COLLECTION TECHNIQUES

Data sources can be classified, based on the types of data,
to two general categories: secondary and primary sources (
Howard et al,1983).

A_SECONDARY DATA: By secondary data it is oftenly meant the
statistics that are not gathered for immediate study at hand
but for other purposes. The same term (secondary data) also
means the data that are collected by others and published in
some form that is fairly acceptable. Secondary data can be
classified as coming from internal sources or external sources:
the former being available within the organization and the
later organized outside it. External come from an array of
sources, such as government publications, books, bulletins and
periodical. Books and journals are the most important source
of what has been called textual data (Howard,1983). Official
publications, are some of the most important secondary data
sources. The most frequently useful official data are probably
the various statistics compiled by government departments.
Official statistics of other countries and those of
international bodies such as OECD and UNESCO,are very important
parts of the international official publications.
Their ready availability and low cost are the most significant
advantages of secondary data compared to the time and cost that
are incorporated with the attainment of primary data. However,
the disadvantage of secondary data, Churchill (1983) argued,
is that because secondary data are collected for other purposes,
it will be rare when they fit perfectly the problem as defined.
B_ PRIMARY DATA. Primary data are the data which the researcher
collects himself for the purpose of the investigation at hand,

or for the research needs at hand.

Communication and observation are two basic means for obtaining primary data (Kidder et al, 1986). Communication involves questioning respondents to secure the desired information, using a data collection instrument such as a questionnaire. The questions may be oral or in writing, and the responses may also be given in either form.

Observation means that the situation of interest is checked and relevant facts,actions or behaviours are recorded.

The communication method of data collection has the general advantages of versatility (the ability of a technique to collect information on the many types of primary data of interest), speed and cost. Communication is a faster means of data collection than observation, because it provides a greater degree of control over data gathering activities. Observation typically produces more objective data than does communication. The communication method of data collection has its own disadvantages, such as (a) the respondent's unwillingness to provide the desired data, (b) the respondent's inability to provide the data, and (c) the influence of the questioning process on the responden.

6.4.1 POPULATION AND SAMPLE SPECIFICATION. This section is
----
mainly concerned with the choice of method by which the needed primary data are collected. One of the ways that the researcher can use to attain the data is to survey each member of the population of interest.

A complete canvass of a population is called a census. Another way would be to collect data from a portion of the population by taking a sample of elements from the larger group, and, on the basis of the data collected from the subset,to extract some

conclusions about the large group (surveyed population)
(Ackroyd et al, 1983).

A sample is a limited number taken from a large group for
testing and analysis, on the assumption that the sample can be
taken as representative of the whole group or population. In
theory it would be possible to measure or to question all
members of the population of interest, but in practice this would
prove difficult for many cases in reality.

It is the practical advantages which accounts for the fact that
samples are the most normal method of collecting data rather
than census in which every element of population must be
included. Hence, sampling is used very frequently because it
offers some major benefits over taking a census, such as saving
money and time. Sampling methods can be divided into two broad
categories: probability and nonprobability sampling procedures.

1_ Nonprobability Sampling: nonprobability samples involve
personal judgement somehow in the selection process. Respondents
and interviewers are mostly the expected individuals who may
impose their personal judgement in the sample selection process.
There are three kinds of sampling procedures in the
nonprobability category (Kidder et al, 1986):

(a) Accidental samples: in accidental sampling, one simply
takes the cases that are at hand, continuing the process until
the sample reseaches a designated size. In all cases it is
unclear as to what population the actual sample is drawn from.
Accidental samples are recommended for descriptive or causal
research.

(b) Purposive (Judgement) Samples: judgement samples are
selected on the bases of what an expert thinks those particular

sampling units or elements will contribute to answering the particular research questions at hand. The key feature of judgement sampling is that population elements are purposively selected.

The SNOWBALL sample is a judgement sample that is sometimes used to sample special population. This sample relies on the researcher's ability to locate an initial set of respondents with the desired characteristics; these individuals are then used as informants to identify others with the desired characteristics. Those initially asked to participate would also be asked for names of others whose cooperation would be solicited; and the last might be asked for names of others; that is referrals from referrals are obtained, and so on, thus leading to the term " snowballing " (Green, 1978).
Purposive sampling may be the only practical approach for sampling populations if no sampling frame can be constructed for random sampling and insufficient data is available about the population for quota sampling.
(c) Quota Samples: quota samples are a special type of judgement sample,they attempt to ensure that the sample is representative by selecting sample elements in such a way that proportion of the sample elements possessing a certain characteristics in the population. Quota sampling is very extensively used in practice. The main advantage of quota sampling is its quickness, both in generating the sample and in completing and controlling the field work.
2_ Probability Samples: the essential characteristic of probability sampling is that one can specify for each element of the population the probability that it will be included in the sample. While in nonprobability sampling, there is no way

of estimating the probability that each element has of being included in the sample and no assurance that every element has some chance of being included. Probability sampling includes: simple random sampling, stratified random sampling, cluster sampling, multistage sampling and stratified cluster sampling (Green, 1978; Honigmann, 1982).

6.4.2 MEANS OF OBTAINING PRIMARY DATA. Choosing a method of
----
collecting primary data implies a number of supplementary decisions, for example, should the researcher administer questionnaires by mail, over the telephone, or in person? Should the purpose of the study be disguised or remain undisguised? Should the answers be open ended or should the respondent be asked to choose from a limited set of alternatives? A decision with respect to method of administration (Churchill, 1983) has serious implications regarding the degree of structure that must be imposed on the questionnaire.

Structure is the degree of standaradization imposed on the questionnaire; hence, with a high structured approach, the questions asked and the responses permitted are completely predetermined; while in a highly unstructured questionnaire the questions to be asked are only loosely predetermined, and the respondents are free to respond in their own words. An intermediate degree of structure would involve standardized questions but an "open_ended" response format. By considering the degree of structure and directness, data collection means can be classified to four techniques (Kinnear, 1983):

(1) Structured_Direct: structured_direct questionnaire is the most common data collection technique; in this technique, questions are asked with exactly the same wording and in exactly

the same sequence for all respondents. Administrative simplicity
and ease of data processing, analysis and interpretation are
some of the structure_direct approach advantages. While its
disadvantages are the same as the limitations of the
communication model (the respondents may not be able to provide
the desired data, or not willing to do so, as an example).
(2) Unstructured_Direct: with this approach the purpose of the
research study is clear to the respondent. Also, there is a
great degree of flexibility in how the questions are asked and
in the degree of probing. The response format is open_ended.
Depth interview is one of the techniques used in this approach.
In_depth interview is an unstructured personal interview which
uses extensive probing to get a single respondent to talk
freely and to express detailed beliefs and feelings on a topic.
3_ Unstructured_Indirect: this type of communication data
collection technique is also called " projective technique " ;
it is basically designed to obtain data directly about
respondents' beliefs and feelings. Projective techniques have
been found to be useful in a situation such as exploratory
research projects.
The communication medium is the personal interview, and
tape_recording or note_taking is the response format of this
technique.
4_ Structured_Indirect: this data collection technique is often
called " performance of objective task technique ." In the
implementation of this technique, respondents are asked to report
factual information about the subject of interest to indirectly
measure the direction and strength of their attitudes.
Structured questionnaire is the topical implemented response
format, and mail is the communication medium used between

researcher and respondents.

6.4.3 QUESTIONNAIE DESIGN. To obtain reliable and valid
----
answers, question content, wording, and sequence must all work

together to convey to the respondents what information is

desired and motivate them to provide it. In developing a

questionnaire, therefore, some thought should be given to such

aspects as, the information sought, the type of questionnaire

and method of administration of data collection, and whether

the respondents have and will give the requested information

(Dillman,1978). These aspects are discussed as below.

In specifying the sought information, the hypotheses are

usually a good guide to the questionnaire, in that, they

determine what information will be sought, and from whom. The

expolretory research is aimed at the discovery of ideas and

insights and thus the questionnaire for exploratory research is

loosely structured, with only a rough idea of the kind of

information that might be sought.

After this,comes the decision on how data will be gathered. The

" how " requires decisions with respect to the structure and

disguise to be used in the questionnaire, and whether it will

be administered by mail, telephone, or personal interviews.

Thus the data needed, how it might be collected, what degree of

structure and disguise will be used, and then how the

questionnaire will be administered, all must be specified

precisely.

Before investigating the contents of each question, it must

be checked that all the formulated questions are necessary. It

is important to avoid unnecessary questions and unnecessary

levels of details. However,enough questions should be included

to permit full understanding of the responses (Kidder et al, 1986). For some issues several questions might be needed instead of one to secure enough accurate information.

Each issue should be examined carefully to accertain that the potential respondents have the information sought, and if the respondents are given the answers, will the answers mean any thing to them (Dillman,1978). In some situations, respondents have the necessary information to answer the enquires presented to them, but they will not give it.

The respondents' willingness to provide the requested informa_ tion, (Churchill,1983) argued, seem to be a function of the amount of work involved in producing an answer, their ability to articulate an answer, and the sensitivity of the issue. Accordingly, questionnaire designers need to be careful of the amount of effort it might take respondents to give the information sought; they also should avoid the issues which embarrass and threaten respondents. If such issues are impossible to be avoided, then a close attention must be paid to how the issue is addressed, particularly with respect to question location and question phrasing.

When sensitive questions must be asked, it helps to consider ways to make them less threatening. Hiding the question in a group of other more innocuous questions, phrasing the question in terms of others and how they might feel or act, and stating the response in terms of a number of categories that the respondent may simply check, are some helpful techniques in this regard.

Improperly wording questions can only result in biased or otherwise meaningless responses (Kidder,1986). Prior decisions about question content dictate some aspects of wording. The

specification of the desired content must be detailed enough to provide guidance. In phrasing questions, terms should be exact, simple, and reflecting just what the question content is intented to mean. Ambiguous and vague words, such as frequently, often, almost and usually, must be avoided; also biased words in questions can produce biased responses. Terms that produce powerful emotional responses, like freedom, justice and bureaucrat, should be avioded if possible (Kidder et al, 1986).

From the structure point of view, questions should be short and simple, because complex and lengthy sentences are likely to be misunderstood by respondents. As a guideline for question structure, Kidder et al, argued that qualifications and conditional clauses should come first, while the key idea in the question come last to avoid respondents' beginning to formulate an answer prematurely; also questions should simplify the respondents' task as much as possible.

A question can lead the respondent if it is framed so as to give the respondent a clue as to how he or she should answer, such as asking a person the question: " Do you like this cold weather? " The word " cold " might lead the respondent to the answer " no". Therefore, if the researcher wants an accurate picture of the situation, he needs to avoid leading the respondent as to how he should answer.

Putting questions together into a questionnaire, the researcher needs to recognize the order in which the questions are presented. It is essential that the first few questions be simple, interesting and in no way threatening to respondents (Dillman, 1978), such questions are those ask respondents for

their opinions on some issues. Broad questions should always come first; also there should be some logical order to the questions, that is sudden changes in topics and jumping around from topic to topic should be avioded.

The real test of a questionnaire is how it performs under actual conditions of data collection. For this assessment the questionnaire is vital. Data collection (Kidder et al, 1986) should never begin without an adequate pretest of the instrument. The pretest can be used to assess both individual questions and their sequence.

By reaching this stage of research process, the researcher should know what data and/or information must be sought, from whom he should get the required data, and by what means he will collect data and information needed. After the required data are gathered, the next step in the research process is to analyse the collected data.

Data collection techniques (Crouch,1985) can be classified into two broad categories. These are: the qualitative approach, where a large amount of information is collected from a relatively small number of people in a fairly unstructured way, usually using group discussions or in_depth interviews. The other category is the quantitative approach, and with it a smaller amount of data are collected from a large number of people in a structured way,usually questionnaire survey. How the resulting data should be analysed, and what techniques of analysis shall be used, will depend on which approach has been used for data collection.

6.5 DATA ANALYSIS

With respect to the above classification of data collection techniques,two approaches of data analysis are discussed below.

6.5.1 QUALITATIVE DATA ANALYSIS. In_depth interviews and group
----
discussions represent the most common ways in which qualitative

data is collected. Usually, each data collection session is to

be tape_recorded. As a first step in the analysis of this type

of data, the moderator will listen to the recorded sessions or

read interviews notes (if the interviews are not tape_recorded)

several times. During the listening or reading the analyzer

takes notes on points make; then in the following stage he

categorizes and classifys the answers into separate topics as

covered by the respondents.

The out come of analysis of qualitative data is a report which

indicates the range of views expressed on the topics covered

and some indication of whether the views were strongly held

and widely supported.The characteristic of qualitative research

report is that it contains direct quotations to indicate the

way in which respondents express their opinions and the

language used.

6.5.2 QUANTITATIVE DATA ANALYSIS. Quantitative data is typically
----
produced using questionnaire survey. In either case the end

result will be a large number of completed questionnaires

containing both pre_coded and open_ended answers. In order to

combine all the answers and thus make a meaningful summary of

responses,there are a number of stages in the analysis process.

These are: data preparation,data processing,analysis,describing

and testing (Kidder et al,1986).

Editing, is one of the main operation in data preparation, and

its objective is to detect and eliminate errors in the completed

questionnaires. Coding is the second treatment to data after

editing, the purpose of coding in surveys is to classify the

answers to a question into meaningful categories, so as to bring out their essential pattern.

To code open_ended questions, the answers must be analysed for separate points that they make and each point assigned a code number which must be written on the questionnaire.

Once data are edited and coded, are often put togather in some kinds of tables and may also undergo some other forms of statistical analysis (data processing). Tabulation concern is mainly about counting of the number of cases falling into each of several classes. At the present time, Computers are the principal method of data analysis in use.

There are three main ways in which statistics are used in the analysis of data (Kerlinger,1986):to describe data,to measure its significance, and to indicate relationships between sets of data.

Describing Data: the purpose of descriptive statistics is to give the user an impression of the location of the data and its spread. The statistics used are Frequency, Percentage, Average and Dispersion.

Measuring Significance: what significance tests do,is to measure whether the difference between two percentages is significant or not, or whether the difference between two means from two different samples is significant. Chi_square is one of the statistical techniques implemented in measuring significance.

Results from analysis stage must be reported. Reporting the research findings is the last stage in the process of any research.

6.6 REPORTING RESEARCH FINDINGS

The final stage of the research process is the preparation and presentation of the research report. In a simple statment,

a research report is the presentation of the research findings
(Bennett, 1983). This section,therefore,briefly,discusses
what should be included in a research report.

(a) Summary: the summary of a research report,especially thesis
gives the high points of the entire body of the report (thesis).
In that, summary contains the necessary background information,
as well as the important results and conclusions. The summary
purpose is to provide the reader with the minimal back ground
to appreciate the results, conclusions, and recommendations of
the study. It should state explicitly the problem or hypothesis
that quided the research; the results presented in the summary
must agree with those in the body of the report.

(b) Introduction: the first task of the introduction section
is to introduce the background and nature of the problem being
investigated, and the research objective (Kinnear et al,1983).
It is important that this part of the report should written in
an easy clear way, so readers will be able to grasp the nature
of the problem and understand the research objectives.
The introduction should also include a summary of the current
state of knowledge in the area of investigation, what previous
research has been done on this problem, and what are the
pertinent theories of the phenomenon, if any? From the previous
research, only the pertinent issues with which the study in
hand is deling and their major conclusions should be cited. In
the last part of the introduction, the study is briefly
overviewed, without procedual details, and with a smooth
transition into the next section of the report.

(c) Method: in considerable detail,this section should explain
how the study was carried out. The methodology section should

also specify the method used. In addition to this, the communication techniques used for data collection should be specified as should the method for translating respondents replies into the study's variables.

Concerning data analysis, the overall procedure followed in converting raw observation into analyzable data should be explained, as well as the way how the responses of the mail survey were coded for analysis.

(d) Results: at the very beginning of the results section, evidence should be presented that shows that the study successfully set up the conditions for testing the hypotheses or answering the questions posed (Kidder et al, 1986). For example, if the study involved a mail survey, the number of respondents who returned the survey must be indicated.

The general rule in presenting the research findings (Kidder et al, 1986) is by beginning, first, with the central findings and then moving to more peripheral ones. Accordingly, the conceptual question of the study comes first, followed by the actual operation performed or the actual behavior measured. Then, comes the spelling out of the answers in clear and presise form or statments. Every set of findings that is sufficiently important to be stressed should be accompanied by a table, graph, or figure showing the relevant data, so readers should be able to grasp major results either by reding the text or by looking at the figures and tables.

(e) Discussion: the discussion section begins by stating what has been learned from the study. Therefore, this section starts with a clear statment on the support or nonsupport of the hypothesis or the answers to the questions were first raised in the introduction. Then, inferences from the findings are drawn,

and the theoretical and practical implications of the results are stated. It is appropriate at this point that results are compared with those reported by other investigators, and the possible shortcomings of the study are discussed.

The conclusions and recommendations must flow logically from the presentation of the results. The conclusions should clearly link the research findings with the information needs, and based on this linkage recommendations for further research can be formulated.

SUMMARY

Research definition and classification were the first issues discussed in this chapter. Research can be classified in more than one way. The purpose of research, the approach of research and the nature of research are examples of these classifications. Deeper understanding of research will come from consideration of the process by which it is conducted and of course from embarking upon an actual study. Accordingly topic selection and setting up hypothesis are the first issues to be considered in the research process. Literature survey is often needed for topic selection.

Once the research topic or problem is selected, hypothesis are framed. After formating hypothesis, the data and/or information needed for testing the hypothesis are sought. For undertaking the rest steps of the research process, a certain research approach must be followed. The laboratory experiment, field experiment, case study and survey are the most common research approaches that a researcher can choose among. By following one of these approaches, subjects from whom data will be collected are identified, and the means (communication or observation)

of data gathering are specified. Communication method of collecting primary data can be performed (based on the type of data and its purpose) either in a structured or unstructured way. Hence, primary data can be gathered by implementing a structured communication technique, with using questionnaire, or by implementing unstructured technique, especially when in_depth interview is necessary.

Data gathered by in_depth interviews are qualitatively analysed; while data resulted from questionnaires are quantitatively analysed. As a part of the analysis, hypothesis are tested and conclusions and recommendations are drawn.

Based on the discussed research techniques, and with respect to the objectives of this research study, what are the most appropriate research approach and techniques that can be implemented in this study? The answers on this questions is analysed in the next chapter.

CHAPTER 7

RESEARCH METHODOLOGY
IMPLEMENTED TECHNIQUES

In the last chapter research methods and techniques were reviewed. Therefore, research classification and process issues, and data collection and analysis techniques were discussed. The last chapter, therefore, provides the background knowledge of the research approaches and techniques. Based on this knowledge, the research method implemented in this study was formulated.

In this chapter, therefore, the research method and techniques that are to be used in this research project are selected and the reasons for their selection are illustrated. To present a complete picture of the methods and techniques that are applied in this study, the contents of this chapter are organized into three main sections as follows.

The first section is devoted to initiation and motivation of the main issues of the study, such as the importance of information for planning and decision_making in a country, and the situation of information services in the less developed countries.

In section two, data collection techniques are the focal point. Therefore, attention, in this section, is given to topics such as the specification of the sources of the data and the techniques by which these data have been collected from the specified sources.

How the collected data are analysed and what analysis techniques are implemented, are what section three is devoted to explain. In addition, how hypotheses are tested and results are approached are also explained in this section.

7.1 THE BASIC ISSUES OF THE STUDY

Information is a resource by means of which the uncertainty about outcomes of decisions may be reduced. It follows that, the availability of sufficient accurate information, is important for making reliable decisions. Therefore, organizations have always required systems which provide their planners and decision makers with the right information when ever needed. Consequently, information systems, with different levels of complexity and for many different types of purposes, have been in use for a long time.

However, information systems, as a distinct discipline of knowledge, have emerged only during the second half of this century (Davis, 1982); since then, information systems, of different forms and for different purposes, have been developed. For example, in the 1950's, Data Processing Systems broke through, whilst the 1970's saw the implementation of more advanced models of information systems, such as Total System, Decision Support Systems and Database Systems (see chapter 2). The implementation of such systems has attracted the interest of both private and public sector organisations. The complexity and size of modern organizations have increased the importance of information in organising and control these type of organisations. Accordingly, information systems, at the national and sectoral levels are constructed to provide the planners and decision makers in these organisations with the information they need.

However, computer_based information systems are not always the best solution to the lack of apposite information that decision makers in an organization might need.

Due to the low demand for information services in most of the LDCs, computer_based information systems such as MSC database in Britain and DATA STREAM in Canada (see chapter 3) are not found in these countries. From the economic point view, low demand has prohibited these countries from consulting the existing international computerized database systems that are installed in the developed countries.

With the present condition of poor perception of information and low demand for its services, computer_based information systems might not always be the best solution to the lack of information in many LDCs since manual information systems might be a better alternative within some of the present information service environments.

So far, most of the developed countries have been able to develop many national and international computerized information systems; library services systems, flight reservation systems and manpower information systems, are examples of such systems (see chapter 3). Therefore, information availability might not be a problem to the planners and decision makers in the developed world.

Despite the substantial success that the developed nations have achieved in the information services field, in the majority of the less developed countries, complete and formal information systems do not exist, as is the case in the most of the African countries (Nyagn, 1983).

Therefore, information availability and services in the LDCs, are still considered serious problems, and planners in these nations are still suffering from information shortages, as explained in chapter three.

7.1.1 MANPOWER INFORMATION SERVICES. Because manpower is a
major resource for any society, keeping a complete and up to
date information of this resource is very important to decision
makers and planners in any society. Accordingly, most of the
developed countries have constructed unique manpower information
systems which suit their labour force conditions, and provide
them with the manpower information required.

However, the situation in the less developed countries, as
outlined in chapter three, is completely different. It has been
indicated in the literature that the available manpower
information in these countries does not meet the planners needs
in the same countries (Nyagn, 1983; Salem, 1980; Salman, 1981).

TABLE 7.1

Employment Distribution Between Libyan And
Non_Libyan Workers In 1975, 1977, 1980 & 1985

Year	description	Libyan Workers		Non_Libyan Workers	
		number	%	number	%
* 1975	Total employment	454,100	67.1	223,000	32.9
** 1977	Educated manpower with university degrees	9655	41.0	14,007	59.0
* 1980	Total employment	532,800	65.6	280,000	34.4
* 1985	Total employment (estimated)	678,000	63.9	383,400	36.1

Sources: (*) Ministry of planning, the Economic Development
plan (1981/5), Libya: table 10 and 19.

(**) A. Gummed " High_level Manpower Requirements For
Economic Development In Libya " , Pk.d. disser_
tation, Oklahoma State University, 1979.

7.1.2 MANPOWER RESOURCES AND INFORMATION IN LIBYA. As explained
in more detail in chapter four, Libya has a very small

population (about 3.25 million in 1984) compared with its
land area (1.775,000 Sq. KM). In 1951, when the country first
obtained its independence, more than 90 per cent of its
population were illiterate. Also, economically, the country, in
the 1950's, was one of the poorest nations in the World.
In the late 1950's, oil was discovered in Libya and since 1962
the country started to be one of the oil producing nations. The
constant increase in oil production and the expansion of its
industry in the country,during the 1960's and the 1970's, have
dramatically increased the demand for manpower, especially
highly educated personnel. Unfortunately, the national
population,until now,has not been able to meet the demand for
skilled personnel, because until the early seventies, more than
60 per cent of the Libyan population were illiterate. Libya,
also is still considered as one of the young nations because it
was found, in 1984, and 1973, that the percentage of the native
people who are younger than 15 years was more than 50 per cent
of the total population. More importantly,the huge investments
in development programmes during the last fifteen years have
made the manpower shortage problem more serious. The consequence
is that the country, so far, has depended on foreign manpower
in constructing and operating most of its economic sectors.
As shown in table 7.1, for instance,in 1975, the total foreign
employment was 223,000 workers accounting for about 33 per cent
of total employment in the country; while in 1977,the percentage
of the expatriate workers accounted for 59 per cent of the
highly educated manpower with university degrees.Of the 812,800
productive persons in 1980, foreign employment' share was 34.4
per cent. While in 1985,immigrant employees were expected to be
36 per cent of the total employment in the country.

Neither the 35 years of the political independence of Libya, nor the last 20 years of its economic improvement, would be long enough for the Libyan people to make a dramatic change in the economic and social structures of their society. In the last 35 years, and from a situation of being very poor economically and highly illiterate, no matter what the efforts in development would be, still, there will be more to be achieved and problems to be solved. Therefore, Libya no matter what has been achieved during the last three decades, is still suffering from many drawbacks, especially in the infrastructure, and undoubtedly, is still one of the Less Developed Countries.

Being one of the Less Developed Countries, Libya, so far, has not maintained a complete network for its national information services (El_Hush, 1985). The main components of its national information system are still under construction, such as documentation centres, or are merely decisions on papers, such as the proposed national data processing centre (see chapter 5). The absence of national organization of information services has impaired the benefit of the limited available resources, which makes the situation of information availability even worse. Hence, in Libya, as in many other less developed countries, information services are very poor and the information industry is still suffering from many problems, such as poor organization, and a poor perception of the information profession.

Labour force information services, as a part of the national information service network in the country, are no exception. Planners of manpower development in Libya are still suffering from shortages in the manpower data that they need for drawing

and following up realistic manpower development plans. The instability of the administrative systems in the public sector, and the absence of a formal and national organization of the information service sector, have constricted the Civil Service Department (CSD), as the main public body responsible for providing manpower data, from achieving its objectives in this field.

Up to this stage in this study, the secondary sources of information indicated that information services in Libya seem to suffer from many problems (see chapter 5). The identification of these problems is a major objective of this study; in the absence of comprehensive research in the information sector in Libya, empirical evidence should be obtained to achieve the objectives of this study; such evidence must be derived from primary sources of data. The types of data reqired, their sources and the methods of collection with, are illustrated in the following section.

7.2 THE SPECIFICATION OF DATA, ITS SOURCES AND COLLECTION TECHNIQUES

Research is the framework which specifies the type of information to be collected, the sources of the required data and the data collection procedure(s) (Kinnear and Taylor, 1983). Within this framework of research, data required in any study are first to be specified. In this research study, therefore, the types of data required are those concerned with manpower information availability and services in Libya.

7.2.1 DATA SOURCES.
Data sources can be classified, based on the types of data, into two general categories: Primary and Secondary sources. Secondary data, as illustrated in the last chapter, means statistics that are not gathered for the immediate study

at hand, but for other purposes. The main secondary sources used in this study consist of the following: books and periodicals, are mostly used for the literature survey of the related areas of the study, especially in chapter two and three. Articles from different journals, as well as official publications, that are published by international organizations such as UNESCO and ILO are extensively used in chapter three for formulating the principal issues of this study (problems and objectives of the study). Other official data sources that are published by different public departments in Libya are also used in chapters four and five to finalise many facts and phenomenon concerning manpower resources and information services in Libya.

Because secondary data are collected by others and not for immediate study, they often do not completely satisfy the required data of a specific study. In the literature the available data concerned with information services in Libya are not sufficient for investigating this study's objectives. Therefore turning to primary sources of data is inevitable.

Primary data, as discussed in the last chapter, are the data which the researcher collects himself for the purpose of the research needs at hand. Accordingly, the collected data in this study covers issues such as the availability of manpower data, the organization of information services, and the implementation of computer technology in information provision. These issues, and some others, are illustrated in Appendix A. Sources of the collected data in this study are specified as follows:
During the last decade the economic system in Libya has been changed from a capitalist to a socialist system, and since the mid 1970's, the public sector has dominated the economic life

of the country. Accordingly, the major manpower employer in Libya, these days, is the public sector. Consequently, planners and decision makers in the public departments are the main users of manpower data in the country.

Therefore, the target population from which data in this study were collected, is limited to the public sector only, and the survey population includes manpower information users in all public departments.

The elements of this population, therefore, include the offices which are mainly responsible for, and directly involved in, manpower data preparation and use, in each public department or economic sector. At the time of conducting the empirical work of this study, the public sector in Libya was organized into 21 different departments. These are:

_ Planning Department
_ Health Department
_ General Education Department
_ Information and Cultural Depart.
_ Youth and Sport Department
_ Agricultural Department
_ Public Utility Department
_ Light Industry Department
_ Foreign Affairs Department
_ Social Security Department
_ Libyan Central Bank

_ Civil Service Department
_ Petroleum Department
_ Higher Education Department
_ Electricity Department
_ Transportation Department
_ Treasury Department
_ Heavy Industry Department
_ Defence Department
_ Scientific Research
  Department
_ Justice Department

All public establishments and corporations are now controlled by public departments, with each department controling establishments in its area.

Each public department is a manpower employer. Therefore, planners and decision makers in these departments are manpower information users. But which office(s) and / or person (s) are directly involved in using this type of information in each department? Since there are no published sources which can help in identifying the real users of manpower data, the only way to

know the correct officers is by directly asking some personnel
in the public departments who know the users of manpower data
or know where such people can be found. This procedure, of
identifying the units of enquiry with certain characteristics
or requirements is called a SNOWBALL sample technique. As
illustrated in chapter six, SNOWBALL sampling is a procedure
in which initial respondents with specific characteristics are
located. These respondents are then used as informants to
identify others with the desired characteristics. That is
referrals from referrals are obtained, until the subpopulation
of interest is located for subsequent personal interview.
The SNOWBALL technique was used to identify the major users of
manpower data in the public sector in Libya, as a surveyed
population in this study.

The development stage that Libya has been undergoing since
the early 1970's, has accompaned by many reorganization events
and administrative regulations of its public departments and
organizations. The instability of the public sector organization
and administration have delayed the construction of reliable
institutions and infrastructures in the country. Accordingly,
formal communication systems are poor and their implementation
is still remote. Therefore, management personnel of the public
sector have no choice but to depend on informal communication
in performing their departments' functions.
The other factor that fosters the informal communication is
the very close personal relationship between the individual in
Libya, mainly because of its small population and the strong
family relation that is still considered as an important
social issue in the country.
The present communication environment in Libya, which might not

exist in many other countries, has helped the researcher of this study to easily implement the snowball sampling technique and to contact the appropriate respondents for data collection in this study.

It is important to note that the potential bias of implementing the snowballing technique in this study is that the interviewed population includes only the present users of manpower data. Some of these users have not had long esperience in manpower information, mainly because of their transfer from one department to another as a result of the instability problem of the public sector organizational system. The other potential bias is that a large percentage of the surveyed population were taught in the Western Countries (Britain, West German and the U.S.A.). Those who had their education in the Western Countries with no doubt had been affected by the Western cultures. Therefore, their perception to the subject matter of this study might not be totally based on the conditions of their home country. Moreover, other potential information modeling will not have been considered. The process of identifying the manpower data users started at the interviews of the undertaken pilot survey of this study. After the identification of the elements of potential population, the required data were gathered from the specified population by using two data collection techniques .

7.2.2 DATA COLLECTION TECHNIQUES. Communication and observation
----
are the two basic means for obtaining primary data. Communication involves questionning respondents to secure the desired information, using a data collection instrument such as a questionnaire. There are various ways to classify the

data collection techniques which utilize the method of communication. Degree of structure and degree of directness are useful classification schemes.

Since the main objective of this study is to explore the problems of information services in Libya, as one of the LDCs, the exploratory design is probably the best research design technique to suit this study, because this technique, as explained in chapter six, is appropriate when the research objectives include something such as the identification of problems, and developing a more precise formulation of vaguely identified problems (Bennett, 1983).

On the other hand, the present information services in Libya (see chapter 5) are characterized by many drawbacks, such as the poor organization and the lack of information concerning national resources and services. With such characteristics, the information services sector in Libya should face many problems. Due to the absence of comprehensive research in this sector, information problems in Libya were not identified. At the same time, the problem of the shortage of reliable information required for planning and decision_making, has been widely expressed by researchers, planners and decision makers in the country. Accordingly,researching the information services problems in Libya has come to be a very important issue in the country at the present time.

The primary use of the in_depth interview is exploratory research;therefore the in_depth interview is the main technique that was used for collecting primary data in this study.

In conducting the in_depth interview, the main role of the interviewer is to identify general areas for discussion, encourage the respondents to discuss freely and in depth the

topics of interest and prompting responses whenever more
comments are needed. In doing all these functions, the
interviewer will often not be able to write down all the
important comments the respondent might raise. Consequently,
tape_recording the interviews is an important issue to be
considered.

In this study, the pilot survey (see below) showed the
impracticality of tape_recording, because interviewees either
resent the recording idea or they will not provide accurate
information. Beside the in_depth interview, the only other data
collection technique that suits this research as an inductive
study, is the questionnaire. As illustrated in chapter six,
the questionnaire for an exploratory research is loosely
structured. Therefore, an open_ended questionnaire was considered
as a substtution to tape_recording and to complement the
in_depth interview. The main objective of this questionnaire
is to capture the main ideas about manpower information service
activities in each surveyed department and organization.
Therefore this questionnaire (appendix B) includes a number of
short questions which cover the same topics that are discussed
in the in_depth interviews.

Pilot studies provide guidance on many critical issues in
any survey, such as the suitability of the method of collecting
data, the non_response rate to be expected, and the efficiency
of the instructions and general briefing of interviews.
Accordingly, a pilot survey was undertaken in this study.

7.2.3 PILOT STUDY. It is quite difficult to plan a survey
----
without a good deal of knowledge about some factors, such as
the way the respondents will react to questions, the time the

survey will take and what issues are worth discussing (Moser and Kalton, 1975). Therefore, it becomes necessary to run some test interviews and to try out all the various features of the main enquiries.

With respect to the importance of pilot survey, a pilot study of six test interviews was undertaken. Three of the six were completed in public departments (Health, Education and Water) in Stirling, Scotland; while in the other three respondents from the Transportation, Civil Service and Scientific Research Departments in Libya were interviewed.

As the results of the pilot survey undertaken indicated (see below), some lessons were learned. These are: the respondents would not provide the correct information unless they trusted the interviewer, data collection techniques might need to be adjusted to better suit the respondents' conditions and the type of data inquired, data can not always be collected from all elements of the potential population, and different respondents might ask for different formal permissions to provide the same information.

From the pilot survey completed in this research, the following conclusions were extracted.

(1) from the reaction of some respondents to the subject matter, it was found that, for some of the respondents, even though they may accept being interviewed, they will not say everything they would like to express unless they completely trust the interviewer. Since the number of respondents in this study is small, therefore, great attention was paid to the communication with the potential respondents to guarantee as many positive interviews as possible.

(2) the pre_test interviewees in Libya emphasised the

impracticality of tape_recording the interviews, because officers either will resent the recording idea or they will not provide the desired data.

(3) from the pilot interviews it was found that,in some sectors, permission from higher authority personnel in these sectors, is required for the respondents to provide the required data. Therefore,high authority permission was sought, whenever needed, for interviewing officers. For this, the researcher was supported by a letter from the Higher Education Department. The Letter was directed to the other public departments asking them for their cooperation with the researcher. Many respondents were satisfied simply by reading this letter. Others asked the permission of their senior staff, with the same letter being used here to permit their subordinates to provide the requested information.

(4) In some public departments, such as Economic and Light Industry,the knowledge of manpower data and its users is mainly concentrated in the public organizations under these departme_ nts. Therefore,the interviewed officers from these departments, were mainly from these organizations. With respect to these results a practical plan for data collection was drawn up.

7.2.4 DATA COLLECTION. It was planned for the work of data
----
collection to be undertaken in two consecutive rounds of interviews. In the first round, the open_ended questionnaire was implemented to capture the main ideas about the manpower information service activities in each surveyed department and organization. Whilst in the second round,the in_depth interview technique was used, upon which the planned topics were extensively discussed by the interviewees.

The first round of interviews was started in the second week of October, 1985. Respondents from the departments surveyed in the pilot study (Civil Service, Scientific Research, and Transportation) were first to be interviewed. The respondents from these departments were used as referals to officers from other departments. Most of the public departments are located very close to each other, in few complxes. For example, Planning, General Education, Higher Education, Health, Youth and Sport, and the Central Statistics Department are all in one complex of buildings. The situation of the public departments allocation helped the researcher to contact the respondents in a short time. Therefore, appointments for the subsequent interviews were taken at the same day before or after each day meeting (s). Appointments were obtained mostly within few days or later during the following week.

Respondents at the first round were interviewed by using the questionnaire, where each was asked short questions and given enough time to express his opinion and impression; at the same time notes of their answers were taken. At the end of each day, collected notes from the completed interviews were reviewed, and if there are any important different issues raised by respondents, these were underlined.

Interviewing the respondents with whom appointments have already been taken and making arrangements with other departments for the subsequent interviews at the same time, the researcher interviewed in a period of 4 weeks, for 6 days a week, respondents from the following public departments and organizations:

1_ Manpower Studies and Information Office / Civil Service
   Department,
2_ Planning Section / Transportation Department,

3_ Economic Sciences Committee/Scientific Research Department,
4_ Training Department / National Post Office Company,
5_ Personnel Affairs Section / Information and Cultural
   Department,
6_ Training Section / Electricity Department,
7_ Personnel Affairs Section / Youth and Sport Department,
8_ Statistics and Computer Section / General Education
   Department,
9_ Computer Section / Social Security Department,
10_Planning Section / Health Department,
11_Planning Section / Agricultural Department,
12_Manpower Planning and Development / Petroleum Department,
13_Manpower Planning Section/Planning and Economic Department,
14_Central Statistical Department,
15_Main Library at University Of Garyounis,
16_Planning Section at University of El_Fatah,
17_Manpower Training Section / Health Department
18_Personnel Affairs Section National Sement Company(Heavy
   Industry),
19_Personnel Affairs Section / National Meat Company
   (Planning & Economic Department),
20_ Personnel Affairs Section / National Car Company
   (Planning and Economic Department),
21_ Statistics and Personnel Affairs Sections/Ports and Lights,
22_National Fodder Company (Light Industry),
23_Planning Section / General Utilities Department
24_Administration Department / Libyan Central Bank,
25_Administrative Affairs Section / Treasury Department,
26_Library and Documentation Centre / General Education
   Department,
27_Regional Civil Service Department/Municipality of El_Zawia,
28_Computer Section / Justice Department.

In the the first round, some important issues such as the
"personnel domination in job's performing" and "information by
demand" were raised by some interviewees. At the end of this
round, these issues were organized and made ready to be
discussed in the second round.

From the completed interviews in the first round, some
conclusions were derived. These are :

a_ Defence and Foreign Affairs Departments, who did not cooperate
in the first round, would not be interviewed in the second round
either.

b_ The Administrative Affairs Section in Treasury Department
would not be interviewed again because the respondent from this
department indicated that he has no more information other than

what he commented in the first round.

In the second week of November 1985, the work in the second round was started by making appointments with some respondents. At the same time, each respondent was given the topics sheet and told to check the topics before the interview. Arrangements for interviews in the second round were much easier than in the first round, because most of the interviewees, and their departments, were known by the researcher at this stage. At each interview in this round, the respondent discussed the topics in the sheet which was given to him before the meeting, and commented on the issues which were raised by some respondents in the first round. Notes on the interviewees' comments were taken at each interview. At the end of each working day, notes from each interview were reviewed and clarified.

After 5 working weeks, all possible interviews in this round were completed. The ultimate outcome of the 5 weeks of interviews consists of 26 interviews from the following departments and organizations:

1_ Manpower Studies and Information Office / Civil Service Department
2_ Economic Sciences's Committee / Scientific Research Department
3_ Training Department National Post Office Company
4_ Personal Affairs Section / Information Department
5_ Training Section / Electricity Department
6_ Personnel Affairs Section / Youth and Sport Department
7_ Statistics and Computer Section / General Education Department
8_ Planning Section / Agriculture Department
9_ Manpower Planning Section / Petroleum Department
10_ Manpower Planning Office/Planning and Economic Department
11_ Central Statistics Department
12_ Planning Section at University of El_Fatah
13_ Manpower Training Section / Health Department
14_ Administrative Affairs Section National Cement Company (Heavy Industry Department)
15_ National Fodder Company (Light In dustry Department)
16_ Administrative Affairs Department / Libyan Central Bank
17_ General Planning Section / Health Department

18_ Personnel Affairs Section National Meat Company
    (Planning & Economic Department)
19_ Planning Department at University of Garyounis
20_ Planning Section / General Utilities Department
21_ Regional Civil Service Department/Municipality of El_Zawia
22_ Main Library at University of Garyounis
23_ The High Committee for Computerization
24_ The National Institution for Publishing and Distribution
25_ The National Library (Dar_Elcotob Elwatenea)
26_ The Revolution Printing Institution.

The results (the notes gathered from the interviews in both rounds) of 54 interviews which were completed in 9 weeks, were organized and made ready for the analysis stage.

7.3 ANALYSING THE DATA AND EXTRACTING THE CONCLUSIONS

For the purpose of organization and preparation of the gathered data, the respondents' answers to the questionnaire were classified into separate points and coded. The coded answers were then tabulated and cross_tabulated by computer by using the SPSSx program (the Statistical Package for the Social Sciences). The outcome of this preparation consists of a number of tables. In these tables the respondents' answers, concerning certain issues, were presented in numerical and percentage form. Later in the analysis, these figures were used for complementing the respondents' comments gathered from the in_depth interviews and extracting conclusions about the study's findings.

The in_depth interviews undertaken were the main source of the data gathered in this study. The collected notes from these interviews were reviewed a number of times, and the respondents' comments were categorized and classified into distinct topics, such as information perception, instability of the public sector administration and the shortage of manpower. The identified topics constitute the main issues which describe the situation of information services in Libya. Then, the aggregate outcome topics were classified into two categories (National

Information Service Characteristics and Manpower Information Service Characteristics) and analysed in chapter eight. From the analysis of these topics, the study objectives were derived and factors for testing the hypothesis were prepared.

The main objective of this study is to find out the problems impairing information services in Libya, and to derive solutions to these problems. In chapter eight, information service problems in Libya were identified. The study hypothesis is to test whether the information service sector in Libya is suffering from the same problems which handicap information services development in the other LDCs, as found in the literature. Therefore, in chapter nine, lists of the information service problems in the LDCs in general, and Libya in particular, are analysed and cross_examined against each other. These lists were produced in different stages of the study:

(1) From the literature review of information services in the less developed countries in chapter three, a list of the information services problems in these countries was produced.

(2) In chapter eight (the analysis), information services problems in Libya were organised, and the suggested solutions to these problems by users of manpower information were also prepared.

By analysing and cross_examining information service problems in the other LDCs, as presented in the literature, and found by this study of Libya, the study's hypothesis were tested. Within the present information environmental conditions in Libya, solutions to the problems of its information services sector were proposed in chapter nine.

Finally, in chapter ten (the last chapter of this study), the study objectives and conclusions were summarized, and further

research in the field of study was recommended.

SUMMARY

To justify whether the information services sector in Libya suffers from the same problems which affect the information services in the other less developed countries, this study is devoted to finding out the information service problems in Libya. In the absence of previous comprehensive research studies of the information sector in this country, undertaking an empirical study was necessary for achieving the research objectives. Manpower information services were selected as a means of tackling this problem (researching the information service problems in Libya). Therefore, primary data were collected from the manpower data users in the public sector of this country.

In_depth interview and open_ended questionnaire were implemented in gathering the required data. The ultimate achievement of the empirical work consisted of 54 interviews, of which 28 were completed by using open_ended questionnaire and 26 by using in_depth interviews. With respect to the study objectives, and as far as the researcher is concerned, the empirical work in this study was successful. The obtained data by the implemented questionnaires were coded and tabulated by computer by using the SPSSx programme. Whilst the respondents' comments from the in_depth interviews were organized and classified into certain topics. These topics, in turn, were classified into two categories. These categories (the National Information Service Problemss) and the (Manpower Information Service Problems) were analysed in chapter eight. In chapter nine, the hypothesis were tested and the objectives were analysed.

CHAPTER 8

AN ANALYSIS OF THE DETAILED CHARACTERISTICS AND PROBLEMS OF THE NATIONAL INFORMATION SERVICES SYSTEM IN LIBYA

In the last chapter, the discussion concentrated mainly on the basic issues of this research project and the techniques employed in collecting and analysing the data required for this study.

By applying the data analysis techniques, as specified in the last chapter, the collected primary data in this study are analysed in this chapter. The contents of this chapter, therefore, are organized as follows. The first section concentrates on the analysis of the factors which affect information services at the national level. Information service organization, information education and computer technology implementation are examples of these factors. In the second section, attention is devoted to the analysis of the factors which have a special affect on manpower information services, such as the lack of specialized organizations in manpower information provision and the organization of manpower information services. The third section summarizes the main information service problems that have been identified and analyzed in sections one and two.

The analysis in this chapter is mainly based on the primary source of data in this research, i.e. the interviews.

8.1 NATIONAL INFORMATION SERVICES PROBLEMS

At the national level, Libya has not as yet completed the formulation of its national information services network, as most of the interviewees indicated. For instance, one of the

interviewees indicated that there is no specific policy for information services on which the role of each sector and organization in information provision is specified. Another respondent argued that in Libya, so far, there is not a structured national information services network. Along the same lines, another interviewee pointed out that a national information network which is based on a specific policy for information services has not yet been formulated. Within the same context, one of the respondents commented that coordination between departments and organizations, concerning information exchange, is only assumed and not formally organized. Because Libya is undergoing a transition, until now, there is no specific strategy for organizing some critical sectors such as information and technology implementation.

Discussing the relationship between information providers and users, one of the interviewees indicated that there is no relationship between the two; simply, because there is no national information infrastructure that articulates and invokes such a relationship. While another respondent said " no wonder there is no reliable relationship between information users and providers ", because organization and administration systems and their communication channels are not formulated seriously with respect to information flow and provision. The stage at which an effective relationship between information users and providers can be built, has not yet been reached, as one of the interviewees commented.

Because information services have not been organized on the national level, each sector, as the interviewees pointed out, has its own approach for serving its own information.

Data preparation and provision by organizations constitutes the

major input into the production process of information services at both national and sectoral levels. Unfortunately,most of the public organizations in Libya, are not organized to carry out data preparation functions.As one of the respondents indicated, " information is by demand ", because in most of the organizations there are neither data processing facilities nor information posts. Therefore, each organization prepares information based on its needs and the facilities it has, and regardless of the other users of the data it produces. Such poor construction and organization of the information services sector has ultimately led to a situation where the available information is incomplete, inconsistent and often produced by demand only.

Based on the collected primary source's data in this study, it appears that the information services sector in Libya suffers from the following problems.

8.1.1 INFORMATION PERCEPTION PROBLEM. In Libya, as shown in
----
table 8.1, 82 per cent of the interviewees indicated that there are many people who still believe that information services are not feasible and the people who carry out such jobs are not productive personnel. This defective perception of information sources is reflected in a number of different ways.For example, a few respondents argued that this was due to Libyan societal structure, where the library profession is a low level job and librarians are still considered as stock keepers. The existing lack of realization of the importance of information has been accompaned by many drawbacks in the public sector organization system. For example,statistical units are located at the bottom of the organizational structures. It has been found by this

study that more than 95 per cent of the surveyed organizations and departments organize their information activities as a part of a section in its organizational structure. At the same time the personnel who usually operate these units are less qualified and hold low level posts and salaries.

Lack of realization of information importance, as shown in table 8.1, and the poor understanding of the role that information specialists can play in this field, have restricted the development of this sector. For example, in education programmes, students have not shown much interest in information and library disciplines. For instance, while the number of college students amounted to about 40,000 in 1983/84, the number of graduates from the library and information department in the five years (1981_85) totalled only 344 (Ahmed,1985).

TABLE 8.1

Interviewees' Perception of People's
Understanding of Information

Respondents Group	Is there a Lack of Understanding of Information By Individuals?				
	Yes	No	Do not know	Row Total n	%
Organizations and Departments Which Have Information Units	15	0	3	18	64
Organizations and Departments Which Do Not Have Information Units	8	0	2	10	36
Column Total n	23	0	5	28	100
%	82	0	18	100	

Note: The table is derived from the respondents to question 1, appendix_B.

Also, interviewees from libraries believe that many college graduates in the library field do not appreciate the library jobs they have been allocated. The reason why graduates with information or library backgrounds do not like statistical and library jobs, as some respondents commented, is that these educated people still believe in the idea that information jobs have little recognition from the public and organizations. Besides this, interviewees from libraries and statistical units believe that the employment conditions of statisticians and librarians do not offer satisfactory incentives, such as special allowances or high level posts, which might attract highly educated personnel.

Hence, the library profession in Libya at present, as some librarians commented, is confronted by many obstacles which discourage the development of the library service and its profession [Esmaiel, 1985].

In the past, as one of the interviewees explained, neither people nor authorities have given enough attention to the field of information. Another respondent argued that, previously, no real effort had been devoted to creating information institutions or information specialists. More than 78 percent of the respondents have the same impression, as shown in table 8.2. Therefore, in practice, these days, information services offered by departments and organizations are suffering from many defects.

Employees at the lower levels of organizational structure in public departments and institutions, are the principal providers of data. They constitute, as the respondents indicated, a major problem in information services. Carelessness and poor understanding of the importance of information by operational

management is another obstacle here. For example, one of the
respondents explained that data providers in operational
management have not yet perceived the importance of data they
collect and the role it might play in decision making.

TABLE 8.2

The Attention That Has Been Given
To Information Services Development

	Have Information Services Been Given Enough Attention?							
	Yes		No		Do Not Know		Total	
Respondents Group	n	%	n	%	n	%	n	%
Departments And Organizations Which Have Information Units	0	0	15	83	3	17	15	64
Departments And Organizations Which Do Not Have Inform_ tion Units	0	0	7	70	3	30	10	36
Total	0	0	22	79	6	21	28	100

Note :1_ All percentages, except rightmost column, are within
        row percentages.
     2_ Percentages in the righthand column are the % of all
        respondents.
     3_ This table is derived from the respondents to

        question 4, appendix_B.

From the interviewees' discussion on the information
perception problems, the following solutions to some of these
problems are drawn: management in each public department should
provide its employees with sufficient training regarding
information's importance and its role in the success of their
organization and country; information units and positions must
be at a higher level in the departments and organizations'

structures; constructing a unique professional body for information specialists like many other professions, because the formal organization of information specialists will give them more recognition and respect from both the authorities and the public.

TABLE 8.3

High Authority Appreciation Of Information
Importance In Planning And Decision Making

	Do High Authority Personnel Appreciate The Importance Of Information?					
	Yes		No		Total	
Respondents Group	n	%	n	%	n	%
Organizations And Departments Which Have Information Units	14	78	4	22	18	64
Organizations And Departments Which Do Not Have Infor_ mation Units	9	90	1	10	10	36
Total	23	82	5	18	28	100

Note: 1_ All percentages, except rightmost column, are within row percentages.
2_ Percentages in the righthand column are the % of all respondents.
3_ This table is derived from the responses to question 1, appendix_B.

8.1.2 APPRECIATION OF INFORMATION. Do those in high authority
----
(ministers), senior officers and operational managers appreciate the role of information in planning and decision making? The answer to this question is given by the interviewees in their comments. As shown in table 8.3, 82 percent of the respondents believe that, high authority and senior personnel appreciate the the importance of information in planning and

decision making. For example, one of the respondents indicated that high authority personnel are strongly convinced by the importance of information and its role in decision making. Another respondent said that decision makers believe in information importance; therefore, they encourage the development of their organizations' information services. While another interviewee indicated that most of the decision makers and planners are convinced of the importance of information, as many of them say " we wish ". This means that although these people realize the importance of information to planning and decision making, within their existing administration systems they were not able to improve this sector. Some respondents even remove high authority of responsibility for the problems from which information services suffer. For example, an interviewee argued that high authority has an interest in maintaining good information service facilities, but operational bodies are not capable of undertaking the responsibility for this service. Similarly, another respondent indicated that planners and decision makers believe in the importance of information, but the problem is the lack of stability in the public sector organization and administrative systems which are responsible for the interruption of information service programmes. Still, some other interviewees believe that high authority personnel have, so far, not done their best to improve information services. One of these interviewees argued that decision makers in his sector see the importance of information, but do not put intensive effort into providing better facilities for information services. Another respondent indicated that high authority has shown some interest in information, but the degree of interest is not enough to cure the problems of the

information services.

With a different perception of the role that high authority has played in improving information service facilities, a third respondent commented that some decision makers are not really interested in information availability, because the qualifications of some decision makers might not match the level of responsibilities attatched to their posts. Above all, another respondent commented that, all high authority, senior officers and operational managers should be blamed for not having paid enough attention to solving the problems of information services in the country; he also criticised high authority for not formulating the national information services network, and blames senior officers for not promoting development within the existing statistical units in their organizations. Therefore, the problem of high authority and senior staff personnel, as the same person argued, is that they do not themselves appreciate the practicality of information use within the existing administrative and organizational conditions.

Therefore, the interviewees believe that the immediate actions that higher authority and senior staff personnel might take to help in solving the information services problems are: higher authority and senior management personnel should give more attention to this sector and provide practical solutions to its problems; public departments and organizations must formulate intensive training programmes aimed at operational management and its employees to improve their level of understanding of the information service and its role in the achievement of their organizations's objectives;decision makers

and planners should seek the available information necessary
for formulating policies and decisions, and ask for more data
whenever it is needed.

8.1.3 PRIORITY IN SECTORS DEVELOPMENT. In Libya the lack in
----
satisfying many people's needs as well as the poor economic
structure suffered by the country before the 1970's have
directed the objectives and the ways of investing and spending
the country's financial resources.

Providing for urgent needs such as food and health services,
and building up the economic resources have been the main
objectives of the country since the early 1970's. Hence, the
country, so far, has completed four development programmes and
is currently executing the fifth. In the completed development
programmes, reconstruction of the main sectors, such as
Agriculture, Electricity and Communication was given first
priority and allocated a big share of the development investment
(for example, from the total investments of LD 17000 million in
the 1981_85 plan, 18.2 % were allocated to Agriculture, 11.8 %
to Electricity and 12.3 % to Communication).

As many interviewees acknowledge, the last fifteen years were
considered the critical period for the development of the
country's economy. For example, one of the respondents said
that Libya has just come out of the under developed realm and
its planners are starting to plan stable systems and structures.
Another interviewee indicated that, in the past, the country's
objectives were mainly focussed on satisfying urgent needs and
building up the main economic resources. In general, provision
of principal services and the improvement of physical structures
constituted the major objectives of each sector during the last
fifteen years. The priority in the development concept was

strongly recognized by the interviewees. For instance, a senior officer from the telephone company pointed out that, in his organization, the installment of more telephone lines is still considered more important to the people than preparing a telephone directory. At the same time a respondent from the health service department said that providing more beds for patients is more important to his sector than keeping health records. These opinions are often reasonable, especially when a service is still in the early stages of construction.

Planning, organization and information services are examples of the many areas that have been given a low development priority as the interviewees explained. For instance, one of the respondents indicated that planning and information offices are the weakest units in all public organizations and departments. Another explained that planners and decision makers in many sectors have not had the opportunity to think about improving their sectors organizational systems and providing information services, because they have been busy with building the physical structures of their sectors.

Priority in development has not only directed the investments and the allocation of time here, but also affected the provision of educated manpower as well. As one of the respondents explained, efforts in manpower training and development programmes have been mainly devoted to certain areas such as education, medicine, agriculture and industry, while organization, information and technological subjects have been given much less attention.

From these comments, it appears that the importance of some subjects such as information, planning and manpower is to, a

certain extent, realized by the planners and decision makers of the country, but under the pressure to satisfy the people's urgent needs, these areas, as one of the senior officers indicated, have not yet been thought about.

There is no doubt that accurate planning and reliable information are very crucial to the economic development of any country. Hence, the low priority that was accorded to the information sector during the last fifteen years in Libya, has affected the achievements of the development programmes. Therefore, especially after the passage of fifteen years of intensive physical construction development, sectors such as planning, information and technology must be given, from now on, high priority in development.

8.1.4 AUTHORITATIVE DECISION PROBLEM. It has been the case
----
that, in Libya, officers in high authority (ministers) on, many occasions, take decisions and issue policies without study and proper analysis. i.e., decision makers follow the " authoritative_technical " way in making some of their decisions, as many interviewees indicated. For instance, a respondent indicated that, in his department, decisions, most of the time, are authoritative decisions. Along the same lines, other respondents insist that authoritative decisions are quite common in public administration these days. Authoritative decisions often do not take into account the conditions related to their implementation, therefore, they face many problems in practice. For example, one respondent stated that sometimes there have been situations where they have had to manipulate conditions to comply with the decision's requirements.

In practice, it is found that authoritative decisions have affected the development of information and computing services

projects. For example, in the late 1970's the University of Garyounis sponsored a research project for constructing a computerized system for student registration. The study was carried out by a team that included senior officers from the university administration and three other staff members specialising in information and computing. The researcher of this study was one of the members involved in this project. In their final report the research team underlined three alternatives for constructing the registration system. It was known later on that the university chancellor took a decision that was not within the recommended solutions given in the project' study. Ultimately, after spending tens of thousands of pounds in two years, the university failed to establish the potential system, simply because the chancellors decision was an authoritative type of decision which did not take into account the environment and practical conditions of the project. The same problem arrose when the Municipality of Musrata sponsored a research project concerning the reconstruction and computing of its main financial and administrative systems. In two years (1980/81) the study was completed and its final report was discussed with the municipality committee. The committee was convinced by the recommended solution, but permission from one of the ministers must be sought. Unfortunately the high authority officer who should permit the municipality to undertake its project, suggested another solution that was completely different from the ones recommended in the study. These two examples illustrate how information and computing services are badly affected by authoritative decisions.

8.1.5 COMMUNICATION SERVICE PROBLEMS. Communication systems in
----
any country can play a major role in the success or failure of

its national information service system. Postal, telex and

telephone services are the most useable communication facilities

in Libya at the present time. The importance of such facilities

to the provision of information services was strongly felt by

the interviewees. As one of them said, " the postal service is

of great importance to the success of the information service

system in Libya". Unfortunately,57 percent of the respondents,

as shown in table 8.4, have complained about the available

communication facilities in the country.One of the respondent's

comments in this context stated that the postal service in

Libya is currently very poor,with loss and delay of mail common

TABLE 8.4

The Effects Of The Communication System
On Information Services Provision

Respondents Group	Does the Communication System Affects Information Services Provision ?							
	Yes		No		Do Not Know		Total	
	n	%	n	%	n	%	n	%
Departments And Organization Which Information Units	9	50	6	33	3	17	18	64
Departments And Organizations Which Do Not Have Inform_ ation Units	7	70	2	20	1	10	10	36
Total	16	57	8	29	4	14	28	100

Note : 1_ All percentages, except the rightmost column, are
          within row percentages.
       2_ Percentages in the righthand column are the % of
          all respondents.
       3_ This tabe is derived from the responses to question
          1, appendix_B.

problems. Another respondent argued that the postal service in

Libya is the most critical problem for the communication service at the present time; neither are all streets named nor all premises numbered. Poor public transportation facilities are other obstacles in the communication system, as the respondents indicated.

The telephone service is much better compared to the postal service in Libya at the present. In spite of this, a few organizations still complain about the unreliability of this service. For example, one respondent indicated that of the 20 telephone lines his organization has, only two of them were working. Lack of telephone directories on both national and organizational levels is another problem which handicaps the telephone service. Unfortunately, transmitting spoken messages is still the main service the telephone network provides. Communication facilities, as tools and technology, are, to a certain extent already available and, as a respondent from the post office pointed out, should be able to provide an acceptable level of service, but the problems of these services, as the same respondent indicated, include (a) the shortage of skilled personnel, (b) poor organization and administration of the sector, and (c) the lack of an appropriate incentive system.

Under the present conditions of communication services in Libya, direct personal contact, as the respondents expressed, is the most effective way of getting information from local organizations. Beside the direct personal contact, many organizations have already implemented a FACSIMILE facility to avoid the loss of mail and to improve communication services. There is no doubt that some of the postal services problems such as the lack of identification of streets and buildings,

and the carelessness of the employees, are serious problems which may take decades to cure. The reorganization of this sector, however, under a national company instead of a department in the Transportation Department helped, as the chief officer of the company commented, to solve some of the problems.

8.1.6 INFORMATION EDUCATION PROBLEM. It is natural that people
----
rate highly the basic requirements of living, such as food, clothes and health services. Because of the acute shortages of these basic requirements which the Libyan people suffered from before the 1970's development plans and public services policies during the last fifteen years were concentrated on providing such basic needs and building up the resources required for their provision. Research, organization, technology and information provision were not considered as urgent and direct services tht people might need, as previously explained in chapter 4 and section 8.1.3, Consequently, poor understanding of the importance of information and the low priority given to development of this sector have delayed the introduction of information as an important education subject in the country's schools and universities. So far, there is only one department that teaches library and information courses in the whole country. This department was established in 1976 / 77 in the University of El_Fatigh.

The shortage of information education and its effect on the availability of information professionals were strongly recognized by interviewees. For example, one of the respondents indicated that the lack of information skills is a consequence of the non_availability of adequate education services in this field. Another interviewee argued that the reason for the great shortages in trained personnel in information science is the

lack of technical training and of education programmes in this area. A third respondent commented that in the past manpower development programmes did not include personnel for the information sector.

The provision of education and training programmes in any field is the only way to provide specialists, and the respondents pointed out that the establishment and the expansion of information science education and training programs is probably the best solution to the shortage of manpower in the information sector.

8.1.7 EDUCATED MANPOWER:SHORTAGE AND ALLOCATION PROBLEMS. In

Libya the delay in providing educational opportunities in some fields such as information and computer technology has drastically affected the supply of locally educated personnel. Consequently, the country has suffered badly from shortages in highly educated manpower during the last fifteen years, especially when large investments in development were undertaken in the same period.

Shortage in highly educated and trained personnel in many different professions,especially in the areas of technology,is one of the most serious problems confronting the country's development programs, as illustrated in chapter 4.

As shown in table 8.5, the shortage of skilled personnel in information and computing fields was cited by 94 per cent of the surveyed organizations and departments who have information units. In contrast, only one organization from the total of 18 which have information units,indicated that uneducated manpower causes no problems in carrying out its information functions. A respondent from one of the organizations which have information

225

units, indicated that the intrinsic problem of information
services in Libya is the lack of Libyan experts in this field.

TABLE 8.5

The Shortage Of Information
Trained Personnel

	Is There A Shortage In Information Trained Personnel?							
	Yes		No		Do not Know		Total	
Respondents Group	n	%	n	%	n	%	n	%
Departments And Organizations Which Have Information Units	17	94	1	6	0	0	18	64
Departments And Organizations Which Do Not Have Information Units	0	0	0	0	10	100	10	36
Total	17	61	1	4	10	35	28	100

Note : 1_ All percentages, except the rightmost column, are
within row percentages.
2_ Percentages in the righthand column are the % of
all respondents.
3_ This table is derived from the responses to question
4, appendix_B.

Another argued that, in his organization as well as in many
other public departments, information units are only
theoretically established as they exist in the organizational
structures. Pragmatically, these units are not active (e.g. in
the University of El_Fatigh and Municipality of El_Zawia)
because there are no information trainees working in them.
Along the same lines, another respondent explained that there
are information posts in his organization, but these posts
have never been occupied by suitably qualified personnel. More
over, respondents from organizations which have not yet
developed computing facilities, indicated that the main reason

for the delay of computing implementation by their organizations is the nonavailability of national computer specialists.

In the past, neither the training nor planning of manpower has been properly undertaken. As the chief officer of the manpower development section in the Electricity Department commented, training professional specialists is not based on real needs, and training programmes are usually constructed on approximated needs. This is because of the lack of manpower data, poor manpower planning and the lack of proper forecasting for manpower needs [Population and Manpower Planning Department, 1983]. The same issue was emphasised by a letter handed to a senior officer in the oil sector during his interview by the researcher of this study. This letter contained a message from the Department of Planning asking for the sectors's future manpower needs. These data, as the letter, indicated will be used in directing students in higher education programmes. The interviewee said that it was the first time they had received such an inquiry.

As illustrated in chapter 4, foreign employees account for an important share of labour force in each sector. With respect to the role which foreign employment has played in solving manpower shortages in Libya, this part of the labour force has been accompanied by some problems, such as the turnover. Accordingly, it is found that failure has been experienced in some cases when the construction of some projects, or the provision of some services, is heavily dependent on expatriate workers. For instance, in the National Cement Company the activities of the information unit collapsed since the foreign employees who used to operate this unit have left. Table 8.6 shows 12 sectors in

TABLE 8.6

The Relationship Between Foreign Workers And The
Availability Of Information Units In The Sectors

The Sector	% Of Foreign Workers In The Sector's Employment	The Availability Of Information Units
Construction	73	no
Mining & Quarrying	47	no
Manufacturing	39	no
Health Service	39	no
Electricity	30	yes
Trade	26	no
Education Service	22	yes
Agriculture	19	no
Transportation	16	yes
Petroleum	12	yes
Banking & Insurance	10	yes
Public Administration	7	yes

FIGURE 8.1

The Relationship Between Foreign Employment
And The Availability Of Information Units
In The Selected Sectors

Number of sectors which
have information units

% of foreign
workers in the
sector total
employment
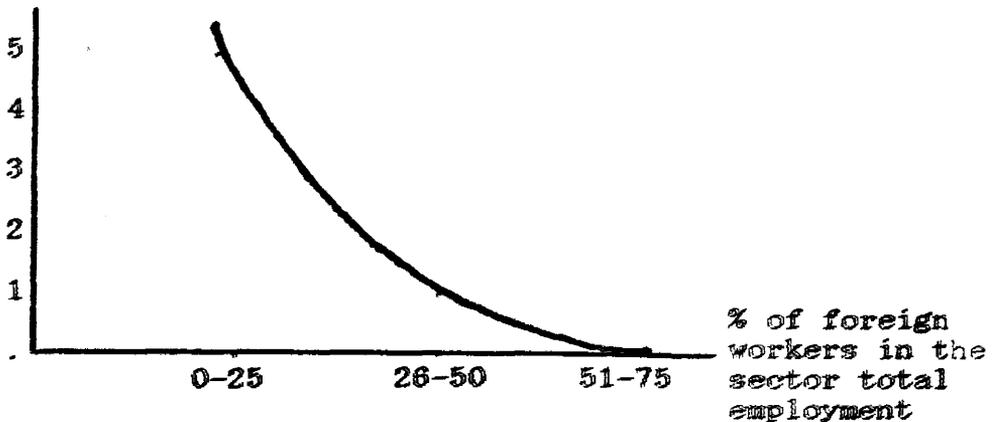
which the percentages of foreign and nationalist workers are maintained. As shown in this table, the sectors which have a big number of foreign employees do not have information units and vice versa. The relation between the foreign workers and the availability of information service in the specified sectors is represented graphically as in figure 8.1. In this diagram, the percentage of foreign workers in the total employment in each sector is broken down into three levels of percentages: 0 - 25 , 26 - 50 , 51 - 75.

Figure 8.1 also shows that the higher the percentage of foreign employment in the sector, the lower the possibility the sector has information unit. The instability of the expatriate employees and their limited experience in the country's culture and language, are most likely to be the main reasons for the shortages in information services in the sectors which have a large number of foreign employees.

In contrast, sectors which have small numbers of foreign workers seem to be capable of providing better information services. That is probably because workers who carrying out the information jobs in these sectors are Libyan. These nationalist workers, compared with the expatriate, have the advantages of stability, familiarity with the country culture and language, and are able to communicate better. This is especially important in this country where personal relations and contact are very important in performing public sector functions.

The allocation of educated personnel is another factor which impedes the availability of indigenous educated manpower, as many interviewees argued. For example, one of the respondents indicated that the country suffers from the incorrect allocation

of its educated personnel. Another respondent explained the same problem by saying that he wished that the right person was in the right place. These comments mainly emphasize the notion that, in this society, personal and social relations play an important role in employment and job allocation. For instance, one respondent explained that the closely knit relationships between people in each community encourage regional employment and handicaps the necessary allocation of manpower resources on a national scale. However, many employees in the society not only prefer, but also insist on employment near their homes and relatives. Under the pressure of personal and family relationships, however, most of the employees, no matter how long it takes them, usually achieve their local employment desire. Nevertheless, many of them may end up with in jobs that are completely different from their original careers. This phenomenon is very common, especially among the female labour force. For example, it is normal practice for a female graduate from an engineering or business college to ask the public authority to allocate to her a teaching job in one of the primary schools near her house.

From the discussions of manpower shortage problems, are taken the following proposed solutions: manpower development structure must be based on the real and intelligent forecasting of the needs of all types of professions, whilst maintaining a tight control on the social and personnel aspects of manpower allocation.

8.1.8 INFORMATION SERVICE ORGANIZATION PROBLEM: As shown in
----
table 8.7, 93 percent of the interviewees believe that management of the public sector is poor, because of the lack of job specification and poor coordination between functions and

offices in the public sector; control, follow up and evaluation measures either are not exist or are not implemented properly; the instability of the public sector organization and administration system; the lack of implementation of modern management techniques. The pocr and unstable management of the public sector has led to a situation where the performance of the public sector offices depends on the philosophy and ethic of the operational management personnel.

This phenomenon is strongly considered by the interviewees to the extent where some of them called it " personnel domination era ". What is meant by this is that management personnel of the public sector do not follow exactly the rules of the implemented administrative system in performing the departments functions. For example, one of the interviewees argued that the

TABLE 8.7

The Respondents' Views On The
Public Sector Management

	Is Management Of The Public Sector Poor?				
Respondents Group	Yes	No	Do Not Know	Row Total n	%
Departments And Organizations Which Have Information Units	17	0	1	18	64
Departments And Organizations Which Do Not Have Inform_ ation Units	9	0	1	10	36
Column Total n	26	0	2	28	100
%	93	0	7	100	

Note: This table is derived from the responces to question 22, appendix_B.

job performance in the public sector is influenced by the individuals in charge more than the controls of the implemented administrative system. Another respondent commented that personnel influence on job performance in the public sector is a fact these days. Within this poor management and inefficient administrative system in the public sector, information function activities are badly affected like many other activities in the sector. For instance, the lack of job specification impaired data collection functions, and the loose relationship between organizational units handicaps the flow of information between the departments.

TABLE 8.8

The Implementation Of Information
Services Policy In Libya

	Is There In Libya A Specific Information Services Policy?				
	Yes	No	Do Not Know	Row Total	
Respondents Group				n	%
Departments And Organizations Which Have Information Units	0	17	1	18	64
Departments And Organizations Which Do Not Have Information Units	0	9	1	10	36
Column Total n	0	26	2	28	100
%	0	93	7	100	

Note: This table is derived from the responses to question 27, appendix_B.

In Libya, as 93 per cent of the interviewees stated (see table 8.8), until now, there is no specific and formal information service policy. The consequence is that many

organizations and departments (36 per cent of the surveyed departments and organizations) in the public sector, the interviewees indicated, do not have information units or even information posts. With few exceptions, information, as the interviewees argued, does not have specific formal sources at either sectoral or national levels.

Because information services have not been provided by organizations as a part of their functions and responsibilities, information units in some organizations, as the respondents indicated, theoretically exist, but in practice they are not active. For instance, one of the interviewees argued that, in his organization there is an information unit, but it is not successful, because it is neither well organized nor does it have the proper personnel. Of the obstacles that impede the activities of information units in many organizations, the interviewees brought up the following: operational management as a major provider of basic data, so far, has not realized the importance of information in planning and decision making; the instability of the organizational and administrative systems in the public sector impedes the development of the existing information units and the progress of their activities; in many sectors, the development emphasis is still on the construction of the physical resources of the main sectors, such as building schools and houses and providing medical and general education services. No attention has been paid to, for example, the development of medical records or education statistical systems. The lack of a national systematic organization of information services has greatly impeded the use of the available data and handicapped the development of this industry. For example, an interviewee indicated that accurate and complete data is hard

to find, because there is no planned and formal systematic coordination between information providers and users. Another respondent argued that the information dilemma is of organizational type;he added that the country has been suffering from the lack of a proper unified procedure for acquiring and providing information. Lack of coordination has often led, as the same interviewee believes, to delay and carelessness from the providers' side.

On the very few occasions when certain types of data are internally needed or externally requested,organizations usually ask their departments, and each provides data related to its direct activities. This procedure of data collection is quite common among organizations. For example,an officer from one of such organizations indicated that in ' urgent data inquiry ' situations, each department in his organization is responsible for collecting data concerning its activities. While another respondent, from a different department, pointed out that all personnel in his organization cooperate in collecting data whenever it is needed.

Under the poor condition of national organization of information services,the public departments who carry some sort of information service's activities indicated that: they can't provide complete and accurate data,because the data collection function in their organizations is not systematically organized; their information activities are not consistent, because of the instability in the organizational systems of their departments. The lack of formal organization to information services has strongly integrated data availability to individual's interest; this means that data, as most of the interviewees explained,is

prepared only when there are some individuals who are interested in information and realize its importance. For instance, a respondent argued that whatever information has been produced is mainly a result of individual efforts; organizations produce data often based on their needs and the facilities they have.

The lack of implementation of a national information service policy which is systematically organized and formally invoked (as attested by most of the interviewees) has left the information function as an optional job for the organizations and departments. Hence, the organizations involvement in this field varies from one to another. As noted above, anything that any of them has achieved is mainly as a result of some personnel interest and, therefore, inconsistency is a common characteristic within the existing information units and their information services.

The sources of information and its services' organization in Libya, as discussed above, suffer from the shortage, and organizational problems. These are: the absence of a national and specific information services policy; the lack of a national organization of information services; the lack of enforcement of information provision by organiations; information units, as a part of the public sector, suffer from organization and administration instability; the utilization of locally produced information is limited, because of the poor coordination between information providers and users.

To some of these problems, the respondents suggested the following solutions:

(1) As most of the interviewees indicated, the country still does not have a specific policy for national information services. Therefore, formulating and implementing a specific

information services policy constitutes the principal solution
to information service problems in Libya.

(2) The establishment of specialized organizations for
information preparation, distribution and provision is a second
major solution to these problems which the respondents
recommended.

(3) The organization of statistical and information units in
the public sector must be based on a national standard structure
and coordinated through a single national network. The functions
of these units should be performed within a standard framework
where information can be passed from one organization to another
through clear and specified channels.

(4) Data preparation and information provision must be formally
considered as part of the organizations' jobs and
responsibilities.

8.1.9 THE INSTABILITY PROBLEM: During the last decade public
----
service departments and organizations in Libya have gone
through many changes in their organization and administration
systems as shown in table 8.9. In this context, for instance,
one of the respondents argued that the instability that the
country has seen since the mid 1970's is a result of the
economic and social transition which the country has undergone
during this period. Another respondent indicated that, so far,
there has been no long term planning for administration in the
public sector. Along the same lines, a senior officer argued
that in the past organization and administration policies were
characterized by an " erase and start from the beginning "
feature. Higher education, scientific research, public utilities,
electricity, telephone and postal services and agriculture

TABLE 8.9

The Instability Of The Public
Sector Administration System

Respondents Group	Is The Administration System Of The Public Sector Instable?							
	Yes		No		Do Not Know		Total	
	n	%	n	%	n	%	n	%
Departments And Organizations Which Have Information Units	15	83	0	0	3	17	18	63
Departments And Organizations Which Do Not Have InformationUnits	7	70	0	0	3	30	10	36
Total	22	79	0	0	6	21	28	100

Note: 1_ All percentages, except rightmost column, are within row percentages.
2_ Percentages in the righthand column are the % of all respondents.
3_ This table is derived from the responses to question 28, appendix_B.

sectors have been the most affected by reorganization and changing administrative systems. For example, higher education institutions, specifically universities, have been administratively reorganized almost every other year since 1978. In the mid 1970's these institutions were controlled by the ministry of general education. Then, in 1978 they were reorganized into a separate body under the control of a higher education committee. After that, they were taken back by the Secretary of General Education. In early 1983, these institutions were reorganized in a separate ministry, called the Higher Education Secretariat. And finally, in 1986 they were merged back with the General Education Department.

Such constant change in the organizational structure of many

public departments and organizations has been accompaned by a stream of administrative laws and regulations that either adjust or nullify each other. The multiplicity of administrative laws and regulations has badly affected, as 79 per cent of the interviewees indicated, the public departments' structures and administrative systems, and their personnel as well. For instance, one of the respondents commented that the continual reorganization and the constant change in the administration regulations, have made it impossible for the public departments personnel to organize their departments' affairs. Other interviewees argued that under the unsettled organizational conditions, they could not follow up the new laws and regulations that affect their departments. The consequence of this is that, on many occasions, as one of the respondents explained, a distinct problem is solved at the same time in different ways and based on different regulations. Under the same conditions, another respondent admitted that many decisions and regulations were issued by a high authority in the public sector, but they have never been partially or completely implemented in practice. This, as the same respondent explained, is for the following reasons: many decisions and regulations are effected either at the same time or in succession. Therefore, departments and organizations have never had enough time to absorb and follow up all the changes; on many occasions regulations and decisions contradict each other. Shortage in qualified personnel impedes the departments abilities to accommodate all the adjustments that are required by new regulations.

The reorganization of public departments, and the changing of their administrative systems, have affected the performance of the public sector in many ways. For example, the change in

managers and key personnel's positions, as a result of the reorganization, has interrupted the public officers' activities and disrupted the development of their experience. Departments during reorganization, have lost either some of their units by elimination or merging, or some of their personnel by transfer or demotion.

Information units, just like any other units in public departments, have been affected by the reorganization problem. For example, one of the respondents stated that, in his organization, there used to be an information unit, but the new organization structure of his institution excluded such a unit, and since then they have been trying to establish a new information unit. At the same time, another respondent said that the last reorganization of his department led to the closure of the information section. The majority of the employees who used to work in this section are still in the same department. These people, since the closure of their section, a year ago, have not produced as many information reports as they did before.

The instability of public sector administration has been exacerbated by staff and employee transfers between, and out of, the public departments. Therefore, many departments actvities have been affected by the loss of their employees, as the respondents from such departments indicated. For example, one interviewee from the General Education Department said that, in the past the information unit in his department used to produce, regularly, a minimum of two comprehensive statistical reports every year. But, in the last two years (1984 and 1985), it could not do so because most of its capable personnel

transfered to other departments immediately after the 1983
reorganization of their department.

TABLE 8.10

The Effect Of Political Events On The
Public Sector Employees' Positions

	Do Political Events Affect Public Sector Employees' Positions?							
Respondents Group	Yes		No		Do Not Know		Total	
	n	%	n	%	n	%	n	%
Departments And Organizations Which Have Information Units	16	88	1	6	1	6	18	64
Departments And Organization Which Do Not Have Infor_mationUnits	8	80	1	10	1	10	10	36
Total	24	86	2	7	2	7	28	100

Note: 1_ All percentages, except rightmost column, are within
 row percentages.
 2_ Percentages in the righthand column are the % of all
 respondents.
 3_ This table is derived from the responses to question
 28, appendix_B.

Because different officers have different philosophies and

ambitions, and in view of the poor administration system in

the public sector, the performance of the operational

departments, has been badly affected by the transfer of

management personnel, as shown in table 8.10. For instance, 86

percent of the respondents commented that political events

affect the personnel positions in public sector management,

whilst 7 per cent of the respondents indicated that political

events have no affect on employees positions. One of the

interviewees indicated that new regulations and employees are

expected with each new high authority officer, because, as he

said, there is no effective control in the public administration for such actions (the effect of new senior staff in personnel posts and job performing procedures).Another respondent argued that every new high authority officer wants new procedures, new staff, and even some times,changes the organizational structure of the departments. This is, as the same respondent believes, a matter of a personal preference, and most of the time, there is no reasonable need for most of these changes.

The lack of controls on personnel and procedure changes, one of the officers explained,is a well known fact in the public sector administration, because the public sector's organization system is not stable or well structured enough to constrain undesirable changes in personnel and procedures.

Even if the organizational instability in the public sector is considered by the interviewees as a crucial problem, staff members at both low and middle management levels will not be able to help in solving this problem, because this problem is a consequence of a political influence and can be solved only by a change in the high authority's policies. If high authority were to tackle the instability, the following actions could help in solving this problem: Changes in organizational structures and administrative systems should not be undertaken unless there is a crucial reason for taking such action; also, an in depth comprehensive study must be undertaken and long term plan formulated, before considering any type of change in organizational structures or the administrative systems and their regulations; more effort should be given to study and analysis, with enough time to test and finalize any new system or law before it can be put in practice;new organizational and

administrative systems and regulations should not result in serious changes in the existing posts and positions of the employees in the affected organizations; Political events (change of high authority personnel) should be carefully conducted, and completed in a way that can not create unnecessary effects either on the organizations structures or on their employees.

8.1.10 COMPUTER TECHNOLOGY IMPLEMENTATION. Computer technology
----
was first introduced to the Libyan people in 1964 by the Statistical and Census Department [Secretariat of Planning, Data Processing Centre, 1981]. So far, the majority of public departments, such as Agriculture, the Treasury, Public Utilities and Health do not have computer facilities.

On the other hand, in the departments which have used these facilities implementations are limited to the traditional applications such as wages analysis, bills preparation and maintaining personnel records. Lack of awareness of computer technology is one of the main obstacles which has impaired the development of computer implementation, as the interviewees indicated. For example, one of the respondents said that there are many officers in the public sector who still do not appreciate computerization as a result of their long experience in the traditional manual procedures of the job performing. Another officer pointed out that the high proportion of employees who are not aware of the subject, as well as the scarcity of trained computer personnel are the main contributing factors to the delay of computer acquirement by his department.

Lack of awareness of computing and its benefits, has hindered the introduction of this technology by many departments in the public sector. As one of the interviewees argued, many employees

in the public sector resist the idea of computerization in their departments, not because they are afraid to lose their jobs, but they believe the computerization of their jobs will put them under the pressure of regularity in work, and of the accuracy of the data required which they would feed into the computerized applications.

Poor planning of computer implementations has been another major factor in the limitation of its expansion in the past. As one of the interviewed officers explained, the reason behind the failure of computer implementation in the past has been the lack of accurate planning and the number of qualified users of these facilities. Concerning the qualification of computer users, another respondent outlined the same problem by saying "the management of many organizations still do not understand exactly their needs from computer implementations "; he also added that even the organizations who already have these facilities, so far, have not achieved a reasonable return on their investment in this technology. The poor utilization of computer facilities has been a very well known problem for many years and still affects the decision to proceed with computerization in many public departments. This problem first appeared when one of the public service departments used computer facilities to simplify and reduce waiting time by individuals in receiving a simple and standard service. Unfortunately, the department failed to achieve the time reduction objective in providing the same service, and on the contrary, service users were asked to wait longer than they used to when they were served by the manual system. Consequently, as one of the respondents argued, many senior

officers believe in the importance of the computer technology,
even though they have not taken practical steps toward
introducing it, because they do not have the faith in the
success of computer implementation under the existing conditions
of unqualified users and poor national organization of this
technology.

TABLE 8.11

The Need Of Computing Facilities By
Public Departments And Organizations

| Respondents Group | Do Organizations Need Computer Facilities? | | | | | |
| | Yes | | No | | Total | |
	n	%	n	%	n	%
Departments And Organizations Which Have Information Units	18	100	0	0	18	64
Departments And Organizations Which Do Not Have Information Units	9	90	1	10	10	36
Total	27	96	1	4	28	100

Note: 1_ All percentages, except rightmost column, are within
        row percentages.
      2_ Percentages in the righthand column are the % of all
        respondents.
      3_ This table is derived from the responses to question
        7, appendix_B.

Because financial resources have not been a problem during
the last fifteen years, many organizations and a few public
service departments maintained computers. In the public service
sector only, one in three departments have computers even
though the need for computer facilities is expressed by 96
percent of the interviewees, as shown in table 8.11.
However, the available computer facilities in the public sector,
so far, have only been used in simple applications, mostly in
salary preparation. For example, one of the respondents commented

that, in his department, the use of computer facilities is
limited to salary analysis only, even though these facilities
have been maintained for two years. Another interviewee
indicated that his organization has maintained computer
facilities since the mid seventies, but, so far, only a few
applications have been computerized.

With the exception of the Census and Statistical Department,
it is clear that the main objective of computerization, in the
majority of the public service departments, is to take the
burden of the large amounts of routine type of work from clerks,
while other applications, such as information analysis, especially
simulation and forecasting, have not yet been undertaken.

As shown in table 8.12, two thirds of the surveyed departments
which own computer facilities indicated that information
analysis and provision is not a major task in their computer
implementations; while one third only of the same organizations
said that information analysis is a major task of computer use
by their organizations. However 78 per cent of the surveyed
organizations pointed out that information analysis still is
not a major task of computer use. Moreover, a respondent from
one of these departments said that although computer facilities
have been maintained by his organization for a few years, this
technology has not been really used in information services.
Another respondent was more specific when he revealed that,
although his organization has been using computer facilities
for six years, information provision has never been considered
as a major part of their computerization programmes.

The reasons behind the limitation of computer implementation
in information services, one of the interviewees argued, are the

limitation of research activities and the low demand for
information in the past. On the other hand another respondent
has a different opinion as he argued that his organization
could not use computers in information analysis because complete
and accurate raw data of any application are not available most
of the time. Of the other obstacles which impaired the progress
of computer implementation and impeded the expansion of its

TABLE 8.12

The Interviewees'Perception Of Computer
Use In Information Analysis And Provision

Respondents Group	Is Information Analysis A Major Task Of Computer Implementation?			Row Total	
	Yes	No	Do Not Know	n	%
Departments And Organizations Which Have Computers	3	6	0	9	32
Departments And Orga_ anizations Which Do Not Have Computers	0	16	3	19	68
Column Total n	3	19	3	28	100
%	11	78	11	100	

Note: This table is derived from the responses to question 9,
      appendix_B.

use, the respondents underlined the shortages in computer
specialists. For instance, one of the interviewees commented
that the main reasons behind the unsuccessful computer
implementations in his organization include the following:
the shortage in computer specialists and trainees; the lack of
consistent and adequate maintenance services for computing
machines. Along the same lines, another respondent said that
the unsuccessful experience of computer implementation by some

public departments and organizations, such as the University of Garyounis and the Social Security Department, is a result of the following problems: the lack of experience in this field has led these departments to the inappropriate selection of computing machines; the software implemented in the major applications could not meet the expected implementations needs, because software designers are not local residents and are not available to make all the adjustments when ever they are needed; the instability of the departments organization and their unsettled staff have led to inconsistency in the departments computerization policies.

Within the existing problems of experience, management, and the shortage of computer trainees, the available computer facilities in Libya have not been successfully utilized. For example, most of the computerized applications, so far, are limited to a few simple ones such as wages and bills processing. Operating time of computer facilities is another deficiency measure of this technology implementation, because computers are often operated during the working hours only. In Libya, public departments work seven hours a day for six days a week. Therefore, computers are often operated for not more than 42 hours a week. A head of a computer department indicated that, in his organization the average operating time of computer machines does not exceed 80 per cent of the dally working hours. This means that the operating time of these facilities is on average, 34 hours a week.

The unsuccessful experience of computer implementations by some departments and organizations, plus the lack of experience and the scarcity of specialists in this field, has discouraged decision makers in some other public departments such as Health

and the Treasury, from undertaking serious decisions toward computerization. For example, a senior officer from the Health department said " if the proper use of and skilled personnel for this technology are not available why should we worry about maintaining these facilities. "

The conclusion, therefore, is that the implementation of computer in information analysis and provision, so far, is very limited, because of the following problems: the lack of awareness of computer technology; poor organization and control of computing services at the national level; the lack of acknowlledgement of computer services as a unique profession; the shortage of computer specialists; shortages of computer education and training programmes; the lack of intensive utilization of the available computer facilities; and the poor demand for information.

From the respondents discussion of computer implementation problems, the following solutions to some of these problems are extracted: because of the lack of experience in the computer field, and toward better results from computer implementations, computer technology should be organized and controlled by a specific national institution; more emphasis on computer education and training programmes should be given; computer specialists should be organized in a unique professional body and be allowed to exercise consultancy in their field without stringent constraints; organizations who are willing to buy computer facilities must firstly, determine their exact requirements of these facilities and the type of applications they are interested in. They also should consult computer specialists in selecting computer hardware and software before

they buy; the imported hardware and software facilities by the different organizations should be compatible and of limited differences in make. Such conditions will help the users in learning from each other and solving each others problems; hardware maintenance is a vital factor in computer operation reliability, therefore, sufficient maintenance facility must be maintained, and if possible, provided by indigenous personnel; coordination and cooperation between organizations and departments are required for greater utilization of the available facilities; employment conditions and controls of computer jobs must be flexible and attractive.

8.1.11 INFORMATION AVAILABILITY AND UTILIZATION: It has been
----
mentioned repeatedly in this chapter that Libya, until now, has not had a complete and structured information services network. Other than the Census and Statistical Department, there are no other specific national organizations which are in charge of providing any type of information services throughout the country. Libraries, especially in the universities, are considered as the main resource and documentation centers. However, most of the available sources in these libraries and other resource centers are published abroad and imported from many different countries.

In the rest of this section, the discussion will be limited to locally produced data and its provision to users.

I_INFORMATION AVAILABILITY. In any country, data concerning national resources and public services are very critical to the planners and decision makers of that country. Unfortunately, in Libya the systems and the institutions that were deliberately formulated to undertake the functions of data collection and information provision are neither completed nor properly

organized. Therefore, even the data concerning the major economic resources and activities is either not complete or not available at all, as the interviewees indicated. For example, the answer of one of the respondents on the question as to whether he finds the manpower data he needs, was that even the department (Civil Service Department) which is in charge of formulating and monitoring the country's employment policies does not have the type of data that can help in making decisions in this sector. Along the same lines, another respondent said, "where is the data", as he answered the question whether the access to locally produced manpower data is satisfactory, while another respondent, in his answer to the question concerning the classification of the utilization of the available manpower data said, " basically, data is not available."

The lack of national and sectoral organization of information services has led to the situation where each organization and sector involved in information provision is different from one to the other. Sectors, such as social security, sport, agriculture, and a few others, for instance, do not have regular information reports about their activities. Unless formally requested by one of the authority officers to prepare a certain type of information, they will not produce any other than what they need for their own purposes. However, the planning department, as an exception, publishes some statistical reports, at times yearly, and mostly, at the end of each development programme. These reports are basically follow up reports to the development programmes.

However, these follow up statistical reports have enormous problems. For example, one of the respondents commented that

even where there are some statistical reports about a sectors's activities, data in these reports is old (five years old or more), incomplete and unclassified. Whilst another officer explained the quality of the available data by saying that the problem is not only the shortage of data, but also the available data still needs to be analysed and compared with other related sources of the same type of data. Another interviewee explained that the available data is mostly presented in a raw and general form and needs more verification and analysis before it can be used. A respondent from a research centre indicated that most of the available manpower data is a raw data and in its present form it can not be used in research. Yet another respondent believes that the available data is often provided as macro data. Accuracy and analysis of the available data is very poor. Inconsistency and differences of data between sources, or the same subject, are widely experienced.

In summary, with the absence of formal organization of information services, even that data which concern the major national economic resources and activities is often collected only by request on certain occasions. Other than that, whatever data might be gathered by any department is often inconsistent and incomplete, and prepared in a way that serves only the users individual concerns.

II_INFORMATION AND DATA UTILIZATION. Up to this stage, the comments of the interviewees clearly showed that the available data is incomplete, inconsistent, and are presented in a raw form. The question now is, how much such data have been in use by the different users? The interviewed officers expressed their opinions about the utilization of the available data. For example, a senior officer from the Planning Department indicated

that if data are available it would be extensively used;he also added " we respect data even if it is not completely accurate. " Another respondent pointed out that if the required data are available, the intention to make use of it would be very high. Yet another said that what ever data are available are fully utilized.   Still   another interviewee believes that   the utilization of the available manpower data is quite high, even if what is available is not really accurate.

Planners and decision makers in the public sector should be major users of the available data.   However, an interviewee specified that the use of the available data by this kind of user has only emerged recently.

It seems that there is a conflict between the use of data, as the interviewees explained above, and the low demand for information, as illustrated in section 8.1.9. But as a senior officer from the Planning Department indicated, data are extensively used if they are available. On the other hand, if data are not available, the data users do not seem to insist that it be made available.

What can be done to develop information sources and improve information services ? The respondents suggested the following means: as one of them explained, regulation and controls concerning the accuracy of produced data and disseminated information must be formulated and nationally invoked; data and information providers must consider,as most of the interviewees argued, the users' needs for the data they produce; sufficient and reliable information can't be preserved, the respondents argued, unless there are certain specialist institutions to carry out regularly and consistently the functions of analysis,

publication and dissemination of important types of data and information.

In this section, factors which affect directly the national information services system in Libya have been analyzed. From the analysis of these factors, it appears that the information sector in Libya suffers from a number of problems such as the poor perception of information by individuals, the lack of effective organization of information services, and shortages of trained personnel in the information and computer fields. All of the information service problems that are identified and analyzed in this section are common problems to all types of information which concern different sectors, such as education, health and manpower sectors, i.e., manpower information services are affected by these problems like the other information services in the information sector.

8.2 MANPOWER INFORMATION SERVICE PROBLEMS

The manpower information services system is a subsystem of the national information system in the country. Therefore, the problems which affect the national system also affect the manpower information as a subsystem of the macro system. For instance, the lack of understanding of information importance by low level management and employees in the public sector has confounded the Civil Service Department from building a complete and updated personal record system for the public sector employees; the carelessness of the low level employees in the public sector, as explained in chapter 5, has badly affected the availability of manpower data, especially at the regional level where the information functions of the Civil Service Offices in municipalities such as El_Zawia, have not been carried out in practice; the central and regional Civil Service Departments,

as the main sources of manpower data, constitute a part of the
public sector in the country.

Therefore, the instability of the public sector administrative
system has affected the organizational structures of these
departments and the stability of their personnel; the poor
national organization and control of information services has
led to the situation where many public organizations and
departments do not have complete and updated personal records
of their employees; communication facilities, especially the
telephone system, constitute the main factor in the failure of
the regional Civil Service Departments' computer service project
that was planned to serve the national personal record system
of the public sector employees; the shortage of computer and
information trainees has impaired computer implementation in
manpower information provision, such as the case of Musrata
Municipality and University of Garyounis. On the other hand,
information units in some public departments and organizations
exist on the organization charts only. The Civil Service
Department in the Municipality of El_Zawia and the National
Cement Company are examples of public organizations whose
information units are not active, mainly because of the shortage
of information specialists; the lack of coordination between
manpower data providers and users has handicaped the manpower
development plans undertaken by some departments such as the
General Education and Planning Departments.

In addition to these problems which affect manpower information
as well as many other types of information in the country
under consideration, there are other problems which precisely
related to and directly affect manpower information availability

and services in Libya. These problems, as the interviewees indicated, consist of the following:

(1) There is a consensus between the interviewees that there is no specific source of manpower information in Libya, because the country does not have any national office or organization which specializes in collecting and providing manpower data. The consequence is that even the public department which organises employment in the public sector has not been able, the respondents asserted, to provide even he minimum data about this sector.

TABLE 8.13

The Availability And Dissemination
Of Manpower Data And Information

Respondents Group	Are Users Of Manpower Data Often Inquire Their Needs Of These Data Directly From The Providers?				
	Yes	No	Do Not Know	Row Total n	%
Departments And Organizations Which Have Information Units	14	1	3	18	64
Departments And Organizations Which Do Not Have Information Units	7	2	1	10	36
Column Total : n	21	3	4	28	100
%	75	11	14	100	

Note: This table is derived from the responses to question 17, appendix_B.

(2) The lack of organization of manpower information services impaired the seriousness of the organizations in undertaking data provision functions. Therefore, as most of the interviewees pointed out, many public organizations do not have complete and detailed data about their employees, especially data concerning

their future needs of manpower. This is because many of these organizations do not have information units. A respondent from one of these organizations indicated that, in his department, on no occasions have employees or an office been directly assigned to carry out the manpower data preparation function; another respondent said " the organizations' needs for manpower and its data have not yet been identified ". A senior officer from the Planning Department indicated that the majority of the sectors when they are consulted for manpower statistics, either provide rough and incomplete data or they never respond at all, mainly because they do not have the data requested.

(3) Under the present poor organization of manpower information services, 75 per cent of the respondents, as shown in table 8.13, argued that users of manpower data often inquire for their needs for this type of data directly from its providers, because, as one of the interviewees pointed out, there is no effective access to locally produced manpower data. Above this more than 60 per cent of the interviewees believe that most of the available manpower data are unpublished.

(4) The lack of national and sectoral organization of manpower information services has impeded the utilization of the available data. As shown in table 8.14, 89 percent of the interviewees indicated that the needs of manpower data users are not considered by the providers of the same type of data. Hence, the shortages of manpower data not only handicap the labour force development programmes, but also affect the formulation of effective development plans in the other sectors such as education. For example, whilst undertaking the empirical work of this study, the secretariat of education called for a senior representative from each sector to discuss with these

representatives the main issues of the 1986 / 90 education

development plan, and how this plan fits their future needs of

educated manpower. The only reason for the Secretariat of

Education to call for these representatives was the

nonavailability of manpower data that is sufficient for

formulating a development plan for education services.

TABLE 8.14

The Considerations That are Given To The Needs Of
Manpower Data Users By The Providers Of These Data

Respondents Group	Do Providers Of Manpower Data Consider The Needs Of Its Users?			Row Total	
	Yes	No	Do Not Know	n	%
Departments And Organizations Which Have Information Units	1	15	2	18	64
Departments And Organizations Which Do Not Have Information Units	0	10	0	10	35
Column Total : n	1	25	2	28	100
%	4	89	7	100	

Note: This table is derived from the responses to question 21,
      appendix_B.

(5) Because there is neither a national institution responsible

for providing manpower data,nor a national system that organizes

manpower information services, the available labour force

data, as shown in table 8.15, is far below the requirements of

its users. Although 50 per cent of the interviewees indicated

that the available manpower data do not satisfy their needs of

these data, only 25 per cent of the respondents pointed out

that the available manpower data satisfy their needs,while the

other 25 per cent of the respondents did not express their

opinions about this matter.

(6) Since organizations have no obligation to maintain a certain
level of data regarding their employees, most of them have
not had complete and detailed follow up records of their labour
force data. For example,a senior officer from one of the public
departments asserted that they never know the number of
employees in his sector.

TABLE 8.15

The Availability Of Manpower Data And
The Satisfaction Of Its Users' Needs

Respondents. Group	Are The Needs Of Manpower Data Users Satisfied?							
	Yes		No		Do Not Know		Total	
	n	%	n	%	n	%	n	%
Dep-artments And Organization Which Have Information Units	4	22	8	45	6	33	18	64
Departments And Organizations Which Do Not Have Information Units	3	30	6	60	1	10	10	36
Total	7	25	14	50	7	25	28	100

Note : 1_ All percentages, except rightmost column, are within
          row percentages.
       2_ Percentage in the righthand column are the % of all
          respondents.
       3_ This table is derived from the responces to question
          20, appendix_B.

(7) A senior officer from the Electricity Department said,
" real and effective manpower planning, so far, has never been
achieved by any department or organization in the public
sector." This is because previous manpower development plans,
as the same officer argued, were often based on immediate and
direct needs. Another interviewee said that the required

manpower and its related data have not yet been identified

either at the macro level or at the sectoral level.

Under these conditions, manpower planning in Libya, as a

respondent from the secretary of planning explained, has been

hindered by the lack of reliable manpower data. Therefore, the

planned and the achieved rates of progress of manpower

development programmes, as shown in table 8.16 quite different

from each other.

TABLE 8.16

Yearly Rate Of Increase In Manpower
During The 1976/80 Development Programme

	yearly rate of increase	
	achieved %	planned %
Libyan manpower (male)	2.5	3.5
Libyan manpower (female)	10.7	6.6
Non libyan manpower	4.7	11.5

To improve the availability and services of manpower data,

the following factors are required: public organizations and

departments should organize and plan their activities, so that

the required bases needed for manpower planning, as the Secre_

tariat of Public Employment (1979) indicated, can be achieved;

each department and organization in the public sector should,as

Elazabi and Elmeri (1981) recommended, consistently maintain

complete and detailed data about its present and future needs

of manpower; on the national level, serious forward steps

should be taken for construction of an efficient manpower

information system,as projected in the 1981/85 development plan.

SUMMARY.

In this chapter the detailed characteristics and problems of

the national information services system in Libya have been identified and analyzed. The problems identified are classified to two categories; the first category consists of the problems which affect the national information services system in general; this means these problems affect the information concerning different types of national services and resources such as health and education services and manpower resources. The lack of effective national organization of information services, the instability of the public sector administration system, and the shortages of trained personnel in information and computing are examples of the problems in the first category. The second category includes the problems which are unique to manpower resources in Libya and directly affect its information services.

These problems include, for example, poor planning of manpower resources, the lack of coordination between providers and users of manpower data, and the absence of a national specialized organization in manpower information analysis and provision.

In considering the information problems that are identified and analyzed in this chapter,it becomes clear that information services in Libya suffer from the following problems:

1_ Poor planning for information services development,and the lack of implementation of a national information policy.

2_ Poor organization of information services at both national and sectoral levels.

3_ Poor perception of information importance by many individuals in society.

4_ The drastic shortages of trained personnel in the information and computer fields.

5_ Poor mailing and transportation facilities present serious

problems which affect information services in the country.

6_ The lack of computer technology implementation in information analysis and provision, and the poor utilization of these facilities.

7_ Low priority of the development of the information sector.

8_ The shortage of information education and training programs.

9_ The instability of the public sector organization and administration systems.

10_ The lack of attention that has been given to information services development by the middle and low level managements in the public sector.

11_ The lack of recognition of information as a profession.

12_ Data concerning many important national services and resources are produced and serviced by demand only, because of the lack of specialized establishments for information provision.

13_ The lack of coordination between data providers and its users.

14_ Political events affect the posts of the information units' employees.

15_ The poor utilization of the available computer facilities.

16_ Poor dissemination of the locally produced information.

17_ The affect of authoritative decisions on information services development.

The questions to be asked now are: Is there any difference between the information service problems in Libya, as this research demonstrated, and the information service problems in the other LDCs, as indicated by literature? Which of these problems are of most important to the information services in

Libya? How could each of these problems be solved? and what

priority should be given to tackling these problems?

In the next chapter,the answers to these questions are analysed.

CHAPTER 9

ANALYSIS OF RESULTS

As stated in chapter one, the main objectives of this study are to explore the problems of information services in Libya and to propose some solutions to these problems. Accordingly,in the last chapter, information services problems in Libya were identified and analyzed, and the solutions to these problems,as recommended by the users of manpower data in Libya, were also suggested.

Do information services in Libya face any problems different from those of the other LDCs, as the literature indicated? What are the most important problems of information services in Libya? How can these problems be solved? And in what priority should these be tackled? The answers to these questions are analysed in this chapter.

In the first section of this chapter,the comparison between information services problems in Libya and other LDCs, is analysed. In section two,the importance of information services problems in Libya and the interrelationships between these problems are analysed. The suggested solutions and the priority in tackling these problems are analyzed in the third section of this chapter.

9.1 THE DIFFERENCE BETWEEN INFORMATION SERVICES PROBLEMS IN

LIBYA AND THE INFORMATION SERVICES PROBLEMS IN THE OTHER LDCs
----

Information services problems in Libya, as identified in chapter eight, consist of the following:

1_ Poor planning of information services development, and the lack of implementation of a national information policy,

2_ the poor organization of the information services sector,

263

3_ the shortage of trained personnel in the information and computer fields,

4_ the shortage of specialized organizations in information provision,

5_ the poor understanding of information and its importance by many individuals in society,

6_ the instability of public sector administration systems,

7_ the low priority of information sector development,

8_ the shortage of information education and training programmes,

9_ the lack of coordination between information providers and users,

10_ the lack of implementation of computer technology in information analysis and provision,

11_ poor mailing and transportation systems,

12_ the lack of recognition of information services as a profession,

13_ the affect of political events on the positions of public sector employees,

14_ the poor utilization of the available computer and telephone services,

15_ the poor dissemination of locally produced information,

16_ the affect of authoritative decisions on information services development, and

17_ carelessness of the public sector at middle and low management levels and their personnel in carrying out their information service functions properly.

The hypothesis of this study, as specified in chapter one, is to test whether information services in Libya suffer from

the same problems which hinder the development of information services in other less developed countries. As illustrated in chapter three,the information service problems in the other LDCs include:

1_ The lack of implementation of information services policy,

2_ the shortage of national organizations specializing in information provision,

3_ the shortage of information specialists,

4_ lack of organization and recognition of information specialists and their profession,

5_ the limitation of resources,

6_ lack of adequate organization of information services,

7_ lack of coordination between information providers and users,

8_ lack of recognition of information importance in development by decision makers,

9_ the instability of public sector administration systems,

10_ lack of adequate communication systems,

11_ lack of implementation of computer technology in information services provision,

12_ the lack of sufficient information education,

13_ under utilization of locally produced information,

14_ restricted import controls on information sources, and

15_ poor information dissemination.

By comparing the list of information service problems in Libya and the list of information services problems in the other LDCs, the conclusion, therefore, is that the null hypothesis (i.e. information services in Libya suffer exactly from the same problems which impair the same services in the other LDCs) of this study is rejected, and the fact, as this study found, is that, even though Libya is one of the LDCs, its information

services sector suffers from some unique problems. That is,even though the information sector in Libya suffers from many similar problems, it still has some unique problems which, so far, have not been recognized as problems in any other LDCs. These unique problems, as this study found, include:

(1) the lack of understanding of information and its importance by many individuals in society,

(2) the poor utilization of the available computer and telephone facilities,

(3) the effect of political events on the position of public sector employees,

(4) the low priority and the delay of information services sector development in the past,

(5) carelessness of the public sector middle and low management levels and their personnel in carrying out their information functions properly,

(6) the effect of authoritative decisions on information services development.

As analysed in chapter eight,the low level of education among individuals, the shortage of information education,and the lack of recognition of information as a profession constitute the main reasons of the poor understanding of information and its importance by many individuals in Libya. The lack of national organization of computer services industry, the shortage of computer specialists, and the low demand on information,led to the poor utilization of the available computer and telephone facilities. The instability of the public sector administration system in Libya during the last ten years is one of the major organizational problems in its public departments. Although

some interviewees consider the instability is a consequence of the development transformation of the society, the researcher believes that the complexity of this problem is enlarged by political issues more than the development changes. Until the early 1970's some basic needs such as food, accomodation and health services of the majority of the Libyan people were not satisfied. Accordingly,the development programmes between 1970 and 1985, mainly concentrated on the physical construction of the main sectors, such as agriculture, health and education. Under the pressure of such needs, information services have been considered as one of the non_urgent services. Therefore, insufficient investment and attention were allocated to the development of the information sector in the past. The poor understanding of information importance in managing public organizations,the lack of national organization of information services,and the low demand on information,are the main reasons behind the carelessness of the public sector managements in information services provision. The reason behind the nonpolitical authoritative decisions is that high authority personnel of public departments,in some cases,do not trust the management personnel in their departments, and they believe that specialists such as researchers from the higher education institutions, are theorists more than practitioners.

On the other hand,information services in Libya do not suffer from some problems that are found in the other LDCs,especially (1) the lack of recognition of information importance in development by decision makers,(2) the limitation of resources, (3) under utilization of the locally produced information, and (4) the import controls in Libya are contrary to the other LDCs, in that they do not affect the acquisition of information

resources from abroad, especially technical and natural
sciences resources.

As analysed in chapter eight, most of the respondents
emphasized that high authority personnel (Ministers) realize
the importance of information in development. Such interest has
been materialized by the issuing of some decisions concerning
the construction and organization of some information services
establishments during the last five years.

Since the early 1970's, Libya has been one of the biggest oil
producing nations, and its income from oil is quite large,
especially compared to its small population (in 1980 the total
population was 3.245 million and the per capita income was
$ 10654). Therefore, Libya, since the early 1970's, has not
suffered from lack of resoures like many other LDCs.

The locally available information in libya is well utilized, as
many respondents indicated. However, information about many
important national resources and services are not available.
Import controls in Libya, as this study found, do not affect
the acquisition of information sources, especially technical
and natural resources, from abroad. At the present time, the
main Libraries in the Libyan universities and some other
resource centres import information sources on their own
responsibilities and with no control from any other public
bodies in the country.

Based on the above comparison between the information
services in Libya and the other LDCs, six new problems (the
ones that are found in Libya but have not been identified in
the other LDCs) should be added to the list of information
problems in the LDCs, including Libya. On the other hand, of

the four problems that are identified in the other LDCs but
not found in Libya,two of them (the limited resources and the
lack of recognition of information importance in development
by decision makers) are very important factors in information
services in all less developed countries, while the other two
problems (the under utilization of locally produced information
and restricted imports) are less important compared with the
other information problems in these countries.

9.2 THE IMPORTANT INFORMATION SERVICES PROBLEMS

The problems of information services in the Less Developed
Countries, as they are listed in chapter three, were not
organized deliberately in a specific sequence based on their
importance to the information services in these countries,
because such organization was not found in the literature. That
is probably because the studies from which these problems were
derived were undertaken by different researchers and organiza_
tions, and in different countries. Different researchers might
have different perceptions of the same problem (s). Therefore,
some of them may believe that information perception and the
limited resources,are the main problems of information services
in the LDCs, while others may believe that shortage of
information specialists and the lack of information technology
implementation are more important.
In the same manner, information services problems may have
different levels of impact in different countries, because
different countries have different environments and conditions.

Since the main objective of this study was to identify the
information services problems in Libya, the priority concept
between the identified problems was not a major issue discussed
by the interviewees. Nevertheless,from the interviewees comments

269

that were analyzed in chapter eight, the important information service problems in Libya can be identified.

With respect to the interviewees comments, information services problems in Libya are organized, based on their importance, as follsow:

I_The lack of recognition of information as one of the valuable resource in the country is one of the most important problems affecting information services in Libya, because although decision makers in Libya appreciate the role of information in development,as yet,they have given low priority to information sector development. In addition to this,the poor understanding of information and its importance by the basic providers of data and many other individuals in society,is a common problem in Libya at the present time.

The lack of consideration of information as one of the country's important resources has led to the lack of implementation of national information policies and to the absence of long_term planning for information services development in Libya.

II_ In the absence of a national information policy and longterm planning, the information sector in Libya, has suffered from the following problems :

(a) the lack of proper and sufficient information education,

(b) the shortage of specialized organizations in information provision,

(c) the lack of control and the poor organization of information services industy,

(d) communication systems, especially telephone and mail, have not been organized and directed to play their proper roles in

information services provision, and

(e) the poor organization of computer technology and the lack of computer implementation in information services provision.

III_ From the above problems, and some others, such as the instability of public sector administration systems and the effect of political events on public sector employees, the following problems emerged:

a_ The shortage of information specialists and the poor understanding of information by individuals, are consequences of the lack of proper information education programmes.

b_ Poor information dissemination and the lack of reliable information are the result of the shortage of specialized organizations for information services.

c_ From the lack of controls and poor organization of information services, emerged some other problems such as poor coordination between information providers and users, the lack of recognition of information as a profession, and the carelessness of some management levels in the public sector in carrying out their information function properly.

d_ The lack of efficient organization of computer technology, has led to the non_economic utilization of this technology,and to the lack of its implementation in information analysis and provision.

e_ Communication systems, especially mail and telephone, have not yet played a proper role in information services provision, mainly because of the poor organization of these systems and the lack of realization of its role in information services.

f_ Information services establishments in Libya and probably in many other LDCs suffer from the effects of reorganization and change in their personnel, because of the instability of the

public sector administration systems and the effect of political events on public sector employees.

Most of the information problems, as outlined above, are interrelated and dependent upon each other. For example, the relationship between information education and the availability of information specialists, and between information services organization and the coordination betweeen information providers and users are direct and effective in nature. The interrelations betweem these problems and their respective effects on information services are both considered in the priority of solving these problems, as suggested below.

9.3 RECOMMENDED SOLUTIONS

The second objective of this study is to draw solutions to the problems of information services in Libya, as specified by this study. As illustrated in chapter five,information services in Libya,at the present time, are provided by a few scattered and poorly integrated public departments and establishments.For instance, university libraries, which are the main provider of information resources in the country, are under the control of the General Education Department; the Central Statistics Department which carries out population and manpower surveys and provides population and manpower statistics, is controlled by the Planning Department; public libraries, printing and publishing services are organized and controlled by the Cultural and Information Department. The information services and resource provision by these departments and establishments are not coordinated and organized within a national network.

Based on the present conditions and problems of information services in Libya, as analyzed in chapters five and eight, the

establishment of a new national information services body is needed. The main objectives of this body should include the following:

1_ Formulating a national information policy that suits the country's available resources, and its present and future needs for information services,

2_ drawing up the plans needed for the development of information services and monitoring the execution of these plans,

3_ constructing a national information services network which includes the main information service establishments, such as the Central Statistical Department, the National Data Processing Centre, and the public libraries and documentation centres,

4_ undertaking the responsibility of gathering data about the main national resources and services in the country, and providing sufficient information services to information users all over the country, and

5_ organizing and controlling the information services establishments and their activities within the national network.

To be able to undertake all these responsibilities, the organizational structure of the new body (see figure 9.1) must consist of the following departments:

_ policy and plans formulation and follow up department,

_ organization and system construction department,

_ data gathering, analysis and information provision department,

_ computer services organization and development department,

_ information personnel organization and development department,

_ publishing, printing, and bibliography services organization department,

CHIEF OF STAFF OFFICE (Minister)

```
CHIEF OF STAFF OFFICE
(Minister)
│
┌──────────────────────────────────────────┬──────────────────────────────────────┐
│                                           │
ORGANIZATIONAL AND                    POLICY AND PLANS
SYSTEMS CONSTRUCTION                  FORMULATION
DEPARTMENT                            DEPARTMENT
```

| LIBRARY AND DOCUMENT-ATION SERVICES ORGANIZATION DEPARTMENT | INFORMATION PERSONNEL DEVELOPMENT AND ORGANIZATION DEPARTMENT | COMPUTER SERVICE ORGANIZATION AND DEVELOPMENT DEPARTMENT |

PUBLISHING, PRINTING AND BIBLIOGRAPHIC CONTROL DEPT

- PUBLISHING SECTION
- PRINTING SECTION
- BIBLIO-GRAPHIC CONTROL SECTION

DATA GATHERING ANALYSIS AND INFORMATION PROVISION DEPARTMENT

- INFORMATION ANALYSIS AND PROVISION SECTION
- DATA GATHERING SECTION

CENTRAL STATISTICS DEPARTMENT

- MANPOWER SURVEY SECTION
- ESTABLISHMENT SURVEY SECTIONS
- POPULATION CENSUS SECTION

_ library and documentation services organization department,

_ the Central Statistics Department.

The main functions of each department are specified as follows:

1_THE POLICY AND PLANNING DEPARTMENT: this department should be concerned with (a) monitoring the implemented information and computer policies and suggesting improvements in these policies, (b) within the implemented information and computing policies, plans for the development of this sector should be drawn up by this department, and (c) directing and monitoring the execution of the information and computing services development plans.

2_ ORGANIZATION AND SYSTEMS CONSTRUCTION DEPARTMENT: this department should be responsible for (a) formulating the organizational structure of the information service establishments, (b) designing the information services systems required by each information service establishment, and (c) constructing the communication and information exchange channels between the information service establishments.

3_LIBRARY AND DOCUMENTATION SERVICES ORGANIZATION DEPARTMENT: the main functions of this department include (a) the establishment of new public libraries and information centres, (b) gathering and documenting information resources from inside and outside the country, (c) providing information sources to users, (d) improving library services by introducing advanced techniques and modern technology, and (e) standardizing library systems and coordinating between libraries' services.

4_DATA GATHERING,ANALYSIS AND INFORMATION PROVISION DEPARTMENT: this department should consist of two sections, one for data gathering and the other for data analysis and provision. The data gathering section should collect data about the important

national resources and services from all public departments. Accordingly data concerning education, health and manpower,for example,should be gathered by this section. Once such data are collected, it should be passed to the data processing and analysis section where they would be analyzed and the required reports are prepared. In summary, the objectives of this department include (a) gathering data concerning the nation's important resources and services, (b) analysing the collected data and preparing the required reports with respect to the users needs, (c) coordinating between data providers in the public departments and the data collection section, and between the data analysis section and the users of the produced information.

5_INFORMATION PERSONNEL DEVELOPMENT AND ORGANIZATION DEPARTMENT: this department should undertake the responsibilities of (a) the constructing of information services profession and organizing information specialists as a part of this profession, (b) formulating the regulations which organize and control the membership and members of this profession, (c) organizing information training programmes, and (d) coordinating between the information personnel needs and the information education programmes provided by the education system in the country.

6_PUBLISHING, PRINTING AND BIBLIOGRAPHIC CONTROL SERVICES DEPARTMENT: in this department there should be three sections; one responsible for the publishing function, another for the printing function and a third responsible for bibliographic controls. Therefore, this department should carry out the following activities: (a) publishing and printing all new sources, especially books, translation and research works, (b)

organizing and developing the required facilities for publishing and printing objectives, (c) organizing and coordinating the distribution services inside and outside the country, (d) maintaining complete bibliographical information, especially about the locally published sources, and (e) formulating the regulations and controls required for organizing and coordinating between the objectives of its three sections.

7_THE CENTRAL STATISTICAL DEPARTMENT: So far, this department has carried out the population censuses, the manpower surveys and some annual and monthly surveys of selected manufacturing and production establishments. In effect, this department has been the main provider of manpower statistics. Therefore, in the projected body, this department would carry more resposibilities concerning manpower information provision.

Accordingly, this department should have three sections; one for population censuses, another for the establishments surveys, and a third for undertaking manpower surveys, gathering manpower data from the other public departments, and providing the users of manpower data with all manpower statistics and information they require. The functions of this department are summarized in the following: (a) conducting population censuses and manpower surveys, (b) carrying out the establishment surveys whenever are needed, (c) analysing the collected data from these surveys and producing the necessary statistical and informtion reports which serve the planners and decision makers needs for information, (d) gathering manpower data from the public departments, analysing the collected data, and producing the required information reports with respect to the needs of manpower information users, and (e) transfering all produced statistical and information reports to the publishing department

to be print and distributed to the information service establishments in the country.

8_ COMPUTER SERVICES ORGANIZATION AND DEVELOPMENT DEPARTMENT:

The development and organization of computing industry are the main objectives of this department. Along these objectives, this department should carry out the following activities: (a) investigating the present situation of the available computer facilities and the country's need of computing services, (b) organizing and directing the utilization of the available computing facilities,(c) organizing and controling the importing of computers from abroad, (d) assisting organizations to maintain computing services by using the available computers or by buying new ones, and (e) undertaking the necessary research and planning activities for developing computing industry in the country.

Practically, the political, economic and administrative environments in Libya at the present time provide promising conditions for the establishment of the recommended body.
From the economic point of view,Libya has achieved a remarkable progress in most of its economic sectors, especially education. In addition to this, the country's income from oil production will provide ample resources for this new body to be established and maintained.

Under the prevalling social economic system in Libya, the economic life in the country is controlled centrally by the government.
High authority (ministers) of all public departments are members of the Peoples General Committee. This committee holds the highest authority in the country, and its commands are

effective to all levels of administration of the public departments and organizations. Accordingly, the new body as a ministry would have the powerful backing that might be needed to carry out its objectives nation wide.

Within the present situation of a lack of well established institutions and infrastructures in Libya, the Peoples General Committee exercises exclusive command on all levels of administration and controls in the country. With this absolute authority, the Committee can put any thing in order at any level of administration in the public sector. Therefore, the new body would have no problems to establishing itself as a national body.

No comments on the need to monitor progress of the National Body because changes over time will become necessary.

Given there would be some overlap between the work of the projected information services body and that of the existing Cultural and Information Department, and the Civil Service Department, the work of the latter two departments should be rationalised in regard to information services.

The Cultural and Information Department should specialized in information service functions that are not in the remit of the new body (e.g. newspaper, radio and television).

Likewise, the Civil Service Department's personal record should be limited to records of senior personnel and selected professional staff in the public sector, such as physicians and engineers. This would enable the record to be more easily kept up to date and to be of a better quality.

The organizational stage of this projected body can start at any time, because in Libya,at the present time, there is enough educated personnel in information and computer who can carry out

the main posts of this body. Before the new body reaches the operational stage, its management personnel need at least five years to formulate the required policies, plans and resource programmes, and to construct the organizational structure of their national body.

As analyzed in chapter eight, information services in Libya, at the present time, face a number of problems. Many of these problems, such as the shortage of trainees in information and computing, the poor understanding of information importance by the basic providers of data in the public departments, and the non_availability of information service units in many public departments. Therefore, planners and administrative personnel of the new body should consider, in planning and organizing their new systems, the following recommended solutions to information problems in Libya:

Based on the analysis of information problems in Libya, and with respect to their effect on information services, planners and decision makers in Libya should realize information as one of the most valuable national resources in their country. The role of the senior staff of the new body in this matter is to take all necessary actions to convince key people in the public sector of the importance of information, such as holding conferences in which senior staff from public departments take part, and / or distributing written material about the subject in all public departments and organizations.

Building a reliable information services sector capable of providing reasonable services to the whole country requires decades of time and large investments. Therefore, long_term planning is needed for the development of the information sector

in any country. Yet, planning in order to be more effective,
should be drawn up in accordance with an established national
information policy, because a national information policy
reflects the needs of information of all sectors of the country
and of the national community as whole. In addition,this policy
guides the establishment of the information development plan(s).
Therefore, the establishment and implementation of a national
information policy, and the undertaking of long_term planning
are the next two issues to be considered by the planners of
the new body.

The shortage of information specialists is one of the major
problems in Libya. This problem can be solved in two ways.
Either the country recruits the personnel needed from other
nations, or makes these needs available locally through its
education and training programmes.

The first alternative has been implemented, but the experience
of some organizations in Libya indicated that the instability
of expatriate workers and their limited experience in the host
country's language and culture have impaired their assistance
to the country to maintain a consistent information services.
Accordingly, the second alternative is much better and more
beneficial to the country in the long run term. At the present
time, the education system in Libya is well established and
qualifies the engineer,the teacher and the physician. Therefore,
in Libya, it is possible to start and develop information and
computer education programmes. The establishment of such
local programmes will help the country in solving its future
needs for educated manpower and improving the information
culture among its peoples.

One of the drawbacks found in Libya is that the development

of the information sector was not properly planned, and the investment allocated to the development of this sector was not sufficient. The philosophy behind the implementation of this policy in the past in Libya, was that information services are not as important as health or education services, for example. This policy has led to the situation where some major components of the information sector, such as manpower, specialized information establishments and bibliography, were not considered properly in the previous economic development programmes. Therefore, a handicaped information sector with poor or no information services was the ultimate result of this policy's implementation.

The solution that must be considered by the planners of the new body is that based on the country's needs for information, and within its national information policy, the main requirements of its information sector should be all considered and developed based on their needs of investments and the available resources in the country.

Working within a specific information policy, and considering the information sector requirements of education, manpower and other resources, the next important problem to be considered by the new body's administration is the organization of the information services sector in the country, because, as this study found, information services organization is a crucial problem in Libya. The lack of coordination between information providers and users, the data redundancy, the shortage of information about some main resources and services, and the poor information dissemination are examples of the serious consequences of the poor information sector organization. The

solution required to this problem is the construction of a national network within which,(a) the role of each information provider establishment is specified,(b) the required channels for information flow are specified and structured, (c) the organizational structure of information establishments and their relationship are formulated and standaradized, and (d) the necessary regulations which control the roles of these establishments and monitor their objectives are formulated and envoked.

The instability of public sector administration systems in Libya, causes a very serious problem to the organization and personnel stability of the public sector. In Libya, the information service establishments are part of the public sector. Therefore, these establishments have suffered from reorganization and changes of their personnel. With these conditions, the information units could not develop their services,and their personnel failed to improve their experience. The instability of public sector administration is a politically oriented problem.
Therefore, the high authority personnel of the new body must explain to their collegues from the other public departments the effect of this problem on the performance of public sector organizations,and advise them to minimize these events as much as possible, justify the necessity of the new administrative systems,and validate their practicality before they are put in practice.

There are a number of different motives which direct people's careers to different fields of knowledge and professions. Individuals desires, income, and social values are examples of such motives. The information field, as yet, is new in Libya,

and the lack of understanding of information by individuals is still a large problem in this country. Therefore, if planners in Libya want to get the greatest benefit from their information education programmes and their investments in information sector development, they should realize that the social values of any profession, still play a major role in the people's respect for any profession.

Accordingly,the administration of the projected body should immediatly recognize information as a profession and organize its specialists as a part of this profession. This recognition of information and its specialists will help to improve the image of this discipline, give more confidence and respect to its specialists, and encourage new generations to enter this field.

As explained in chapter eight, the middle and low level managements and their personnel in the public sector in Libya do not carry out their information jobs properly. This problem is a consequence of some other integrated problems, such as the poor organization and administration of the information sector, the lack of understanding of information importance by individuals in these management levels,and the lack of promotion in information posts. Therefore, in organizing their new departments, senior staff of the projected body should make sure that, (a) information jobs are allocated proper posts in the job hierarchy in their respective departments, (b) the information posts are allocated competitive salaries compared to the salaries of the other similar professions, (c) the information jobs are carried out by information_based and skilled personnel, as much as possible, (d) the information units and their

functions are properly organized, and their objectives are well specified, and (e) the control measures and regulations which govern the activities and objectives of information services establishments are complete and implemented properly.

Because of the shortage of information trainnees in Libya, the immediate substitution of the basic data providers in the public sector by information trainnees is not possible, therefore information orientation programmes should be organized for the basic data providers to help them to improve the level of their understanding of information importance in the success of their organizations specifically and their country in general.

There are a number of factors which have contributed to the lack of computer implementation in information provision in Libya. The shortage of computer experts, and the poor organization and utilization ofcomputer facilities are the main factors affecting computing services in this country. To these problems the following solutions are recommended:

(a) because of the lack of experience and the shortage of experts in the computer field, computer implementation will probably be better of if it is organized and controlled by a specialized national body or agency. Many LDCs' governments, (Khailany,1981), have realized the need for central agencies to regulate and monitor computing systems and their usage. Nevertheless, these controlling bodies have not been successful in Libya, because they suffer from a lack of authority and a shortage of full time employees. Besides this, these agencies have been organized on a narrow scale where their activities cover only a part of the country.

Therefore, sufficient authority, resources and personnel should be allocated to the computer organization and development

department in the projected body. In addition to this, this department must be organized on a scale large enough to control the computing industry all over the country. This department should help to maintain better computer services, higher rates of utilization of these facilities, and advanced computerized applications.

(b)_ Workers in computer and information fields should have a unique promotion scheme (like some other professions, e.g. Medicine and Accountancy) which compensate for their professional qualifications and the importance of their services.

(c)_ For the shortage of computer specialists,in some countries like Libya who do not suffer badly from the shortage of resources and have some computer experts, emphasis must be placed on home programmes for developing their needs of computer specialists, especially in software and hardware maintenance. Above all,learning from the developed countries should always be considered within the available reources and along with their home programmes.

In Libya, mail,telephone and transportation services constitute major handicaps to the development of the information services sector,because,mail and telephone services especially are poor in construction and organization, even though, Libya has lately maintained quite advanced telephone facilities, but its utilization was handicaped by the shortage of manpower and poor organization. With respect to the Libyan experience, the role of mail,telephone and transportation systems in information services, has not been realized in this country, and the traditional services of carrying letters, making personal

telephone calls, and carrying people, are all that the mail, telephone and transportation systems can provide.

Therefore, the first and most important issue to be considered by the staff of the projected body, is the role that such systems can play in the development of information services in their country. The second issue to be considered is that the same staff should advise the administration of mail, transportation and telephone establishments to organize their sectors in a way that enables them to play the proper role of serving information sector objectives (exchange and transferral of data and information).

In Libya, the lack of professionalism of mail and telephone services impaired the loyalty of the personnel working in these sectors,because most of these sectors employees were not taught and trained in specialized education institutions which prepared them as professionals in mail and telephone services. Therefore, the authority personnel in these sectors should recognize and organize the post office, the telephone and transportation services,and their employees into professions. They also should include, in future economic development plans, the required education and training programmes for developing manpower in these sectors.

It has been found by this study that, in Libya, decision makers on many occasions take non_political decisions without consulting the available experts or respecting their opinions. Such phenomena (taking authoritative decisions) has probably been growing amongst decision makers as a result of the illiteracy problem that the Libyan people have been suffering from.

The advisors of the projected body can tackle this problem by

inviting decision makers from the public sector to seminars on

the role of information in decision_making, and by advising

them to build a stronger relationship with the experts in their

societies and respect their professional opinions. Because

having faithful and respectful relations between decision makers

and the professionals not only leads to more accurate decisions,

but motivates the educated people in these countries.

It has been repeatedly mentioned in this study that different

countries with differnt economic, social and political

conditions will always have different problems,and will require

different solutions. Accordingly, the solutions recommended by

this research to the information problems in Libya might not

suit the other LDCs. However, the similarity between the

information problems in Libya and many other LDCs,as this study

demonstrated, might help some of these countries, whose

conditions are similar to those of Libya,to use these solutions

as guidelines to improve their information services.

SUMMARY

In this chapter, the study hypothesis (whether information

services in Libya suffer from the same problems which impair

information services in the other LDCs) has been tested, and

the result was that even though Libya is one of the LDCs, its

information services suffer from some unique problems which,

so far, have not been recognized as problems in any other LDCs.

The carelessness of middle and low level management of the

public sector in undertaking their information functions

properly, and the poor utilization of the available computer

facilities are examples of the information problems that are,

as yet, known only in Libya. On the other hand,the information

services in Libya,as this study found, do not suffer from some problems, such as the shortage of financial resources and the restricted import controls on information sources, which are found in some other LDCs.

As previously demonstrated in this chapter, the lack of recognition of information as a valuable national resource, and the lack of implementation of policies and long_term planning for information services development are the most serious problems which affect the information services in Libya. From these problems, many other information problems, such as the shortage of information specialists, the lack of proper and sufficient information education programmes, and the poor organization of the information services industry,have emerged.

To these and some other information problems in Libya, solutions were recommended in this chapter. Based on this study's findings,it is believed that Libya needs a new national body which undertakes the responsibility of constructing a national information services network and organizing,developing and providing information services all over the country. For these important objectives, the organization structure of the projected body consists of eight major departments. Some of these departments already exist such as the Central Statistical Department, and publishing and printing establishments, while others, such as the computer organization and development department and the data gathering, analysis and information provision department would have to be established. A number of problems have to be solved before these departments can exercise their functions. These are, the formulation of a national information services policy and development plans, the development of some establishments necessary for carrying out

the information services functions,the provision of the minimum

information personnel required for carrying out the jobs of the

new information services network, and the organization of the

computing services required. Under the present economic

conditions in Libya, all of these problems can be solved, but

it will take at least five years. Other problems such as the

instability of the public sector administration system,

authoritative decisions, and the realization of information

importance by individuals will take a longer time to be solved,

and they need long_term information orientation and education

programmes.

In this chapter, the research hypothesis and objectives are

analysed. .While in the next chapter, conclusions and

recommendations are summarized.

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

Information has always been one of the main ingredients of business processes and forms the basis for decision_making. Therefore, the need to produce relevant information becomes a requirement of survival in the modern organization. Accordigly, mechanical and electromechanical techniques of data processing, especially card data processing were developed in the 1800's, and since then, advanced forms of these techniques have been designed and widely implemented, especially in the first half of this century.

During the Second World War, computers were invented, and since the mid 1950's computer implementation by business has evolved. As time passes, the acceptance of computers in data processing has increased, computer technology has improved remarkably, while its cost has constantly decreased.

With the constant progress of computer technology and the decrease of computer cost, especially hardware, new models of computer_based information systems have been developed and implemented. During the last three decades there has been a growing awareness in the industrialized nations that information has a value in itself and is considered as one of the new non_scarce raw materials for the economies of nations. Such awareness in the industrialized world has inspired the development of both information systems and information technology. These two disciplines (information systems and information technology) have seen tremendous progress during the last three decades. The progress in the information systems

area has leaped from some simple and disintegrated data processing applications in the mid 1950's to advanced and complicated information systems, such as decision support systeme and integrated data base systems,in the late 1970's. Information technology has also seen much progress. For instance, data is now processed by computers hunderds of times faster than manual manipulation, and transported electronically instead of being send on paper records at the speed of horse or steam locomotive.

It must be emphasised however that all these scientific and technological developments in information systems as well as in information technology have been invented, developed and mainly implemented in the developed nations. Therefore,during the last decade, the implementation of the advanced techniques of information systems along with the use of modern computers and telecommunication technologies has enabled most of the developed countries to establish many huge and computer_based information systems which serve many of their purposes at the national and international levels. Examples of these systems include,for instance,the national cashline service systems in the banking sector,the library and information centres systems such as the British Library, and the electronic bond market in Denmark.

The implementation of the various information systems at the national and international levels by most of the developed nations,provide planners and decision makers in these countries with sufficient and reliable information they need.

Despite the success of many industrialized nations in developing the different national and sectoral information systems, very few developing countries have been able to

establish such systems. For instance, most African countries

do not have formal information systems. In one of its studies

of information services in the LDCs, Unesco found that the

local basic information necessary for formulating and applying

development plans is either unavailable or unused.

During the last fifteen years, a number of research works

have been undertaken within the areas of information services

and information technology implementation in the LDCs. From

these research activities two themes have developed. The first

is concerned with information services problems in the LDCs,

while the other concentrates on the solutions to these problems.

As analyzed in chapter three, information services in the

majority,if·not all, of the less developed countries are still

suffering from a number of serious problems, such as the poor

understanding of information importance in development, the

shortage of information specialists, and the poor organization

of information services. These problems however vary in depth

from one country to another, because different countries with

different economic, social and political conditions often

having different problems.

Libya is one of the Less Developed Countries. According to

the literature on information services in the LDCs in general

and Libya in specific, information services sector in Libya

should face the same problems which handicap the same sectors

in many other LDCs.

The questions that were raised by this study are: what are the

infortion problems in Libya? Is there any difference between

the information problems in Libya and those found in the other

LDCs and illustrated in chapter three? How can the information

problems in Libya be solved? The answers on these questions could not be achieved without an empirical evidence about the information services situation in Libya. Accordingly, an empirical study was undertaken in Libya as a part of this research.

Manpower is one of the important resources of any nation,and having a sufficient and up to date information of this resource is very important to planners and decision makers in any country. Therefore, in this study, manpower information services,as a part of the national information services network, was used as a mean to investigate information problems in Libya.

Since the mid 1970's, the public sector in Libya has dominated the economic life of the country. Accordingly,public departments are the major employer of manpower resources, and the main user of manpower data are the planners and decision makers of these departments.

By implementing the in_depth interviews and open_ended questionnaire techniques, data about manpower information service in Libya were gathered from the manpower data users in the public sector. The collected data, then, analyzed (see chapter eight), and the information service problems in Libya were identified. The analysis of the collected data revealed that information services in Libya suffer from a number of problems similar to those identified in the other LDCs, such as the poor organization of information services, the shortage of information trannees and the lack of implementation of computer technology in information provision.

According to the analysis of results (see chapter nine),it has been found that although the information services sector in

Libya face many problems similar to those found in the other LDCs, it still suffers from some unique problems. Most notable of these are the under utilization of the available computer and telephone facilities, the low priority and the delay of information sector development,and the effect of authoritative decisions on information services development.

On the other hand, the information services sector in Libya is free from some of the problems that are exist in some other LDCs,such as the lack of recognition of information importance in development by the decision makers, the lack of resources and the restricted import controls on information sources come from abroad.

Based on the analysis of information problems in chapter eight, and the analysis of the solutions of these problems in chapter nine, it was illustrated that the major problems of information services in Libya are the lack of recognition of information as one of the main national resources in the country, the lack of implementation of national information policy,the absence of long_term planning for information sector development, the shortage of information education,the shortage of specialized organizations for information provision, the poor organization of information services industry, the poor organization of computer services, and the shortage of information specialists.

Based on the analysis of information service problems in Libya (chapter eight) and with respect to the recommended solutions to these problems (chapter nine), it is believed in this study that Libya needs a new national information services body. This body must have the authority and be organized as a

ministry in the public sector. The main objectives of this body, as illustrated in chapter nine, include the formulation of a national information services policy for the country, the planning for the information sector development, the construction and organization of the national information services network, and the provision of information services all over the country. Before the projected body can exercise its functions, some of the existing information problems must be first solved. In Libya at the present time, there are enough educated personnel in information and computer technology that can meet the main short_term organizational and educational objectives that a national information policy for Libya would require.

The main short term objectives (i.e. objectives attainable within 5_years) would be to:

(1) Organize a national information services network.

(2) Organize and provide the necessary information orientation programmes to the basic data providers to help them realize the importance of information.

(3) Organize the computing services in the country.

(4) To start new and expand the existing education and training programmes in information and computing.

These objectives would require some construction of new establishments needed for information provision which could feasibly be met from available resources.

It is important to note however, that due to the level of culture development and the difficulties in accelerating development, some informational problems will take a lot longer to solve than five years. The problems of poor perception of information by individuals, the instability of the administrative system of the public sector and the effect of

authoritative decisions and political events on the organization
and personnel of information service establishments will not
be solved by a short_term initiative. These problems will only
be solved by more comprehensive educational programmes and by
cultural development.

Based on this study findings, information services in the
LDCs suffer from many similar problems, such as the shortage
of educated personnel in information and computing, the poor
organization of information services, and the lack of
implementation of information policies and long_range planning
for information services development. Therefore,future research
of the information problems in these countries, will not have
to be performed in the same manner as this study, since many
major information problems in these countries are identified
by this study and some other research works in this area.
Therefore, future research activities in this area will be more
useful if they tackle these problems on an individual basis.
If future studies treat information service problems on an
individual basis then it is imperative that research is more
comprehensive and well_documented when it is published than it
has been prior to this study. This will allow different
studies in different countries to be easily compared which in
turn will enable the level and standard of research in the
overall field to grow faster.

However, information services in the LDCs still need more
research efforts, especially to examine the following aspects:
(1) The poor perception of information profession by the
individuals in many LDCs such as Libya, and the lack of
realization of information role in development by decision

makers in others are a very serious problem. This problem in part (as found in Libya) is a consequence of poor culture and the lack of information educational opportunity in these societies. Therefore, the undertaking of any research study to investigate the role of education systems in the development of information services in these countries will help in clarifying the drawbacks of the education services with respect to the information service discipline. By overcoming such drawbacks the poor perception problem might be solved.

(2) The drastic shortage of information and computer specialists is a common problem in almost all developing nations. The lack of proper planning for manpower, as is the case of Libya,is one of the major causes to this problem. Therefore examining the manpower planning and its role in the provision of information specialists in these nations will help to clarify the way of improving the availability of skilled personnel in information and computer fields.

(3) The use of computer technology in information provision is still very limited in most of the developing countries. The lack of implementation of information technology policies, the shortage of resources and the lack of national organization of computer technology are the main causes of this problem.If the shortage of resources in some of these countries is an inevitable constraint,the reasons why most of the LDCs have not yet implemented information technology policies and why the national organization of their information technology sectors is very poor are still a matter of debate and therefore more research studies are needed.

(4) The intergovernmental conference on NATIS in 1974, in which some LDCs such as Libya were members, recommended each memeber

state to formulate and implement an information policy.
Unfortunately, the absence of information services policies in
many of the LDCs constitutes one of the major factors impairing
their information service sectors. Therefore,any effort to find
out why these countries have not been able to implement certain
policies for their respective information services sectors will
be very useful to the development of this service in these
countries.

R E F E R E N C E S

Abbel, R.   " The West German Information Policy: Results of
                 the First and Plans for a Second Government
                 Program " Aslib Proc (GB), Vol 38, No 6/7,
                 1986, pp 193_ 193_98.

Ackroyd, S. andughes, J.A. (1981) Data Collection In Context.
                 England : Longman Group Limited.

Adimorah, E.N.O. " Problems of Scientific Work in Developing
                 Countries" The Information Scientisti,
                 Vol 10, No 4, 1976, pp 139_148.

Ahmed, R.Z.   " Bibliographic Control in Libya " Paper presented
                 at the first scientific conference on the develop_
                 ment of library, information and research centres
                 in Libya, Tripoli, Libya, October 19_21, 1985
                 (in Arabic).

Alexander, M.T.   (1974) Information Systems Analysis:
                 Theory and Application. USA: Science Research
                 Association, inc.

Anker, R. and Faroog, G. " Population and Socio_Economic
                 Development: the   New   Perspective "
                 International Labour Review, Vol. 117, No. 2,
                 1978, pp 143_56.

Arousi, Fathi A.   Manpower Planning in Jordan . Ph.D.
                 dissertation, the University of Wales,
                 December 1981.

Attneave, F. (1959) Application of Information Theory to
                 Psychology. New York : Holt, Rinehart
                 and Winston.

Atwood, Jerry W. (1977) The Systems Analysis. New Jersey :
                 Hayden Book Company, Inc.

Axelrod, Joel N.   " 14 Rules for Building an MIS "
                 Journal of Advertising Research, Vol. 10,
                 No. 3, June 1970, pp 3_11.

Baron, Christopher G. " Computer and Employment in Developed
                    Countries" International Labour Review,
                    Vol. 113, No. 3, 1976, pp 329_344.

Barros, O.; Perez, V. and Holgado, A. " Structured Logical
                    Design of Information Systems : A Method_
                    ology, Documentation and Experience "
                    Information Systems, Vol 4, 1979, pp13_21.

Beeri, I.M. (1977) Laws, Regulations and Decisions Related to
                    Public Employment and Employees. Tripoli,
                    Libya: Technical Printer.

Bentley, Trevor J. (1982) Management Information Systems and
                    Data Processing. London : Holt, Rinehart
                    and Winston.

Bertalanffy, L.   " The History and Status of General Systems
                    Theory " in J. Daniel and R. Napp (ed.)
                    (1974) Systems Analysis Techniques. Ney
                    York: John Wily and Sons.

Birks, J.S. and Sinclair, C.A. (1980) Arab Manpower. London:
                    Croom Helm Ltd.

Bortnick, J.   " National and International Information
                    Policy " Journal of the American Society
                    For Information Science, May 1985, Vol 36,
                    No 3, pp 164_68.

Bossers, A. and Muyen, M. " Library Automation in Netherlands
                    and Pica" The Electronic Library, Vol 2,
                    No 2, 1984, pp 87_100.

Brightman, R.; Luskin, B. and Tilton,T. (1968) Data Processing
                    For Decision_Making.   New York: The
                    Macmillan Comp.

British Library Lending Division " The British Library Lending
                    Division in 1984_85 " Interlending and
                    Document Supply, Vol 13,No 3,1985,pp 71_78.

_____ " Organizational Profile:
                    The Japan Information Centre of Science and
                    Technology " Interlending and Document

Supply, Vol 14, No 2, 1986, pp 58_59.

Brookers, C.H.; Grouse, P.J.; Jefery, D.R. and Lawrence, M.J.
(1982) Information System DEsign. Netley,
Australia: Prentice_Hall of Australia.

Brussaard, K. and Tas, Peter A. (1980) " Information and
Organization Policies in Public Administra_
tion " in S.H. Lavinton (ed.) Information
Processing. Amsterdam: North_Holland
Publishing Company.

Burch, J.; Strater, F. and Grudnitski, G. (1979) Information
Systems: Theory and Practice (second ed).
New York: John Wiley and Sons.

Central Bank of Libya, Sixteenth Annual Report of the Board
of Directors, Tripoli Libya,1972, part 112.

Central Bank of Libya, Eighteenth Annual Report of the Board
of Directors, Tripoli, Libya, part 115.

Central Statistical Office. Annual Abstract of Statistics,
No. 120. United Kingdom, 1984.

Central Statistical Office. Annual Abstract of Statistics,
No. 121. United Kingdom, 1985.

Chandler, Jr. (1977) The Visible Hand The Managerial
Revolution in American Business. London:
the Belknap Press.

Chapman_Wardy, F.K. " What Does a Developing Countries Expect
From Intergovernmental Cooperation in
Information Technology" symposium on
Systems Approaches to Developing
Countries, Algiers, May,1973, Algeria,
pp 499_502.

Churchill, Gilbert A. (1983) Marketing Research, Methodological

Foundation. New York : the Dryden Press.

Churchman, C. W.   (1968)   The Systems Approach. New York: Dell
                  ----
                  Publishing Com.

Cohen, Leo J.   " Defining Detailed Database Requirements "
                  Database Journal, Vol 11, No 1, 1981,
                  ----
                  pp 9_11.

Croft,   W.B.   " An Overview of Information Systems "
                  Information Technology: Research and

                  Development, Vol 1, No 1, 1982, pp 73_96.

Crouch, Sunny (1985) Marketing Research For Management.

                  London: Pan Books Ltd.

Daniel, J. and Knapp, R.   (1974)   Systems Analysis Techniques.

                  New York: John Wily and Sons.

Date, C.J.   (1981)   An   Introduction To Database Systems.

                  London: Addison_Wesley Publishing Company.

Davenport, R. A.   " Distributed or Centralized Data Base "
                  Computer Journal, Vol 21, No 1, 1978,
                  ----
                  pp 7_14.

D'Avignon, G. and Guruprasad, G. (1971) " Data Stream: A
                  Manpower Data Bank " in D.J. Batholomew
                  and A.R. Smith (eds) Manpower and

                  Management Services. London: English

                  University Press.

Davis, G. B.   (1974)   Management   Information   Systems:

                  Conceptual, Foundation, Structure and

                  Development. Tokyo: Mcgraw Hill Kogakusha.

Davis, G. B.   " Management Information Systems_A Fifteen_
                  Year Perspective " Data Base, Vol 13, No 4,
                                     ----
                  1982, pp 10_11.

Davis, William S.   (1983) Computers and Business Information
                  ----
                  Processing (2 end.). London: Addison_Wesley
                  ----

Pul. Com.

Deen, S.M. (1984)   Fundamental Of Database Systems. HongKong:
                    ─────────────────────────────────
                    Macmillian Publishers Ltd.

Dickson, G. W.; Benbasat, Izak and King, W.R. " The MIS Area:
                    Problems, Challenge, and Opportunities "
                    DATABASE, Vol 14, No 1, Fall 1982, pp 7_12.
                    ────────

Diebold, John (1985) Management Information The Challenge
                    ─────────────────────────────────────
                    And The Opportunity. New York : Amacom.
                    ───────────────────

Dillman, D.A. (1978) Mail and Telephone Surveys, The Total
                    ───────────────────────────────────
                    Design Method. New York:John Wiley and Sons.
                    ──────────────

Doswell, A. (1985) Foundation of Business Information System.
                    ──────────────────────────────────────
                    London: Plenum Press.

El_Azabi, M.Y. and El_Meeri, M.A. (1981)   Improving Workers
                                        ─────────────────
                    Knowledge Necessity or Choice. Tripoli,
                    ─────────────────────────────
                    Libya: High_Technical School for Manpower
                    Education, (in Arabic).

Elfazzani, A.A.   " The Necessity for Library Service's
                    Planning in Libya " Paper presented at
                    the first scientific conference on the
                    development of library, information and
                    research centres in Libya,Tripoli,Libya,
                    October 19_21, 1985.

El_Hush, B.M.   " Why the establishment of the national
                    information system in Libya is delayed? "
                    Paper presented at the first scientific
                    conference on the development of library,
                    information and research centres in Libya.
                    Tripoli, Libya, October 19_21, 1985.

El_Hush, B.M.   " Bibliographic Control and Depository Law
                    in Libya " Alim El_Ma'Alumat, vol. 3, 1981,
                                ───────────────────
                    pp 29_35. Tripoli, Libya: University of
                    El_Fatah (in Arabic).

Elmegri, M.   The National Institution for Publishing and
                    Distribution, Tripoli, Libya. Interview,
                    3_4 December, 1985.

Eres, Beth K.   " Transfer of Information Technology to LDCs:
                    A Systematic Approach " Journal of the
                                             ───────────────

American Society for Information Science,
_____
March 1981, pp 97_101.

Ethapah, M.E.   " Computer and its Implementation in Libya "
                       Alim El_Ma'alumat, Vol 3, 1982, pp 50_57.
                       _____
                       Tripoli, Libya: University of El_ Fatah
                       (in Arabic).

Feketekuty, G. and Aronson, J. D. " The World Information
                       Economy " The World Economy, Vol 7, No 1,
                                   _____
                       1984, pp 63_86.

Frenchman, M.   " Denamark Takes the Lead in Electronic
                       Bond Dealing " Bank Technology, Vol 2,
                                      _____
                       No 19, Nov. 1985, pp 36_37.

Fry, James P. and Sibley, Edgar H. " Evolution of Data_Base
                       Management Systems " Computing Surveys,
                                             _____
                       Vol 8, No. 1, March 1976, pp 7_35.

Galinski, C.   " Information_the Basis of Japan's Forcast
                       Technological and Economic Development "
                       Aslib Proc (GB), Vol 36, No 1, 1984,
                       _____
                       pp 24_57.

Ghosh, G.; Mijares, I.; and Wiederhold, G. " Some Very Large
                       Data Base in Developing Countries "
                       Proc. 5th Int Conf on VLDB, October, 1979,
                       _____
                       pp 173_82.

Gillman, Peter L.   " Development In Information Technology: an
                       Over view " ASLIB Proceedings, Vol 36, No 5,
                                    _____
                       1984, pp 235_44.

Glaser, E.L.   " DBMS_ What Is It and Where Is It Going? "
                       Database Journal, Vol 12, No 1, 1982,
                       _____
                       pp 10_14.

Gordon, M. D.   " Deficiencies Of Scientific Information
                       Access And Output In Less Developed
                       Countries " Journal Of American Society
                                   _____
                       For Information Science, Vol 30, No 6,
                       _____
                       1979, pp 341_42.

Green, B.E. and Tull, D.S. (1978) Research for Marketing
                                    _____
                       Decisions (4th ed.). Englewod Cliff:
                       _____

Printice Hall.

Gummed, A.A.   High_Level Manpower Requirement for Economic
Development. Ph.d. dissertation, Oklahoma
State University, 1979.

Higgins, J.C. (1976) Information Systems For Planning And
Control: Concepts And Cases. London: Edward
Arnold.

Holloway, S.   " Data Administration in the Organization "
Data Processing, Vol 28, No 4, 1986,
pp 195_98.

Honigmann, John, J. " Sampling in Ethnographic Fieldwork " in
Burgess, Robert, J. (ed), (1982) Field
Research: A Source Book and Field Manual.
London : Allen and Unwin, Inc.

Horton, Jr, F. W. " Information ResourceManagement in Public
Administration: a Decade of Progress "
Aslib Proc (GB), Vol 37, No 1,1985,pp 9_17.

Howard, K. and Sharp, A. (1983) The Management of A Student
Research Project. Hants: Gower Publishing
Company Ltd.

ILO   Guidelines for the Development of Employment
and Manpower Information Programmes in
Developing Countries. Geneva, 1979.

ILO   Labour Market Information In Developing
Countries: A General Review. Geneva, 1978.
By (Lother Richter).

Industrial Development Organization. United Nations. Comparative
Study of Plan of Arabic States. New York,
1976, pp 161.

Janes, Michel J. " A Manpower Database for the Manpower Service
Commission " Statistical News, No 59, Nov.
1982, pp 59.20_24.

Kahn, R. and Ernst, M.L. " The Impact of Cable " in T.
         Forester (ed) (1985) The Information

         Technology Revolution. Padstow, Cornwall,

         GB: T.J. Press Ltd.

Keren, C. and Harmon, L. (1980) " Information Services Issues
         in LDCs " in Martha E. Williams (ed) Annual

         Review of Information Science and Technology.

         New York: Knowledge Industry P.

Kerlinger, F.N. (1986) Foundation of Behavioral Research.

         Tokyo : CBS Publishing Japan Ltd.

Khailany, Asad   "Central Government Computing Agency in Less
                    Developed Countries " SIGCSE BULL (USA), Vol
                                          ----
                    13, No 3, 1981, pp 13_13.

Kidder, L.H. and Judd, C.M. (1986) Research Methods In

         Social Relations (5th ed.). Tokyo : CBS

         Publishing Japan Ltd.

Kilian, W.   " Computerized Information systems in
                    Personnel " Journal of Computer Society

                    India, Vol 11, Part 2, 1981, pp 3_8.

Kim, W.   " Relational Database Systems " Computing

                    Survey, Vol 11, No 3, September 1979,
                    ------
                    pp 185_207.

Kinnear, Thomas, C. and Taylor, James, R. (1983) Marketing

         Research An Applied Approach. London :

         McGraw_Hill, Inc.

Kpedekpo, G.M.C. and Arya, P.L. (1981) Social and Economic

         Statistics For Africa. London: George Allen
         ----
         and UNWIN.

Krass, p. and Wiener, H. " The DBMS Market Is Booming "
                    DATAMATION, Vol 27, Part 10, 1981,
                    ----
                    pp 153_170.

Landry, M. and Moigne,J. " Toward A Theory of Organizational

Information   System_ A   General   System
Perspective " Information Processing, 1977,
pp 801_805.

Langefors, B.   " Information Systems Theory " Information
                       Systems, Vol 2, 1977, pp 207_219.

Langefors, B. (1973)   Theoratical Analysis Of Information
                         Systems. Philadelphia: Auerbach Publishing
                         Inc.

Lester, R.A. (1966)   Manpower Planning in a Free Society.
                        Princeton, NewJersey: Princeton University
                        Press.

Leveson, N.; Wasserman,A. and Berry,D.   " BASIS: A Behavioral
                       Approach To The Specification Of Information
                       Systems " Information Systems, Vol 8, No 1,
                       1983, pp 15_23.

Lewis, D. A. and Martyn, J.   " An Appraisal Of National
                       Information Policy In The United Kingdom "
                       Aslib Proc (GB), Vol 38, No 1, 1986,
                       pp 25_ 33.

Leyton, A.C. (1968)   The Art Of Communication. London: Pitman
                      Publish.

Ligon, Helen H.   (1978)   Successful Management Information
                  Systems. UMI Research Press.

Lunderberg, M.; Goldkuhl, G. and Nilson, A.   " A Systematic
                       Approach To Information Systems
                       Development_1. Introduction " Information
                       Systems, Vol 4, 1979, pp 1_12.

Lunderberg, M.   " Utilization of New Information Systems
                       Development Methods in Practice_Perspectives
                       and Prospects " Information Processing,1977,
                       pp 73_78.

Marks, C.P.   (1976)   " Data and Classification " in A. R.
                       Smith (ed.)   Manpower Planning in the Civil

Sevice. London: HM Statistical Office.
———————

Marston, P. (1982) Applied Business Statistics. East Sussex:
————————————————————————
Holt, Rinehart and Winston ltd.

Mayo, J.S.   " Evolution of the Intelligent Network "
                     in T. Forester (ed) (1985) The Information
                                                ————————————————
                     Technology Revolution. Padstow,Cornwall,GB:
                     ———————————————————————
                     T.J. Press Ltd.

Meadow,   Charles   (1973)   The Analysis Of Information Systems
                              ——————————————————————————————————
                     (second edition). Los Angeless: Melville
                       ————————————————
                     Publisher Company.

Meetham, Roger   (1969)   Information Retrieval. London: Aldus
                           ——————————————————————
                     Books.

Menou, Michel J.   " An   Overview   of   Social   Measures of
                     Information "Journal of the American Society
                                 ——————————————————————————————————
                     for Information Sciences. Vol 36,No 3, 1985,
                     ——————————————————————————
                     pp 169_ 177.

Menou, Michel J. (1) " Challenges for the Information Future
                     of the Third World " (abstract) in
                     Challenges To An Information Society,
                     ————————————————————————————————————
                     Proceedings Of The 47th ASIS Annual Meeting,
                     ——
                     Philadelphia, Pennsylvania, October 21_25,
                     ——————————————————————————————
                     1984.

Menou, Michel J. (2) " Purpose, Scope and Methods of National
                     And International   Information   Measures"
                     (abstract) in Challenges To An Information
                                   ————————————————————————————
                     Society,Proceedings of the 47th ASIS Annual
                     ——
                     Meeting, Philadelphia, Pennsylvania, October
                     ——
                     21_25, 1984.   .

Messer, T.   " Computers Take on Job Matching " Canadian
                                                         ————————
                     Data System, Vol 13, PT 2, 1981, pp 60.
                     ———————————

Ministry Of Education. Education Statistical Department.
                     Education Statistics. Tripoli, Libya, 1977.
                     ——————————————————————

Ministry of Planning and Scientific Research. Census and
             Statistical Department. Year book 1976.

             Tripoli,Libya, 1977.

Ministry of Planning. Census and Statistical Department.
             Population Census's Instructions. Tripoli,

             Libya, 1973, (in Arabic).

Ministry of Planning and Scientific Research. Census and
             Statistical Department. The 1973 Population

             Census. Benghazi, Libya, 1976 (in Arabic).

Modum, U.   " Lack of effective MIS Hinders Organizati_
                         onal Development: A Nigerian Perspective "
                       Data Base, Vol 14, No 3, 1983, pp 30_31.

Morgan, S.   " Manpower Problems Hurt Libya's Growth
                       Prospects ", Financial Time, 20 February

                       1980.

Moser, C. A. and Kalton, G. (1975) Survey Methods In Social

                       Investigation. London: Heinemann Educational

                       Books.

Neelameghan, A.   " International and Regional Cooperation in
                       Human Resource Development for Information
                       Services in Developing Countries: A Case
                       Study " Education for Information, 2(3),

                       1984, pp 191_208.

Nelsen, Judith C. (1980) Communication Theory And Social

                       Work Practice. Chicago: The University of

                       Chicago Press.

Nowak, E. and Szablowski, B.F. " Expert Systems in Scientific
             Information exchange "Journal of Information

             Science, 8 (1984), pp 103_111.

Nyang, Elizabeth T. (1983) " Information Systems and
             National Development in Africa " National

             Online Meeting Proceedings, New York.

             pp 395_403.

People General Committee. Report On Development Achievements

             in Libya (1970_1984). Tripoli, Libya, 1985,

(in Arabic).

People General Committee, Libya.   Decision NO. 584 of 1984
for Establishing Markez Ettotheg El_Jamaheri.

People General Committee, Libya.   Decision No. 27 of 1985
for Establishing the National Information
and Documentation Centre, (in Arabic).

People General Committee, Libya. Decision No. 947 of 1984 for
reorganiizing the Secretariat of Civil
Service, (in Arabic).

People General Committee, Libya. Decision No. 184 of 1983 for
Municipalities's Organization,(in Arabic).

Perez, Victor L.   "Factors Challenging Information Technology
Application in Developing Countries "
Information and Management, Vol 3, Part 4.
1980, pp 141_47.

Prince, Thomas R. (1975)   Information Systems For Management
Planning And Control (3 rd ed). HomeWood,
Illinios: Richard Irwing.

Rada, J.   "Information Technology and the Third World"
in T. Forester (ed) (1985)   The Information
Technology Revolution. Padstow,Cornwall,GB:
T.J. Press Ltd.

Raho,L.E. and Belohlav,J.A.   " Discrimination Characteristics
of EDP,MIS and DSS Information Interface"
Data Management (USA), Vol 20, PT 12, Dec.
1982, pp 18_20.

Raitt, D.   " Information Technology and the Library "
The Electronic Library, Vol 1, No 2, 1983,
pp 149_56.

Randall, A.   " Personnel Record Information System For
Management " MANAGE SERV (GB), Vol 30, PT 3,

1975, pp 121_129.

Reference Number 9376 (march, 1980)   Computer and Control

                Abstract, Vol 15, No 166.

Richter, L.   " New Sources of Manpower Information in
                   Developing Countries "   International

                   Libour Review, Vol 117, No 4, 1978,
                   ----
                   pp 453_62.

Rosenberg,   Victor   " Information Policies of Developing
                   Countries: the Case of Brazil " Journal Of
                                                    ----
                   The American Society for Information Science,
                   ----
                   Vol 33, No 4, 1982, pp 203_207.

Rosendaal, C. Jansen Van   " European Information Policy
                   Situation " ASLIB: Proceedings (GB),

                   Vol 36, No 1, 1984, pp 15_23.

Salem, S. ·   " The Role of Information in Science and
                   Technology Transfer in Arabic Countries "
                   Journal of Information Science, Vol 2, No 5,
                   ----
                   1980, pp 255_61.

Salman,   Lamia   " Information Needs of the Developing
                   Countries: Analytical Case_Studies "
                   Unesco Bull. Libr,PT III No 4,1981,pp 241_46.

Salmona,   Jean   " Information Systems, Development And
                   Structural Changes " in S.H. Lavington (ed)
                   (1980) Information Processing. North_Holland
                          ----
                   Publishing Company.

Saracevic,T.;Braga,G.M.;Alfolayan,M.A. " Issues in Information
                   Science Education in Developing Countries "
                   Journal of American Society for Information
                   ----
                   Science, Vol 36, No 3, 1984, pp 192_99.

Sayed, H.A. and Hassan, M. " Using Factor Analysis in
                   Organising and Evaluating of a Manpower
                   Management Information System "
                   International Journal of Manpower, Vol 5,

                   No 4,1984, pp 25_31.

Scott, G.M.   (1986) Principles of Management Information

                   Systems.New York: Megraw_Hill Book Company.

Secretariat of General education. Department of Education
         Planning. Report on Development Achievements
         ――――――――――――――――――――――――――――
         in Education (1969_1984). Tripoli, Libya,
         ―――――――――――――――――――――
         august,1984 (in Arabic).

Secretariat of Information and Culture. Characteristics of
         ――――――――――――――――――――
         Cultural Development in Libya. Tripoli,
         ――――――――――――――――――――――――――
         Libya, 1984 (in Arabic).

Secretariat of Labour and Civil Service (1977) Research
                                              ――――――――
         in Civil Service System in Libya. Benghazi,
         ――――――――――――――――――――――――――――――
         Libya: The Revolution Press, (in Arabic).

Secretary of People General Committee, Development's
                                       ――――――――――――
         Achievements in Fifteen Years (1970_1984),
         ――
         Tripoli, Libya, 1985.

Secretariat of Planning. Census and Statistical Department.
         Preliminary Results of Libyan Population
         ―――――――――――――――――――――――――――――――――――――
         Sensus: 1984. November, 1984.
         ―――――――――――――

Secretariat of Planning. Census and Statistics Department.
         Statistical HandBook. Tripoli, Libya, 1982.
         ――――――――――――――――――

Secretariat of Planning. The Economic Development Plan
                         ――――――――――――――――――――――――――――
         (1981_1985).Tripoli,Libya,1981,(in Arabic).
         ―――――――――――――

Secretariat of Planning. Central Statistical Department.
         Preliminary results of the 1984 Population
         ―――
         Census. Tripoli,Libya,Nove.1984 (in Arabic).
         ――――――

Secretary of Planning, The Economic and Social Development
                        ―――――――――――――――――――――――――――――――――
         Plan (1981_1985),Follow up Report. Tripoli,
         ――――――――――――――――――――――――――――――――
         Libya. 1985.

Secretariat of Planning, Census and Statistics Department,
         Manpower Survey of 1980. Tripoli, Libya,
         ―――――――――――――――――――――――
         (in Arabic).

Secretary of Planning,   Computer Center For   Data
                           ―――――――――――――――――――――――――――――

Preparation. Elhorea Printing House,
Tripoli,Libya, 1981.

Secretariat of Planning. Census and Statistical Department.
Monthly Statistics for Manpower and
Production in Selected Large Manufacturing
Establishments,49th publication. Tripoli,
Libya, 1982.

_____.

Report of the Annual Survey of Petroleum
Industry, 1981. Tripoli, Libya, 1982.

_____.

Report of the Annual Survey of Large Const_
ruction Establishments 1980. Tripoli,Libya,
1982.

_____.

Report of the Annual Survey of Large
Manufacturing Establishments 1979. Tripoli,
Libya, 1984.

Secretariat of Planning. Electronic Data Processing Centre.
Tripoli, Libya, 1980.

Senko, M.E. " Information Systems: Records, Relations, Sets,
Entities And Things " Information Systems,
Vol 1, 1975, pp 3_13.

Sharif, A.M. (1980) Education for Librarianship in the Arab
Countries. Tripoli, Libya: University of
El_Fatah.

Sharif, A.M. " Hindrances to Book Publishing in Arab Countries"
Alim El_M'Alumat,Vol 1,No 1,1983, pp 38_74.
Tripoli, Libya: University of El_Fatah .

Shio, Martin J. " An Approach to the Design of National
Information Systems for Developing Countries"
in D. Eade and J. Hodgson (eds) (1981)
Information Systems in Public Administration.

North_Holand Publishing Comp.

Shirey, Donald L.   " Management Information Systems for Large
                     Institutions "   Bulletin of the ASIS,

                     Vol 5, No 1, October, 1978, pp 12_13.

Showers, V. (1979)   World Facts and Figures. New York : John
                     ----
                     Wiley and Sons.

Shuman, Jack N.   " Strategic Planning and Information
                     systems " ASIS Bullatin, Vol 8, No 5, 1982,
                              ----
                     pp 23_26.

Sibley, E.H.   " The Development Of Data Base Technology "
                     Computing Survey, Vol 8, No 1, March 1976,
                     ----
                     pp 1_5.

Slamecka, V.   "Information Technology And The Third World"
                     Journal of the American Society for

                     Information Science, Vol 36, No 3, 1985,
                     ----
                     pp 178_85.

Smyth, W.F. and Jayasiri, N. W. N. " The Encouragement of
                     Effective Computer Use in   Developing
                     Countries " in S.H. Lavington (ed.) (1980)
                     Information Processing 80. North_Holland
                     ----
                     Publishing Company.

Songhurst, Ruth   "Poor Nations Need World Informatics System"
                     Computer Data Canada, Vol 7, No 2, 1982,
                     ----
                     pp 16.

SPSS Inc. (1983)   SPSSx User Guide. London: McGraw_Hill Book
                     ----
                     Company.

Stamper, Roland   (1973)   Information In   Business And

                     Administrative Systems. London: B.T.Batsford.

Statistical Office. United Nation. Statistical Year Book

                    (1966). New York, 1967.

Statistical Office. United Nations. Statistical Year Book

                    (1968). New York, 1969.

Study Centre of Libyan Struggle Against Italian Invasion (1984)

General Information Book. Tripoli, Libya,
——————————————
(in Arabic).

Supper, K.   "Evaluation Of Database Management Systems"
                    Database Journal, Vol 7,No. 1,1977, pp 6_8.
                    —————————————

Taylor, R.W. and Frank,R.L. " CODASYL Data_Base Management
                    Systems " Computing Surveys, Vol 8, No 1,
                    ——————————————————
                    March 1976, pp 68_104.

Tell, V. Bjorn   " The Awakening Information Needs of the
                    Developing Countries "Journal of Information
                    ——————————————————————
                    Science, Vol 1, No 5, 1980, pp 285_89.
                    ————————

The National Library (Dar El_Kotob El_Watanea) (1984)

                    Libyan Arab Bibliography. Benghazi, Libya.
                    ——————————————————

Thompson, G.K.   " Informational Standards for Information
                    Handling: Emergence of the Common
                    Communication Format and Open Systems
                    Interconnection " Journel of Information
                    ——————————————————————
                    Science, Vol 6, No 2/3,April 1983,pp 47_50.

Thorpe, P.   " The Impact of New Information Technology
                    in the Developing Countries " Journal of
                    ———————————————
                    Information Science, Vol 4, No 3, 1984,
                    ——————————————————
                    pp 213_220.

Tricker, R.I. and Boland, R.J. (1982) Management Information
                    ————————————————————————
                    and Control Systems (second edition).
                    ————————————————————————————
                    New York: John Wiley and Sons.

Tsichritizis, D.C. and Lochovsky, F.H. " Hierarchical Data
                    Base Management " Computing Surveys, Vol 8,
                    ——————————————————
                    NO 1, 1976, pp 105_124.

Turabian, Kate, J. (1982) A Manual for Witers of Research
                    ————————————————————————————————
                    Papers Theses and Dissertations. London:
                    ————————————————————————————————
                    William Heinemann.

Unesco.   National Information System. Paris, 1975.
                    ——————————————————

Unesco.   HandBook for Information Systems and
                    ————————————————————————————————

SErvices. Paris, 1977.
_____

Unesco.   Statistical Yearbook.   Paris, 1985.
_____

Upham, David L.   " Relational Database Management " Data
                                                   _____
Processing, Vol 24, No 10, December 1982,
_____
pp 10_12.

Valls, Jacques (1983) Information Services for Developing
                            _____
Countries. Bangkok, Thailand: Published by
_____
Library and Regional Documentation Center
Asian Institute of Technology.

Vanderlan, A.   " Information Policy In The Netherlands "
                    Aslib Proc (GB), Vol 38,No 6/7,1986,pp 199.
                    _____

Waddams, F.C. (1980) The Libyan Oil Industry. Londen:
                        _____
Croom Helm Ltd.

Walsh, M.E. " MIS_ Where Are We, How Did We Get Here And Where
                    Are We Going " in M.J. Riley (ed.) (1981)
                    Management Information System (2 end ed).
                    _____
San Francisco: Holden_Day.

Wasserman, A. I.   " Information System Design Methodology "
                    Journal of the American Society for
                    _____
Information Science, Vol 31, No 1, January
_____
1980, pp 5_23.

Watson,   H.J.;   Sprague, R.H. and Krober,D.W. " Computer
                    Technology And Information System
                    Performance " in M.J. Riley (ed)(1981)
                    Management Information System (2 end ed).
                    _____
San Francisco: Holden_Day.

Westin, A.   "Personnel Practices In The US Civil Servic"
                    INF AGE (GB), Vol 4, PT 3, 1982, pp 149_69.
                    _____

Wetherbe, James C. (1979) System Analysis for Computer_Based
                            _____
Information System. New York: West
_____
Publishing Company.

Wiederhold, Gio (1983) Database Design. London: Mcgraw_Hill.
                      _____

Wijasuriya, D.E.K. " The Development of National Information
Systems " Journal of Information Science,
Vol 1, No 1, 1979, pp 27_34.

William, G.C. and Stephen, V.B. (1978) Form and Style Theses,
Reports, Term Papers (fourth edition).
Boston: Hougton Mifflin Company.

Wilson, R. (1984)   The Arab   World, an   International
Statistical Directory. Boulder, Colorado :
Westview Press.

Withington, Fredric G. " Computer Technology: State Of The
Art " Journal Of The American Society For
Information Science ", Vol 32, No 2, March
1981, pp 124_130.

Woodward, A.M.   " Future Information Requirements of the Third
World "Journal of Information Science,Vol 1,
No 5, 1980, pp 259_65.

Woolston, Jhon E.   " Information Exchange in North_South
Context: is There more to Gain Through
Cooperation Than in Trying to Establish New
Markets? " ALIB Proc (GB), Vol 36, No 1,
1984, pp 7_14.

Wright, J. (1983) Libya A Modern History. Kent: Biddles Ltd.

TOPICS WERE DISCUSSED BY RESPONDENTS
AT THE IN_DEPTH INTERVIEWS

1_ THE IMPLEMENTATION OF INFORMATION SYSTEMS.

As a consequence of the importance of information in decision
making, a new profession of information handling has evolved in
many developed countries. In these countries information
specialists are part of a distinct profession. I would like you
to explain the situation in your organization concerning the
availability of information units and specialists, the
professional organization of information specialists, and the
level of information jobs and their payments compared with
other professions.

2_ CONSTRAINTS ON INFORMATION SERVICES.

Information service like any other services has its own problems
and constraints. Of the many factors that might affect an
information service are: the availability of financial resources
and foreign currency, import controls and communication
facilities. At the interview I would like you to discuss the
effect of these factors and others on manpower information
services and the availability of information sources in this
field.

3_ THE COORDINATION BETWEEN INFORMATION PROVIDERS AND USERS.

In any country there are many information users and providers.
Therefore, many countries utilize information policies to achieve
coordination between provider's system and user needs, to ensure
the optimum utilization of accumulated knowledge and the
availability of adequate information to the users. Based on your
experience in the information in your field and the construction
of your organization's information system, I would like you to
explain how, in your country, information systems are coordinated,
accumulated knowledge is utilized, and information users's
needs are satisfied.

4_ THE USE OF INFORMATION TECHNOLOGY.

Information technology has a wide range of hardware and software
facilties. Based on available resources and information needs,
each organization utilizes different levels and facilities of
information technology. I will be grateful if you would explain
how far your organization goes in implementing modern technology
such as computers and communication facilities, in information
service's provision.

5_ NATIONAL INFORMATION POLICY.

To control the design and imlpementation of information systems,
many developed countries utilize national information policies.
With such policies these countries try to ensure the optimum

utilization of accumulated knowledge and the availability of
adequate information to decision makers. Based on your
experience in manpower information services, I would like you
to explain the imlemented information policy in your country,
the high authorities recognition to national information service
systems and the effect of political events in your department
on the organization structure and personnel of the information
unit in your department / organization.

OUTLINE OF SEMI_STRUCTURED INTERVIEW
FOR COLLECTING DATA

PERSONAL INFORMATION

1_ Respondent name: ....
2_ Name of department :................................
3_ Respondent post: ....
4_ Respondent profession: ....

INFORMATION SYSTEMS IMPLEMENTATION

01_ What is your perception to information system?

02_ Does your department have information / data processing
    unit?

    If no, then proceed to Q 6.

03_ What level of representation does the information unit has
    in the organization structure of your department?

04_ Does your department / organization face any problems in
    recruting the needed personnel for information jobs?

    If yes, (a) please indicate what these problems are?

             (b) How these problems can be solved?

05_ Compared with the other similar professions, how do you
    rank information jobs and their payments in your
    department / organization?

    Proceed to question 7.

06_ Does your department / organization have information posts?

    If yes,

        (a) How do you rank them compared with the posts of
            the other profession within your department?

        (b) To which section in the department these posts
            are allocated?

    If no, Who carry out the information functions in the
        department?

07_ Does your department/organization need computer services?

08_ If yes to Q7, Does your department has such facilities?

    If no, please indicate the reasons?

09_ If yes to Q8, Has these facilities been used for
information analysis and provision?

CONSTRAINTS ON INFORMATION PROVISION

10_ What tupes of communication facilities does your department
use in performing its information functions?

11_ Does your department / organization face any problems in
using such communication facilities?

    If yes,

        (a) Please indicate what these problems are?

        (b) How could these problems be solved?

12_ Does your department / organization imports any sources
of information from abroad?

13_ If it imports, does it face any import control problems?

If yes,

(a) Please indicate what these problems are?

(b) How could these problems be solved?

THE USAGE OF MANPOWER DATA

14_ As a user of manpower data, what are the main sources
which provide you with this type of data?

15_ For what purposes do you use manpower data?

16_ Do you find all manpower data you need?

If no,

(a) Please indicate the reasons?

(b) How could your needs of these data be satisfied?

COORDINATION BETWEEN DATA PROVIDERS AND USERS

17_ Do you get most of the manpower data you need directly
from the provider?

18_ Are most of the manpower data sources you use published
or unpublished?

19_ If most of them are published, are they available to you?

20_ To which extent do the available manpower data suit your needs of these data?

21_ Are your needs of manpower data considered by the providers of this type of data?

22_ How do you describe the present management system of the public sector?

GENERAL QUESTIONS

23_ Do the decision makers in your department appreciate the role of manpower information in planning and decision_ makin for the development of this sector?

If yes, please indicate how?

If no, indicate how could they be made to do so?

24_ How do you describe the prevailed manpower information dissemination in your country?

25_ Is the access to locally produced manpower data in your country satisfactory?

If no, Please indicate how it could be improved?

26_ How do you classify the use of the available manpower information in your country?

27_ Does your country implement a distinct national information policy?

28_ Do political events (the change of senior staff personnel) in your department cause any effect on the organizational structure and personnel of your department / organization?