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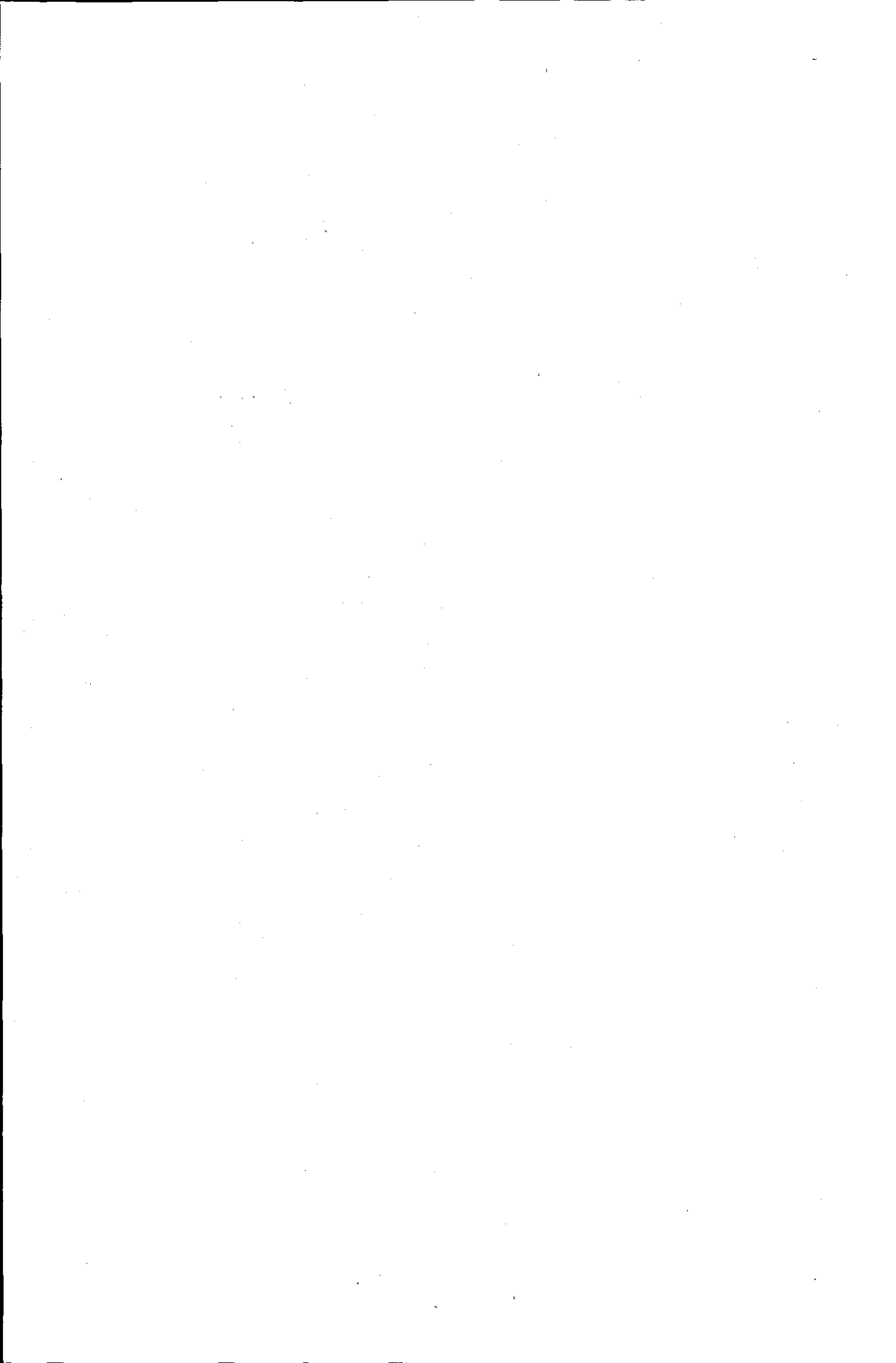
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ECONOMIC DATA BANK MANAGEMENT

IN

A DEVELOPING NATION

by

BORHAN N. SHRYDEH

A dissertation submitted to satisfy the
requirements for the Degree of Doctor of Philosophy

LOUGHBOROUGH

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ABSTRACT

This dissertation describes the results of a research project which was undertaken at Loughborough University of Technology.

The basic objectives of the research project were:

1. To investigate the management elements required for organising the development of an Economic Data Bank (EDB), with particular emphasis on the requirements of a developing nation.
2. To investigate the sociological, political and technical implications associated with organising the development of an EDB in a developing nation.

A theoretical framework was established for this study. This was done after an extensive search and review of literature was performed in the areas of data and data base management systems, management information systems, and computer technology in general.

The outcome of the theoretical phase of this study was the translation of the research objectives into relevant issues. These issues were utilised as a base in conducting the field study in a developing nation. The developing nation selected for this research was the Hashemite Kingdom of Jordan.

The field study included two survey instruments: personal interviews, and questionnaire. The purpose of the personal interviews was to interview selected top level policy makers and officials in Jordan. The purpose of the questionnaire was to obtain relevant information from

a large number of Jordanian officials, both in the public and private sectors.

The field survey was conducted and the results were documented and analysed. Based on this analysis, conclusions were drawn regarding the issues.

Recommendations were made on the basis of the theoretical and empirical phases of this study. These recommendations included those related directly to the issues developed in the theoretical phase, and those related to the approach to EDB development in Jordan.

ACKNOWLEDGEMENTS

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My sincere thanks and appreciation of the research supervisor, Dr. P.J. Stratfold, which without his guidance, assistance and encouragement this research would not have been possible. I much appreciate the assistance provided by Professor G. Gregory in statistics, and the contributions made by the staff of the Department of Management Studies.

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CHAPTER I
INTRODUCTION

CHAPTER I

INTRODUCTION

1.1. Statement of the Problem

In virtually all developing nations, as well as in many developed ones, socio-economic data and information are either unavailable, unstructured, inaccurate, or untimely. Especially in developing countries, where there is a more rapidly changing social, political, and industrial environment, there exists a constant need for accurate, up-to-date, and well structured information for planners and decision makers to use for far reaching decisions. Inevitably, in this sort of situation, there is an inherent lack of organisation in the data collecting and storage processes, and difficulties in defining data requirements and structure. Hence, although it is evident that some type of data bank would be a necessity, there are going to be problems in defining its managerial and organisational requirements.

These problems are aggravated by the rapid advancement in the technology of data bases and the lack of any great length of experience in the field. In particular, although there have been attempts at building data bases for economic purposes, there is as yet little published in the area, and apparently little success to date.

The development of a nationwide Economic Data Bank (EDB) would bring with it further problems which will have to be examined in advance. This will embrace such issues as the necessity for legislation, the social and political impact, and the need for adequate security.

Before any great investment of limited national resources were incurred, it would be necessary to ensure the integration of the system into the administration of the country, the effectiveness of the service to supply information to the planners and decision makers, and the acceptance of its principles and operation by the public at large.

Unless adequate preparation is carried out, the development of an EDB for a country may result in a poor level of achievement of the planned objectives at a high cost of national resources in terms of manpower, time, and revenue. Organising and managing the development of an EDB is a complex and intricate process with a multitude of problems which have to be dealt with effectively. A tremendous amount of research and analysis is required in order to combat these problems, and avoid serious consequences.

1.2. Objectives and Methodology of the Research

This study has two basic interrelated objectives:

1. To investigate the management elements required for organising the development of an EDB, with particular emphasis on the requirements of a developing nation.
2. To investigate the sociological, political, and technical implications associated with organising the development of an EDB in a developing nation.

The research methods employed include:

1. A thorough and exhaustive library search of literature which is

considered relevant to this study. Further search of pertinent literature was undertaken in the selected developing nation, the Hashemite Kingdom of Jordan. This search was performed in order to obtain historical, social, political, and economic data and information on Jordan. The main sources of the data and information obtained were:

- a. Central Bank of Jordan: Statistical Bulletins.
 - b. Department of Statistics: Statistical Yearbooks.
 - c. Ministry of Culture and Information: pamphlets and booklets on the historical, sociological, political, and economic aspects of Jordan.
 - d. National Planning Council: the Seven Year Programme for Economic Development 1964-1970, the Three Year Development Plan 1973-1975, and the Five Year Plan 1976-1980.
 - e. Royal Scientific Society, Economics Department: Economic Development Indicators of Jordan 1975.
2. An extensive review of literature and analysis of the concepts involved.
 3. A field survey was performed in the selected developing nation, Jordan. Its purpose was to obtain certain information from a large number of Jordanian officials, both in the public and private sectors, who have reasonable awareness and knowledge in the subject matter. This information is utilized in evaluating the management elements and implications associated with organising the development of an EDB in Jordan.

Two instruments were used in the field survey:

- a. Personal Interviews
- b. Questionnaire

Topics of discussion were developed for the personal interviews, and the interviewing procedure was tested. The personal interviews were held with a large number of top level officials in Jordan, both in the public and private sectors. The majority of those interviewed were at the policy making level. Their selection was made with the assistance of His Royal Highness Crown Prince Hassan Bin Talal and the Director of the Economics Department, Royal Scientific Society, who was assigned by His Royal Highness to assist in this effort. This is in addition to the assistance provided by former colleagues and friends. The questionnaire was developed, tested, and then distributed in Jordan. The main distribution method was that of direct personal contact. Only a small number of the questionnaires were sent by mail. The categories of officials covered were:

1. Policy Makers
 2. Managers
 3. Staff
 4. Consultant/Advisers/Planners
 5. Educators/Researchers
 6. Businessmen
4. Tabulation and analysis of the results of the questionnaire and personal interviews. Non-parametric statistics are used in the analysis of the results of the questionnaire. Chi-square tests are made in order to determine if the responses to the questionnaire are significantly different for the categories of respondents.
 5. Conclusions which are based on the conceptual analysis and the empirical results of the field survey.

1.3. Scope and Limitations

The scope of this research was confined to the investigation of the management elements and implications associated with organising the development of an EDB, with particular emphasis on the requirements of a developing nation. The study focuses on the managerial and organisational, rather than the technical, requirements of developing an EDB. The technical development in data base technology has advanced extremely fast, while little has been done in the managerial and organisational aspects of data base applications.

The study was limited to the investigation of the basic managerial and organisational issues associated with the development of an EDB at a macro, rather than micro, level. An in-depth study of any of these issues would be an entire project in itself and would require additional time and funds. Furthermore, it would, at any rate, require some such study as the present one as a necessary prerequisite.

The conclusions drawn in the study are subject to the general limitations of the field survey approach. These limitations include:

1. Interview Limitations: Most of the interviewees were at the policy making level in either the public or the private sectors of Jordan. Their time was extremely valuable. This situation affected the lengths of interviews and the depth to which the topics of discussion could be covered. Rough notes were taken during the interviews and mostly documented at their conclusion in order to minimise the loss of information. Acceptance of

the use of mechanical devices for documentation was doubtful. The level of awareness of the interviewees in the subject matter varied, but was generally high. Their response may have not reflected the actual situation, but how they perceived it.

The number of interviewees was higher than planned. Interviewing more officials would require additional time and funds.

2. Questionnaire Limitations: The most significant limitation in this area is the language barrier. Although most of the respondents have a reasonable level of understanding the English language, there was a large variance in proficiency. An Arabic version of the questionnaire was provided to assist the respondents but, no matter how excellent the translation is, it is extremely difficult to capture the precise meanings. In addition, the Arabic language does not handle some of the technical concepts well.

In general, questions prepared may not properly convey the meaning intended by the researcher, and may not be perceived in the same way by various respondents. Although the questionnaire must cover the essential points, it must not be overly long. The questions must be designed to facilitate the answering process in order to improve the rate of response. Furthermore, the responses may not necessarily reflect the actual situation, but only how that situation is perceived by the respondent.

The distribution of the questionnaires by mail in Jordan proved to be ineffective. Consequently, the questionnaires were mainly distributed by direct personal contact. Several

colleagues and friends participated in this task.

The selection of respondents, with a reasonable level of awareness in the subject matter was based on the personal judgement of the distributors following a detailed discussion and instructions in this regard. This requirement limited substantially the size of the population from which the sample of respondents can be selected.

3. Other Field Study Limitations: Due to the highly complex nature of the technical implication issue, it was excluded from the field survey.

The scope and limitations of this study should be taken into consideration in using its results.

1.4. Organisation of the Dissertation

The remainder of this Chapter covers the definitions of pertinent terms to this study, and a survey of the literature which appears in the Bibliography.

Chapter II provides the theoretical framework for the empirical phase of the study. The objectives of the research was translated into relevant issues for the field survey.

Chapter II presents pertinent information about the developing nation, Jordan, which was selected for this study. This information includes some historical, sociological, political, economic, and economic planning aspects of Jordan.

Chapters IV and V cover the empirical phase of this study.

Chapter IV discusses the planning of the field survey. In addition, it covers the development, testing, and implementation of the instruments in the field survey. Chapter V presents the combined results of the interviews and the questionnaire. These results are analysed and conclusions are drawn.

In Chapter VI, the conclusions of the study are summarised and recommendations are provided regarding the research methodology, EDB development in Jordan, EDB organisation, and DBMS software and selection. In addition, suggestions for future research are given on insights gained from this study.

Eight appendices are referenced in the various chapters of this study. These appendices, as well as the list of references and bibliography, appear at the end of this dissertation.

1.5. Definitions of Terms

Data base technology is still in its early stages of development. A great deal of controversy exists, particularly in the associated terminology and definitions of terms. For an example, there is no universally accepted definition, or even spelling, of the term "data base" itself. Consequently, five pertinent definitions are presented and explained:

1. Socio-Economic Data
2. Management Information Systems (MIS)
3. Data Base and Data Bank
4. Data Base Management Systems
5. Economic Data Bank

1.5.1. Socio-Economic Data: Before defining the total term, it is necessary to define the term "data".

"Data" is commonly used in singular as well as plural form. The singular form is "datum" which is rarely used. The Webster's Dictionary defines "datum" as a "fact given", and "data" as "things known and from which inferences may be deduced". In this study the term "data" will be generally used to mean facts relevant to a business organisation.

The term "socio-economic data" is used in this study to mean social and economic facts from which inferences may be deduced.

1.5.2. Management Information Systems (MIS): The Webster's Dictionary defines the terms: "management" as "a body of directors controlling a business"; "information" as "knowledge derived from ... observation ... ; especially from unorganised facts or data"; "system" as "assemblage of objects arranged after some distinct method, usually logical or scientific ...". These definitions are simple but include the essentials for the purpose of this study. In general, a management information system is a group of inter-related components which are interconnected and linked in a particular manner, with the objective of providing useful facts to those responsible in an organisation for the purpose they were intended.

An information system is normally a subsystem of a larger system. For an example, an organisation may have a manpower information system which is a subsystem of an economic information system.

1.5.3. Data Base and Data Bank: Sundgren, in his book "*The Theory of Data Bases*", stated that "For many years 'data base' has been one of the buzz words in the data processing world. Although nobody really knows what a data base actually is, there are a lot of problems that are generally recognised as data base problems. Some of these problems have caused excited debates." (784)

There are several definitions of the term which are not identical. The CODASYL Data Base Task Group report states that "a data base consists of all the record occurrences, set occurrences and areas which are controlled by specific schema ... A schema ... is a complete description of a data base." (176). GUIDE-SHARE, in "*Data Base System Requirements*", defines a data base as "a named collection of units of physical data which are related to each other in a specified manner." (374). In Infotech International "*Data Base Systems*", Foord stated that a data base is "a collection of fields of data that are related in a meaningful way and can be accessed in different logical orders but are stored only once." (425).

A data base is used in this study to mean a centralised collection of data stored in a meaningful way to serve information requirements. A data bank is used to mean a group of data bases.

1.5.4. Data Base Management Systems (DBMS): The CODASYL Systems

Committee, in a paper titled: *Introduction to "Feature Analysis of Generalized Data Base Management Systems"*, states that "Generalized data base management systems are developed and marketed today under various generic names. Such applications as data management system, generalized information retrieval system, information management system, and file management system are the main terms in use. The more elementary systems search a sequential file having simple record structures and provide only rudimentary report formatting facilities. More elaborate systems handle several files via indexes or links and function in an on-line mode." (180).

Collmeyer, in an article titled *"Database Management in a Multi-Access Environment"*, defines a DBMS as a network of logical subsystems, where each of the subsystems performs a specific function consistent with its role in the network." (195). In an article titled *"Building a Base for Data Base: A Management Perspective"*, Cuozzo and Kurtz define a DBMS as "a structured series of generalized system programs that act as a common interface point to intercept and satisfy data base information requests." (215).

For the purpose of this study, a DBMS is defined as a computer software system that incorporates subsystems which provide facilities for the creation, maintenance, update, retrieval, and control of data bases.

1.5.5. Economic Data Bank (EDB): The term "economic data bank" is not specifically defined in the literature researched thus far.

Consequently, an attempt will be made to define the term.

For the purpose of this study an EDB is defined as a group of socio-economic data bases with the objective of providing policy makers, planners, researchers, and scholars, pertinent socio-economic data and information needed to improve the performance of their tasks.

1.6. Survey of Literature

A thorough and exhaustive library search of relevant literature was performed. The 865 pieces of literature appearing in the bibliography are the relevant and interesting portion of what was found.

Virtually no literature was found on economic data banks. The available literature is, for the most part, software, technical, and computer oriented in the data bases, DBMS's, and other related areas.

Due to the massiveness of the bibliography, it is classified into categories and sub-categories in order to simplify the coverage of its content. The examples provided on each category and sub-category are those which made relevant and material contribution to this study.

The bibliography is divided into four major categories:

1. Books
2. Dissertations
3. Conferences, Workshops, and Seminars
4. Articles and Papers

1.6.1. Books: There are few books which are available on data base management and data base systems. This is due mainly to the fact that computerised data bases have emerged in recent years.

The books category is divided into sub-categories with examples on each. These sub-categories are:

1. Data base management and data base systems: Date (224), House (412), Martin (518 and 519), and Tsichritzis and Lochovsky (809).
2. Management, and management information systems: Burca (117), Churchman (166), Elmhurst (277 and 278), Goldschmidt (357), and Stewart (770 and 771).
3. Data structure: Berztiss (71), Elson (279), Flores (320), Harrison (384), and Shave (724).
4. Organisation and organisational planning: Emery (280), and Leavitt (483).
5. Economic structure and development: Barker (51), and Bos (91).

1.6.2. Dissertations: The literature search resulted in finding nine dissertations in the data base area. These dissertations are sub-categorised as follows:

1. Data base management systems: Kanfer (446), Pliner (631), and Powers (635).
2. Data and file structures: Schafheitlin (680), Smith (748), Taylor (793), and Thay (800).
3. Technical and statistical: Kennedy (455) and Siler (743).

1.6.3. Conferences, Workshops and Seminars: Several conferences, workshops and seminars, which are directly related to the data base area, have taken place in the late 1960's and the 1970's. Each of these gatherings covered a wide range of topics centred around a specified theme. Each

topic may be covered by one or more individuals or work groups. Furthermore, the same subject may be discussed by one or more associations periodically. Consequently, the coverage of these gatherings will be limited to the sub-categorisation of the subjects with examples on each. These sub-categories are:

1. Data bases and their requirements, management, and direction: ACM SIGMOD (3 and 5), Bachman (43), Berg (65), Carlson (145), Codd (190), GUIDE/SHARE (374), and Lupien (503).
2. Data description, access, management and control: ACM SIGMOD (4 and 5), and Carmon (146).
3. Data systems languages: CODASYL (173).
4. Ethics and Data Banks: (Miller (548)

1.6.4. Articles and Papers: The articles and papers category is the largest in number. Several hundreds of relevant articles and papers, covering a variety of topics and issues, are included in the bibliography. Consequently, this category is divided into six sub-categories with examples on each. These sub-categories are:

1. Planning: long range, strategic, and general: Aines and Day (8), Anonymous (29), Blumenthal (84), Donovan (259), Fried (333), HMSO (402), Infotech International Limited (425), McLean and Soden (532), and Pipe (622).
2. Data base design and development: concepts, considerations, and characteristics: this sub-category is divided further into the following relevant areas of interest:
 - a. Data base design concepts: CODASYL (180), Cousins (209), HMSO (402), Lyon (505), Naur (570), Pretzer (637) Samuelson (675),

- Senko (716), and Sundgren (783, 784 and 785).
- b. Data management and structure: Canning (126 and 135), Cardenas (141), D'Imperio (252), Ollie (589 and 590), Senko (712, 713 and 715), Schneiderman (733), and Skronn (747).
 - c. Relational data base concepts: Bracchi (97 and 98), Codd (184, 185, 186, 188 and 189), Date (225), Minker (552), and Stonebraker (776).
 - d. Data base organisation: Aspinall and Bell (40), Canning (132), Dearnley (240 and 241), Ollie (591), Senko (714, 717 and 719), Schneiderman (732), and Stocker (772).
 - e. Data base performance: Boyse (96), Davenport (230), Dearnley (242), Ghosh and Tuel (347), Lesk (489), Lucas (499), Miyamoto (559), and Nakamura (567).
 - f. Data base retrieval: Bloom (82), Elias (276), Hersey (399), Hsiad (413), Jones (438), Kraegeloh (472), Ollie (593), Pollack (632), Siler (742), Calle (815), and Vickery (823).
 - g. Data base recovery: Canning (134), Davies (233), Edelberg (272), Grafton (365), and Tonik (807).
 - h. Data base integrity: Curtice (218), Davenport (229) Eswaren (290), Everest (296), Fossum (325), Giannotti (350), and Wilkes (844).
 - i. Data base audit and control: Bjork (75), Desalvio (248), Florentin (319), Ivanov (427), Jarvinen (435), and Reneau (650).
 - j. Data base standards: CODASYL (172 and 176). HMSO (403), Infotech International Limited (425), Steel (766), and United Nations (814).

- k. Data base technical articles and papers: Andres (10), Barton and Lynch (53), Bjork (76), CODASYL (175), Collmeyer (195), Easton (270), Holland (409), Lowe (498), Marcus (516), Martin (521), Owens (600), Palmer (605), Parsons (611), Senko (711), Thiel (801), Waltz (827), and Ware (831).
3. Data base software evaluation and selection: Adams (6), Anonymous (19), CODASYL (182 and 183), Digimma (250), Dublin (261), Evans (294 and 295), Frank (328), Kuss (475), Palmer (606), Rodriguez (657), and Testa (799).
4. Data base application and users experience: this sub-category is divided further into the following relevant areas of interest:
- a. Patient, hospital and medical care: Crocetti (212), Davies (234), Eyman (299), Gardiner (343), Jainz (429), Mather (523), Race (642), Remond (649), Sauter (678), and Wolf and Vallee (853).
- b. Industrial: Anonymous (20), Bechler (58), Blanchad (78), Brown (107), Coupe (208), Huhn (418), Mommertz (560), Nunamaker (581), Pyne (641), Reside (651), Roach (654), Seamens (707), Stross (779), Terry and Jones (798), and Tyran (813).
- c. Library and information science: Anonymous (28), Bergstroem (67), Hansen (382), Horner (411), Lynch (504), McLaughlin (531), Patrinostro (613), Pratt (636), Schipma (685), Schneider (690), Smith (749), Wyatt (855), and Yamamoto (857).
- d. Marine, geophysical, archeological, and natural resources: Chenhall (158), Luehrman (500), Picciolo (621), Rinkel (653), Schneider (689), and Surican (787).

- e. Research and educational: Anonymous (17 and 18), Counts (207), Gorth (361), Lochovsky (496), Makila (512), Sandewall and Makila (677), and Vallee (817).
 - f. Social and economic: Grose (372), Hirsch (401), Kurabaya (474), and Weldon (837).
 - g. General users experience: Canning (122, 133, and 134), Davis (235), Erwin (289), Foreman (323), Infosystems (424), and O'Donohue (583).
5. Social, political and legislative issues: Bisco (73), Canning (127), Committee on Government Operations (199), Committee on the Judiciary (200), Conway (202), Fellegi (305), Ferry (309), Foster (326), Hoffman (406-408), Jacob (428), Karhause (448), Kolle (470), Metzner (545), Olsson (597), Rose (659), Sager (673), Sherif (730), Smith (752), Snedeker (757), Sundgren (786), Thomas (802), Turn (811), Turn and Shapiro (812), Vantesse (820), Warner and Stone (832), and Westin (839).
6. Data base: general issues: this sub-category is divided further into the following relevant area of interest:
- a. History, trend and evolution: Ashany (38), Bachman (44 and 45), Bruun (111), Canning (136), Dearnley (239), Flynn (321), Fry and Sibley (339), Kanter (447), Lo Cascio (495), McCarthy (526), McCusler (527), Nolan (579), Olle (587), Pelta (618), Poole (633), Roth (664), Rucker (670), and Schubert (697).
 - b. Positions of caution: Anonymous (15 and 27), Bowles (93), Canning (121 and 139), Carter (147), Hoffman (408), Mancinelli (514), Maron (517), Patterson (616), Schussel (703), Traver (808), and Williams (848).

c. General positions: Anonymous (16 and 23), Arvas (34), Boylan (94), Brebach (100), Burgess (113), Canning (120, 123, 124, 125, 128, 130, 131, 137, and 138), Charney (156), Cooke (203), Crutcher (213), Davenport (231), Delonge (247), Engles (283), Ferguson (306), Gardner (344), Gibbons (351), Gilb (353), Gosden (363), Hanlon (381), Hunt (419), Jardine (433), Menkus (538), Minsky (554), Mottram (562), Mumford (563-565), Nijssen (576), Nolan (580), Ollie (585 and 592), Palmer (603), Plagman (625-629), Price (638), Radford (643), Romberg (658), Ruggles (671), Scott (706), Sessions (720), Severino (722), Simonson (745), Tebbs (796), and Yasaki (859).

CHAPTER II

EDB MANAGERIAL AND ORGANISATIONAL ISSUES

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EDB MANAGERIAL AND ORGANISATIONAL ISSUES

INTRODUCTION

The purpose of this chapter is to develop the EDB managerial and organisational issues. These issues serve as the bases for the field study.

This chapter is divided into four sections. These sections are:

1. MIS's and DBMS's
2. DBMS's: Managerial and Organisational Issues
3. EDB's: Managerial and Organisational Issues
4. Selection of Location for the Field Survey

The chapter ends with a summary of the EDB managerial and organisational issues.

2.1. MIS's and DBMS's

"Computers are going to change the lives of men in unprecedented ways. More than the steam engine, electrical power, nuclear energy, or any other revolutionary invention of industrialisation; more than any prior change in techniques, small or great; society will be changed more perhaps than men will be able to bear. Much of this change will be for the betterment of our lives, individually or collectively; potentially there could be many changes for the worse. At the very least, those who know and care must strive to come to terms with the new power and ameliorate its effects." (832).

As computers emerge from their years of infancy, they are taking on

increasingly responsible work. Computer systems organisations, in their utilisation of computers, progressed from developing simple data processing and accounting applications to computerised MIS. These systems vastly changed our way of life and had a tremendous impact on many nations and organisations.

Computer systems organisations faced severe challenges during the early years of designing and developing computerised MIS. Several computer applications, each designed and developed to fulfil a specific function, were tackled simultaneously by separate project teams. This caused extensive challenges in administration, coordination, and control. Project teams, in the majority of instances, designed and developed computer systems in isolation from one another. This approach, together with the lack of a file coordinating function, led to the proliferation of files and the duplication of much data within the computer complex. Although some regard was usually given to longer term requirements by project teams, most systems became obsolete within a few years of implementations. Hardware progression from first to second and third generation caused a huge impact on computer systems concepts and design.

The computer systems developed in the first generation era were strictly application oriented. The data requirements for each system were established based on the need of each individual application, and files were organised to suit it. Consequently, as applications increased, data became duplicated in a whole series of files created for each application and, thereby, increasing the possibility of errors and misinterpretations. These problems were recognised by the

second generation users. Yet they found that it was not always possible to merge files even where these related to the same subject. As a consequence, they created common files serving several applications. These files no longer represented specific applications, but specific subject areas. This approach fell short of allowing complex interdisciplinary cross-referencing, and unique, identification and structuring of data which allows its effective accessing, maintenance, update, utilisation, and control. The third generation hardware flexibility and versatility caused serious problems to computer users. Anyone who lived through the conversion era from second to third generation "... can recall the pain of changing data files, programming languages, and the subsequent testing of those revised programs. It was a bitter experience at the time; however, the data processing industry focused its view on some basic inadequacies in documentation, standards, and technique uniformity within an installation." (638). They began to recognise that the data processing and computerised systems require in their design a "... considerably higher degree of separation between the logical data (the data as perceived by the programmer) and the physical data (the data as it is stored in the system)." (209).

Much attention was focused in the early 1960's on the problems of computer systems administration, coordination, and control. Computer manufacturers, consulting firms, computer users organisations, and educational institutions began to offer courses and seminars in systems project management and control. The massive efforts exerted in this area led to a major improvement in managing, coordinating and controlling MIS.

By the mid 1960's, as more computer applications were developed and implemented, the proliferation of files and the duplicity data between systems reached an intolerable level. The hardware evolution to third generation removed several prior barriers and restriction and provided more flexibility and versatility. Computer manufacturers, and software organisations faced the challenge, and started to work extremely hard at developing a new methodology and technology to combat these problems. They, along with the computer users, realised that extensive guidelines, standardisation and software development are mandatory for this new technology. As a consequence, the data base technology gained a tremendous momentum, and the List Processing Task Force was formed in October 1965, as an off-shoot of CODASYL (Conference on Data Systems Languages).

The first meeting held by the List Processing Task Force was in March 1966, and in May 1967, the name of the group was changed to Data Base Task Group (DBTG). The first report released by the DBTG was in January 1968. It was distributed by the Association for Computing Machinery (ACM) Special Interest Groups. It was not given the wide circulation of the DBTG later reports. In October 1969, the first formal submission was made to the parent committee, the CODASYL Programming Language Committee. One of the aims of submitting was to get worldwide reaction to its proposal. That report gained wide circulation and sold thousands of copies. Since then the DBTG became more formal and started to have voting rules and attempted to get some order into their business. The objectives of the DBTG in this work are to allow:

- a. Interrelated data bases
- b. A variety of data structures without required redundancy
- c. Sharing of data by multiple applications
- d. Biasing of data to multiple applications (optimisation of the whole rather than sub-optimisation of the part)
- e. Control over strategy decisions (methods of data access and placement control)
- f. A description of the data base and the data base described to be interfaced by multiple processing languages.

The DBTG continues to set and improve guidelines and standards for the data base technology. These guidelines and standards have contributed substantially to computer manufacturers, software organisations and computer users in their DBMS development.

Basically, the need for the DBMS technology grew rapidly as MIS applications increased in number and their data requirements became massive, complex and interrelated. Conventional files, and data organisation and structures were no longer viable in the MIS explosion era, where planners and decision makers "... tend to have the unpredefinable information needs." (592).

2.2. DBMS's: Managerial and Organisational Issues

"Data banks are not a new problem. Hamurabi kept an extensive clay tablet library of legal transactions several thousand years ago in Babylon. What has happened with the advent of computers is that the cost of operating such data banks has dropped by several orders of magnitude ... Data banks are inevitable and essential in a complex society. Our civilisation would quickly strangle in the flood of

paperwork if computerised files were eliminated. Although the potential for good inherent in data banks is very large, we are afraid that the potential for evil is infinite." (326).

As the complexity of modern day life increases with astonishing rapidity, the complexity of the problems facing the planners, and policy and decision makers is increasing at a corresponding rapid rate. Traditional intuitive methods of planning and decision making are no longer adequate in dealing with these complex problems. A tremendous amount of information is required to assist in planning and managing the complexities of societies and businesses. "The inadequacy of the present tools for providing this necessary information to assist in the decision making process is being felt here and now. These tools simply have not developed to any reasonable level of completeness. It is the responsibility of the disciplines of management and information processing above all other to provide these valuable tools." (259).

The problems facing the planners and decision makers, and the data required to perform the analyses are continually changing. The answers to these problems are needed in a short time frame. The complexity of problems requires not just raw data, but sophisticated analyses, transformations, projections and displays. These needs, when translated into MIS, are requiring massive amount of data which must be highly organised and structured.

Computer manufacturers, software organisations, and computer users focused their attention to meet this challenge. They turned to DBMS

development in the late 1960's for a solution. The DBTG provided guidelines and standards to assist in this effort.

The term DBMS is currently in wide use identifying a software system to perform specific functions associated with the management of a data base. Several DBMS's have been developed and are in wide use all over the world. Information is provided on selected DBMS's software in Appendix H. Of course, the DBMS technology is still in the cradle. The experience and expertise in this technology remains extremely limited.

Several organisations embarked on the utilisation of DBMS in a variety of applications by the late 1960's. In the early 1970's, their number increased tremendously in a very short period of time. Many organisations looked to DBMS as a panacea for their data processing and MIS problems. They adopted the technology without thorough planning, and plunged into disaster. Several authors cautioned from the premature use of DBMS, and were critical of the state of the art. Patterson, in his article *"Data Base Hazards"*, remarked: "The DBMS has captured the imagination and sometimes the fantasy, of many influential figures in the data processing world. With a blinding, sensuous flash, DBMS concepts have caught us up in fascination while sometimes obscuring the real, practical issues of data processing." (616). Schussel, in his article *"When Not to Use a Data Base"*, stated: "While it is certain that the data base approach will become a standard in most shops, it is equally certain that many people have made the data base decision for the wrong reasons ..." (703). A study made by Diebold Research Program on data base management indicated that the total integrated data base approach for many organisation "... has turned out to be a dramatic mistake. The concept involved a top-down design methodology embracing

every information need conceivable. This technique has fallen generally into disfavour as organisations found it difficult, if not impossible, to implement." (15).

One of the major findings, which was brought to light during the McKinsey - UCLA Conference in 1974, that "There is a growing need for formal long-range information systems planning as systems become more complex; require longer to develop; utilise common data bases; involve multiple functions, departments, operating companies, and/or countries of the world; cost more money; and have greater competitive impact." (532). McLean and Soden, in their book *"Strategic Planning for MIS"*, cautioned that if "... project development is not effectively planned and managed, it does little good to speculate on where the organisation will be five to seven years in the future. More than likely, it will be an organisation with a new cast of characters!" (532).

Strategic planning is not only necessary to determine the need and benefits of a particular DBMS application, but its associated organisational, legislative, manpower, and training requirements; definition of its objective and specification of its scope; investigation of its implications from a social, political and technical viewpoint. Many authors in this general area have come out in support of these views in part or in total. The need and benefits of data base technology should be established prior to delving into its applications.

In a paper titled *"The Evaluation and Management of Computer-Based*

Systems: An Interdisciplinary Approach", Hagwood, Land, Mumford and Reddington wrote that "The main findings of the working party were that very few computer-based systems have been subjected either to rigorous prior economic appraisal, or to monitoring after implementation, and that the main reasons for this are the lack of guidelines from experience, and agreed accounting standards, to aid in estimating costs, benefits and risks in the field. In particular, little attention has been paid to human factors in system design, and no techniques are available for assessing the value of information." (565). Gall, as a chairman of a working panel on user experience, wrote in his report, *"What Experience Has Taught Us"*, that the following pertinent question was distributed in the initial questionnaire to the members of the working group: "Is data base technology necessary for my organisation? Is there a break-even point in size, type or complexity of information processing needs? If so, how do I measure it? Is there a way to determine cost/benefit?" (65).

Once the needs and benefits for a data base application is established then a strong organisation is needed to properly perform the associated planning, coordination, development, implementation, post audit, and control tasks. The type, structure, and shape of the organisation and any required regulations need to be defined. Some of the guidelines established by a Diebold Research Program study on data base management are: "Data base planning and coordination must be centralised for consistency of development efforts and cost-effectiveness control." and "Top management backing is the most importance factor in gaining acceptance of any data base proposal and implementation." (15). Magraw, in a keynote speech titled *"A Manager's Viewpoint"* stated

that one of the "... problems in managements Baliwick relates to organising for data base management. DBM turns out to be an expensive, academic exercise unless unequivocal statement of responsibility and a proper structure are established for the function ... I cannot refrain from saying that unless there is a strong, central, total authority over data item authorisation and definition and all related DBMS functions ... reporting relationships need careful attention ... these guidelines must speak to the need for strong and visible management support for DBMS." (65). Trigg, as a chairman of a working panel on Government Regulation, in his report *"Impact of Government Regulations"*, wrote: "It is clear that implementation of a data management system has organisational implications.", "State and local governments should have standard privacy/security regulations if they have a requirement to exchange data.", and "With respect to organisation structure, those organisations whose prevailing management philosophy encourages centralisation of control will probably be more amenable to adopting the DBMS approach. Organisations which emphasise decentralisation of accountability should approach the DBMS decision with an awareness of the possible broader implications on its approach to management." (65). In an OECD (Organisation for Economic Cooperation and Development) report titled *"Towards Central Government Computer Policies"*, it is stated that "... fragmentation of important features affecting ADP (Automated Data Processing) development has been the chief deterrent to developing coherent plans in most countries. New coordinating authorities usually take the form of expanded jurisdiction to an existing Ministry or Department. The add-on nature of this development is not necessarily a disadvantage, if the needed tools to execute this authority are in their possession", and "... a single

department should have overall responsibility for coordination (ADP) and house most central planning staff." (403). In an OECD Informatics Studies report titled "*Computerized Data Banks in Public Administration*" it is stated that "Access to information can mean power, and automation often involves considerable changes in access patterns ... the problem of privacy can be solved in two ways, namely by reducing drastically the collection of data about persons or by handling these data in a legal, organisational and technical framework which reduces the possibilities of misuse. The first way is practical only to a limited extent without grave consequences for the services rendered by public administration and for the planning needs of an industrialised society. The second way, however, is not just one of extended data security, but implies important reforms of public administration and its legal bases ..." (802).

The organisation, after its establishment, needs to formulate its DBMS objectives and define the scope of the work to be performed. In a keynote speech by Magraw titled "*A Manager's Viewpoint*", it was stated that "The first problem is that there needs to be a clear and highly specific understanding of the objectives of DBMS in any organisation ... one simply does not fiddle around with the most precious of all raw materials of an organisation: its data. It is simply crucial that the target be clear." (65). Fried, in "*Long Range Planning for EDP*", stated that "It is impossible to develop a long range plan for DP (Data Processing) unless there is a specific long-range plan with stated goals and objectives for the corporation as a whole and for the individual users divisions" (333). In an article titled "*Data Base Hazards*", Patterson wrote, "The risk factor

can be substantially reduced by careful, intelligent planning ... and by using a phased implementation plan taking advantage of the concept of evolution." (616).

In order for the organisation to have the necessary strength to perform the DBMS tasks, it requires highly qualified staff at all levels. This kind of staff is currently in short supply and is difficult to recruit. Tsichritzis and Lochovsky wrote in their book titled "*Data Base Management Systems*", that "The rapid growth in the usage of DBMS's have created a shortage of personnel trained in the effective use of such systems.", and "To achieve its goals, an information system requires a group of specialised persons. These persons formulate the request to the system and evaluate the results ..." (809). In their book, "*Strategic Planning for MIS*", McLean and Soden indicated that one of the objectives in strategic planning should deal with "The type of management and staff to be developed." (532).

Training is of vital importance for the database organisation. The technology is growing at a rapid rate and it is highly important that the staff at all levels be kept well informed. Gall, as a chairman of a working panel on user experience wrote in his report "*What Experience Has Taught Us*", that "Education of those involved in the implementation of more effectively managed data base environments was discussed and felt to be sadly lacking ... Technological training is needed in data base design and its systems design implications. Education about the future directions that systems are likely to take, such as distributed processing, would be very helpful. Some

college courses are now being offered, but most available training right now is in the form of seminars given by private firms." (65). In a keynote speech titled "*A Manager's Viewpoint*", Magraw stated that one of the major areas of concern "... is DBM training, particularly among the users. My understanding is that excellent training exists for computer professionals in DBM theory. I judge that there is insufficient training for them in the field of decision theory and systems and in man-computer dialogue." (65). In an OECD report titled "*Towards Central Government Computer Policies*", it is stated that some of the data base policy issues in the "Managerial/Administrative" category are "Organisational restructuring, new procedures, manpower, training ..." (403).

Data base applications have several implications particularly those in the sociological and political aspects. These aspects should be thoroughly examined and considered because of their far reaching affect. Metzner, in an article titled "*Data Banks: Fundamental Considerations*", stated that "Data banks should be considered not simply in technical terms, but of at least equal significance with respect to social, political and ethical issues" (545). In an article titled "*Need for Greater World Rationality*", Pajestka wrote: "The world realities are never purely economic: they are economic, societal, and political." (91). Aines and Day, in a paper titled "*National Planning of Information Services*", stated that "National planning in an area such as information handling is still regarded with suspicion by some in the United States. Such activity is often considered the common practice of authoritarian or dictatorial states." (8). In an article titled "*Data Base Hazards*", Patterson

indicated that "A new political/technical function will have to be set up to support the DBMS." (616). Stewart, in a book titled, *"How Computers Affect Management"*, stated that "... the staff man, whether he is a computer manager or a different type of specialist, has to operate in the political climate of his particular organisation. Professional expertise is often not sufficient to be effective; a sensitivity to the politics of the organisation is usually also necessary." (770). Mumford and associates, in a paper titled, *"The Human Problems of Computer Introduction"*, stated that "... computer systems can be more effectively planned, designed and implemented if account is taken of the nature of the social environments in which they are to be introduced and of the attitudes and needs of staff affected by them." (564).

The technical implication is also an extremely critical one. It should be seriously investigated and considered. The characteristics of the software should be thoroughly examined. In a paper titled *"Data Base Software: A Sceptical Viewpoint and Some Alternatives"*, Gilb wrote that "The published literature about data base management systems is by now substantial, as is the informal (user copied) material. It is, therefore, surprising that there seem to be no examples of cost justification: none that compare generalised data base management systems with tailored, home made data base management systems, at least none that really will stand up to attack." (353). Tschritzis and Lochovsky, in their book *"Data Base Management Systems"* stated: "Generalised DBMS's evolved to facilitate data organisation and access. They serve as an interface between the user and the physical copies of the data. Users specify what data they want and

in what form. They do not need to specify where the data resides or how to get to them." (809). In an article titled "*Current and Future Trends in Data Base Management Systems*", Olle wrote "More recent capabilities which are justifiably required of a DBMS are integrity and privacy ... the essence of a DBMS is an ability to structure data more flexibly than in conventional systems." (587). Patterson, in his article "*Data Base Hazards*" stated: "The DBMS is a combination of staff, software and hardware functions responsible for providing access (storage and retrieval) to the DB. It is only that it is not a management information system (MIS). An MIS is an application program to the DBMS, and it converts data provided by the DBMS into information which the end user can interpret." (616). In an article titled "*The Concepts and Implications of Data Base*", Cousins states that "The basis of the data base approach to systems design is that there is a limit to the amount of meaningful data that can be collected about an organisation relative to the number of ways in which such data can be presented, analysed and summarised. Therefore, the emphasis is placed on the structuring of the data in the most logical manner within the computer to enable extraction in the various ways required." (209).

2.3. EDB's: Managerial and Organisational Issues

EDB's have been thought about and talked about much more than they have been developed and implemented. In addition, literature related to the strategic planning of developing EDB's is scarce. This situation brings to mind a remark made by Mark Twain about the weather: "Everyone talks about it, but nobody does anything about it." The technology for developing EDB's is available now; the

problem lies in planning and managing the project.

The United Nations (UN) attempted to provide some international standards in the classification of economic activities. In this connection the UN Economic and Social Council adopted the original version of the International Standard Industrial Classification of All Economic Activities (ISIC) in 1948 (814). The basis for this action was the recognition of the need for international comparability of economic statistics. The ISIC was recommended for adoption as a national standard by all Member Governments. Several countries have utilised the ISIC as the basis for devising their industrial classification scheme. Many international organisations, such as the International Labour Office, the Food and Agriculture Organisation, and the UN Educational, Scientific and Cultural Organisation, have utilised the ISIC in the publishing and analysis of economic data and activities. User experience in ISIC revealed the necessity for periodic reviews of the structure and definition of the ISIC categories. To date, two reviews have been made, one in 1956-1958, and the other in 1965-1968. The ISIC classification can be described as a hierarchical coding scheme which provides up to four levels of classifying economic activities. This classification does not reach the micro level of economic activity. It is recognised that the detail required in the classification of economic data differs from country to country. Differences in the degree of industrial development and in the organisation of economic activities may result in differences in the detail and way in which various countries find it necessary and feasible to classify economic data. The level of detail required for the purposes of international comparison of data

is generally less than that needed for national analysis.

Several countries, developed and developing, have been engaged in EDB developmental activities. Although the general developmental objectives are similar, but their approaches to planning and development varies. For examples: there are several economic data bases developed in the USA and England. The development was performed on a decentralised basis. Several organisations, both in the public and private sectors, have developed EDB's. Development of this kind has been performed centrally in Russia, France, and Sweden. The Information Centre in Russia is an independent governmental agency. In France, the agency reports to the office of the Prime Minister. The EDB activity in Sweden is an integral part of the National Central Bureau of Statistics. The areas of economic development differ from one country to another based on its national needs, resources, and priorities. In the USA, economic data base activity in several areas (e.g. services, agriculture, finance, taxation, credit, etc.) was developed. In other countries the development varied based on the limitation of resources. Several countries have recognised the need for legislation in this area. In 1973, Sweden was the first country in the world which passed a specific legislation in this area, the so-called Data Act, and established the Data Inspection Board. The legislation and the agency were the results of a very intensive public debate on ethics and policies in the area of data bases. Other legislative acts, which are related to this area, have been passed in the USA, and some other countries in the world.

One of the major proposals in the field of economic and social development which is appearing on the international scene is called DEVSIS (A Development Science Information System) (249). DEVSIS, as proposed, is a global system aiming at comprehensive coverage of economic and social development literature. It relies on the participation of national governments to obtain its inputs and on a central unit located within a UN organisation for processing and distribution. It is a mission-oriented system directed towards meeting the information needs of the development community. Its target users are: policy makers, planners, researchers and teachers, financiers, communicators, and those who provide them with information. The co-sponsors of the DEVSIS study are: The International Development Research Centre (IDRC), the International Labour Office (ILO), the Organisation for Economic Co-operation and Development (OECD), the UN Department of Economic and Social Affairs (ESA), the UN Development Programme (UNDP), and the UN Educational, Scientific and Cultural Organisation (UNESCO). DEVSIS was first proposed in January 1974. The proposal has been discussed in several international conferences and in a number of papers. A preliminary design of the system was prepared by the DEVSIS Study Team which worked in Geneva, Switzerland, during the period March - September 1975. This preliminary design was published in a book form by IDRC shortly afterwards.

The proposal promotes the development of international standards particularly in the areas of classification and coding. Some helpful standards were provided in the published material. Although the system can be of a tremendous benefit to all nations, it has its pitfalls. Its reliance on the nations of the world for input

provides an opportunity for value judgements to be made at the level of the national input/output units. The national authorities, in the exercise of their sovereign rights, may screen out or bias the data and information they provide.

The sources of finance for the development and implementation of DEVSIS were originally to come from a combination of interested agencies that would contribute to a fund to be placed at the disposal of the agency that accepts to manage the system. Currently, attempts are being made to locate the sources of finance before any further development can be performed.

Overall, EDB development has been extremely limited with little standardisation in approach. Furthermore, research and strategic planning in this area are still in the infancy stage.

The planning and development of an EDB is a complex and gigantic undertaking for any nation or organisation. It is extremely important to plan the entire bank but to develop it in pieces. The EDB includes several data bases and MIS's. The basic functions of the banks are:

1. Data collection: The collection of timely and accurate socio-economic data, using manual and/or automatic (teleprocessing) methods, for planning and decision making.
2. Data preparation: The classification and coding of data based on a standardised hierarchical structure of coding for the EDB, and its preparation in a machine readable form for processing.

3. Data processing: The processing of socio-economic data for the purpose of maintaining and updating the EDB files. Data is subjected to rigorous and extensive methods of edit and validation prior to the maintenance and update of the EDB files. Rejected transactions are corrected for reprocessing.
4. Data interrogation and retrieval: The interrogation of the EDB files, and retrieval of socio-economic data for planning and decision making. Data can be displayed in the required formats on various means of output devices, and can also be analysed by analytical and scientific methods.

The functions listed above need not be done distinctly. For an example: Using a teleprocessing network connected to a central computer, which has the EDB files on-line, socio-economic data can be properly classified, coded, and entered at the source of input via a terminal. The data can be directly edited and validated. Erroneous data can be rejected for correction and re-entering. Correct data can be processed, and the EDB files maintained and updated. In the meantime, while the above functions are in progress, interrogation of the EDB files, and retrieval and analysis of socio-economic data for planning and decision making can take place. The technology for operating in such a manner is available today. The basic limiting factor is the availability of resources.

A parallel can now be drawn between EDB's and an application of DBMS's and MIS's in a particular field. They are basically similar and, therefore, their managerial and organisational requirements and implications are similar.

Based on the preceding discussion, the objectives of this research are translated into meaningful issues, which serve as the bases for the investigation and study in the field survey. These issues are:

1. The need for an EDB and its immediacy and benefits
2. The organisational and legislative requirements for an EDB
3. The initial developmental objectives and scope of an EDB
4. The manpower requirements for the development of an EDB
5. The training requirements for the development of an EDB
6. The sociological and political implications in developing an EDB
7. The technical implications in developing an EDB

The technical implication issue was excluded from the field survey in Jordan. This is due mainly to the highly technical and complex nature of the software involved. However, this implication along with DBMS software selection are discussed and relevant recommendations are provided in Sections 6.3 and 6.5 of Chapter VI.

Furthermore, pertinent information regarding some popular DBMS software packages is provided in Appendix H. It is well to remember in this regard the words of Appleton, which appeared in an article titled *"What Data Base Isn't"*. He stated: "It seems that we have become so obsessed with figuring out what data base is (what data base administrators do, or what type of data base management systems to buy) that we forgot the real roots of the concept. These roots do not lie in computer hardware and software technology." (33).

2.4. Selection of Location for the Field Survey

The EDB issues, appearing in the previous section (2.3), are the same for developed and developing nations. The basic differences are in the magnitude and type of problems associated with each issue. For example: the availability of resources, such as materials, money, manpower, and training facilities vary substantially between developed and developing nations. Furthermore, the political, sociological, and technical implications vary from one country to another.

The developed nations have, to various degrees, the resources to experiment, research, develop, and implement socio-economic data bases. They have progressed substantially in building the technology, developing the resources, and constructing some socio-economic data bases.

The developing nations are totally dependent on the developed nations for the technology, and to various degrees with respect to the resources. They are in great need of socio-economic data and information to improve their planning and decision making, but they cannot afford the luxury of experimentation and extensive research. They deploy the resources available to them for development, but much of it is wasted because of their limited technical ability and the small number of trained personnel.

The above indicates that the problems and implications of EDB development in developing countries are far more acute than those of the developed ones, and require a great deal of attention.

Consequently, it was decided to perform the field survey in a developing nation.

Although there are some characteristic differences between developing countries, a great deal of similarity exists. For example: their resources are mostly unexploited, the development of manpower and training facilities are lacking especially in the technical areas, they rely heavily on trade, and depend in many instances on developed nations for technology and resources. Their socio-political structures are generally non-westernised and non-democratic to various degrees with apparent or hidden political instability. There are also strong ties within the tribal and family groups which influence the running of governments and industry.

Many developing nations are attempting the development of socio-economic data banks. Several are mainly concerned with the information which is nationally produced in the field of socio-economic development. For examples: in Brazil, the IPEA (The Instituto do Planejamento Economico e Social) "is organising a reference center that will attempt to establish bibliographic control over all unpublished Brazilian economic literature and data" (249), in Morocco there has been "... a concerted effort (made) to control all literature generated within its borders. The Centre National de Documentation now has access to almost all material of economic and social significance that is produced in the country. But the Center has not yet found a way of making available to Moroccan users, information about Morocco that is published or printed elsewhere" (12), in India there are "... many important initiatives

in respect of the national socio-economic development information. Perhaps one of the more significant is that carried out at the Documentation Research and Training Center of the Indian Statistical Institute ..." (249), and in Jamaica "... the Library of the Institute of Social and Economic Research (ISER), University of the West Indies (Mona) has maintained a documentation service for the benefit of researchers and government officials. Recently the Institute has proposed to expand this service, particularly for the benefit of decision-makers, and to create a 'Development-Output Evaluation and Research Service' (DORES) - primarily to synthesise the wide array of national documents, reports, surveys, speeches; to classify, analyse and interpret these materials; and to disseminate information in a variety of forms" (249).

The developing nation which was selected for the field survey is Jordan. The Jordanian Government has exerted a great deal of effort in socio-economic planning since 1962. Several attempts have been made in recent years in the area of EDB development. This is highlighted in Chapter III, Section 2.5 on Jordan and EDB Development Status.

Jordan has most of the characteristics associated with developing nations. It also has several additional problems such as the massive number of refugees, the war status with Israel, the occupation of the West Bank by Israel, and the political situation and balance of power with its Arab neighbours and in the region. These problems are discussed in Chapter III in detail.

The selection of Jordan as the developing nation for performing the field survey is primarily due to the origin and location of employment of the researcher. The information required can thus be better gathered there from the knowledgeable officials of the Jordanian Government and its associated agencies and corporations, businessmen in the private sector, researchers, and scholars. This information is vital to the field survey and its success.

SUMMARY

This chapter provides the theoretical framework for the empirical phase of this study.

The chapter covers: the evolution of MIS's; the basic conditions and elements which led to the development of DBMS's software; the evolution of DBMS's, and its managerial and organisational requirements and implications; some aspects of EDB's development; the basic functions of an EDB; EDB's management and organisational requirements and implications; the selection of location for the field study.

In this chapter, the objectives of this research are also translated into meaningful issues for the field survey. These issues serve as the bases for the investigation and study of the managerial and organisational requirements and implications of developing an EDB.

CHAPTER III
JORDAN AND EDB DEVELOPMENT

CHAPTER III

JORDAN AND EDB DEVELOPMENT

INTRODUCTION

The purpose of this chapter is to provide pertinent information, in a synopsis form, about the Hashemite Kingdom of Jordan and its EDB development.

In the objectives of this research, which appeared in Chapter I, it was stated that this study is to be performed with a particular emphasis on the requirements of, and in relation to, a developing nation. Consequently, the Hashemite Kingdom of Jordan was selected for this study.

Jordan is a progressive developing nation, determined to face the challenges it encountered since becoming a Kingdom. It continues to devote great efforts to economic and social planning and development.

This chapter is sectioned in order to acquaint the reader with Jordan from various perspectives. These sections are:

1. Jordan: A Historical Synopsis
2. Jordan: A Sociological Synopsis
3. Jordan: A Political Synopsis
4. Jordan: An Economic and Economic Planning Synopsis
5. Jordan and EDB Development Status

A summary is provided at the end of this chapter.

3.1. Jordan: A Historical Synopsis*

Jordan comprises the former state of Transjordan, and the remaining part of Palestine after the establishment of Israel, with the exception of the Gaza Strip. These two territories are separated by the Jordan River and the Rift Valley. This is the reason for their popular names of the "East Bank" and "West Bank" of Jordan.

Geographically, it is surrounded by Syria in the north, Iraq in the northeast, Saudi Arabia in the south and the southeast, and Israel in the west. A map of Jordan is provided in Appendix A.

"Jordan is an ancient country, possibly the oldest in the world. There is evidence for example, of man's existence in Jordan 200,000 years ago in the desert oasis at Azraq. Since it pre-dates the recorded history of man, the importance to man's existence of this sole body of water within thousands of square miles of desert can never perhaps be known, but it must have been a life-giving oasis to Paleolithic man. If Jordan was indeed the cradle of mankind, it may also well have been the cradle of civilisation. In the Jordan Valley more than 10,000 years ago, many archaeologists believe, man gave up his endless roving as a hunter and settled down in his first community ... The excavated city of Jericho, on the West Bank, supports this belief. By 7000 B.C. the earliest level to have been excavated, man was leading a complete communal life." (806).

Several wars and invasions shaped and re-shaped the political destiny of the area for the past 3000 years. The boundaries of the various

*A significant part of the information was obtained from the Hashemite Kingdom of Jordan, Ministry of Culture and Information booklets.

tribal or political entities of natural Syria, which included Jordan, Palestine, and Syria, continued to change with each war or invasion. The area was occupied by the Assyrians, Babylonians, Persians, Greeks, and Romans. The Roman occupation started about 40 B.C. and a state of stability was established until the fourth century, when the area became a Byzantine province. The whole area came under Moslem rule when the Byzantines were defeated at the Yarmuk battle in 636 A.D.

The Islamic Empire changed hands several times. There were the Caliphs, Omayyads, Abbassides, Ayyubites, Mamelukes, and Turks. In between, there were the Crusaders who ruled from 1099 to 1187. All these changes occurred from 636 A.D. to 1516 A.D., when the Ottoman Turks occupied Syria.

In 1914 the Turks entered the First World War against the Allies. Although the Moslem sentiment was high among the Arabs, many of their leaders became disenchanted with Turks entering the war. This brought about retaliation from the Turks which left the Arabs with no choice but to revolt.

The revolt was carried out by Sherif Hussein of Mecca in 1916 after a political agreement was reached with the British. This agreement included promises and pledges for the unity and independence of all the Arabs in Asia, excluding Aden.

The war in Syria was virtually ended when the army of Amir Faisal (one of the sons of Sherif Hussein) entered Damascus in 1918. Later that year, Amir Faisal headed the Arab delegation to the Paris Peace Conference. The Amir held political discussions with the Allies for

the fulfillment of the pledges and promises made by the British to Sherif Hussein. The Allies insisted on their colonial claims in the region. They later held the San Remo Conference in 1920, which was also attended by Italy and Japan, and decided to place Transjordan, Palestine, and Iraq under British mandate, and Syria and Lebanon under French mandate.

Transjordan remained without a central government until 1921, when an agreement was reached between Amir Abdullah (one of the sons of Sherif Hussein) and the British. The new central government faced several difficulties and uprisings. The sheikhs in the area resented its authority, and wanted to maintain their autonomous status. It was not until 1925 when Transjordan was settled with the geographical boundaries being, what is now known as, the East Bank. This was followed by a period of stability in the area.

In 1946, a new treaty was signed with the British. The treaty was ratified, and the Jordanian Cabinet and Legislative Assembly amended the law. The Emirate of Transjordan became a sovereign independent state known as the Hashemite Kingdom of Jordan. King Abdullah was proclaimed a constitutional monarch with all the executive and legislative powers vested in the King and his heirs.

In 1947, the General Assembly of the United Nations voted for the partition of Palestine into an Arab and Jewish state, with international administration over Jerusalem. This was followed by a British declaration that it would withdraw its forces from Palestine on May 15th 1948.

The resolution of the United Nations for the establishment of a Jewish state was opposed by the Arabs. Consequently, when the British mandate ended, the Palestine War started. The Arabs were weak and divided, and their armies were no match to that of the Israelis. The war ended with Israel occupying most of Palestine. The area defended by the Jordan Army, which is now known as the West Bank, was unified with Jordan, and King Abdullah was acknowledged as the sovereign ruler of both Banks.

A period of instability followed. King Abdullah was assassinated in 1951, and Crown Prince Talal was proclaimed as a constitutional monarch. The poor health of King Talal caused his relief from duties, and Crown Prince Hussein was proclaimed as a constitutional monarch in 1952. A Regency Council ruled the country until King Hussein attained the age of 18 in 1953, and formally acceded to the throne.

King Hussein was faced with a multitude of problems: the state of war with Israel, the Palestinian refugees, and the neighbouring Arab countries closing their borders with Jordan, severing all communications, are some examples. These problems hindered the economic and social progress in Jordan. The 1967 Arab-Israeli war dealt a devastating blow to any progress made. The war ended with the Israeli occupation of the West Bank, wrecking the economy of Jordan as well as its national morale.

The problems of Jordan reached the apex when it plunged into a civil war with the Palestinian commando movement in September 1970. This war ended with the defeat of the commando movement in Jordan and the

emergence of a new era.

Jordan was not directly involved in the 1973 Arab-Israeli war and, therefore, it was not affected substantially by it.

In spite of all the problems and difficulties which plagued Jordan, it continued to progress with unwavering determination.

3.2. Jordan: A Sociological Synopsis*

The only census of the population of Jordan was conducted in 1961.

The census indicated that the population was approximately 1.7 million with a slight excess of males over females. It also revealed that about 52% of the total population is eighteen years of age or under, and the labour force constituted only 23% of the total population. It further revealed that about 44% of the population lived in fully urban areas, over 50% in mainly rural areas, and approximately 6% in scattered tents (Bedouins).

Jordan's population has been growing fairly rapidly in the last two decades. It increased from about 1.2 million in 1950 to over 2.3 million in 1970, and approximately 2.9 million in 1977. Although no exact rate of growth is available, the high fertility rates derived from the census data, and an adjustment of the incomplete vital statistics, particularly of deaths, indicate that the rate is about

*Statistical figures were obtained mainly from: The Hashemite Kingdom of Jordan, Department of Statistics - Statistical Yearbooks, and the Ministry of Culture and Information booklets.

3.2% per annum. This is the result of a high fertility rate of 6.8 children per woman, a birth rate of about 4.8%, and a death rate of approximately 1.6%.

In 1971, it was estimated that about 60% of the population in Jordan lived in fully urban areas, 37% in rural areas, and 3% in scattered tents. The urban population has been increasing continually during recent years, particularly in the greater Amman area (the capital of Jordan).

The population of the East Bank was estimated at 2.1 million in 1977, and the West Bank at 0.8 million. The total registered refugee population in both Banks was approximately 0.9 million in 1973, as shown in the official figures of the United Nations Relief and Works Agency (UNRWA). The population living in refugee camps is estimated at 0.3 million, most of which are in the East Bank.

The geographical and historical factors of Jordan play an important role in the distribution of the population. Rainfall and the pattern of cultivation have a great deal of influence on this distribution. In recent years, the sudden influx of more than half a million Palestinian refugees has contributed substantially to this influence. The internal migration in Jordan has been determined mainly by the movement of the refugees.

The distribution of population in the desert areas in Jordan is based mainly on the availability of a sufficient water supply.

The cultivation of the Jordan Valley, where new farms were established and irrigation projects were implemented, also contributed to the changes in the pattern of population distribution.

Jordan is situated off the south eastern shores of the Mediterranean sea, between longitudes 34° and 39° East, and latitudes 29° and 33° North, and extends eastward to the Arabian desert. It is located in a semi-arid zone of the Middle East, and covers an area of 96,600 sq.kms., of which 90,000 sq.kms. are on the East Bank, and 6,600 sq.kms. on the West Bank. The population density is about 103 people per sq.km. in the settled areas of the East Bank, and 115 people per sq.km. in the West Bank. The cultivated area in Jordan is estimated at 13,000 sq.kms., which gives a population density of about 223 people per sq.km. of cultivated land in Jordan.

The population growth in Jordan has dramatically increased in recent years. The increase was due mainly to the unification of the East and West Banks, as well as the influx of Palestinian refugees. Consequently, the population increased by more than 1.5 million within a single year. In 1948, the population of Transjordan was approximately 0.5 million. The total population directly after the unification was approximately 1.4 million, of which 450,000 are refugees. The population of the Jordanian capital in 1947 was about 30,000. Now, the greater Amman area has over a million inhabitants.

During the Ottoman rule a few settlements of Circassians, Chechans, and Turkomans were established in the northern regions of Jordan. The people are of the Moslem faith, bi-lingual, and cause no minority problems.

The vast majority of the population of Jordan is of the Moslem faith. The Christians are estimated at less than 10%.

The number of schools in the East Bank totalled 2,231 in 1975, of which 840 (38%) for males, 758 (34%) for females, and 633 (28%) coeducational. There were 1,750 (79%) government schools, 298 (13%) private schools, and 183 (8%) UNRWA schools. Currently, there are two universities in the East Bank: the University of Jordan which was founded in 1962, and the Yarmouk University which was founded in 1976.

The number of students in the East Bank during 1975 was 539,790, of which 301,870 (56%) were males, and 237,920 (44%) were females. The estimated number of students of higher education, who were studying outside the East Bank in 1975, was 39,913, of which 34,166 (86%) were males, and 5,747 (14%) were females. This indicates that over 21% of the population was attending school that year, in the East Bank or abroad.

The number of teachers in the East Bank in 1975 was 18,054, of which 9,722 (54%) were males, and 8,332 (46%) were females. This indicates that the number of students per teacher in the East Bank were about 30 to 1. The staff of the University of Jordan in 1975 was about 281. The number of students was approximately 5,500, which constitutes about 11% of the total East Bank students attending universities during that year. The number of students per teacher was about 20.

There were 30 hospitals in the East Bank in 1975, of which 12 (40%)

were government owned, 11 (37%) privately owned, and 7 (23%) foreign privately owned hospitals. Physicians numbered 744, dentists 145, pharmacists 285, mid-wives 167, professional nurses 331, and bacteriologists 38. There were 83,466 patients admitted into hospitals, 431,800 outpatients, 20,935 deliveries, and 29,650 surgical operations performed.

In 1975, the registered birth rate in the East Bank was about 4%, and the registered death rate was about 0.3%. Deaths at the age of one or less were 29% of the total, and the age of 60 or more were 39% of the total. The casualties due to motor vehicles were 3,855, of which 253 (7%) were deaths, and 3,602 (93%) were injuries.

The registered vehicles in the East Bank in 1975 were 47,243. There were 21,306 (45%) privately owned cars, 7,258 (15%) taxis, 706 (2%) buses, 8,378 (18%) trucks, 2,923 (6%) tractors, 1,887 (4%) motor cycles, and 4,573 (10%) official cars (e.g. government, diplomatic core etc.). The number of people per car (private, taxi, government, etc.) was approximately 59.

In 1975, there were 14,137 marriages and 2,345 divorces in the East Bank. The rate of marriages to divorces is about 7 to 1.

3.3. Jordan: A Political Synopsis*

Jordan is a constitutional monarchy. King Abdullah, the grandfather of the present Monarch, King Hussein, was the founder of the Hashemite dynasty in Jordan.

*A significant part of the information was obtained from the Hashemite Kingdom of Jordan, Ministry of Culture and Information booklets.

Executive authority resides in the Monarch. The Monarchy is hereditary, and the crown is passed by the King to his eldest son. The King may choose to nominate one of his brothers as heir apparent. Prince Hassan, the brother of King Hussein, was proclaimed Crown Prince of the Hashemite Kingdom of Jordan in 1965.

The King attains majority at the age of eighteen. If the heir apparent accedes to the throne before he is eighteen, a Regent or a Regency Council exercises power on his behalf until he comes of age. The King takes the constitutional oath before Parliament upon accession to the throne. He is the Head of the State and, therefore, immune from all liability and responsibility. The King receives foreign envoys, confers honours and medals for meritorious service, and grants special pardons and remits sentences. On the recommendation of the Prime Minister or Cabinet, he appoints all senior government civil servants and high officials.

The King ratifies and issues laws and regulations. He is the Supreme Commander of the armed forces, declares war, concludes peace, and signs treaties. He appoints the President and Members of the Senate (the upper House of Parliament), and orders the holding of elections for the House of Representatives (the lower House of Parliament), or its dissolution.

The King appoints the Prime Minister. On the recommendations of the Prime Minister, he appoints the Ministers.

The Parliament of Jordan is the National Assembly. It is composed

of two Houses: The Senate and the House of Representatives. The supreme legislative authority in the Kingdom is vested in the King, and the two Houses.

The Senate has thirty Members, where the House of Representatives has sixty Deputies. The minimum age for the Senate is forty years, and for the House is thirty years. The House of Representatives is empowered to pass a vote of confidence, or no confidence, in a government. The chief officer of the Senate is the President, and of the House is the Speaker, who is elected by the Deputies at the beginning of each session. The term of each House is four years. The term of the House of Representatives can be extended by one or more years, at the discretion of the King.

The House of Representatives is suspended indefinitely at this time. This suspension is related to the Israeli occupation of the West Bank, and its future as a Palestinian state.

The Prime Minister and Ministers are collectively responsible to the House of Representatives for the initiation and direction of national policy. They attend sessions of the two Houses of Parliament to answer questions, and defend and seek approval for policies and legislation.

The Cabinet is the supreme executive body which presides over, and controls the government. This is done through Ministers, Heads of statutory organisations which are attached to the Prime Minister's Office, and local government councils.

The Office of the Prime Minister includes the following statutory organisations:

1. The Executive Office for the affairs of the Occupied Territories
2. The Natural Resource Authority
3. The Scientific Research Council
4. The Youth Organisation

The Ministries in Jordan are:

1. The Ministry of Agriculture
2. The Ministry of Communications
3. The Ministry of Culture and Information
4. The Ministry of Defence
5. The Ministry of Education
6. The Ministry of Finance
7. The Ministry of Foreign Affairs
8. The Ministry of Health
9. The Ministry of Industry and Trade
10. The Ministry of Interior
11. The Ministry of Interior for Municipal and Rural Affairs
12. The Ministry of Justice
13. The Ministry of Public Works
14. The Ministry of Reconstruction and Development
15. The Ministry of Labour
16. The Ministry of Tourism and Antiquities
17. The Ministry of Transport
18. The Ministry of WAKFS, Islamic Affairs and Shrines

The following independent organisations report directly to the Office of the Prime Minister:

1. The Agricultural Credit Corporation
2. The Audit Department
3. The Central Bank
4. The Civil Service Commission
5. The Islamic Chief Justice Department
6. The Jordan Valley Commission
7. The National Planning Council
8. The Public Corporation for Insurance

The local government organisation consists of eight governorates. Each governorate is headed by a Governor, and is subdivided into administrative regions.

The Judiciary branch is independent of the executive and legislative branches of the government. Judges are appointed by Royal Decree.

The Courts are divided into three categories: Civil, Religious, and Special Courts. The Civil Courts have jurisdiction over all persons in the Kingdom including the government. The High Court of Justice is the only court which deals with Administrative Law. It has powers to examine and rescind Ministerial and other Administration decisions. The Religious Courts include the Moslem Shari'a Courts, and the Religious Community Councils. The Moslem Shari'a Courts deal with all matters of personal law for Moslems, while the Religious Community Councils deal with similar matters for non-Moslems. The Special Courts are mainly the Military Court and the State Security Court.

The jury system is not used in Jordan. Trials are performed by one judge in the Magistrate's Court, two to three judges in the court of Cassation, and five judges in the Supreme Court of Appeal.

There is no political party system in Jordan at this time.

3.4. Jordan: An Economic and Economic Planning Synopsis*

Jordan faced a multitude of problems arising out of the Israeli occupation of the major part of Palestine in 1948. Within a few months, the population of Jordan tripled without a commensurate increase in resources. Trade and lines of communications to the Mediterranean coast had to be re-routed. Infrastructural developments had to be compressed into a shorter time span. In addition, Jordan was forced to depend on outside assistance, due to the inadequacy of its domestic revenues.

The Jordan economy was faced with: rapidly growing population, a small domestic market, limited natural and capital resources, a chronic trade deficit, dominance of agricultural activity with its heavy reliance on rainfall, and dependence on outside assistance.

The Jordanian Government recognised the importance of long range planning, and the use of available resources in such a manner as to maximise their contribution to the overall socio-economic objectives of the country.

*Statistical figures were obtained mainly from: The Hashemite Kingdom of Jordan - Department of Statistics (Statistical Yearbooks), The Ministry of Culture and Information (Booklets), Royal Scientific Society - Economics Department (Economic Development Indicators of Jordan), National Planning Council (The Seven Year Programme for Economic Development 1964-70, The Three Year Development Plan 1973-75, and the Five Year Plan 1976-80), Central Bank of Jordan (Statistical Bulletins).

The Jordan Development Board was reorganised in 1957. It became responsible for the design of national development policy, and the formulation of comprehensive development programmes. In 1962, the Five Year Programme for Economic Development 1962-67 was adopted. This programme was soon revised in order to accelerate the process of rendering the Jordan economy self-dependent. Consequently, the Seven Year Programme for Economic Development 1964-1970 was prepared, and officially adopted in late 1965.

The programme got under way with a measurable degree of success, and economic prospects for 1967 were promising. The progress was interrupted by the Arab-Israeli War of 1967.

The aftermath of the 1967 War created grave economic and social problems to Jordan. The occupation of the West Bank placed about one-third of the population of Jordan under Israeli control. Over 0.4 million persons fled their homes, and about one quarter of whom became refugees for the second time in twenty years. Subsequent events also forced thousands of people living on the eastern side of the Jordan Valley to move to the highlands in seeking protection.

The effect of the war on economic conditions was particularly severe. The occupied West Bank is an important producer of goods and services, and constitutes a vital component of domestic effective demand. It contributed approximately 45% of the gross national product in 1966. The share of the West Bank in the various sectors of the economy in 1966 was as follows: agriculture 37%, industry 19%, trade 43%, and services 55%.

The immediate effect of the war on the national economy was enormous. It was felt in all the economic sectors, particularly in agriculture, industry, tourism, spending, and investment. This is in addition to the delays encountered in the initiation of planned developmental projects, and the implementations of those which were started. These projects included the telecommunications and electrification schemes which were intended for the country as a whole, and the potash project development which was planned to start in 1967.

The Jordanian Government was faced with mounting and grave responsibilities after the war. It continued to pay the salaries of the civil servants in the West Bank, and other recurring expenditures, such as subsidies to schools and hospitals. Military preparedness had to be kept at a high level. Refugees had to be fed and sheltered, and provided with basic educational, health, and social services.

The Government received outside assistance from the oil producing Arab countries after the war. With this assistance, it took several measures to stimulate the economy. While continuing to adhere to the Seven Year Programme, it adopted an emergency economic programme, which included projects in the major economic sectors. Work on projects was accelerated, and implementation time was advanced for others. The Government encouraged the activity and investment of the private sector in Jordan.

By 1969, the economy attained a marked recovery. The gross national product was 12.4% higher than that of 1967, and 17.3% higher than that of 1968. Consumption expenditures increased from JD 205 million in 1967 to JD 229 million in 1969, or about 12%. While exports of

goods and services, and net factor income from abroad, regained their 1966 levels, imports of goods and services, increased from JD 76.6 million to JD 108.7 million, or by 42%. Incomes in all sectors of the economy surpassed their respective 1966 levels with the exception of tourism. This rapid recovery continued into 1970, but proved to be short-lived. Jordan plunged into the civil war of September 1970.

The situation was further complicated when some neighbouring Arab countries closed their borders and airspace to Jordan in 1971. This move seriously affected the export of agricultural and industrial commodities to these countries, and rock phosphate to Europe. Since the Suez Canal was closed, imports had to be re-routed around Africa. A large quantity of Jordanian imports remained idle in Lebanese and Syrian ports.

The Jordanian Government had to combat these problems, and develop a course of action to alleviate the situation. Measures were taken to rehabilitate and repair essential public services, and compensate for damaged private property. It again attempted to encourage the activity and investment of the private sector, and to restore public confidence. Consequently, the government expenditures were maintained at a high level.

There was no growth in real Gross Domestic Product (GDP) during the period 1967-1972. The 4.4% average annual growth rate realised in the GDP at current prices, was offset by a comparable rise in the general price level during the same period. Per capita GDP at current prices declined from JD 131 in 1967 to JD 101 in 1972.

The Three Year Development Plan 1973-1975 was developed in order to accelerate the recovery of the economy of Jordan from its post 1967 and 1970 difficulties. The main long-term objectives of the plan were:

1. Increase employment opportunities in order to maintain low unemployment rates, and reduce under-employment. The plan target was the creation of 70,000 new job opportunities.
2. Achieve an 8% annual growth rate of GDP with priority on production sectors such as agriculture, mining, and manufacturing.
3. Improve the distribution of economic gains among the different regions and population groups. This was to be achieved mainly through rural development programmes, and improved public housing and other social services.
4. Eliminate the heavy dependence of the Jordanian economy on outside support. This was to be achieved through the reduction of the budget and the trade deficits, and the expansion of domestic revenues and foreign exchange earnings.

The economy of Jordan grew during the Three Year Development Plan 1973-1975 period at an average rate of 5.9%. Although this was a major stride, it fell short of the planned increase of 8%. The GDP at current prices increased from JD 189 million in 1973 to JD 252 million in 1974 and to JD 290 million in 1975. This was offset by an average annual price increase of 10%.

The Gross National Product (GNP) showed a real increase averaging 7% per annum. It increased from JD 217 million in 1972 to JD 241

million in 1973, JD 319 million in 1974, and JD 368 million in 1975.

The share of the agricultural sector has fluctuated substantially, reflecting the dependence of production on weather conditions. Its share was 12.3% in 1972, 9.5% in 1973, 15.1% in 1974, and 10.3% in 1975.

The mining and industry sector continued to expand during the Plan period. Its share was 11.2% in 1972, 12.2% in 1973, 17.5% in 1974, and 15.5% in 1975. This was due mainly to the expansion of the rock phosphate mining, and associated international price increases.

The economy of Jordan is characterised by a high relative share of the services sector in GDP, and absorption of the labour force. The average share of the services sector in GDP over the plan period is over 64%. The sector employs more than 60% of the labour force.

The balance of payments showed a surplus during the Plan period, constituting 6% of GDP. This position was a definite improvement from the deficit of JD 23.1 million which was realised in 1971.

Since 1973, Jordan suffered from a serious drain of its trained manpower, particularly among technical and professional people. This was due to the high demand for trained manpower in the neighbouring oil producing Arab countries. The drain has seriously limited the ability of managing and implementing developmental projects in Jordan.

The Jordanian Government played a very significant role in the

development of the economy during the Three Year Development Plan 1973-1975. The success encountered during the Plan period was stimulating and encouraging. This prompted the development of the Five Year Plan 1976-1980.

The specific objectives of the Five Year Plan are:

1. Expansion of the productive capacity of the primary and secondary sectors of the economy. This is in order to reduce the structural imbalances, and increase the overall absorptive capacity of the economy. The share of the commodity producing sectors in GDP is planned to rise from 35% in 1975 to 44% in 1980.
2. Realisation of high growth rates in GNP in real terms. This is to be accomplished by raising per capita income levels, and narrowing the gap between income levels in Jordan and the developed countries. The target of the Plan is to increase GDP at 1975 prices by an average annual rate of 12%.
3. Promotion of an improved and more equitable distribution of national income.
4. Achievement of a high level of employment, development of manpower capabilities, and increase of productivity.
5. Substantial reduction in the trade deficit, expansion and diversification of exports, and strengthening the balance of payments components related to factor income from abroad. The trade deficit is planned to be reduced from JD 153 million in 1975 to JD 131 million in 1980.
6. Development of domestic revenues as the main source of public revenue. This is in order to cover recurring government

expenditures, and provide an increasing proportion of public capital expenditures.

7. Distribution of economic activities, public services, and ensuing gains on a more and equitable basis among the various regions of the Kingdom.

The Five Year Plan calls for the investment of JD 765 million, of which JD 383 million are to be invested by the private sector, and JD 382 million by the public sector.

The Jordanian Government is to take the following steps in order to assist in achieving the objective of the Plan:

1. Increase the productive capacity of the agricultural sector through the expansion of irrigation facilities, and increased yields in the rainfed and irrigated areas.
2. Develop and diversify the mineral sub-sector while also developing import substitutes and export oriented manufacturing industries.
3. Expand the infra-structural facilities such as water supply, transport, port facilities, power, and telecommunications. This is in order to insure the planned development in the primary and secondary sectors.
4. Increase the efficiency and absorptive capacity of the public and private sectors. This is to be accomplished through administrative reforms, and institutional and organisational improvements.
5. Promote fiscal and monetary policies which will ensure the mobilisation and more effective utilisation of financial

resources. Domestic revenues are to increase at an average annual rate of 16.5%.

6. Develop and fully utilise the human resources of the nation.

Jordan relies heavily on external capital and technical assistance in its implementation of the Five Year Plan. Nearly 45% of the total planned investments are to come from external sources in the form of grants and loans. The major contributors are expected to be the oil producing countries, USA, and Western European countries. The balance is to be channeled through international organisations.

The Jordanian Government is determined to modify the structure of the economy to become more production-oriented and less service-oriented. Consequently, this affects the capital requirements as the agricultural, and mining and industry sectors tend to be more capital extensive than the services sector. Furthermore, it necessitates additional capital resources for the development of the supporting infrastructure. It is expected that this approach will lead the economy to become less dependent on foreign aid.

The development perspective for Jordan is excellent, and will continue to be as long as a suitable climate for development exists.

3.5. Jordan and EDB Development Status

Since 1962 the Jordanian Government has progressively installed a comprehensive planning system. Efforts in the planning and development process were severely disrupted by the 1967 and 1970 wars.

The Government has since then sought to restore the process and strengthen the planning system. This was reflected in the development of the Three Year Development Plan 1973-1975, and the Five Year Plan 1976-1980. The planners realised the insufficiency of socio-economic data in the initial planning stage. They recognised the detrimental effect of this on their planning and decision making process.

Furthermore, it became apparent that a follow-up on the planned projects during their development and implementation stages was required. This follow-up required data collection and analysis on each project from its inception to its completion and post audit. In recognition of these problems, a project follow-up department and an EDB were established at Royal Scientific Society (RSS) in 1972.

RSS is an independent, non-profit, Jordanian organisation which was initiated in 1970 by Royal Charter. Its primary mission is to conduct research and studies, and to provide scientific, technological, and administrative consultations. It is governed by a board of trustees, the president of which is His Royal Highness Crown Prince Hassan. The Prince is extremely active, and heavily involved, in the economic planning in Jordan.

RSS was selected as a home for the EDB due to the high level support it received from Crown Prince Hassan, and its ability to attract highly qualified personnel from prestige, financial, and environmental viewpoints. In addition, RSS had a computer facility, when only two other computers were available at that time in Jordan as a whole. Now it has an NCR-Century 251 computer with 256 thousand bytes of memory. The Cincom TOTAL Data Base Management System is one of its software packages.

The objectives of the EDB were:

1. Measuring socio-economic planning achievements at the national level.
2. Collecting socio-economic data which are related to the economic activity.

These objectives were to be achieved through:

1. Collecting socio-economic data which are related, in specific, to the economic activity in Jordan and, in general, to the neighbouring countries. These data were to be collected, at the micro level, from national and international sources, in the form of time series. The collected data were to be arranged in a number of forms in order to simplify its use and retrieval.
2. Organising the data collected in a variety of useful structures, which relate between the socio-economic indicators. These structures were to be used in measuring the socio-economic planning achievements in Jordan.
3. Applying the appropriate statistical tools for the purpose of analysis and inference.
4. Evaluating the available socio-economic data in Jordan as to its reliability and accuracy. This evaluation was to cover the methodology used in data collection and its effectiveness. Recommendations were to be made regarding the development of the statistical activity, and modern management techniques.
5. Publishing periodic documentary reports for the use of decision makers, planners, researchers, and scholars. These reports were to be developed with the objective of unifying the statistical

sources and distribution.

6. Publishing periodic reports on the socio-economic development in Jordan.
7. Surveying the statistical shortages in Jordan. Findings and recommendations were to be submitted to the proper authorities for action. A follow-up was to be performed in order to insure their compliance.

The coverage of the EDB was to include time series of socio-economic data in:

1. National Accounts Indicators
2. Economic Production Indicators (agriculture, industry, construction, electricity, transportation, etc.)
3. Financial Indicators
4. Monetary Indicators
5. External Indicators (Foreign Trade, Balance of Payments, Tourism Income, etc.)
6. Sociological Indicators which are directly related to the economic activity.

The EDB faced several serious problems. The needed socio-economic data and information were either unavailable, unstructured, inaccurate, and/or untimely. Similar types of data existed in several distinct locations, with its classification and organisation being different in each location. Many organisations either refused or delayed the supply of necessary data and information. Their refusal was due mainly to the nature of the legal authority, and recognition aspects of RSS and the EDB. The delay in supplying the data was due mainly

to competition and conflict of interest between some organisations and the EDB. Each would rather be first in publishing the data. This situation was aggravated further by the inadequacy of the EDB staff to cope with these problems. The staff was inexperienced, the qualified manpower in extremely short supply, and a formal and on-the-job training unavailable. These problems contributed to the dilution of the EDB function.

RSS went through periods of change and instability. Its administration changed hands seven times in six years. The head of the EDB became the Director of the Economics Department in 1974. This prompted the administration to include the EDB as a section of the Economics Department.

The Economics Department also had several administrations within a short period of time. The EDB function is currently limited to the annual production of the Economic Development Indicators of Jordan. Their function is performed manually in its entirety. Several attempts were made to revitalise and strengthen the EDB. The planners included in the Five Year Plan a Population Data Bank project to be developed at RSS, and allocated JD 720 thousand for its development. This project aimed at the provision of an up-to-date socio-economic data and information on the Jordanian population and its activities. It was recognised that this project demanded close collaboration and cooperation, between RSS and several ministries, department and agencies, who were involved in the collection of primary data, or possessed it by virtue of their functions. Those involved, as indicated in the Plan, included the Department of Statistics, the

Civil Status Department, the Ministry of Education, the Ministry of Health, the Department of Land and Survey, and the Passport Department. To date, nothing has been done by the EDB at RSS in this regard. The inability of the EDB to function properly at RSS caused the planners and decision makers to seriously discuss its transfer to other locations. Among those considered was the National Planning Council. These discussions and plans were soon dropped due to political and administrative technicalities and problems. Since then, the direction appears to be toward the decentralisation of the EDB functions. For examples, the Amman Urban Region Planning group was recently established. Its major objective is to develop an EDB for the Amman urban region, which is to be used in the planning for the region. The Ministry of Labour is seriously considering the development of a Manpower Data Bank. Consequently, the plight and predicament of the EDB situation goes on.

The above discussion further emphasises the need to research and analyse the EDB development in Jordan, in light of the issues which were developed in the theoretical phase of this study. The need for an EDB, and its immediacy and benefits, should be confirmed. The organisational and legislative requirements should be decided. The initial developmental objectives and scope should be defined. The manpower and training requirements should be determined. The sociological, political and technical implications should be resolved. This is in order to forge ahead in the EDB development on solid basis, and ensure its success.

SUMMARY

This chapter presents pertinent information about the Hashemite Kingdom of Jordan and its EDB development, in a synopsis form. Jordan, as a developing nation, was selected for this study.

The information is provided in five sections, in order to acquaint the reader with Jordan from various perspectives.

The first section provides a historical synopsis about Jordan and its surrounding area, from the early days of the Paleolithic man to the present. It covers the evolution of the country from the colonialism era to independence, and its plight as a consequence of its wars with Israel.

The second section provides a sociological synopsis about Jordan. It covers pertinent statistical data and information, which are associated with the sociological aspects of the country and its fast growing population. In addition, it presents the vast problems of the Palestinian refugees and their sociological impact on the nation.

The third section provides a political synopsis about Jordan. It covers pertinent information regarding the role and functions of the King, and the executive, legislative, and judicial branches of the Government. It also provides a list of the Ministries, and statutory and independent organisations who are associated with the Government.

The fourth section provides an economic, and economic planning synopsis about Jordan. It covers pertinent statistical data and information

associated with the economy of the country. It focuses on the socio-economic planning in Jordan as reflected in the Seven Year Plan for Economic Development 1964-1970, the Three Year Development Plan 1973-1975, and the Five Year Plan 1976-1980. In addition, the severe impact of the wars with Israel on its socio-economic planning and development is covered in this section.

The fifth section provides pertinent information regarding the EDB development status in Jordan. It covers the evolution of the EDB at RSS, from its inception in 1972 to the present. Its objectives and scope are discussed. It also presents the serious problems facing the EDB development and the need for research and analysis, based on the issues which were developed in the theoretical phase of this study.

CHAPTER IV

FIELD SURVEY: EDB MANAGEMENT IN JORDAN

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FIELD SURVEY: EDB MANAGEMENT IN JORDAN

INTRODUCTION

A theoretical framework has been established for the empirical phase of this study. This framework is utilised in evaluating the management elements, and implications associated with developing an EDB in a developing nation.

The purpose of this chapter is to discuss the instruments used in the field survey. This chapter is sectioned for this discussion as follows:

1. Field Survey Planning
2. Interviews
3. Questionnaire

The Field Survey Planning section covers the selection of the tools to be utilised in gathering the required information. This is in light of the issues which were developed in the theoretical phase of this study.

The Interviews section covers the following sub-sections:

1. Personal Interviewing as a Field Survey Tool
2. Development of the Topics of Discussion
3. Testing of the Interviewing Procedure
4. Implementation of the Interviews

The Questionnaire section covers the following sub-sections:

1. Questionnaire as a Field Survey Tool
2. Development of the Questionnaire
3. Testing of the Questionnaire
4. Implementation of the Questionnaire

The chapter ends with a summary of the field survey for the EDB management in a developing nation - Jordan.

4.1. Field Survey Planning

The purpose of the field survey is to obtain information regarding the issues and implications of developing an EDB in a developing nation. This information is to be gathered from those who are knowledgeable in the subject area in a developing nation, and utilised to evaluate the issues which were developed in the theoretical portion of this study. These issues appear in Chapter II, Section 2.3.

There are several methods of collecting data and information for a research study. These methods "... can be classified in many ways...

The following grouping is convenient:

- a. Documentary sources
- b. Observation
- c. Mail questionnaire
- d. Interviewing" (561)

These methods can be used individually or in combination. The first method was used throughout the research. The second is not appropriate at this stage of research. The third and fourth are used in the field survey, and are discussed in the sections which follow.

4.2. Interviews

4.2.1. Personal Interviewing as a Field Survey Tool

Moser and Kalton, in their book "Survey Methods in Social Investigation" stated that in collecting information in social surveys "... interviewing is without doubt generally the most appropriate procedure, even though it introduces various sources of error and bias." (561)

The most important elements for successful interviewing are the accessibility of the required information to the interviewee, his understanding of what is required, and his motivation to answer questions accurately. Interviewing can be performed in a variety of ways and under several distinguishing terms which are in use, such as: structured, unstructured, standardised, unstandardised, formal, informal, controlled, uncontrolled, extensive, and intensive to mention a few. There are advantages and disadvantages to each of the various approaches to interviewing. For an example, structured interviews make the information obtained comparable from case to case, are generally more reliable and minimise errors of question wording. On the other hand, unstructured interviews permit standardisation of meanings instead of the more superficial

aspects of the stimulus situation, they encourage more spontaneous replies which contribute to validity, and provide a great deal of flexibility.

Structured and unstructured interviewing do not have to be mutually exclusive however. There is a middle ground where unstructured interviewing can be performed so that the basic topics can be used by the researcher as guidelines and be covered with all interviewees in various sequences and depths.

Based on the above discussion, unstructured personal interviews using a set of topics of discussion as guidelines were to be held with approximately 20 key officials, at the policy making and planning level, from both the public and private sectors of Jordan.

4.2.2. Development of the Topics of Discussion

Seven topics of discussion were formulated in order to be used as guidelines in the personal interviews. As was stated above, the interviews were to be unstructured, and the topics were only to be used by the interviewer in order to assist the interviewees in focusing on matters related to the field survey issues. These topics were not to be provided in a written form or sequence. They were to be brought up during the interviews as required, and if a particular area of interest was not brought up by the interviewee. The topics were directly related to the field survey issues listed in Chapter II, Section 2.3.

The first topic is directly related to the first issue, which covers the need for an EDB in Jordan, and its immediacy and benefits.

Under this topic, the need of the individual, as well as Jordan as a whole, for an EDB is discussed. Reflections are sought on the reasons of this need in real application terms and the benefits which can be derived by the individual interviewee and for the nation. In addition, the time frame for starting the development of the EDB in Jordan is discussed.

The second and the third topics are directly related to the second issue, which covers the organisational and legislative requirements for an EDB in Jordan. The organisational location of an EDB is discussed under the second topic. Reflections are sought from the interviewees regarding their views of the best physical location for the EDB. The pros and cons of having the EDB in that location, as well as alternative locations, are discussed. The need for new laws enactment, code of ethics, and policies and procedures for an EDB in Jordan is discussed under the third topic. Reflections are sought from the interviewees regarding the current status in these areas of interest and the needed additions and modifications. In addition, specific organisational and legislative requirements which are associated with the EDB and its development, are discussed.

The fourth topic is directly related to the third issue, which covers the initial developmental objectives and scope of an EDB in Jordan. The economic sectors priority in developing an EDB is discussed. Reflections are sought from the interviewees regarding

their views on the content and coverage of an EDB in Jordan. Other developmental requirements which are associated with the EDB, are also discussed.

The fifth topic is directly related to the fourth issue, which covers the manpower requirements for the development of an EDB in Jordan. The manpower, and its current availability and adequacy for developing an EDB in Jordan, is discussed under this topic. Reflections are sought from the interviewees regarding their views, suggestions and recommendations in the manpower area.

The sixth topic is directly related to the fifth issue, which covers the training requirements for the development of an EDB in Jordan. The national training facilities, and their current availability and adequacy to train the personnel required for the development of an EDB in Jordan, is discussed under this topic. Reflections are sought from the interviewees regarding their views, suggestions and recommendations in the training area.

The seventh topic is directly related to the sixth issue, which covers the sociological and political implications in developing an EDB in Jordan. The sociological and political implications and their dominant roles in the developmental activities of an EDB in Jordan is discussed under this topic. Reflections are sought from the interviewees regarding the impact of the EDB and its development from a sociological and political viewpoint.

Any other topics, which the interviewees felt important to discuss,

were to be pursued within the interviewing time limitations. The above topics were to serve as a guide, and not to be limiting with respect to coverage or sequence.

4.2.3. Testing of the Interviewing Procedure

Several interviews were performed with close friends and associates in order to test the interviewing procedure. In addition, the first few interviews were held with individuals who were former colleagues. These interviews were beneficial, and valuable experience was gained from them. The interviews in this test offered helpful suggestions which were taken into consideration in the remaining interviews.

Improvements were also made, as more experience and insight were gained in the process of further interviewing.

4.2.4. Implementation of the Interviews

In paving the way for the interviews, some arrangements and preparations had to be made. A letter was prepared and sent to His Royal Highness Crown Prince Hassan Bin Talal from Professor G. Gregory, Department of Management Studies, Loughborough University of Technology. The letter explained the objectives of the research being performed and the field survey requirements. A request was made for the granting of an interview with His Royal Highness. In addition, the assignment of someone who could assist in the arrangement of interviews with key officials in Jordan was also

requested. His Royal Highness assigned the Director of the Economics Department, Royal Scientific Society, to respond and assist in this effort. The correspondence is provided in Appendix E.

Personal contacts were also made with former colleagues, who are in key positions, to assist in the selection of interviewees, and arrange for interviews.

An audience was arranged with His Royal Highness Crown Prince Hassan. The Prince expressed great interest in the research and was extremely encouraging. In addition, His Royal Highness provided invaluable guidance and direction on the research and the field survey.

A list of interviewees was made with the assistance of the Director of the Economics Department, Royal Scientific Society, and other colleagues and friends in the public and private sectors of Jordan. Certain additions and modifications were made based on suggestions offered by some of those interviewed.

It was planned to interview twenty key Jordanian officials in the field survey. This number was increased substantially due to problems with the questionnaire and its use in a developing nation. (These are covered in the next section).

The personal interviewing method was successful in gathering the required information in Jordan. Thirty-nine interviews were held with top level officials in the public and private sectors of

Jordan. A list of the interviewees is provided in Appendix G.

The procedure generally followed in these interviews was to seek an appointment which was convenient to the interviewee. Since the working hours of the public sector was mostly from 8 a.m. to 2 p.m., Saturday to Thursday, the interviews were limited to two per day as possible. The first appointment was to commence between 9 a.m. and 10 a.m. in order to avoid critical start-up tasks of the interviewees. The second appointment was to commence between 11 a.m. and 12 noon in order to provide sufficient time for the first interview and its documentation, as well as for travel time. The appointments with the key officials in the private sector were made mostly in the afternoons, since their working hours extend normally to 5 p.m. or later.

During the interviews, and after the formalities, the research objective and scope were explained to the interviewee. The first topic was then discussed. It was left to the interviewee to proceed in any direction relevant to the subject matter. The remaining topics were either covered by the interviewee in the course of the interview, or raised by the interviewer as required.

The documentation of the interviews was through notes. Mechanical devices were not used in the interviews because it was doubtful that the interviewees, who are in responsible positions, would accept this approach. Even if they did, the quality of response would be questionable.

Rough notes were taken during the interviews. These notes were documented directly at the conclusion of the interview. If for some reason time did not permit, the documentation was done at the end of the working day.

In general, the interviews covered the administrative, sociological, and political issues associated with the development of an EDB in Jordan. The interviews varied in length from a half hour to two hours depending on the time availability of the interviewees. The depth and coverage of topics also varied accordingly. In some instances, the depth to which it was possible to cover the topics was necessarily reduced because of the lack of time, whereas in other cases it was possible to probe deeply into issues, and in these cases great growth of understanding was possible.

It took approximately one and a half months to perform the interviews portion of the field survey.

4.3. Questionnaire

4.3.1. Questionnaire as a Field Survey Tool

The use of the questionnaire as an information gathering tool is generally cheaper than personal interviews, and can reach more people. Its use has several additional advantages such as: it largely eliminates the problems of interviewer errors, allows the time for thinking which may result in improved accuracy of response, and facilitates the answering of questions of embarrassing nature more willingly and accurately than face to face with an interviewer.

Although the questionnaire method of gathering information has some distinct advantages, it also has some problems and pitfalls. Some of its disadvantages are: the questions have to be sufficiently simple and straightforward in order to be understood with limited assistance from printed instructions; the responses to the questions provided by the respondents have to be considered final for all practical purposes; the respondents can review all questions prior to answering any of them; can omit questions or not respond if they so choose contributing to loss of information; may have more difficulty writing their responses to questions than to speak them; and may be faced with questions which are not applicable to them. In addition, its use does not facilitate probing in general.

Although the success of the use of a questionnaire in a developing nation, and particularly in an unexplored and sensitive area, was questionable, it was decided to try it out.

A simple and straightforward questionnaire was to be designed and distributed in a stratified manner by category of respondents. This is in order to obtain cross sectional views and perspectives on the subject. The categories (strata) are: Policy Maker, Manager, Staff, Consultant/Adviser/Planner, Educator/Researcher, Businessman (private sector). A quota sample of about 30 people was to be obtained from each category. These people were to have a reasonable level of awareness in the subject matter. They are few in number, and a sample of 180 people constitutes a large portion of the total in Jordan.

There are several means of contacting prospective respondents in using the questionnaire as a survey tool. Initially it was decided to use the mail as the major avenue to reach the selected respondents. This was found to be largely ineffective in Jordan and was dropped in favour of a method of direct personal contact which will be discussed in a later sub-section (4.3.4).

4.3.2. Development of the Questionnaire

The questionnaire instrument is provided in its entirety in Appendix B. It includes the following:

1. Introduction
2. Name and Address of Respondents
3. Twelve questions
4. Arabic version of the questionnaire

The introduction is provided on a separate page, and covers the dissertation title, an opening paragraph, and a mailing address. The opening paragraph is designed to set the framework of the study by explaining its purpose, coverage, and directions on the use of the Arabic version of the questionnaire. The name and address of respondents to the questionnaire is provided on a separate page with a mailing address. This is done in order to highlight the ability of disassociating the names and addresses of the respondents from their responses to the questions. This approach is used to convey indirectly to the respondents that their responses to the questionnaire would be confidential.

There are twelve questions which appear in the questionnaire.

The first question asks the duties of the respondents. This is in order to stratify the response to the questionnaire by category.

The second question, asking for the number of subordinates is included in order to obtain some indication of the spread of responsibilities between the respondents by category, and in total for all respondents.

In general, the remaining ten questions included in the questionnaire are developed for the purpose of gathering information regarding the issues of developing an EDB in Jordan. These issues are listed in Chapter II, Section 2.3. Several questions have tutorial purposes in addition to that stated above. The tutorial aspects are aimed at increasing the level of awareness of respondents in the subject area.

Each question relates directly to an issue, or to a part of an issue. The questions are discussed below in relation to the issues.

Questions numbers 3, 4, 5 and 6 are related to the first issue, which covers the need for an EDB in Jordan, and its immediacy and benefits. Question number 3 is related to the need for an EDB in Jordan. In this question, it is inquired if the individual respondent requires or gathers economic data and information in performing his duties or uses them in his decision making and planning.

Questions 4 and 5 are related to the benefits which can be derived from the availability of an EDB to the individual respondent, and

to Jordan as a whole. A list of EDB benefits is provided for checking all those applicable to each question. A space is also provided for the respondents to enter any additional benefits of their choice, which do not appear in the provided list. Question number 6 concerns the immediacy for developing an EDB in Jordan. In this question, it is inquired if the development of an EDB in Jordan should start in the long term (in more than 10 years), short term (5 - 10 years), or immediately.

Question number 10 is related to the second issue, which covers the organisational and legislative requirements for an EDB in Jordan. In this question, it is inquired who should be responsible for selecting a group of people at the national level with the responsibility of establishing and controlling policies and procedures required for the development of an EDB in Jordan. A list of alternatives is provided for the selection of one. These alternatives are: Government, Parliament, Private Sector, and Mixture of the above.

Question numbers 8 and 9 are related to the third issue, which covers the initial developmental objectives and scope of an EDB in Jordan. Question number 8 deals with the initial developmental objectives of an EDB. In this question, the selection of five economic sectors which have the highest priority in the development of an EDB in Jordan is requested. The selected sectors were to be given priorities of 1 to 5 (high to low). A list containing sixteen major economic sectors is provided for this selection. A space is also provided for the respondents to enter any additional economic sectors of

their choice, which do not appear in the list provided. Question number 9 is related to the initial scope of an EDB in Jordan. In this question it is asked how many sectors should an EDB cover initially. Two alternatives are provided, one of which is to be selected. These alternatives are: One economic sector, and More than one economic sector. A space is provided with the second alternative to indicate the number of economic sectors chosen by the respondent.

Question number 12 concerns the fourth issue, which covers the manpower requirements for the development of an EDB in Jordan. In this question, it is inquired if the currently available manpower in Jordan has adequate experience and training in certain areas of expertise to start immediately on the development of an EDB. These areas are: Policy Making, Managing, Developing, and Consulting/Advising/Planning.

Question number 11 is related to the fifth issue, which covers the training requirements for the development of an EDB in Jordan. In a similar manner to question number 12, this question inquires if the currently available national training facilities are adequate to train personnel in certain areas of expertise for the development of an EDB in Jordan: Policy Making, Managing, Developing, and Consulting/Advising/Planning.

Question number 7 deals with the sixth issue which covers the sociological and political implications of developing an EDB in Jordan. Here, it is queried if the sociological and political

implications play a dominant role in certain activities related to the development of an EDB in Jordan. A list of these activities is provided, with separate columns for response, to each of the sociological and political implications. The reason for covering both the sociological and political implications in one question is to tone down the political aspects. This was based on recommendations made by all the individuals who participated in testing the questionnaire (see Section 4.3.3. below). They felt strongly that a separate question regarding the political implication may invoke problems and cause many respondents not to answer the question, or even the questionnaire in total. Some went further to suggest that the question is best dropped from the questionnaire and to rely on the interviews results instead. They also recommend that the sociological portion of the question should be placed ahead of the political.

An Arabic version of the questionnaire was prepared. This version is a translation of the introduction, and questions appearing in the questionnaire without provision for responses in it. It was to be distributed with the English version to respondents for their convenience and better understanding. The responses to the questionnaire, however, were to be provided on the English version.

4.3.3. Testing of the Questionnaire

The English and Arabic versions of the questionnaire were tested. Three Jordanian students attending Loughborough University of Technology, and an official from Jordan who happened to be attending a seminar in the area, participated in this test. They were able to

understand and complete the questionnaire. The participants offered helpful suggestions which were taken into consideration, and adjustments were made where necessary.

A pilot test should have been performed to try out systematically all the various features of the questionnaire. This is in order to insure the suitability of the method for gathering the required information, and the adequacy of the tool and the efficiency of its instructions. These and other aspects of a pilot test should have been performed particularly in light of a developing nation and an unexplored area of research. This was not possible due to the limited resources in terms of time and funds to perform such a test.

The above situation caused the heavy reliance on the results of the personal interviews which were increased substantially in number. Consequently, the results of the questionnaire are used for support of those obtained through interviews.

4.3.4. Implementation of the Questionnaire

Initially, it was decided to mail copies of the questionnaire to the selected prospective respondents. The selection was to be performed by a group of associates and friends in the public and private sectors of Jordan. The basic selection criterion is that the prospective respondents have reasonable level of awareness in the subject matter.

The mail approach was tried out with 30 copies mailed to prospective respondents. A sufficient period of time lapsed without the receipt of one single response. It took a tedious follow-up effort of personal contacts to retrieve 17 completed questionnaires as is shown in Table 4 - 1. After looking at the problem of mailing further, it was decided that this method was most unreliable in Jordan. Consequently, this approach was dropped, and the use of personal contacts of prospective respondents was used in the questionnaire portion of the field survey.

Copies of the questionnaire were distributed through the personal contacts of the associates and friends mentioned above and based on their selection in accordance with the established criterion. The staff of the EDB section at Royal Scientific Society, and colleagues in the Jordanian Government and associated agencies and corporations and private sector, assisted in this effort. The number of participants in personal contacting of prospective respondents exceeded seventeen. A list of the major participants is provided in Appendix C.

The questionnaire, and its objectives and scope were discussed in detail with each distributor. Their efforts were coordinated and monitored to ensure the achievement of the required coverage and stratification.

In total there were 225 copies of the questionnaire distributed to selected individuals. Of the 225 copies which were distributed 212 (94%) were completed. The distribution of the questionnaire

and the completion results are shown in Table No. 4 - 1.

Table No. 4 - 1

Distribution of the Questionnaire

<u>Distribution Method</u>	<u>Distributed</u>		<u>Completed</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
Direct Personal Contact	195	87	195	100
Mail	30	13	17	57
<u>TOTAL</u>	<u>225</u>	<u>100</u>	<u>212</u>	<u>94</u>

The results of the questionnaire were tabulated. The raw tabulation by category and in total is provided in Appendix D.

SUMMARY

This chapter presents the field survey for the EDB Management in Jordan.

The contribution of this chapter is the selection of the field survey instruments to be used for gathering the required information. The instruments selected are personal interviewing and questionnaire.

The bases for selecting the personal interviewing instrument, the development of the topics to be used as guidelines with the interviewees, and the testing of the interviewing procedure and its implementation are discussed in the interviews section.

The bases for selecting the questionnaire instrument, and the development of the questionnaire and its testing and implementation are provided in the questionnaire section.

CHAPTER V

FIELD SURVEY: RESULTS AND ANALYSIS

CHAPTER V

FIELD SURVEY: RESULTS AND ANALYSIS

INTRODUCTION

The purpose of this Chapter is to present the field survey results and analysis in light of the selected issues in developing an EDB in Jordan.

The Chapter is sectioned by issue. For each issue, the results obtained from both the interviews and the questionnaire are discussed and analysed.

The raw tables of the results of the interviews and the questionnaire are provided in Appendix F. The tabulation of the questionnaire response is provided by category and in total in Appendix D.

Only the questionnaire response at the aggregate level is used in this Chapter. The response at the category level is tabulated and provided in Appendix F along with the associated statistical tests. These tests were performed, where applicable, to compare the expected and actual responses between categories and listed areas of interest. This is in order to determine whether the actual responses are significantly different between them. Other statistical techniques (e.g. ranking) are also utilised where necessary. Based on the results of these tests, conclusions are drawn and comments are made as required. Consequently, reference should be made to Appendix F for any detailed statistical treatment of the response to the questionnaire.

The massive tables and statistical work were excluded from this Chapter

and placed in Appendix F in order to avoid confusion and much repetition. The tables appearing in this Chapter are organised for analytical purposes, but the originals are in Appendix F.

In this Chapter, focus is made on the field survey results. These results, particularly those of the questionnaire, will be critically appraised later in Chapter VI, Section 6.2.

5.1. Issue Number 1: The Need for an EDB in Jordan, and its Immediacy and Benefits

The overall need for an EDB in Jordan was reflected in an overwhelming support by the interviewees (100%), and high vote by the questionnaire respondents (79%), as shown in Tables 5 - 1 and 5 - 2. The lower questionnaire response is mainly due to a significant number of the respondents who are in the social field. The title of the questionnaire, as well as its content, conveyed to many of these individuals that the EDB in question is strictly for economic purposes, and they may not have realised the relevance that an EDB could have for their work.

Table No. 5 - 1

Interviews Response - Immediate Need for an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	39	100
No	0	0
<u>TOTALS</u>	39	100

Table No. 5 - 2

Questionnaire Response - The Need for an EDB in Jordan

<u>Category</u>	<u>Positive Response</u> <u> %</u>
a. Businessman	100
b. Policy Maker	100
c. Manager	80
d. Educator/Researcher	78
e. Staff	74
f. Consultant/Adviser/Planner	57
<u>TOTAL</u>	<u>79</u>

The need for an EDB in Jordan shown by the questionnaire respondents in each of the categories of "Policy Maker" and "Businessman" was 100% (see Table No. 5 - 2). This is in line with the response of the interviewees who are mainly policy makers and businessmen.

The overall immediacy for implementing an EDB in Jordan was also reflected in overwhelming support by the interviewees (100%), and by the majority of the questionnaire respondents (63%), as shown in Tables No. 5 - 1 and 5 - 3. Again, the lower questionnaire response for the immediate development of an EDB may be due in part to those respondents in the social field who could be giving the economic area a lower developmental priority. The high questionnaire response of 33% for the EDB development in the short term, may be due in part to the feeling of some respondents that it takes several years in preparation prior to starting. Some of these preparations are implied

in the questionnaire, such as setting policies, and personnel selection and training. The questionnaire response for the EDB development in the long term (4%) was extremely low. Those responding to this time frame may have felt in part that the feasibility of developing an EDB in a developing nation in the short term is questionable.

Table No. 5 - 3

Questionnaire Response - Immediacy for the Development of
an EDB in Jordan

<u>Response</u>	<u>%</u>
a. Immediately	63
b. In the short term (5 - 10 years)	33
c. In the long term (in more than 10 years)	4
<u>TOTAL</u>	<u>100</u>

The method of gathering information regarding the EDB benefits differed for the interviewees from that for the questionnaire respondents. Several EDB benefits were listed in two questions for the questionnaire respondents to check all the benefits directly applicable to themselves in one question, and to Jordan as a whole in the other. A check mark for a benefit is considered as a positive response, and its absence as an abstention. The interviewees were not provided with a list. They stated the benefits which could be derived from an EDB in Jordan as an integral part of a topic of discussion. Virtually all the interviewees felt that the benefits

to Jordan and to themselves are directly related and similar.

The vast majority of the interviewees cited improved economic planning (82%) and decision making (82%) as the main benefits of an EDB in Jordan. Improved timeliness (54%), availability (54%), accuracy (41%) trailed far behind, as shown in Table No. 5 - 4. This could be due to the direct relationship between the improved timeliness, availability, and accuracy of economic data and information on the one hand, and improved economic planning and decision making on the other.

Table No. 5 - 4

Interviews Response - EDB Benefits as Reflected by Interviewees

(in High to Low Percentage Order of Response)

<u>Benefit</u>	<u>Response %</u>
a. Improved economic planning	82
b. Improved decision making	82
c. Improved timeliness of economic data	54
d. Improved availability of economic data	54
e. Improved measuring and monitoring the achievements of development plans	44
f. Improved accuracy of economic data	41
g. Reduced duplication and redundancy in economic data.	33
h. Improved scientific research	31
i. Improved documentation and historical data availability	18

The questionnaire results indicated that the EDB benefits to the respondents with the highest positive response were improved timeliness (70%), availability (66%), accuracy (66%), economic planning (61%), and decision making (59%), as shown in Table No. 5 - 5. On the other hand, the results indicated that the EDB benefits to Jordan as a whole, with the highest positive response, were improved economic planning (78%), availability (76%), timeliness (75%), decision making (72%), and accuracy (71%), as indicated in Table No. 5 - 6.

It appears that in the questionnaire, respondents rated the benefits to themselves and to Jordan as a whole somewhat differently. They rated the primary EDB benefits, such as timeliness, availability, and accuracy higher to themselves than to Jordan as a whole. Furthermore, they rated the derived EDB benefits, such as improved planning and decision making, higher to Jordan as a whole than to themselves. This may be due to the fact that most of the questionnaire respondents were not at the policy making level, and required the prime benefits more than those derived to improve the performance of their tasks. This is in addition to the need for improved quality of data and information which they provide to the top level planners and policy makers. Their higher rating of the derived EDB benefits to Jordan as a whole is more in line with those which were rated highly by the interviewees.

The abstention count (i.e. failure to make possible benefits) of the EDB benefits to the questionnaire respondents and to Jordan as a whole were high. The instructions provided the option to check all the benefits listed which are applicable. Although this option

was provided, it appears that the respondents have had the tendency of selecting only the most relevant ones, in order to emphasise their preferences.

Table No. 5-5

Questionnaire Response - EDB Benefits to the Individual Respondent

<u>Area of Interest</u>	<u>Positive Response</u> <u>%</u>
a. Improved timeliness of economic data	70
b. Improved availability of economic data	66
c. Improved accuracy of economic data	66
d. Improved economic planning	61
e. Improved decision making	59
f. Reduced redundancy and waste in data gathering, storage, and processing	56
g. Improved data analysis	50
h. Improved economic information retrieval	49
<u>TOTAL</u>	<u>60</u>

Table No. 5 - 6

Questionnaire Response - EDB Benefits to Jordan as a Whole

<u>Area of Interest</u>	<u>Positive Response</u> <u>%</u>
a. Improved economic planning	78
b. Improved availability of economic data	76
c. Improved timeliness of economic data	75
d. Improved decision making	72
e. Improved accuracy of economic data	71
f. Reduced redundancy and waste in data gathering, storage, and processing	66
g. Improved data analysis	65
h. Improved economic information retrieval	58
<u>TOTAL</u>	<u>70</u>

The interviewees cited additional EDB benefits to those discussed above. These benefits are: improved measuring and monitoring of the achievements of development plans, improved scientific research, and the availability of improved documentation and historical data.

The questionnaire respondents listed two additional benefits in the space provided for 'Other' Benefits. 'Improved marketing information' was listed by two respondents and 'Assist in research and feasibility studies' by another.

In general, the literature research performed in Jordan also supports

the results of the need for an EDB in Jordan, and emphasises its immediacy and benefits. This was highlighted earlier in Chapter I, section 1.2, and Chapter III, sections 3.4 and 3.5.

Several reflections were made by the interviewees which relate to the immediate need and benefits of an EDB in Jordan. These included some guidelines regarding the scope, objectives, organisation, and development of an EDB. The following are some highlights:

- a. Planning is becoming an integral part of our life. The Three Year Plan 1973 - 1975 and the Five Year Plan 1976 - 1980 for Jordan are perfect examples. Meanwhile, data and information gathering is widely spread between ministries, departments, agencies, and other governmental institutions with much duplication of effort and inconsistencies. Many estimates on which we base our plans are either invalid or substantially inaccurate. This situation is causing much waste in money and manpower.
- b. A lack of organisation and coordination exists in data collection, classification and presentation. I believe in: Organisation ahead of invention.
- c. Data is not available in a reasonably structured form and there are many doubts regarding its accuracy and integrity.
- d. Inaccurate data is misleading, and having it is much worse than not having it at all. The major cause of our poor planning and missing our planned targets is not having the right information at the right time. An EDB is as good as the data it contains.

- e. We collect and have on hand a tremendous amount of labour data, but it is not in a mechanised form. It is extremely difficult to benefit a great deal from it or even cope with it.
- f. A tremendous shortage of data and information exists for planning vocational and technical training in Jordan.
- g. Here at the University of Jordan we use American and other foreign statistical data and information to teach our students due to the lack of our own.
- h. An EDB objective should be different from that of the Department of Statistics. The Department of Statistics should be a data collection arm for an EDB.
- i. The EDB must meet both social and economic requirements and needs in Jordan.
- j. The EDB should only be concerned with the provision of socio-economic data to users in an accurate and timely manner. A service can be provided to assist the users in the analysis if so desired. The data analysis decisions should be left to the users.
- k. The EDB should be free of government and must have the encouragement of scientific research as one of its major objectives.
- l. An EDB should become available as soon as possible. Our first job is to convert the massive statistical data on hand. It is becoming impossible to cope with the volume using our current approach.

- m. The EDB should focus on the statistical data which have an immediate or short term usage and application. Data should not be available for the nicety of having it.
- n. The EDB must be presented to the public as the system of the country and as an integral part of it.

It can be seen from the foregoing analysis of the field survey results that there is a great positive response for the immediate start of developing an EDB in Jordan, and a good measure of agreement on the benefits which can be derived from it.

5.2. Issue Number 2: The Organisational and Legislative Requirements For an EDB in Jordan

The vast majority of the interviewees and the questionnaire respondents indicated a strong preference for the independency of an EDB in Jordan. The primary choices of interviewees regarding the location of an EDB in Jordan were for independent organisations (92.2%), as indicated in Table No. 5 - 7. The only exceptions are: decentralised EDB (2.6%), Department of Statistics (2.6%), and Ministry of Industry and Commerce (2.6%). The questionnaire respondents reflected their preference for an independent EDB in Jordan by electing a mixed body (75%) to select those responsible for establishing and controlling its required policies and procedures, as indicated in Table No. 5 - 8. The mixed body includes members from the Jordanian Government, Parliament, and private sector.

The responses from the questionnaire for "Parliament" (2%), and "Private Sector" (6%) were very low as indicated in Table No. 5 - 8. The reason for the low response to "Parliament" was due to the indefinite suspension of the Jordanian Parliament at the time the field survey took place. The low response to the "Private Sector" may be due to the general feeling that the private sector has neither the power nor the resources to function independent of the public sector.

Table No. 5 - 7

Interviews Response - Location of an EDB in Jordan

<u>Location</u>	<u>Response (TOTAL=39)</u>		
	<u>Primary Choice</u> <u>No.</u>	<u>%</u>	<u>Alternate Choice</u> <u>No.</u>
Independent Agency	15	38.4	-
Royal Scientific Society (RSS)	11	28.1	4
National Planning Council (NPC)	8	20.5	3
Central Bank	1	2.6	-
Decentralised EDB	1	2.6	-
Department of Statistics	1	2.6	3
Ministry of Industry and Commerce	1	2.6	-
University of Jordan	1	2.6	1
Ministry of Finance	0	0	1
Private Sector	0	0	1

Table No. 5 - 8

Questionnaire Response - Responsibility and Control of an
EDB in Jordan

<u>Response</u>	<u>%</u>
a. Government	17
b. Parliament	2
c. Private Sector	6
d. Mixture from the above (a,b, and c)	75
<u>TOTAL</u>	<u>100</u>

A great deal of concern was expressed by the interviewees regarding the importance and criticality of the location of an EDB. They reflected that the location factor contributes substantially to the success or failure of it. All the interviewees responded in this regard providing a preference for an EDB prime location, and in some instances providing alternative locations as shown in Table No. 5 - 7.

There were three interviewees, whose preferences for an EDB prime location was the NPC. These stated that the EDB should evolve into an independent organisation or agency at a later date upon maturity. This was also proposed by five others, whose preference for an EDB prime location was RSS. Therefore, upon maturity of the EDB, the response for the "Independent Agency" location for an EDB in Jordan would increase from 38.4% to 59%.

The interviewees made relevant reflections for and against various locations for an EDB. The highlights of these reflections are provided below by location:

1. Independent Agency:

- a. The EDB should be an independent body which answers directly to the Prime Minister.
- b. The EDB should not be a part of the government routine. It should be independent with a very high level backing such as that of His Royal Highness Crown Prince Hassan.
- c. The EDB should be a part of the prime-ministry as is the case in France.
- d. The EDB should be autonomous with both public and private sectors participation.
- e. The EDB should be a separate entity operating in a similar manner to the Information Centre of Russia.
- f. Locating the EDB with any existing organisation would doom it to failure. A centralised independent agency should be created for the EDB.
- g. A socio-economic data bank should be an independent agency so that it can serve both the public and the private sectors. If the bank is linked to any existing organisation or sector, its benefits in the social, economic, and scientific research areas would not be fully realised.
- h. The EDB should be an independent agency similar in status to that of the Department of Statistics.

- i. The EDB should be an autonomous institution which does not have a bureaucratic appearance.
 - j. There are too many new agencies being created in Jordan. We certainly do not need another one. The EDB should be a part of an existing independent organisation or agency.
 - k. Based on our success to date in the agencies created, it is not likely that an EDB, as a new agency, would be successful.
2. Royal Scientific Society (RSS):
- a. RSS is an excellent location for the EDB because of its ability to attract the qualified manpower.
 - b. RSS has the atmosphere and the cadre which are required for the EDB.
 - c. RSS is an independent organisation free of government routine and bureaucracy. It is a good location for the EDB.
 - d. The EDB has a better chance for success at RSS because of the backing of its Head, His Royal Highness Crown Prince Hassan.
 - e. The EDB at RSS could serve scientific research as well as the socio-economic needs of Jordan.
 - f. The EDB could be established as a department or an agency within RSS initially. It can be separated at a later date, when required, as an autonomous organisation or agency.
 - g. The relationship of RSS to other organisations is not clear. Therefore, it is not the proper location for the EDB.
 - h. RSS does not have the power to perform the required tasks for the EDB.

- i. The status and image of RSS are in question. This may be of a tremendous hindrance to the EDB.

3. National Planning Council (NPC):

- a. The EDB should be located as an agency within the NPC. The bank would be complementary to its major function which is planning.
- b. The NPC has the sort of independency from the government which is required in the location of the EDB.
- c. The NPC is the planning organisation of the country. It has the required connections both in the public and private sectors. The EDB would have a better chance for success there than any other location which comes to mind.
- d. The NPC is in need of the EDB for proper performance of its functions. It is currently gathering data and performing statistical studies for its planning function. This is due to the unavailability of such data and information in the Department of Statistics. I believe that it would be advantageous to incorporate both the EDB and the Department of Statistics as independent agencies within the NPC.
- e. The NPC is not a pure government apparatus and, therefore, it would be a good starting point for the EDB. At a later date, the EDB can be developed into a separate agency.
- f. The NPC performs special studies and its scope would be confining to the EDB. The EDB should be of such diversity if it is to serve the nation as a whole.

- g. The NPC does not have the required authority for performing the needed functions of the EDB. The authority of the NPC is limited to recommendations in dealing with governmental and other institutions.
- h. The NPC does not have the required manpower and the cadre for the EDB.

4. Central Bank:

- a. I think that the financial area should be dominant in an EDB. The Central Bank is the best source of financial information. In addition, it has an excellent Economics Department.
- b. The Central Bank is too limited in scope for an EDB.

5. Decentralised EDB:

- a. I believe in a decentralised EDB. Each ministry should have its own computer facility and EDB. The current state of the art in computer technology makes it possible to have from a large scale computer all the way down to a mini. Furthermore, remote processing is becoming more feasible and could be investigated.
- b. Jordan is a relatively small country and cannot absorb more than one EDB from both monetary and manpower viewpoints.

6. Department of Statistics

- a. The Department of Statistics has a legal status which is vital for an EDB.

- b. The Department of Statistics is currently in existence and data collection is one of its major functions. Therefore, much duplication of effort would be eliminated if the EDB is located in the department.
- c. The Department of Statistics has well trained staff in the collection of data and its accuracy. If the department is provided with the needed power and environment, it could be a good location for an EDB.
- d. An EDB objectives should be different from that of the Department of Statistics. The Department of Statistics should be a data collection arm for an EDB.
- e. The Department of Statistics does not have the qualified manpower, good cadre or the right environment for an EDB. It is similar to ministries and other governmental bodies.
- f. The Department of Statistics is an authority without legalisation.

7. Ministry of Industry and Commerce:

- a. The Ministry of Industry and Commerce is the best location for the EDB. Industrial and trade data can be best gathered there.

8. University of Jordan:

- a. The University of Jordan can provide the best administrative management, and technical leadership to the EDB on a continuous basis. It is free of government to a great extent. This would provide the proper atmosphere for the EDB.
- b. In a developing nation, I believe that the best location for an EDB is in the academic environment.

- c. The University of Jordan is another possibility for locating the EDB. It can provide expertise in the social, economic and scientific research areas.

9. Ministry of Finance:

- a. The Ministry of Finance is another possibility for locating the EDB. The financial and accounting transactions and data resulting from our plans and actual spending can be easily gathered there.

10. Private Sector:

- a. The best location for the EDB would be the private sector. I am aware that the private sector in Jordan does not have the resources and can in no way support the development of an EDB. But it may turn out to be a possibility with some form of government connection and support.
- b. The private sector may turn the EDB into a monopoly.

The comments from the interviewees about the three most preferred independent locations for an EDB: Independent Agency (38.4%), RSS (28.1%), and NPC (20.5%), were extremely similar. They emphasised that an EDB in Jordan should:

1. Have high level support.
2. Be independent from Government and its routine.
3. Have joint participation of the public and private sectors in its board of directors.
4. Serve the economic, social, and scientific research needs.
5. Have the ability to attract qualified manpower.

The overwhelming majority of the interviewees (82%) indicated the need for new law enactment, code of ethics, and policies and procedures in the establishment of an EDB in Jordan, as shown in Table No. 5 - 9. Only two interviewees responded negatively (5 %). They thought that the enactment of new laws would be too formal an approach and time consuming, and felt that there is an immediate need for the EDB and getting on with its development. Five interviewees did not respond in this regard due to the limited interviewing time.

Table No. 5 - 9

Interviews Response - the Need for New Laws Enactment, Code of Ethics, and Policies and Procedures for an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	32	82
No	2	5
No mention	5	13
<u>TOTALS</u>	<u>39</u>	<u>100</u>

The interviewees also had some comments to make about the enactment of new laws, the establishment of a code of ethics, and the required policies and procedures for an EDB in Jordan. The highlights of these are provided below:

1. Enactment of new laws:

- a. The EDB requires the enactment of new laws to put it legally into existence.
- b. The board of ministers should appoint a special committee to investigate the legal requirements for the EDB. This committee should benefit from the experience gained by the developed nations, and the international community in this area. The committee should then submit its findings and recommendations to the board of ministers for review and approval. The new required laws should then be submitted for enactment.
- c. The new required laws for the EDB cannot be enacted at this time because of the indefinite suspension of the Jordanian Parliament. Therefore, the board of ministers can issue temporary laws with the approval of His Majesty King Hussein.
- d. The new laws for the EDB must include laws for data collection and penalties associated with non-cooperation in this area. This is the most crucial element for the EDB and its success.
- e. Legislation of laws for the EDB would be time consuming with little benefit. There is no need for such formalities.
- f. There is no need to enact new laws for the EDB. What is needed is the establishment of good policies and procedures for it.
- g. Awaiting the passage of new laws for the EDB would be a serious set-back.

2. Code of Ethics

- a. The EDB necessitates the establishment of a code of ethics. Misuse of the data and information in the EDB could have far reaching effects and serious consequences.
- b. A study should be made of the experience gained by other countries and the international community in the area of a code of ethics for an EDB.
- c. A group made of Jordanians with various relevant backgrounds, such as socio-economists, legislators, lawyers, executives, researchers and the like, should be selected. This group is to investigate the requirements for establishing a code of ethics for the EDB. The group should utilise the experiences gained elsewhere in their study.

3. Policies and procedures

- a. Policies and procedures for the EDB should be developed by appropriate committees selected by the EDB board of directors. The board should review the findings and recommendations of these committees for approval.
- b. Special committees should be selected by the board of ministers for investigating and recommending policies and procedures deemed necessary for the EDB. The committees should include representatives from each ministry and governmental agency, as well as known experts both in the public and private sectors in Jordan. Their findings should be subjected to approval by the board of ministers.

- c. The committees selected for investigating and recommending policies and procedures for the EDB should be a part of the business and technological communities rather than the political community.
- d. The selected head of the EDB should be the one to formulate the policies and procedures for his organisation. He should seek consultation and assistance from any source, as required, in his formulation. The formulated policies and procedures should be subjected to approval by the EDB board of directors.
- e. A secrecy law and/or policy regarding the data and information in the EDB should be established. This policy will prove extremely valuable in the future.
- f. A policy should be established regarding the internal and external use of the EDB data and information. It is extremely important to establish guidelines on what data and information can be provided to individuals and organisations internally. Furthermore, it is politically vital to establish guidelines on what data and information could be provided to other countries and to the international community.

It can be seen from the foregoing analysis of the field survey results that the vast majority of interviewees and respondents favoured the establishment of the EDB in Jordan as an independent organisation with a high level support. This organisation requires a legislative action for its establishment as a legal entity in Jordan, and is to be governed by a board of directors with both public and private sectors participating. Furthermore, there is a need to formulate a

code of ethics, and relevant policies and procedures for the establishment and development of an EDB in Jordan.

5.3. Issue Number 3: The Initial Developmental Objectives and Scope of an EDB in Jordan

The results of the field survey, when ranked according to the importance of economic sectors for initial development of an EDB, show only slight difference in the first four places, though they diverge at the fifth. This is shown in Table No. 5 - 10.

Table No. 5 - 10

Interviews and Questionnaire Responses - The Five Highest Ranked Economic Sectors

<u>Interviews</u>	<u>Questionnaire</u>	<u>Economic Sector</u>
<u>Rank</u>	<u>Rank</u>	
1	1	Agriculture
2	3	Manpower and Employment
3	2	Mining and Industry
4	4	Trade and Services
5	8	Population
9	5	Education

There are a number of methods to rank the economic sectors based on the given field survey response. The ranking approach selected is one in which inverted weights are given to each priority choice. In

the case of the interviews, there were no restrictions imposed on the number of economic sectors to select, and no list of economic sectors to choose from. Consequently, weights from 6 to 1 were given to the priorities 1 to 6 since the maximum number of economic sectors selected by any interviewee was six. In the case of the questionnaire, a list of sixteen economic sectors was provided for the selection and ranking of five. Consequently, weights from 16 to 12 were given to the priorities of 1 to 5. The results of ranking by the interviews and the questionnaire respondents are shown in Table No. 5 - 10.

Two other ranking methods were tried for comparison purposes. The first was based on giving equal weights (1,1,1,1,1) to the priorities 1 to 5. In this approach, it is assumed that all choices made are of equal importance. The second was based on giving the total weight to the top priority choice (1,0.0.0.0). In this approach, it is assumed that only the top priority choice is considered. In the case of the interviews, the result of the first method differed from that of the selected one by the exclusion of the population sector and the inclusion of the tourism sector. The results of the second method produced the same five sectors obtained by the selected method but ranked them somewhat differently. The results from the interviews are shown in Table No. 5 - 11. In the case of the questionnaire, the result of the first method was identical to that of the selected method. The results of the second method produced the same five sectors obtained by the selected method but ranked them somewhat differently. The questionnaire related results are shown in Table No. 5 - 12.

There were three questionnaire respondents who listed three additional economic sectors in response to "Other". One listed "Social Planning", the second "Income Distribution", and the third "Social Infrastructure".

Table No. 5-11

Interviews Response - Ranking Economic
Sectors by Alternate Methods

<u>Rank</u>	<u>(1,1,1,1,1) Method</u>	<u>(1,0,0,0,0,0) Method</u>
1	Manpower and Employment	Agriculture
2	Agriculture	Manpower and Employment
3	Mining and Industry	Population
4	Trade and Services	Mining and Industry
5	Tourism	Trade and Services

Table No. 5-12

Questionnaire Response - Ranking Economic
Sectors by Alternate Methods

<u>Rank</u>	<u>(1,1,1,1,1) Method</u>	<u>(1,0,0,0,0) Method</u>
1	Agriculture	Agriculture
2	Industry	Manpower
3	Manpower	Industry
4	Trade	Education
5	Education	Population

The response of the interviewees indicates that the overwhelming majority (90%) elected the coverage of more than one economic sector as the scope of the initial development of an EDB in Jordan. Their cumulative response reached 92% for the coverage of five economic sectors or less, as indicated in Table No. 5 - 13. Several interviewees stressed that the priority given to economic sector coverage in the initial developmental stages of the EDB does not mean that these sectors should be totally developed. Emphasis should be given to the vital portions of these sectors. Furthermore, these portions should serve both the economic and social needs of Jordan.

The majority of the questionnaire respondents (57%) indicated their preference for the coverage of more than one economic sector in the initial development of an EDB. Their cumulative response reached 91% for the coverage of five economic sectors or less, as indicated in Table No. 5 - 14. This choice could have been biased by Question Number 8, which precedes the question for the number of economic sectors to be covered initially by an EDB. In Question Number 8, the priority selection of five economic sectors was requested. On the other hand, the results appear to be very much in line with those of the interviews.

Table No. 5 - 13

Interviews Response - Distribution of the Initial Economic
Sectors Coverage by an EDB in Jordan

<u>Number of</u> <u>Economic Sectors</u>	<u>Cumulative "less than"</u> <u>Response</u>	
	<u>No.</u>	<u>%</u>
1 only	4	10
2 or less	13	33
3 or less	22	56
4 or less	29	74
5 or less	36	92
6 or less	39	100

Table No. 5 - 14

Questionnaire Response - Distribution of the Initial Economic
Sectors Coverage by an EDB in Jordan

<u>Number of</u> <u>Economic Sectors</u>	<u>Cumulative "less than"</u> <u>Response</u>	
	<u>No.</u>	<u>%</u>
1 only	87	41
2 or less	98	46
3 or less	131	62
4 or less	140	66
5 or less	193	91
More than 5	208	98
(Abstained)	(4)	(2)

The following are highlights of the comments made on this topic in the interviews:

1. Jordan is basically an agricultural country. A tremendous data shortage exists in this area. We should do much more in this vital sector.
2. The external Jordanian manpower is as important to learn about if not more than the internal manpower. Shortage in skilled manpower is a critical factor in achieving our goals in planning and building the Jordanian economy. Much of our qualified and experienced manpower is elsewhere. Although the external manpower brings into the economy large amounts of foreign currency, some of their skills are desperately needed in Jordan.
3. The manpower sector is a critical one. It covers portions of many vital economic sectors such as agriculture, mining and industry, services and the like.
4. We are expanding the industrial sector substantially. More data and information are required in this area as well as in the trade and services sector to help provide a better base for our planning.
5. The last census taken in Jordan was in 1961. The population of the country has since gone through drastic changes in size and structure. We are in desperate need for reliable economic and social data and information about the population. It is extremely difficult to plan without such data and information.
6. A tremendous shortage of data exists in the natural resources area. This area is extremely vital to our economy. More should

be learned about it than has been done in the past.

7. Planners in Jordan are in need of more and better financial and monetary indicators to improve their planning performance.
8. In giving an economic sector a high priority should not mean that we go to extremities to develop it. Concentration should be made on obtaining only the vital data in that sector.
9. The data collected in the high priority economic sectors should serve both the economic and social needs of Jordan.

It can be seen from the foregoing analysis of the field survey results that the vast majority of interviewees and respondents favoured the initial development of an EDB in Jordan to focus on basic economic sectors, such as Agriculture, Mining and Industry, Manpower and Employment, and Trade and Services. In addition, they favoured the initial scope of an EDB to cover several economic sectors with concentration on the vital segments of these sectors, which can better serve the socio-economic needs of Jordan.

5.4. Issue Number 4: The Manpower Requirements for the Development of an EDB in Jordan

The field survey results indicate that the response of the interviewees differed substantially from that of the questionnaire respondents regarding the extent of the inadequacy of the currently available manpower in Jordan for developing an EDB. The overwhelming majority of the interviewees (95%) saw great inadequacy in the currently available manpower in Jordan for an EDB development. Only two

interviewees (5%) thought that the current manpower is sufficient for a humble beginning, as shown in Table No. 5 - 15. Only 49% of the questionnaire respondents, which constitutes a majority, felt this inadequacy, as shown in Table No. 5 - 16. The large difference with the interviewees may be contributed to a variable and generally lower level of knowledge among the questionnaire respondents regarding the overall manpower requirements for developing an EDB in Jordan.

Table No. 5 - 15

Interviews Response - Current Availability and Adequacy of
Manpower for Developing an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	2	5
No	37	95
<u>TOTAL</u>	<u>39</u>	<u>100</u>

Table No. 5 - 16

Questionnaire Response - Current Adequacy of Manpower for
Developing an EDB in Jordan

<u>Response</u>	<u>%</u>
Yes	47
No	49
Abstained	4
<u>TOTAL</u>	<u>100</u>

The interviewees made several reflections regarding the availability and adequacy of manpower in Jordan for the development of an EDB.

The highlights of these reflections are:

1. The demand for professional and skilled manpower has become extremely out of proportion with the supply in the last few years in Jordan. A large portion of the skilled manpower is working outside Jordan mainly in the oil producing countries. This is caused by higher monetary compensation in these countries.
2. The shortage in qualified manpower has become evident in recent years. This shortage will have a tremendous impact on our planning and cause delay in our development and implementation of important projects.
3. Our manpower policies are not in order. A study is currently underway by a selected committee to study the manpower problems and submit its findings and recommendations for action.
4. The lack of data and information on manpower, particularly that working outside Jordan, is causing poor project planning and development. Compounding the problem is the unavailability of data and information on manpower supply and demand both in the public and private sectors of Jordan.
5. Our major problem in manpower is the shortage of managers. This has been highlighted in a number of studies made in Jordan and in particular, a study made by an impartial outside consultant.
6. The manpower is available in Jordan at the working level but a definite shortage exists at the management and the policy making levels.

7. The Three Year Development Plan 1973 - 1975 and the Five Year Plan 1976 - 1980 caused the creation of many agencies and authorities in Jordan. These agencies and authorities robbed qualified manpower from existing organisations due to the shortage of qualified personnel in Jordan. This situation compounded our problem further. The small number of qualified and available manpower in Jordan is now spread so thin among these agencies and authorities that little is being accomplished as a net result. It is a vicious circle, and we need to take a serious look at our manpower and its regrouping.
8. There are many people who are blaming the emigration of qualified and skilled manpower on the housing shortage in Jordan. I do not believe that this is the cause. Emigration is a middle eastern problem of greed for money, and jealousy and envy of others. Monetary compensation should be sought from the oil producing countries for the Jordanian manpower. The money should be invested in manpower training in Jordan.
9. The qualified manpower availability is extremely limited to Jordan. We need to maximise their utilisation through improved planning and giving the right job to the right man. Furthermore, the working hours and monetary compensation should be increased.
10. The manpower problems and shortage in Jordan are mainly due to ignorance and poor administration. There is a highly qualified technical and scientific manpower in Jordan who are pushing the pencils and doing clerical and administrative work. Some are doing practically nothing due to poor management and jealousy. We need to relieve this manpower from this kind of work and stop

idleness and waste of time. There are many qualified retired personnel from the armed forces who are young and capable of relieving the technical manpower from the clerical and administrative work.

11. Outside experts are needed initially to assist in the development of an EDB in Jordan. Their selection should be based on solid accomplishment records in this area. We have had bad experiences with outside experts in the past and we should be extremely careful in our selection.

The reflections made by the interviewees on this issue stressed the following points:

1. The demand for qualified manpower is in excess of the supply.
2. The cause of the qualified Jordanian manpower emigration is mainly due to low monetary compensation, and poor policies and management.
3. The qualified manpower is spread thin due to the increase in agencies, authorities, and projects planning and development in Jordan. This is in addition to the existing shortage in qualified manpower.
4. Inefficient use and poor distribution of the qualified manpower in Jordan.
5. The use of outside experts is initially required for the development of an EDB in Jordan. This was reiterated by the vast majority of interviewees.

It can be seen from the foregoing analysis of the the field survey results that the majority of interviewees and respondents feel that the currently available manpower in Jordan is generally inadequate for developing an EDB.

5.5. Issue Number 5: The Training Requirements for the Development of an EDB in Jordan

In the same way as that for manpower, the field survey results show that the response of the interviewees differed substantially from that of the questionnaire respondents regarding the magnitude of the inadequacy of the national training facilities to train an EDB personnel. The overwhelming majority of the interviewees (95%) felt the inadequacy of the currently available national training facilities in Jordan to train an EDB staff. Only two interviewees (5%) thought that the training facilities are somewhat adequate for a start, as shown in Table No. 5 - 17. It was the same two interviewees who felt that the currently available manpower in Jordan is adequate to start the development of an EDB. Only 56% of the questionnaire respondents saw this inadequacy, as shown in Table No. 5 - 18. Again, the large difference with the interviewees may be contributed to a variable and generally lower level of knowledge among the questionnaire respondents regarding the overall training requirements for an EDB staff in Jordan.

Table No. 5 - 17

Interviews Response - Current Availability and
Adequacy of National Training Facilities to train
an EDB Personnel in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	2	5
No	37	95
	—	—
<u>TOTALS</u>	39	100
	—	—

Table No. 5 - 18

Questionnaire Response - Adequacy of National
Training Facilities to Train an
EDB Personnel in Jordan

<u>Response</u>	<u>%</u>
Yes	41
No	56
Abstained	3
	—
<u>TOTAL</u>	100
	—

The interviewees made several remarks regarding the availability and adequacy of training facilities to train an EDB personnel in Jordan.

The highlights of these remarks are:

1. There is a lack of national training policy in Jordan. The formulation of such a policy should be an integral part of national development.
2. Studies should be conducted to determine the educational and training needs in Jordan. It is extremely difficult to plan for the training requirements in Jordan when the data and information on these requirements are absent.
3. Proper planning, development, and implementation of technical training facilities such as that for the training of personnel in the development of an EDB is time consuming and very costly. Based on our past experience, crash programmes in this area are doomed to failure. Initially, training would have to be performed externally and on the job. Meanwhile, the planning and development of training facilities should evolve.
4. Experts should be recruited from developed countries for the initial training of personnel for the development of an EDB in Jordan. The number of experts should be limited, and their selection should be based on solid accomplishments in this field. Based on our past experience, academic degrees can be misleading.
5. Training personnel for the development of an EDB should be performed both externally and internally. Emphasis should be made on the eventual internal training.
6. Initially, experts should be brought in from developed nations to train the low to middle management personnel for the development of an EDB in Jordan. Upper management should be trained externally until the training facilities become adequate for such a critical level in Jordan.

7. External training should focus on the development of the EDB in Jordan and not on obtaining academic degrees. This is caused by the current cadres and personnel evaluation methods which focus mainly on academic degrees. The cadres and methods should be re-aligned in order to make special courses attractive to personnel.
8. Experience gained by developed nations in the establishment of technical training facilities such as that for the development of an EDB, should be utilised. This would assist in speeding up the development of the required training facilities in Jordan.
9. Training personnel for the development of an EDB in Jordan should be performed in the private sector. This would be an encouragement to the private sector and would allow for healthy competition in this area.
10. Stress should be made on project management in training personnel for the development of an EDB in Jordan. This is one of our major problems in planning and development.
11. The problem is not just the training of personnel for the development of an EDB in Jordan, but how to keep them from leaving the country once they are trained. Monetary compensation, incentive, and motivation problems should be investigated and dealt with effectively.
12. A training centre should be established as a part of the EDB. This centre should evolve over a reasonable period of time and not be developed on a crash programme. Staffing would be a problem initially, but outside experts can fill this gap until self sufficiency is achieved.

The reflections made by the interviewees on this issue stressed the following points:

1. The absence of a national training policy in Jordan.
2. The lack of data and information on the training needs in Jordan.
3. External training is essential initially.
4. The planning and development of training facilities for the EDB should evolve rather than be performed on a crash basis. Experience gained by developed nations in this area should be investigated and utilised.
5. Experts should be recruited initially for training personnel for the EDB development in Jordan from developed countries. Their number should be limited and be replaced when self sufficiency is achieved.
6. The establishment of a training centre as an integral part of the EDB.

Items 5 and 6 above were reiterated by the vast majority of interviewees.

It can be seen from the foregoing analysis of the field results that the majority of interviewees and respondents felt that the currently available training facilities in Jordan are inadequate to train an EDB staff.

5.6. Issue Number 6: The Sociological and Political Implications in Developing an EDB in Jordan

The field survey results indicate that the response of the interviewees differed substantially from that of the questionnaire respondents regarding the magnitude of the sociological and political implications in developing an EDB in Jordan. There was also a noticeable difference in their abstention rates. Some of these differences could be contributed to the ineffectiveness of the questionnaire in this particular area.

The overwhelming majority of the interviewees (87%) indicated that the sociological aspects will have an impact on the development of an EDB in Jordan, as shown in Table No. 5 - 19. They responded similarly (79%) regarding the political aspects, as shown in Table No. 5 - 20. Only one interviewee (3%) who thought that neither the sociological nor the political implications play a dominant role in the development of an EDB. Four interviewees (10%) did not respond regarding the sociological implication. This was due either to limited interviewing time (5%), or not having a solid conviction in this area (5%). Seven interviewees (18%) did not respond regarding the political implication. This was also due either to limited interviewing time (5%) or not having a solid conviction in this area (13%). Four of the seven interviewees who did not respond regarding the political implication were the same who did not respond regarding the sociological implication.

The majority of the questionnaire respondents (51%) indicated that

the sociological aspects in Jordan will have an impact on the development of an EDB, as shown in Table No. 5 - 21. They responded similarly (45%), which constitutes a majority, regarding the political aspects, as shown in Table No. 5 - 21. This was reflected in all the listed areas of interest, for both the sociological and political implications, except that of "Computer Selection" (36% for sociological and 27% for political), as shown in Table No. 5 - 21.

Table No. 5 - 19

Interviews Response - The Sociological Implication Dominant
Role in the Developmental Activities of an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	34	87
No	1	3
No Mention	4	10
<u>TOTALS</u>	<u>39</u>	<u>100</u>

Table No. 5 - 20

Interviews Response - The Political Implication Dominant Role
in the Developmental Activities of an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	31	79
No	1	3
No Mention	7	18
<u>TOTALS</u>	<u>39</u>	<u>100</u>

Table No. 5-21

Questionnaire Response - Sociological and Political Implications
by Area of Interest

<u>Response</u>	<u>Sociological</u>			<u>Political</u>		
	<u>% Yes</u>	<u>% No</u>	<u>%Abs</u>	<u>% Yes</u>	<u>% No</u>	<u>% Abs</u>
1. Setting Policies	60	28	12	65	21	14
2. Personnel Section	65	22	13	56	26	18
3. Personnel Training	49	34	17	36	35	29
4. Project Management	52	32	16	43	33	24
5. Computer Selection	36	46	18	27	42	31
6. Security and Audit.	45	35	20	46	28	26
<u>TOTALS</u>	<u>51</u>	<u>33</u>	<u>16</u>	<u>45</u>	<u>31</u>	<u>24</u>

The interviewees made several reflections regarding the sociological and political implications in developing an EDB in Jordan. The highlights of these reflections are:

1. The EDB will be faced with numerous sociological and political problems. These problems must be dealt with effectively for the success of the EDB.
2. Centralisation of data and information is a great danger from both sociological and political viewpoints. It produces distrust and fear in the public, and the misuse of data and information by politicians could be extremely harmful. Decentralisation of the data and information may have less of an impact from a sociological and political viewpoints. The centralisation issue

should be thoroughly investigated before serious mistakes are made.

3. There are many inherent sociological problems in our society. Our culture has a mixture of the old and the new; the east and the west; the civilians, the refugees, and the bedouins. Psychological and sociological studies should be performed and a methodology should be developed in order to communicate effectively with this kind of population. The success of the EDB in Jordan is highly dependent on good communication with the population.
4. The success of the EDB is highly dependent on the relationship between the citizen and the government. The problems in this vital area should be thoroughly examined and studied in order to determine a proper course of action.
5. A study should be made on how the mass media can be utilised to close the gap between the public and the government. The citizen must feel well informed and should trust the system if he is to provide it with the correct and required data.
6. The EDB will face problems such as personal, political, family, and tribal ties. In addition, problems relating to culture, religion, and customs will be encountered. These problems should be dealt with effectively during the planning stage for the EDB.
7. Project management is one of the most difficult tasks in our society. The team work concept is virtually non-existent in the middle east. Each individual considers himself the boss. This area requires a great deal of attention in the development of the EDB.

8. The success of the EDB requires the separation of political and other influences from the decision making and operating functions.
9. The EDB should not be government dominated. It should have a strong board of directors, with heavy and strong private sector representation, in order to defuse the political issue.
10. Many political and social problems, which the EDB could face, can be solved through good and strong legislation, code of ethics, and policies and procedures.
11. The EDB must be practical and convincing to the public. They must feel that their socio-economic well being is dependent on it.

The reflections made by interviewees on this issue stressed the following points:

1. The EDB will be faced with many sociological problems to cope with, such as:
 - a. Distrust and fear by the public
 - b. Cultural and religious
 - c. Relational, between the citizen and the government
2. The EDB will be faced with many political problems to cope with, such as:
 - a. Possible misuse of the EDB data and information by politicians
 - b. Relational, between the citizens and the government
 - c. Political influence on decision making and operating functions of the EDB.

There were suggestions for combating these problems, such as:

1. Psychological and sociological studies.
2. Utilisation of the mass media.
3. Investigation of centralisation versus decentralisation of the EDB.
4. Separation of political and other influences from the decision making and operating functions of the EDB.
5. Strong EDB board of directors with heavy private sector representation.
6. Good and strong legislations, code of ethics, and policies and procedures.

It can be seen from the foregoing analysis of the field survey results that the majority of interviewees and questionnaire respondents felt that the sociological and political aspects in Jordan will have a significant impact on the development of an EDB.

SUMMARY

This chapter presents the results of the field survey which was conducted in Jordan. These results are a combination of the personal interviews and a summary of the responses to the questionnaire.

The field survey results are analysed by issue, for the issues developed in the theoretical phase of this study.

Based on the results of the field survey and the associated analysis, conclusions are drawn in regard to each issue.

CHAPTER VI
CONCLUSIONS

CHAPTER VI

CONCLUSIONS

INTRODUCTION

The purpose of this chapter is to present the conclusions of the theoretical and empirical phases of this study, and the recommendations for the next stage of setting up an EDB in Jordan.

The chapter is divided into seven sections:

1. Summary of Work
2. Recommendations: Research Methodology
3. Recommendations: EDB Development
4. Recommendations: EDB Organisation
5. Recommendations: DBMS Software and Selection
6. Need for Further Research
7. General Recommendations and Overview of Work

The summary section provides a synopsis of the entire study and its results. The recommendations are provided in four sections, each dealing with a major aspect in developing an EDB in Jordan. In the penultimate section, the need for further research is discussed, and some examples and areas of interest are provided.

Finally, an epilogue is provided regarding an overview of the research study and its conclusions.

6.1. Summary

The objective of this study has been to investigate the management elements and implications involved in organising the development of an EDB, with particular emphasis on the requirements of a developing nation.

This objective was divided into two interrelated basic tasks:

1. To investigate the management elements required for organising the development of an EDB, with particular emphasis to the requirements of a developing nation.
2. To investigate the sociological, political and technical implications associated with the development of an EDB in a developing nation.

A thorough and exhaustive search of library and other relevant literature was undertaken. In addition, an extensive review of this literature and analysis of the concepts involved were performed. Based on the above, a theoretical framework was established for this study, and the research objective was translated into relevant issues for the field survey. These issues are listed in Chapter II section 2.3.

Jordan was the developing nation selected for the field study. Two survey instruments were used in the empirical phase:

1. Personal interviews
2. Questionnaire

These instruments were developed, tested, and implemented. This resulted in obtaining information from a large number of Jordanian officials, both in the public and private sectors.

Valuable information on the needs for, and attitudes towards, an EDB were obtained from both aspects of the field study; the analysis from these are provided in Chapter V. However, the methods used were of a developmental nature and their application was restricted both by time and distance. There are also specific problems encountered when applying instruments developed essentially for research in highly developed countries, in the different culture and organisation of a developing country. An analysis of the problems and limitations of the research methodology, along with suggestions for improvements in the techniques are presented in Section 6.2.

The technical implication was excluded from the field survey in Jordan due to the highly technical and complex nature of the software involved. This implication, along with DBMS software and selection, is discussed and relevant recommendations are provided in Sections 6.3 and 6.5 of this Chapter. Furthermore, pertinent information regarding some popular DBMS software packages is provided in Appendix H.

6.2. Recommendations: Research Methodology

The instruments used in the field survey for gathering the required information were personal interviews and questionnaire. The selection of these instruments was discussed in Chapter IV Section 4.1 and sub-sections 4.2.1 and 4.3.1.

The interviews were unstructured using a set of topics of discussion as guidelines. The questionnaire was designed in a simple and straightforward manner, tested on a limited scale, and distributed by mail and personal contacts.

The unstructured interviewing method appeared to be effective and adequate with no serious problems encountered in gathering the information. This was not the case with the questionnaire, where several problems were encountered in its design and implementation. This was due mainly to:

1. Conducting this study in a developing nation. In-depth research and guidelines in the field survey methodology for developing nations, particularly in the area of questionnaire design and implementation, are at best meagre.
2. A large number of issues are under investigation. This is due to the cross-sectional nature of this study in an unexplored and sensitive area, which caused severe limitations on the design of the questionnaire, e.g. the number of questions to be asked per issue, and enquiries related to the political and sociological implications.
3. Insufficient testing of the questionnaire. The limited availability of time and funds did not permit the adequate testing of the instrument. A thorough pilot test in this unexplored and sensitive area would require substantial amount of time and money.

This situation caused heavier reliance on the personal interviewing method than was originally anticipated, and limited the role of the questionnaire approach to that of support. Consequently, the number of interviews held was increased substantially; that is from the planned twenty to thirtynine.

The following comments regarding the questionnaire instruments are provided in light of the experience gained in the field survey:

1. The wording of the definition of an EDB, which appeared in the Introduction section of the questionnaire, was not neutral. This situation may have caused some bias in the responses to the questions which are related to the first issue. This issue deals with the need, immediacy, and benefits of an EDB.
2. The confidential aspects of the name and address sheet of the questionnaire were not plainly stated. It was suggested by the individuals who participated in testing the instrument that emphasis on confidentiality may have a negative effect on respondents. They recommended that the name and address question be provided on a separate sheet to convey indirectly the ability of disassociating this part from the remainder of the questionnaire. Although this approach, along with the assistance provided by those who participated in the distribution of the questionnaire in emphasising the confidentiality aspects of it when necessary, appeared to be adequate, but a pilot test would have provided more insight in this regard.

3. In general, the structure, content, wording, and order of questions need to be investigated further for refinement and improvement. The following are specific comments and guidelines which are related to the remaining questions appearing in the questionnaire:
 - a. The categories listed in Question number 1 regarding the duties of respondents were not clearly defined. There were several enquiries made by respondents in this regard. The criteria for the distinction between a manager, a policy maker, and an educator/researcher who is involved in management or decision making, etc., was questioned by several respondents. These categories should have been clearly defined in order to avoid ambiguities. It may also be necessary to split the question into levels. The first level is to question if the respondent is employed by government, governmental independent agency, educational/research institution, or the private sector. The second level for those who are employed by government is to enquire about the grades of their positions which are indicative of the categories of duties and so forth.
 - b. The purpose of Question number 2 was to obtain some information on the spread of responsibilities between the various categories of respondents. The response to supervising over 50 people was exceptionally high in the "Educator/Research" and "Consultant/Adviser/Planner" categories. Further investigation of this matter uncovered that a large number of educators teach in excess of 50 students, and several consult-

- ants, advisers and planners are in the social and educational areas with field responsibilities for more than 50 people. Adequate instructions are needed in this regard in order to improve the quality of the response.
- c. The name and address question as well as questions 1 and 2 are considered leading questions. Texts surveyed on questionnaire design suggest the delay of their order of appearance.
 - d. Questions 3, 6 and 10 need more precision and clarity in wording. For examples: replacing the word "require" in Question 3 with "use" and adding the option "or both", including the instruction "as you perceive it" in Question 6, and revising option d in Question 10 to read "Independent Agency with mixed representation from the above".
 - e. The inclusion of a grading method for the EDB benefits listed in Questions 4 and 5 would be beneficial. This grading would be particularly helpful in the planning, design and development of the EDB. It may have also been advisable to include negative options in the list in order to detect any hostilities toward an EDB.
 - f. The benefits derived from Question 7, which deals with the sociological and political implications of developing an EDB, is questionable. The use of the questionnaire instrument in these sensitive areas in a developing nation may not be most suitable. Further research is needed in the use of the questionnaire in such areas so that major benefits can be realised.

- g. The order of Questions 8 and 9 appeared to cause bias. In Question 8, the selection of five economic sectors, and assignment of priorities to those selected, was requested. When it was enquired in Question 10 the extent of the initial economic sectors coverage by an EDB, a large number of respondents entered the number 5 as their choice. This bias could be decreased by the modification of order and wording of Question 9.
- h. The areas of expertise listed in Questions 11 and 12, which deal with the issues of training and manpower, are not clearly defined. The provision of clear definition of these areas would reduce the misunderstanding of respondents and improve the quality of response.

The following recommendations are made based on the knowledge and experience gained in the field survey:

1. The personal interviewing methods appears to be the most appropriate in this unexplored and sensitive area in a developing nation. Maccoby et al, in an article titled "*The Interview: A Tool of Social Science*", wrote that "... some of the most impressive contributions to social science knowledge have been made by studies which employed the interview as their central technique.", and "It has been widely assumed that the interview is superior to the questionnaire in many ways, and should be used when resources permit. Certainly, the interview must be used at the exploratory stages;" (508).

It is further recommended that these personal interviews be unstructured (unstandardised) in the early stages of research in this unexplored area. The move to structured interviews should be delayed until more progress and experience are achieved. Maccoby et al also stated that "It is fruitless to attempt standardized interviewing before the dimensions of an area are well delineated, and a good many years of exploratory work are often needed before the precision of standardized interviewing is possible or justified ... Every developing field in social science must arrive at the measurement stage eventually, at which point the standardized interview comes into its own." (508).

2. In-depth research and guidelines regarding questionnaire design and implementation for use in developing nations are needed. This is a huge undertaking and would require vast amount of resources. This type of project has several international dimensions and may be best taken on by an organisation such as the United Nations.
3. The use of the questionnaire instrument can be valuable in several areas, particularly those which are insensitive in a developing nation. A pilot test is the key to success in questionnaire design. Oppenheim, in his book titled "*Questionnaire Design and Attitude Measurements*", stated that "It is to be emphasized that each survey presents its own problems and difficulties and that expert advice and spurious orthodoxy are no substitutes for well-organized pilot work. The importance of really careful piloting will be stressed over and over again ... pilot work can help us

with the actual wording of questions, but also with procedural matters as the design of a letter of introduction, the ordering of question sequences, and the reduction of non response rates.", and "The earliest stages of pilot work are likely to be exploratory. They might involve lengthy, unstructured interviews, talk with key informants, or the accumulation of essays written about the subject of the inquiry." (598).

4. The distribution of the questionnaire instrument through personal contacts. This method proved to be highly successful in Jordan, whereas the distribution by mail was ineffective. This may not apply to every developing nation. Again, a pilot test can shed some light on this subject.

6.3. Recommendations: EDB Development

In Chapter V, basic conclusions were drawn from the analyses of the field survey results. These conclusions can be summarised as follows:

1. There is a great positive response for the immediate start of developing an EDB in Jordan, and a good measure of agreement on the benefits which can be derived from it.
2. The establishment of an EDB in Jordan as an independent agency with top level support was favoured. This agency requires legislative action for its establishment as a legal entity, and is to be governed by a board of directors with both public and private sectors participating. Furthermore, there is a need to

formulate a code of ethics, and relevant policies and procedures for the establishment and development of an EDB in Jordan.

3. The initial development of an EDB in Jordan was favoured to focus on basic economic sectors such as Agriculture, Mining and Industry, Manpower and Employment, and Trade and Services. In addition, the initial scope of an EDB coverage of several economic sectors was also favoured. Concentration should be made in this coverage on the vital segments of these sectors which can better serve the socio-economic needs of Jordan.
4. The currently available manpower in Jordan is generally inadequate for developing an EDB.
5. The training facilities in Jordan are adequate to train an EDB staff.
6. The sociological and political aspects in Jordan will have a significant impact on the development of an EDB.

There were many comments made by the interviewees which provide a great deal of insight, guidelines, and direction. The recommendations provided below are based on the integration of the basic conclusions, comments of the interviewees, literature surveyed, and the experience and views of the researcher:

1. Based on an executive action initiated by a top level policy maker, an EDB can be enacted into law and empowered to perform

its functions as an independent agency from government. An alternative to this recommendation is to locate the EDB in one of the current independent agencies in Jordan, such as RSS, NPC, or the University of Jordan. The EDB could then evolve into a separate entity as an independent agency at the appropriate stage of development.

Several laws need to be enacted and policies and procedures established for the EDB in order to function effectively in Jordan. These should be examined in light of international experience both in developed and developing nations. The laws, policies, and procedures are related to:

- a. The formation of a board of directors to govern the EDB. It is recommended that the membership should include:
 - (i) The Jordanian Cabinet
 - (ii) Top level officials from the public and private sectors of Jordan
 - (iii) The Director General of the EDB upon his appointment

In this way all the branches of government and the private sector of Jordan can be represented at a high level. This kind of representation allows the opportunity to all factions of the society to participate in the governing of the EDB and its activities.

- b. The authority to collect specific types of data from the public and private sectors and individuals in Jordan, and the responsibility for specifying the collection methodology. It is recommended that the EDB be responsible for:

- (i) Designing the data collection methodology in Jordan
 - (ii) Auditing the quality of data received
 - (iii) Disseminating data errors to the sources for corrections
- c. The obligations of the public and private sectors as well as Jordanian nationals and foreigners in Jordan. It is recommended that:
- (i) All organisations and individuals should be required to submit data and corrections on timely basis in accordance with the data collection methodology specified by the EDB and approved by its Board of Directors.
 - (ii) Heavy penalties should be imposed on the withholding of data, delaying the submission of data and corrections, and providing false data.
- d. The obligation of the EDB for the processing and dissemination of data and information. It is recommended that the EDB be responsible for processing the data and disseminating information, nationally and internationally, in accordance with the laws enacted and policies and procedures approved by the Board of Directors.
- e. Data security: the protection of data against its unauthorised modifications and destruction, and its accidental or intentional disclosure to unauthorised persons.
- f. Data privacy: the protection of the rights of individuals and organisations regarding the exposure of their data and its use by others.
- g. The protection of individuals and organisations from prosecution

and hardship due to data and information obtained from the EDB. They should be able to access any information stored concerning them. Legal guarantees should be made to inspect and correct the data and information stored at any time. Provisions should also be provided to make them aware of the existence of such data and information.

- h. The establishment of an internal committee to monitor and control data collection, security, privacy, and access of the EDB. In addition, ensure that the data is used for statistical purposes only.
- i. The formation of an independent commission. This commission is to investigate any complaints regarding the EDB.
- j. The organisational structure which should be headed by a Director General who is assisted by a Deputy. This organisation is to include Departments of: Administration, Research and Planning, Development, Operations, Marketing and Public Relations, Accounting and Finance, Personnel and Training, and Legal Staff. Recommendations regarding the organisational structure and its formation and functions are provided in Section 6.4 of this chapter.

The organisation need not be fully manned until it reaches maturity. At the outset, the Deputy position may be left vacant, and the Departments can be grouped and managed by fewer directors.

- k. The creation of an internal audit section. This section is to perform financial and social audit of the EDB organisation.
- l. The security vetting, clearance, and contractual commitment

of personnel working with sensitive data. Severe penalties should be imposed for breaches of laws, policies and procedures.

m. The environment and cadre of the EDB. These are to be conducive in order to attract highly qualified personnel.

n. The type of data to be stored in the EDB and its access. The authority for these should be vested in the Board of Directors which has representatives from all factions of the society. The EDB is to be responsible for implementing the policies and procedures of the Board in this regard through a Data Bank Administration section. This section should be responsible for the control of the information content of the EDB, storage structure of data and its access strategy, user interface, and the integrity and performance of the data bank. This is a 'centralised control' approach for controlling the data of an enterprise. There are several advantages to this approach. It provides the ability to:

- (i) Reduce redundancy and inconsistency in the stored data
- (ii) Share data stored by the various applications of the system
- (iii) Administer security regulations related to the stored data
- (iv) Preserve data integrity
- (v) Enforce standards particularly in the area of data representation
- (vi) Maintain data independence by ensuring the immunity of the system applications to changes in the storage of the data and its access strategy.

There are those who support 'distributed control' of the data.

Comba, in his article titled "*Needed: Distributed Control*", stated

that "... complete decentralization is certainly not appropriate to most businesses ... and one could justifiably argue that a collection of data segments which are independently controlled by many users is not a DB. Between the two extremes of the centralization spectrum many regimes are possible. They may be described as instances of distributed control (DC), and they are characterized by the existence of some effective sharing of authority and control over the DB resources ..." (198).

The advocates of this approach highlight that it has certain advantages over the centralised control such as:

- (i) The security risks are less. This is due to the difference between the two approaches in viewing data. Under distributed control it is viewed as being dispersed, and is integrated and shared when necessary. Under centralised control, it is viewed as being in one pool, where the integrity constraints and access control are defined at the highest level.
- (ii) The design of a data base system is easier. Distributed control promotes evolutionary design of the system. Centralised control, however, encourages the design of the entire system.
- (iii) The interface with a data base system is simpler. Distributed control allows data description, manipulation, and access control to occur simultaneously. Centralised control, however, emphasises that these activities should be performed separately.

The security risk problem is a major one and both approaches are exposed to it. In either case, effective and stringent laws,

policies, and procedures need to be specified and enforced. The dispersion of control in itself does not solve the problem.

The total data bank need not be designed in detail. An overall conceptual design of the total system is highly beneficial prior to the design, development, and implementation of its parts.

If this is not done, serious problems of integration and control can arise.

Certain complexities are introduced in allowing data description, manipulation, and access control to occur simultaneously. In addition, higher exposure to problems of integrity and control may be encountered.

In general, centralised control appears to be more beneficial than distributed control.

The above list of laws, policies and procedures is not meant to be comprehensive. This area is vast and the research and development in it is still in the infancy stage. As this is an area where there is little or no experience to be drawn on, and it is recognised that there will be a large content of uniqueness about any individual development, many of the difficulties will have to be faced as they arise. It is, therefore, important that a high degree of flexibility be built into the process of legal enactment, together with an awareness and sensitivity to problems as they occur.

2. A strategic planning study should be performed by the Planning Study Team of the EDB (see Sub-section 6.4.4.). This is in order to quantify the costs and benefits of the EDB, and determine its

feasibility and detailed requirements. Although the expression regarding its immediate need and benefits was overwhelming, the quantification of these is required prior to the final design and development of the system.

The Team should investigate the feasibility of developing an EDB in Jordan, and determine its detailed developmental and implementational requirements. This study should result in an EDB planning study report which is to include:

- a. Executive Summary
- b. Objectives and Scope (short, medium, and long range)
- c. Assumptions, Constraints, and Controls
- d. Developmental and Implementational Requirements (organisational, economic, political, technical and operational)
- e. Benefits and Evaluation (tangible and intangible)
- f. Costs and Schedules (developmental, implementational, and operational)

The report is to be submitted to the Board of Directors for review and approval.

3. The initial coverage of the EDB should be limited to one horizontal (highly interactive) economic sector. The priority of the development should be given to its vital portions which can better serve the socio-economic needs of Jordan. This approach will provide a humble beginning, and time for the development and maturity of the EDB and its organisation.

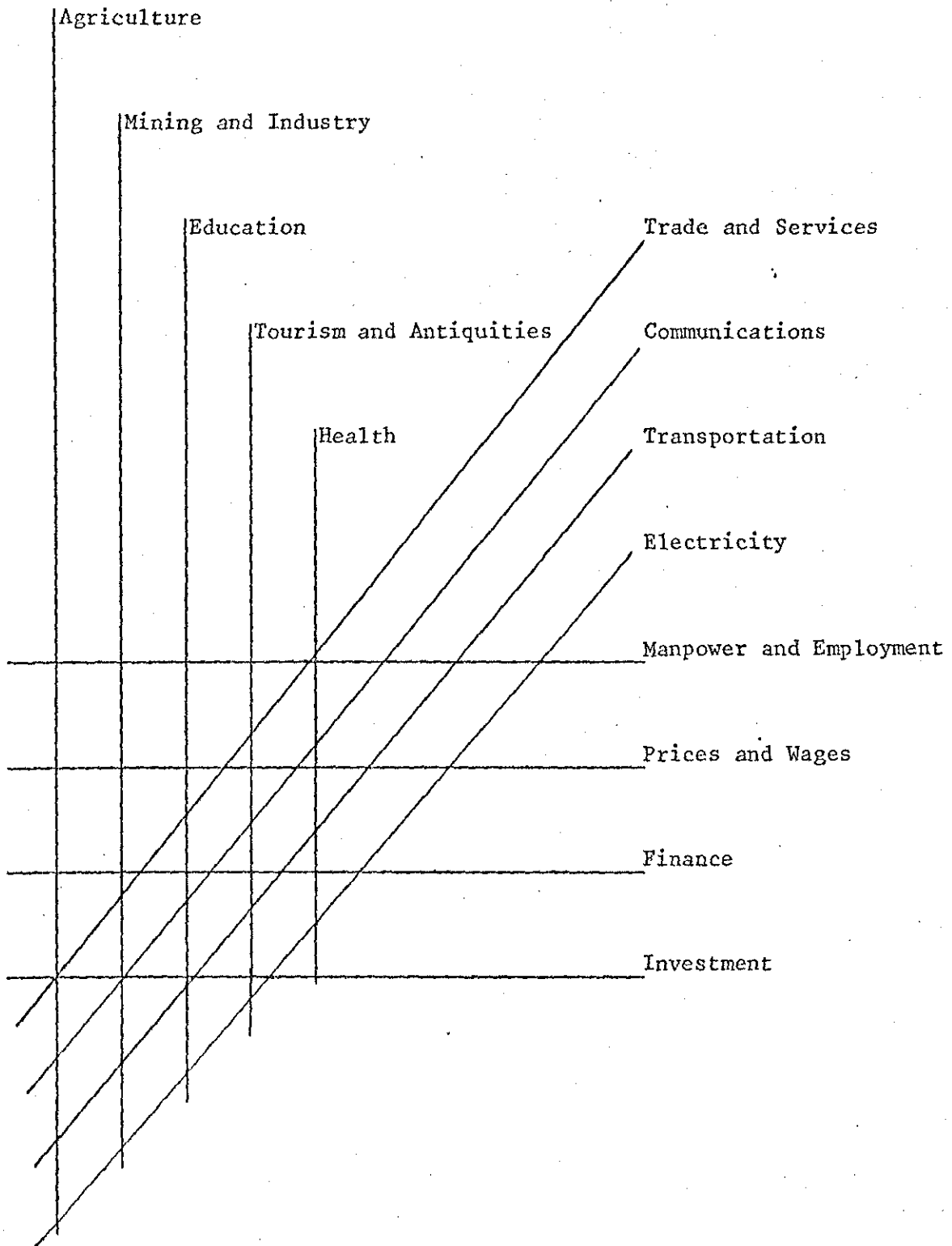
The above recommendation is in contrast to the field survey findings. The initial development of several economic sectors

was highly favoured by both the interviewees and questionnaire respondents. Some of the interviewees indicated that this development should only cover the vital portions of the sectors. Others indicated that, although there is a tremendous need for information in the sectors which they ranked highly, they had some reservations regarding the ability of a newly formed organisation to cope with such enormous development in Jordan.

All agreed that the four most essential economic sectors to be developed initially are Agriculture, Manpower and Employment, Mining and Industry, and Trade and Services. The Agriculture and Mining and Industry sectors are considered as vertical sectors due to their low level of interaction with other economic sectors. The Trade and Services sector is considered diagonal due to its medium level of interaction with other economic sectors. However, the Manpower and Employment is considered a horizontal sector due to its high level of interaction with all the other economic sectors. A pictorial representation of the interaction between economic sectors is provided in Figure 6.1.

Based on the above discussion, it is strongly recommended that the initial coverage of the EDB should be of the Manpower and Employment sector. This approach provides the ability to give the priority in coverage to those sectors which were ranked highly in the field survey. It would also lay the foundation in these essential sectors from which to expand and cover their other vital segments.

Figure 6.1

ECONOMIC SECTORS INTERACTION

4. Effective steps should be taken in order to overcome the inadequacy and shortage of qualified manpower and training facilities in Jordan for developing the EDB. The following are some recommendations and guidelines to assist in this regard:

- a. A critical review and analysis of the national policies and priorities regarding the manpower and its distribution in Jordan should be undertaken. The manpower shortage and problems were discussed in Chapter III, Sections 3.4 and 3.5, and Chapter V, Section 5.4.

The Jordanian Cabinet should form a committee to carry out this task. All governmental bodies and associated independent agencies and corporations, educational institutions, and the Armed Forces should be covered in this study.

- b. Modern management approach and techniques, particularly in dealing with the manpower and working environment of the EDB, should be utilised. This is in order to motivate its staff and increase their productivity. They should be challenged and encouraged to use management science tools (e.g. critical path method, simulation, and statistics) in the planning, development, and implementation of the EDB.
- c. Remuneration of the EDB staff should be competitive. Their compensation should be based on job classification rather than academic qualifications, and advancement dependent on merit. Job description should then define the basic academic qualifications which are required.

The emigration of experienced manpower, which is a result mainly of poor remuneration, is causing a tremendous shortage

in the requirements for the needed economic development.

- d. Vigorous pursuit of the recruitment of Jordanian nationals from abroad with expertise in this area should be pursued. This is in addition to the initial recruitment of staff of other nationalities for specific tasks and needs, particularly in the areas of planning and on-the-job training. However, long range planning should focus on internal sufficiency.
- e. Facilities within the EDB for the basic training of its staff should be developed. Seminars should be regularly held on EDB orientation, organisation, administration, control, cadre, and the associated laws, policies, and procedures. Structured courses should be offered in the areas of EDB planning, development, implementation, and internal and external interfaces. This is in addition to specific courses in data collection, processing, dissemination, and control, computer technology, hardware, and software, management science tools, and other pertinent subjects. A tailor-made training plan should be developed for each member of the EDB organisation. It is to be based on the individual needs as evaluated by the direct line managers and supervisors in conjunction with the Personnel and Training Department.
- f. Cooperation with the universities, the Ministry of Education, and other educational institutions should be performed in order to implement relevant training in their structures. This is in addition to working jointly with the Institute of Public Administration for the provision of related courses and seminars in this area.

- g. Training of selected members of the EDB staff in developed nations, and other developing ones who have some experience in this area, should be performed. This is in order to gain from their experiences in EDB development and on-the-job practice. This training should be geared to related and specific purposes, rather than to achieving general academic qualifications.
 - h. Structured training for the EDB users, and those interfacing with it (e.g. data collectors) should be provided. Presentations should be made in the form of lectures and seminars to acquaint them with the new technology and its potential advantages. They should be made actively involved in the development of the EDB and reassured that job security will not be adversely affected by it.
5. Strong action must be taken in order to limit the political and sociological ill effects on the development and operation of an EDB in Jordan. The EDB will be sandwiched between the top level policy makers and politicians on one side, and the public at large on the other. It will also have many problems of its own to resolve and overcome.

The policy makers and politicians may affect the EDB adversely in the following areas:

- a. Appointments of the members of the EDB Board of Directors based on political affiliation, sociological ties, personal loyalties, and individual gains.
- b. Interference with the management and operation of the EDB, such as:

- (i) Influencing the internal affairs of the EDB, particularly in the area of personnel appointments.
 - (ii) Applying pressure on the management to publish biased or erroneous data for socio-political gains, and the continuation of foreign aid, and outside assistance and contributions. The possibility also exists of modifying data to give the appearance that forecasts have been fulfilled, quotas and targets met, and public commitments were achieved.
 - (iii) Providing the EDB with erroneous data, which is under their control, for socio-political purposes, personal gains, or avoiding prosecution.
- c. Ineffective implementation of laws, policies, and procedures such as:
- (i) Laxity in penalising and prosecuting those who violate the rules of data collection, processing, dissemination, privacy, and security, as well as those who provide false data, or withhold information.
 - (ii) Poor protection of individuals and organisations from prosecution and hardship which are caused by obtaining data and information from the EDB.
 - (iii) Imposition of budgetary limitations which contribute to lower quality and quantity of data collectors and their training.

Data of high quality is most essential to the EDB. There are numerous public and national problems to deal with in obtaining this data, such as:

- (i) Fear of its misuse for prosecution, taxation, and other types of penalties.
- (ii) Mistrust of the ability of Government to adhere strictly to the established laws, policies, and procedures.
- (iii) A high level of illiteracy, particularly among bedouins, farmers, and other rural population.
- (iv) Little or no knowledge of the objectives and purposes of data collection and its values and benefits. This situation may allow rumour, particularly by those who set out deliberately to mislead the public.
- (v) Provision of false data for personal gains, socio-political purposes, avoiding penalties and prosecutions, and the like. Examples of this situation are: supplying erroneous information regarding the number of dependents in order to receive more social subsidies, eating habits due to religious dietary restrictions, and affiliation with a prohibited political party to avoid prosecution.
- (vi) Occupation of the West Bank of Jordan and the status of war with Israel (Chapter III, Section 3.1), which prevents data collection from that vital area.
- (vii) Difficulty in data gathering from a portion of the population on the East Bank due to problems in transportation and communication. There are some areas in southern and eastern Jordan with gravel roads which are particularly inadequate for winter travel. Methods of transportation to these areas are limited. These problems are magnified with respect to reaching the bedouin population.

- (viii) Religious and cultural situations related to condemnation of the charging of interest on loans, sensitivity to certain types of data (e.g. number of wives, ages of daughters, alcohol consumption, and gambling habits), limited communication between the two sexes, reluctance of women to provide data to collectors (who are entirely men), strain and shyness of individuals due to family structure and ties, etc.

Some of the internal socio-political problems which the EDB may face are:

- (i) Internal personnel appointments based on political affiliation, social ties, personal loyalties, and individual gains.
- (ii) External interference in the functions of the EDB, and socio-political pressures.
- (iii) Strict adherence to the established laws, policies, and procedures.
- (iv) Quality of manpower and training in administration, project management, supervision, and business, technical and operational staff functions.
- (v) Interface with the public and private sectors, particularly the suppliers and users of the data and information.

The following recommendations and guidelines are provided to assist in limiting the socio-political ill effects on the EDB:

- (i) Laws, policies, and procedures, in line with those recommended earlier in this section, should be established and rigorously implemented.

- (ii) Non-political and non-sociological personnel appointments should be strictly adhered to.
- (iii) Committees in line with those recommended earlier in this section should be formed. This is in order to assist in limiting the internal and external interferences and pressures.
- (iv) Campaigns should be developed and implemented, and the mass media utilised with the objectives of:
 - a. Building up the trust in the Government and the public sector at large.
 - b. Overcoming fears of the public and private sectors regarding the use of data and information.
 - c. Reducing the level of illiteracy in the country.
 - d. Explaining the objectives and purposes of data collection and the EDB functions, particularly in data handling, dissemination, privacy, security, and other control features.
 - e. Highlighting the established laws, policies, and procedures, and the associated penalties for violations committed by individuals in both the public and private sectors.
 - f. Presenting the value and benefits of the EDB.

It should be kept in mind that these types of campaigns must be broached gently and with careful design. Otherwise, these will be seen as the sort of brain washing slogans and tactics one associates with totalitarian states.

- (v) Women should be recruited and employed in the data

collection function. The task of gaining social acceptance for females to perform this function, and their attraction to carry out the work involved may prove to be very difficult. The position would have to be highlighted as an honourable, challenging, and rewarding one. A parallel can be drawn to the public between this position and those of policewomen and nurses where females are currently employed.

- (vi) Transportation and communication should be improved in the remote areas. Roads to these locations should be paved, and better methods of transportation and communication should be established.
- (vii) Initiation of an EDB research project with the objective of investigating and developing a data collection methodology which can be successful in the socio-political environment of the country.

In the final analysis, the top level policy makers and politicians must display responsibility and restraint to the public at large, and as one interviewee put it "The EDB must be presented to the public as the system of the country and as an integral part of it."

6. In-depth analysis of the technical requirements of developing an EDB in Jordan prior to making any software or hardware commitments. This should be performed as an integral part of the recommended planning study.

Installing a data base is a huge undertaking which involves substantial effort and funds. Poor planning and design in this area

could be extremely costly and fatal. The design of a data base is becoming increasingly difficult, particularly if it is to perform in an optimal fashion. The software is becoming increasingly complex and intricate. There are many ways in which data can be structured with advantages and disadvantages relevant to each. Data need to be organised in several ways for users with diverse requirements which necessitate some compromises in the design. These kinds of complexities force many into purchasing the data base software rather than to developing it custom-made.

No software package can be all things to all people. Software packages vary in their sophistication levels, from a very high to a rudimentary level. For an example, some DBMS's have the ability to perform low volume inquiries rapidly on a large data base but at the expense of slow files maintenance and update. Some others, have limited file structure options and a tabular report specification language which make the file management systems easy to use, but limit the flexibility of application of the data base. These vast differences and varieties in software make it extremely difficult to select the most appropriate DBMS for a particular application.

Selecting a DBMS is an extremely difficult task. In many instances the selection decisions are based on incomplete and inaccurate factors which result in serious and costly long range repercussions. Little has been accomplished in the development of comprehensive procedures for the selection of a DBMS which lead to the determination of the organisational needs and the required DBMS features. Many organisations are restricted by their decisions

previously made in the hardware area.

Several attempts have been made regarding the selection of a DBMS for organisational use. Some authors provided check lists and others discussed the development of complex weighing schemes. In addition, the subject has been the topic of many debates and seminars. These attempts, debates, and seminars brought to focus some guidelines in planning a DBMS. These guidelines have been adopted to form the recommendations regarding the technical implications for national use which are provided below:

1. The development of a long range plan, to serve as the basis for the EDB development in Jordan, should be performed. The coverage of this plan should include:
 - a. The information needs of the user. In this area, focus should be made on:
 - . User characteristics, such as: the types of expected users, the number and geographical dispersion of the users, type and frequency of access required, and response time needed.
 - . Data characteristics, such as: the volume of the data, its expected growth, its structural complexity and volatility, and the geographical distribution of its resources.
 - . System characteristics, such as: the enquiry and tele-processing capabilities, and the volume, size, obsolescence, and modularity of the system programmes as well as the

volume growth and volatility.

- . Support services needed from the EDB such as: the services and the documentation required for the staff associated with the system, the interfacing requirements with other systems and software packages, and the required recovery capabilities of the system.
 - b. The specifications for the required primary capabilities of the EDB. In particular, those related to:
 - . Data, such as: Structure, independence, security, privacy reliability, quality, shareability, and integrity.
 - . Software, such as: maintainability, portability, implementability, supportability, compatibility, and flexibility as well as the audit features and performance.
2. The purchase of a DBMS software should be made to be used in the development of an EDB in Jordan. The in-house development of a custom made data base software can lead to disaster, particularly in a developing nation. The costs of initial in-house data base software development and its continuing maintenance can be extremely high. The design and development of such software require a large number of technical experts and a long period of time, neither of which a developing nation can reasonably afford. Guidelines regarding DBMS software and selection are provided in Section 6.5 of this chapter.

6.4. Recommendations: EDB Organisation

The recommendations provided in Section 6.3 of this chapter dealt

with the basic issues of developing an EDB in Jordan. In this section, recommendations regarding the organisational aspects and evolvement of an EDB are offered.

The recommended framework is composed of the following:

1. Tasks of a top level policy maker
2. Tasks of the Board of Directors of the EDB
3. Tasks of the Director General of the EDB
4. Tasks of the Planning Study Team of the EDB
5. Tasks of the Department Directors of the EDB

6.4.1. Tasks of a Top Level Policy Maker

A top level policy maker in Jordan needs to initiate the development of an EDB through an executive action. A legislative action is not possible at this time due to the indefinite suspension of the Jordanian Parliament.

A Board of Directors should then be formed to serve as a governing body of the EDB. The appointment of members to the board should be restricted to those who have the ability, capability, and interest to participate actively in the policy making of the EDB, and its interface with the public and private sectors of Jordan.

The senior statesman is to continue to act as a supervisor of policy development, and a consultant and adviser on major decisions.

6.4.2. Tasks of the Board of Directors of the EDB

The Board should select and appoint a highly qualified candidate in this field, with modern management experience, to serve as the Director General of the EDB. This appointment should be non-political and strictly based on the ability, merit, and expertise of the candidate in this field.

The Board should then provide the Director General with guidelines regarding policies, objectives, scope, monetary and other matters of high importance. It should monitor the activities and performance of the EDB, and review its top policies and actions for approval. In addition, it should assist, on a continuous basis, the interface of the EDB with other governmental, semi-private, and private organisations in Jordan and internationally.

6.4.3. Tasks of the Director General of the EDB

The Director General should select and appoint highly qualified candidates, with modern management experience, to participate in a planning study for the EDB. The selection of candidates should be non-political, and based on ability, merit, and expertise in the fields of interest. The major criterion for selection should be the qualifications of candidates to serve as directors and key officials in the EDB organisation when it is fully established. The Director General should also recruit an initial supporting staff and obtain reasonable facilities.

He is to be the chief executive of the EDB organisation, and responsible for carrying out the policies of the Board within the provided guidelines. He should be the basic link between the Board and the EDB organisation, and serve as a filter of upward and downward communications between them. The Director General should lead and coordinate the Planning Study Team.

Another of his tasks would be to select and appoint a Deputy Director General. This appointment should be non-political and the qualification of the candidate should fall in line with those of the General Director and Directors.

The Director shall seek the approval of the Board for the appointments of the Deputy Director General, Directors and key official of the EDB organisation. He should also seek their approval of the budget, cadre, and financial and other matters of high importance.

6.4.4. Tasks of the Planning Study Team of the EDB

The selected members of the EDB Planning Study Team should have qualifications to cover the following fields of interest:

1. Business Administration and Management Science
2. Economics and Econometrics
3. Social and Political Science
4. Systems and Computer Science
5. Law
6. Accounting and Finance
7. Marketing and Public Relations
8. Statistics and Quality Control

The objectives of the Planning Study Team will be to investigate the economic, social, political, technical, and operational feasibility of developing an EDB in Jordan. In addition, to determine its detailed developmental and implementational requirements. This study will result in an EDB Planning Study Report which shall then be submitted to the Board of Directors for review and approval. Should the results of the study be approved, then the EDB organisation can be formally established in order to carry on its responsibilities and perform the required tasks. If not, the Board shall provide the Director General with new guidelines and direction for further action.

6.4.5. Tasks of the Department Directors of the EDB

Upon the approval of the results of the EDB Planning Study by the Board, the organisation will be formalised. It is to be made of functional departments with directors as heads. The general tasks which are to be delegated to these Directors are those of organising their respective departments, selecting and training its staff, and coordinating and interfacing with each other and externally. In addition, they will have the responsibility of reporting and liaising with the Director General. This is in order to achieve the established objectives and perform the required functions and tasks of the EDB.

In addition to the usual and conventional tasks, there are some specific ones which should be focused on, and planned for, by the Directors. These tasks are provided below for the Directors of the Departments which should be included in the EDB organisation:

1. Director of Administration: Plan in order to achieve:
 - . Effective coordination and control
 - . Conducive environment
 - . Tight security
 - . Highly competitive cadre

2. Director of Research and Planning: Investigate and plan:
 - . EDB input requirements and sources
 - . EDB output requirements and distribution
 - . Logical and physical data structure and coding
 - . EDB software and hardware requirements
 - . EDB general technical requirements

3. Director of Development: Insure that the design and development of the EDB satisfy:
 - . The needs of the users
 - . The planned capabilities
 - . The long range objectives

4. Director of Operations: Plan for effective:
 - . Input gathering
 - . Use of technical resources
 - . Output distribution
 - . Customer service

5. Director of Marketing and Public Relations: Investigate and develop plans for:
 - . Marketing socio-economic data and information in Jordan and abroad
 - . Effective campaigns to present the EDB to the public and private sectors of Jordan

6. Director of Accounting and Finance: Prepare and develop an effective:
 - . EDB budget
 - . Cost centres
 - . Standards to measure performance
 - . Accounting and financial reporting scheme

7. Director of Personnel and Training: Plan and develop strategies and procedures for:
 - . Manpower requirements in the short, medium, and long range
 - . National and international recruitment of personnel
 - . Local training facilities
 - . Local, national, and international personnel training programme
 - . Hiring and dismissal practices

8. Director of the Legal Staff: In addition to providing legal advice to the EDB organisation, he should investigate and prepare legislation, methods, and procedures for:
 - . Data collection and control
 - . Data and information distribution and control

- . Data security and control
- . Data privacy and control

The following block diagram (Figure 6.2) summarises the recommendations provided in this section:

FIGURE 6.2

BLOCK DIAGRAM: RECOMMENDATIONS REGARDING THE APPROACH
TO EDB DEVELOPMENT

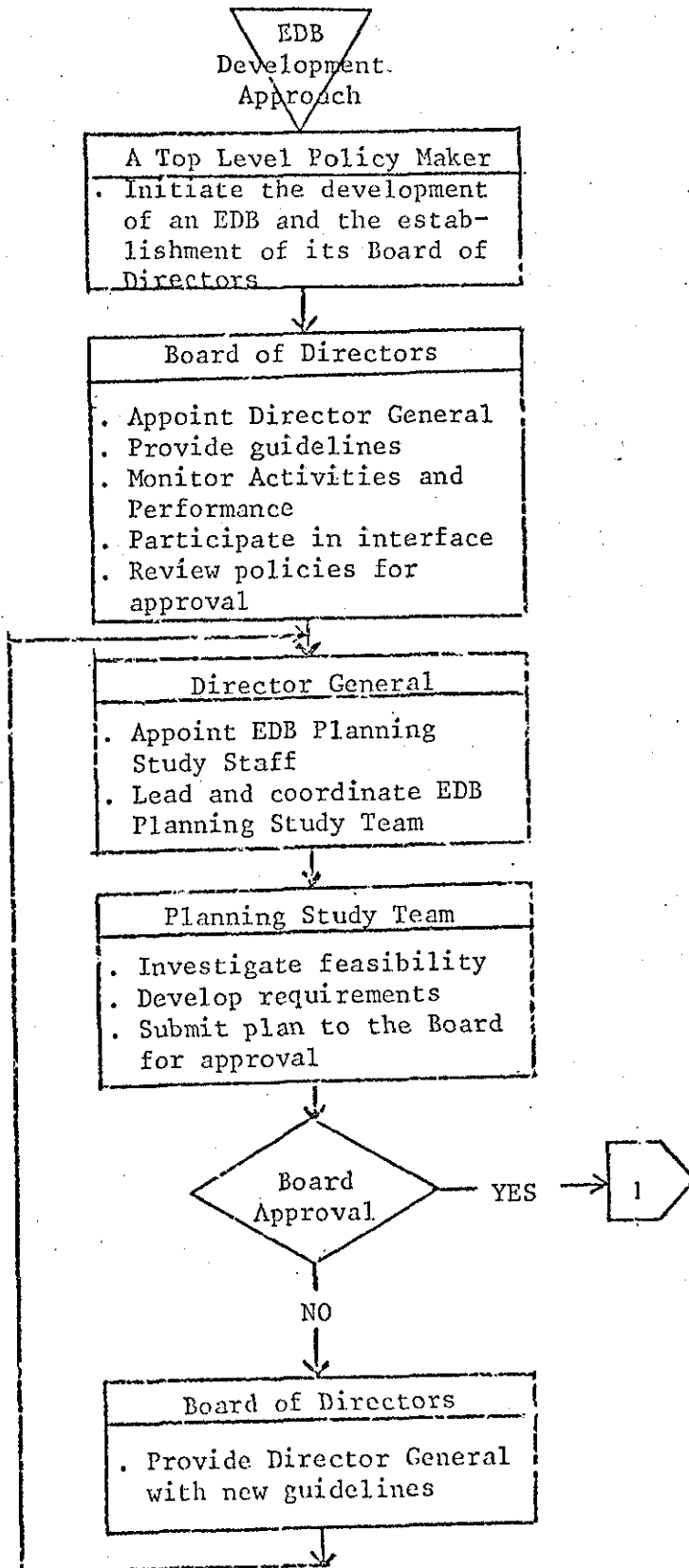
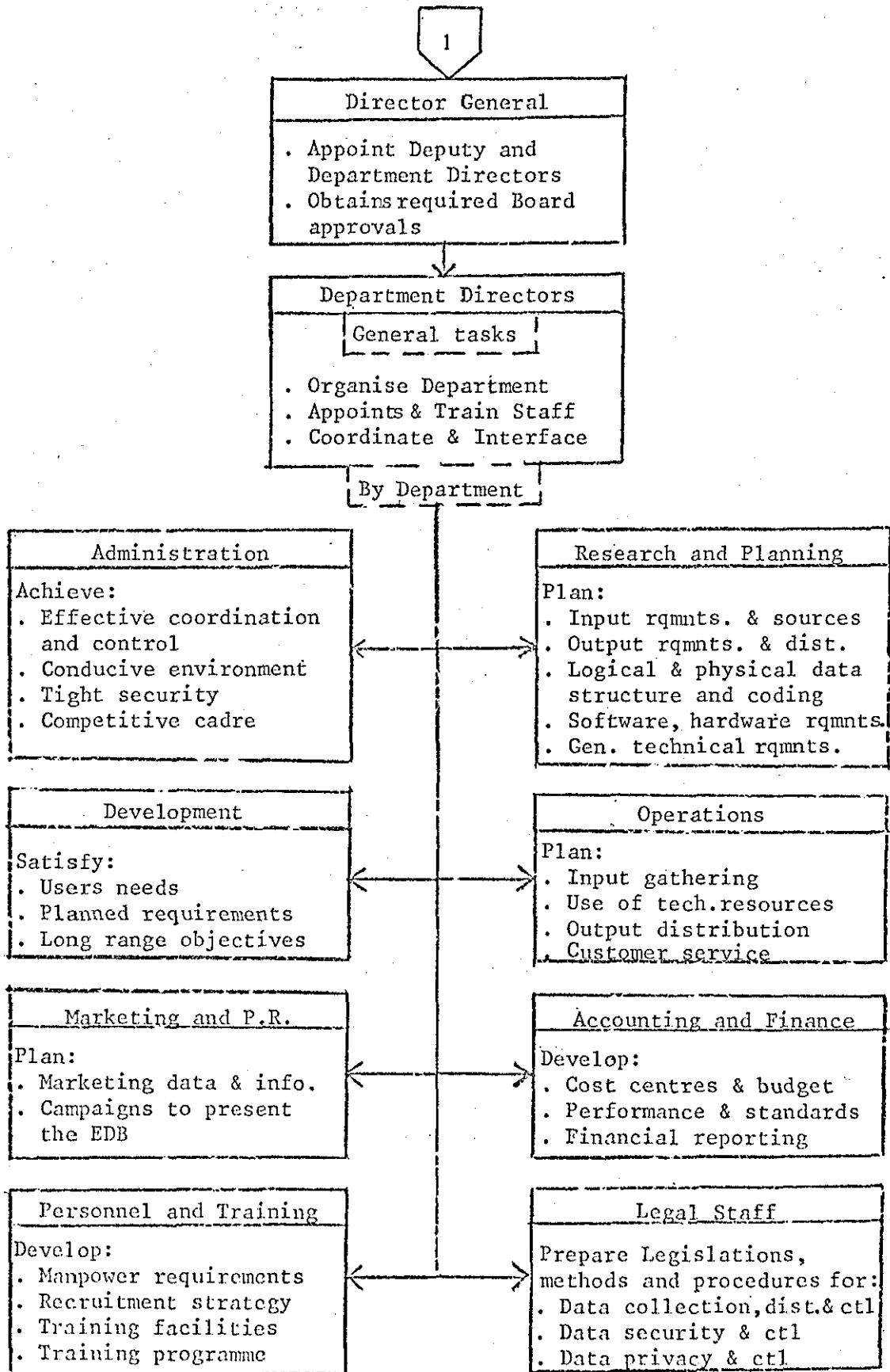


FIGURE 6.2 continued



6.5. Recommendations: DBMS Software and Selection

The number of software packages concerned with data handling, storage, and retrieval, which are available for commercial use, is increasing at a rapid rate. These packages are offered under a variety of generic names, and fall into several categories such as: data management systems, data retrieval systems, file management systems, information management systems, information retrieval systems, data base management systems, and special purpose data handling systems. For the purpose of this section, all these software packages will be referred to as data base management systems (DBMS).

As new advancements and accomplishments are achieved in the computer hardware and software areas, and more knowledge and experience are gained in computerised systems, the DBMS software packages are increasing in complexity. Each package has its own features, capabilities, options, and limitations. This situation is making the task of selecting a DBMS package extremely difficult.

Several organisations and individuals have attempted the development of selection methodologies, standards, and techniques for classifying, evaluating, and selecting the appropriate DBMS software package. Elaborate questionnaires and exhaustive feature lists were developed, and complex weighing and scoring techniques were formulated for the assessment of packages and their comparison. The CODASYL Systems Committee, the U.S. National Bureau of Standards, Carter, Sibley, and Chow, to mention a few, have contributed in this area (162, 180, 425). To date, no single methodology, set of standards, or technique

is agreed upon by the business community, or considered effective as the framework for the evaluation and selection of DBMS software packages. Although the state of the art in this area is still at a rudimentary level, some basic guidelines can be gained from the work performed to date. These guidelines can be extremely beneficial in providing assistance and direction to prospective users, and serve as a foundation for DBMS selection.

The DBMS selection guidelines are required in three areas:

1. DBMS: User Objectives and Requirements
2. DBMS: Survey
3. DBMS: Evaluation and Selection

6.5.1. DBMS: User Objectives and Requirements

Basic guidelines and recommendations in this area were provided in a previous Section (6.3) which can be summarised as follows:

1. The information needs of the users, and the required DBMS features and capabilities should be established as an integral part of an overall strategic and long range plan.
2. The characteristics of the user, data, and system, as well as the required support services should be specified.
3. The primary capabilities which are required of the EDB, particularly those related to data and software should be identified.

6.5.2. DBMS: Survey

In order to prepare for the evaluation of DBMS packages and the selection of the appropriate one, it is necessary to survey the DBMS software market for candidates. The list of available DBMS candidates is dynamic and constantly increasing. In addition, the currently available DBMS packages are expanded in their facilities, options, and capabilities, and improved in their features and performance. Consequently, it is best to survey the DBMS software market for candidates at the appropriate time during planning.

The basic guidelines for this market survey are:

1. Critical review of available literature on various DBMS software packages. This review should include:
 - a. Brochures and technical documents.
 - b. Books, articles, and reports covering discussions and comparisons of DBMS software packages.

2. Personal contact of DBMS software users and in particular those with similar environment to the prospective user. These contacts should result in:
 - a. Better understanding of the package and its features, capabilities, options, and limitations.
 - b. Advantages and disadvantages realised by the users.
 - c. Problems experienced in manpower and training, design and development, start-up or conversion, implementation, user interface, package and performance, hardware and software

environment, and vendor interface and support.

3. In-depth study of the legal and contractual aspects imposed by the DBMS software vendor. This study should cover:
 - a. Costs associated with vendor services such as: personnel training, start-up assistance, documentation, maintenance, modifications, expansion and continued support.
 - b. Prices associated with the package and its use such as: basic price, prices of special features, and price reduction for multiple usage by the user.
 - c. Other penalties and rewards associated with the DBMS software packages such as: developing additional special features, capabilities, and options, and user participation in the modification and testing of the package or any additions developed by the vendor.
4. Careful consideration of the benchmarks of the DBMS software package.

6.5.3. DBMS: Evaluation and Selection

The DBMS candidates selected by the planning team should be thoroughly evaluated and compared. This is in order to select the most appropriate package which can serve the needs of the prospective user.

A selection team should be formed consisting of a group of experts in the field. The members of this team should have the ability and capability of providing consistent realistic ratings without bias. The rating criteria, methodology, and approach should be thoroughly defined and agreed upon in advance.

The evaluation of DBMS candidates should be performed in the light of immediate needs as well as long term need of the prospective user. This evaluation should include:

1. Vendor profile
2. Environmental considerations
3. Data structure
4. Interface facilities
5. Software features

6.5.3.1. DBMS Evaluation: Vendor Profile

There are several pieces of information about the vendors of the DBMS candidates which should be obtained and included in their evaluation and comparison. This information should cover:

1. General items of interest such as: Historical and financial background, reputation in the business community, number and quality of personnel, extent of operation, and other involvements and activities.
2. Specific items of interest such as: the ability and capability to support, maintain, document, train, improve, and expand the DBMS software package on continuing basis.

6.5.3.2. DBMS Evaluation: Environmental Considerations

The external elements which are required by each DBMS software package should be specified. These elements should include:

1. Hardware configuration and environment such as: CPU and peripheral needs, processing mode and facility requirements (local, teleprocessing, time-sharing, dedicated, shared, etc.).
2. Software configuration and environment such as: operating system, utility programmes, languages, and multi-programming requirements.
3. Quality of personnel required to interface directly and indirectly with the DBMS software package such as: at the levels of policy maker, user, manager, analyst, programmer, and operator.

6.5.3.3. DBMS Evaluation: Data Structure

One of the most important issues in DBMS software packages is that of data structure. It is essential and vital that DBMS packages support complex data structures in order to facilitate the relation and integration of data, and minimise its duplication and redundancy. Consequently, thorough understanding of the data structures supported by the DBMS packages is of high importance in their evaluation.

One of the important aspects of complex data structures is the separation of the logical and physical data representation. Logical data representation refers to the manner in which data is presented to the user programme. Physical data representation refers to the manner in which data is physically stored. This separation was

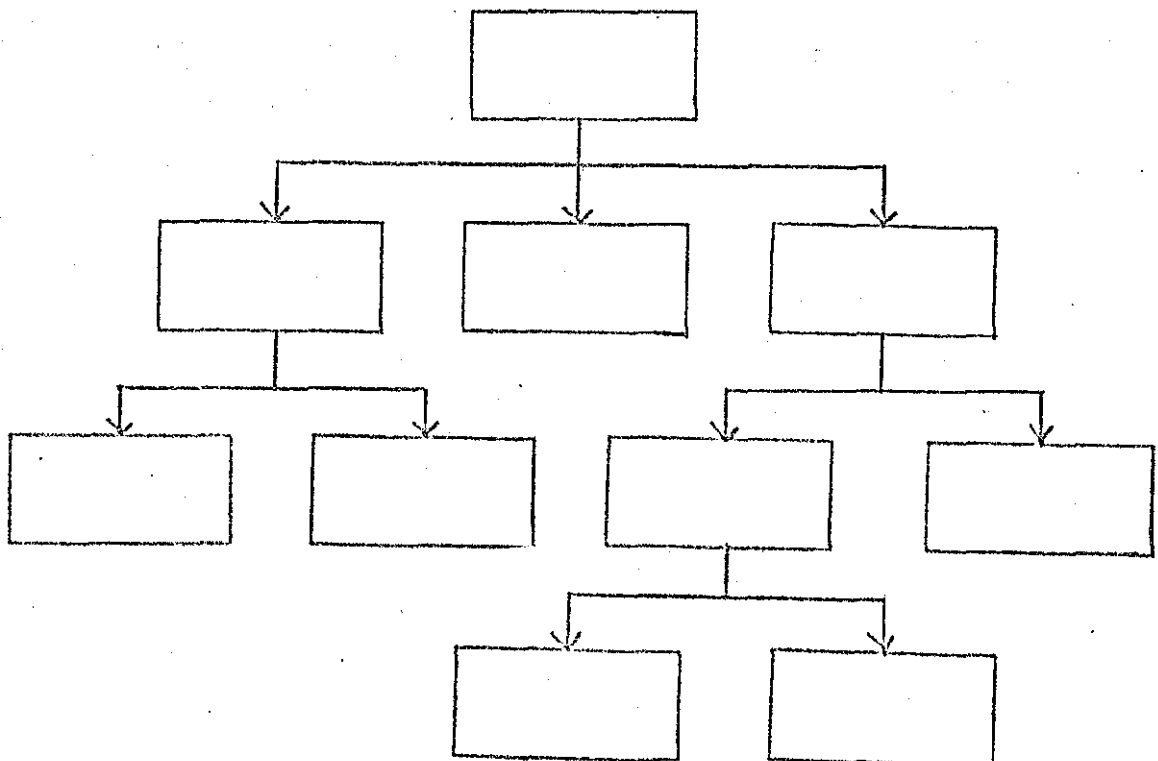
recognised and emphasised by the CODASYL Systems Committee (180).

There are several types of complex data structuring. One of the most important issues in the evaluation of various DBMS packages is the types of data structures they support, and their advantages and disadvantages in the environment of the prospective user. The highly noted data structures are:

1. Hierarchical Structure: Figure 6.3 shows the type which is also known as the inverted tree structure. The structure has several levels of organisation. The data elements on each level point to collections of logically related elements on a lower level. Each element has only one parent. The highest element is called the root.

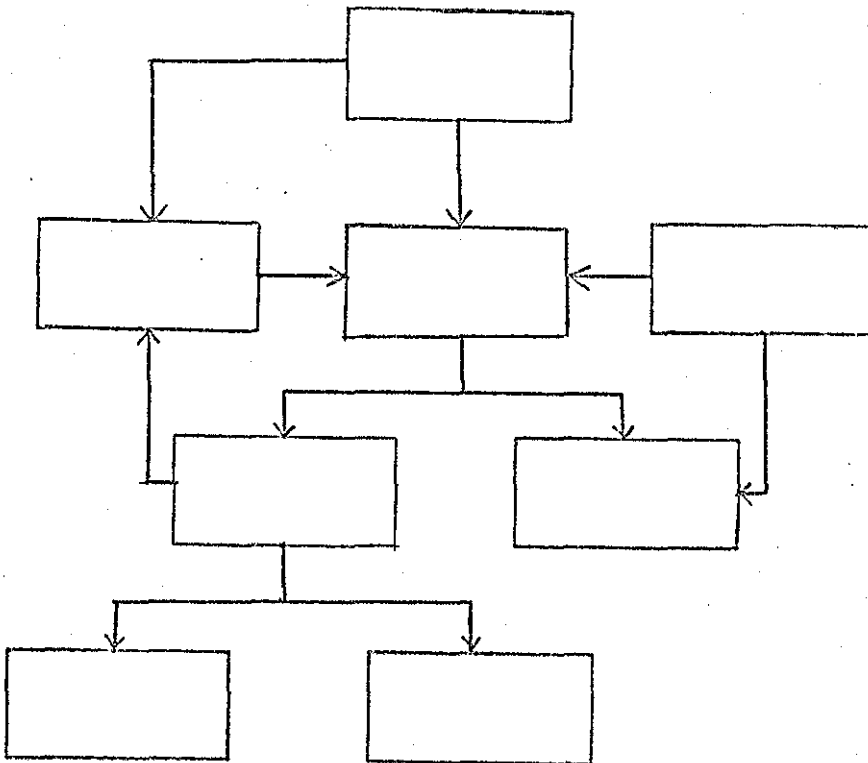
FIGURE 6.3

Hierarchical Structure



2. Network Structure: Figure 6.4 shows this type of data structure. It is not a single rooted data organisation. Each element can have more than one parent. Consequently, an element can have several relationships with other elements in the structure.

FIGURE 6.4

Network Structure

3. Relational Structure: A paper was published by Codd in 1970 titled "*A Relational Model of Data for Large Shared Data Banks*" (185), which generated an extremely high level of interest particularly in the academic circles.

The basic principle of this approach is that each record within the structure expresses one and only one relationship between

the key elements or identifiers, as shown in Figure 6.5. This structure is rigorous and flexible. Additions, deletions, and changes to this structure can be performed without impacting the existing organisation. However, this can result in a considerable duplication of data. The structure also facilitates the sequential processing of records of a given type.

To date, the few known implementation of data bases utilising the relational approach are in research institutions, and on a relatively small scale. With the currently available storage devices, it is unlikely that data will be stored as relations on a large scale. The research and development in this area is still in the infancy stage. Large scale use of the relational approach must await hardware advances which may come about in the next decade.

FIGURE 6.5

Relational Structure

a(1)	b(2)	a(1)	c(2)	d(3)
a(2)	b(1)	a(2)	c(1)	d(2)
a(3)	b(3)	a(3)	c(3)	d(1)
.
.
.
b(1)	e(3)	c(1)	e(3)	
b(2)	e(1)	c(2)	e(1)	
b(3)	e(2)	c(3)	e(2)	
.	.	.	.	
.	.	.	.	
.	.	.	.	

6.5.3.4. DBMS Evaluation: Interface Facilities

There are several types of interface facilities which are provided by the various DBMS packages. These facilities are of high importance to the prospective user, and should be included in the evaluation and comparison of the packages. The interface facilities include:

1. Data Description Language (DDL): This language is used to define the data structure, format, access, and relationships.
2. Data Manipulation Language (DML): This language is used to define the data maintenance, update, and retrieval. It is also used to handle the representation of relationships between data. Consequently, it is the interfacing mechanism between the user and data. Several types of DML are provided by the various DBMS packages such as those for batch processing and conversational mode as well as for technical and non-technical users.

The subsystem which interprets the DML statements and manipulates the data is called the Data Base Manager (DBM).

3. Data Analysis Language (DAL): This language is used to describe the various aspects of the stored data such as: volumes, number of accesses by type, right of access, et al. Details of this type are commonly called the Data Dictionary.
4. Storage Structure Language (SSL): This language is used to define the mapping and storage media of the data base. It is concerned primarily with optimising the storage and access

strategies of the data base. To date, this particular area of interface and its associated terminology has not reached maturity.

5. Miscellaneous Facilities: There are other interface facilities provided by the various DBMS packages such as aids for auditing, tuning, performance measurement, debugging, and design, which should also be included in the evaluation and comparison of the various packages.

6.5.3.5. DBMS Evaluation: Software Features

There have been many interested organisations and individuals who have debated, discussed, and written about a multitude of features which should be considered in the evaluation and comparison of DBMS packages. Consequently, the list provided below is not a comprehensive one, but it covers several features which should be used as a guideline in the evaluation and comparison of the DBMS candidates:

1. Data:
 - a. Independence
 - b. Integrity and controls
 - c. Privacy and controls
 - d. Redundancy and controls
 - e. Security and controls
 - f. Shareability
2. Software:
 - a. Ad hoc enquiry

- b. Application independency
- c. Compatibility
- d. Documentation
- e. Flexibility
- f. Modes
- g. Performance
- h. Portability (convertability)
- i. Recovery
- j. Reliability
- k. Search strategies
- l. Stability
- m. Transferability.

3. Costs associated with:

- a. Hardware requirements
- b. Implementation
- c. Maintenance
- d. Operations
- e. Software
- f. Support

6.6. Need for Further Research

EDB development is still in the infancy stage. A tremendous amount of research is desperately needed in order to improve the chances of its success.

This study was limited in scope to the investigation of the basic managerial and organisational issues associated with the development

of an EDB. It was exploratory in nature, and was performed as a cross-section rather than a deep analysis of a narrow area. Consequently, each aspect of the research can be investigated further and in more depth, such as:

1. Research Methodology: In-depth study of questionnaire design and implementation in a developing nation. This is in order to investigate the structure, content, and other procedural matters associated with a questionnaire, and develop guidelines for its implementation in the socio-political environment of a developing country.
2. EDB Development: There are many important areas of research which are needed for the next planning stage of EDB development, and as an essential part of the everyday work of an EDB, such as:
 - a. Survey and data collection methodology in a developing nation.
 - b. Laws, policies, and procedures for an EDB covering data security and privacy, code of ethics, and other organisational, developmental, operational, technical, and implementational matters.
 - c. Quantification procedure for the determination of an EDB cost-benefit.
 - d. Project planning and control of the development of an EDB in a developing nation.
 - e. Detailed manpower, and staff and user training requirements of an EDB.
 - f. Type of campaigns and methods of using the mass media in limiting the socio-political impact on an EDB.

3. EDB Organisation: Some of the studies needed in this area are related to:
 - a. Effective organisational structure for successful EDB development. This is to include controls, audit, internal and external interface, and other related matters.
 - b. A project team mix which can best develop an EDB in socio-technical terms.
 - c. A manpower recruitment strategy, particularly for women, cadre, and environment which can be inducive to highly qualified people for an EDB.

4. EDB Technical Aspects: One of the extremely vital and interesting areas of study in this regard is the development of coding schemes for the socio-economic sectors to be included in an EDB. This is in addition to the development of the intersectional, logical, and physical relationships between these sectors. Some of the other essential studies in this area are:
 - a. Quantification procedures for software and hardware selection for an EDB.
 - b. A communication network model for an effective EDB data and information collection, dissemination, and control in a developing country.
 - c. Specifications of the basic requirements and modus operandi for software and hardware maintenance, and system back-up and recovery in a developing nation.

The above list is not meant to be comprehensive. Furthermore, each area of investigation or research can be further broken down into several studies.

6.7. General Recommendations and Overview of Work

There is little doubt in the mind of anyone at all conversant with computer development that one of the major future applications will be the large-scale collection of nation-wide data for national planning and policy making. In developing countries there will be special problems because:

1. Their rate of technological progress is that much faster.
2. Their political, social, and cultural backgrounds and objectives differ from those of the developed countries.
3. They have fewer resources, especially in the technical area.

Problems which all developers of any EDB will have to face are:

1. The infancy of DB technology.
2. The rapid growth, not only of DB technology, but also the computer technology necessary to support it.
3. The paucity of any prior work in this area on which to base development.

There is, as has been seen, an urgency in getting work started on a national EDB, but several major factors have to be faced first:

1. There is a trade-off in starting soon to have the systems available earlier, or delaying to allow for development in technology, and other areas of expertise.
2. In order to be effective, there must be a clear understanding among the planners and policy makers, for whom the bank would be designed, about the objectives, purpose and scope of the operations. Otherwise, the systems will become pawns in a

grappling for the power that would derive from having control of the information.

3. Once the policies have been made clear, there is then the problem of organising the development of the planning and running of the EDB. The hiring of staff, the structure of the organisation, its processes and controls, must all be examined if an efficient as well as an effective EDB is to come about.
4. Only then can the technical problems be faced realistically, such as those of the design and selection of hardware and software; of data collection, verification, and coding; of audit, security, and privacy; of information availability, accuracy, and format.
5. Wider issues will pervade throughout the development, such as those that relate to the impact of the existence of a computerised data bank not only on the economic performance of the country, but on its social, political, and religious structure. The developers will have to be aware of the sensitivities that can arise in these areas if their work is to prove acceptable.

The work of this research deals in different depths with the above factors, all of which must be taken into account before any major commitments are made. When something as wide scale and innovative as this is set afoot, the degree of care that is taken in the first few phases of development are critical to the level of ultimate success of the venture.

Critical to the success of these initial stages are planning and structuring the development of the EDB, so that as each new set of

problems arises, the appropriate resources are there to meet them. The research has, therefore, detailed a three level hierarchy for controlling the development:

1. At the most senior level, facilities for formulating policy, setting objectives and enacting the laws necessary for the establishment of the EDB as a truly national entity.
2. Next a managerial level responsible for implementing the objectives and thus involved in the administration, accounting and finance, marketing and public relations, staffing and training, and auditing necessary to run the EDB.
3. At the operational level there will be teams responsible for data collection and processing, research, planning and development, information preparation, and control of accuracy and security. The fine details of the structure here especially must await decisions made by the higher level of staffing.

As in most projects, the success will depend not only on the quality of the planning, but also on the personalities of the staff and their relationships. Especially in running a national EDB the development of a team spirit, an effective code of conduct, and loyalty is important to the quality and the security of the project. This means that care must be taken in ensuring that all appointments are carefully scrutinised and that the environment of the employment (pay, security of tenure, and working conditions) are conducive to a high level of morale. As much of the spirit of the organisation permeates from the attitudes of its top executives, then the selection of these first few key people should be made with special care.

Long before the development of an EDB approaches the point of becoming live, decisions will have to be made concerning its initial areas of application and their depth and scope. Factors affecting these decisions have been investigated, both in respect to the immediate usefulness of specific areas and their ultimate ability to form a nucleus for growth of an EDB. Specific recommendations are made here that the initial sector for growth should be one with much interaction with other areas of future development thus providing sites for contact and growth.

One of the major problems which will have to be faced by the EDB management when in operation is the fact that, especially as this is both a new area and with the problems already discussed of working in a developing nation, the data collected will be both incomplete and inaccurate. There is also the risk of bias entering for reasons such as those related to the sociological and political aspects (Chapter VI Section 6.3). This has two repercussions:

1. Data collection and vetting will have to be carefully designed to ensure that the problem is reduced to manageable proportions.
2. As there will always be some residual effect, however carefully the data collection is done, there will have to be stringent measures included in the analysis and presentation of results. This is in order to ensure that the existence of ambiguity or uncertainty in the data is not then ignored, and the results given that air of concrete certainty often attributed to computer produced results. In other words, inherent inaccuracies in data must not be glossed over and the information handed to decision makers must not lead them to making assumptions based on insufficient or erroneous data.

This is a topic that is of major concern and, although the detailed approach to this lies outside the scope of this present work, indeed most of the problems here will only arise when the system begins to operate. There is built into the organisational structure a fairly heavy content of audit and data control, whose job it will be continually to study this aspect, monitor and advise to ensure that the information produced is at all times reliable and unbiased.

The establishment of an EDB should be seen within the structure of a stable and well-governed country with a commitment to develop the best interests of its population and retaining its own cultural and historical identity. The implementation of an effective EDB will give government a powerful decision-making tool; properly wielded it will provide a means of improving the use of the resources of the nation, resulting in benefit to the country and its people. On the other hand, it must be remembered that in the wrong hands it could become a powerful weapon, providing data to those who would wish to subvert those resources to the interest of a minority, or to those whose affiliations lie outside the country. It could also be used as an instrument for propaganda. It is essential, therefore, that in developing an EDB, all possible steps should be taken from the outset to ensure that its control rests only with those whose allegiance is proven to rest only with responsible government.

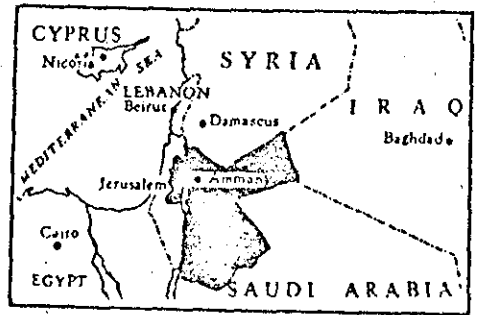
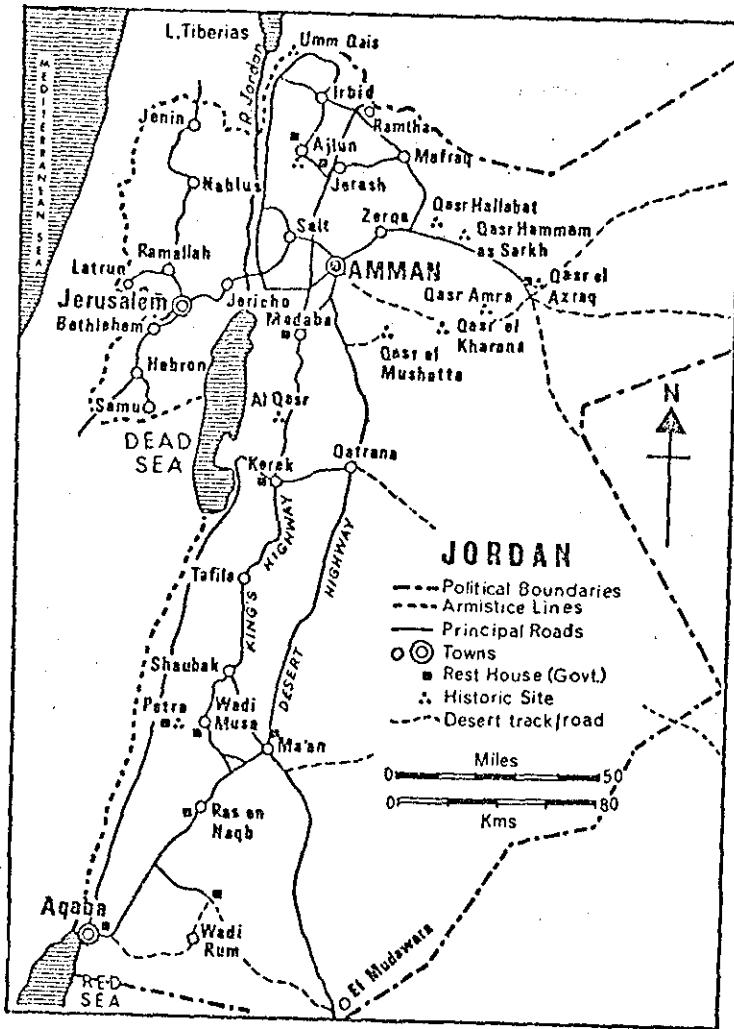
To sum up finally, an EDB must be efficient, effective, and accepted; to do this it must provide information that is timely, accurate, and flexible for those who make policy or implement it. In the national interests it must be secure, loyal, and aware of its social responsibilities.

APPENDIX A

MAP OF JORDAN

APPENDIX A

MAP OF JORDAN



APPENDIX B
EDB DEVELOPMENT IN JORDAN
QUESTIONNAIRE

APPENDIX B

ECONOMIC DATA BANK MANAGEMENT IN A DEVELOPING NATION

QUESTIONNAIRE

INTRODUCTION

The purpose of this questionnaire is to obtain certain information from a number of officials of the Jordanian Government and associated agencies and corporations, businessmen in the private sector, researchers, and scholars. This information is in regard to the need, implications, and elements of developing an Economic Data Bank (EDB) in Jordan. Findings are to be used as an integral part of a Doctoral Thesis titled:

"Economic Data Bank Management in a Developing Nation".

The EDB encompasses an automated management information system which covers timely; accurate, and non-redundant economic data gathering, processing, and information retrieval, for improving mainly economic planning and decision making.

Your speedy cooperation in completing the questionnaire will be most welcomed and very much appreciated. Questions are translated into Arabic for your convenience but please provide the answers on the English copy and mail to:

c/o Mr. Omar Widyan,
Royal Scientific Society,
P.O. Box 6945,
Amman,
Jordan.

Sincerely yours,

Borhan N. Shrydeh

Borhan N. Shrydeh
Department of Management Studies,
University of Technology,
Loughborough, Leicestershire,
England

QUESTIONNAIRE

Name

Address

.....

.....

.....

Please mail to:

c/o Mr. Omar Widyan,
Royal Scientific Society,
P.O. Box 6945,
Amman,
Jordan.

Date: _____

1. Your duties: (check one)

- a. Policy Maker
- b. Manager
- c. Staff
- d. Consultant/Advisor/Planner
- e. Educator/Researcher
- f. Businessman (private sector)

2. Approximate number of employees under your supervision: (check one)

- a. 1-5
- b. 6-10
- c. 11-50
- d. Over 50

3. Do you require or gather economic data and information in performing your duties or use in your decision making and planning: (check one)

- a. Yes
- b. No

4. In which of the following ways an EDB would be directly helpful to you if available for your use in Jordan: (check all applicable)

- a. Improved timeliness of economic data and information
- b. Improved availability of economic data and information
- c. Improved accuracy of economic data and information
- d. Reduced redundancy and waste in economic data gathering, storage and processing
- e. Improved economic information retrieval
- f. Improved data analysis
- g. Improved economic planning
- h. Improved economic decision making
- i. Other (List)

5. In which of the following ways, in your opinion, and EDB would be an asset to Jordan as a whole: (check all applicable)

- a. Improved timeliness of economic data and information
- b. Improved availability of economic data and information
- c. Improved accuracy of economic data and information
- d. Reduced redundancy and waste in economic data gathering, storage and processing
- e. Improved economic information retrieval
- f. Improved economic data analysis
- g. Improved economic planning
- h. Improved economic decision making
- i. Other (List)

6. Do you believe that an EDB should be developed in Jordan starting:
(check one)

- a. In the long term (in more than 10 years)
- b. In the short term (5-10 years)
- c. Immediately

7. Do you believe that the sociological (religion, customs, etc) and political implications play a dominant role in the following activities related to the development of an EDB in Jordan: (check one under each category for each question)

	<u>Sociological</u>		<u>Political</u>	
	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>
a. Setting policies and procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Personnel selection and assignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Personnel training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Project management and control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Computer selection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Security and audit features	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Select five (5) economic sectors which, in your opinion, have the highest priority in developing an EDB in Jordan. Use numbers 1 to 5 for those selected where 1 indicates the highest priority among the 5 selected, and so on:

- | | | |
|---|--|---|
| <input type="checkbox"/> a. Electricity | <input type="checkbox"/> b. Communications | <input type="checkbox"/> c. Transportation |
| <input type="checkbox"/> d. Agriculture | <input type="checkbox"/> e. Housing and Construction | <input type="checkbox"/> f. Health |
| <input type="checkbox"/> g. Mining and Industry | <input type="checkbox"/> h. Population | <input type="checkbox"/> i. Tourism and Antiquities |
| <input type="checkbox"/> j. Manpower and Employment | <input type="checkbox"/> k. Finance | <input type="checkbox"/> l. Trade and Services |
| <input type="checkbox"/> m. Education | <input type="checkbox"/> n. Water | <input type="checkbox"/> o. Investments |
| <input type="checkbox"/> p. Prices and Wages | <input type="checkbox"/> q. Others (List) | |

9. Should, in your opinion, and EDB cover: (check one)

- a. One economic sector at a time
- b. More than one economic sector - indicate number: _____

10. Who, in your opinion, should be responsible for selecting a group of people at the national level with the responsibility of establishing and controlling policies and procedures required for the development of an EDB in Jordan: (check one)

- a. Government
 b. Parliament
 c. Private sector
 d. Mixture from the above (a, b and c)

11. Do you believe that the currently available national training facilities are adequate to train personnel in the following categories for the development of an EDB in Jordan: (check one for each)

- | | <u>Yes</u> | <u>No</u> |
|---------------------------------|------------|-----------|
| a. Policy making | ___ | ___ |
| b. Managing | ___ | ___ |
| c. Developing | ___ | ___ |
| d. Consulting/Advising/Planning | ___ | ___ |

12. Do you believe that the currently available manpower has adequate experience and training in the following categories to start immediately on the development of an EDB in Jordan: (check one for each)

- | | <u>Yes</u> | <u>No</u> |
|---------------------------------|------------|-----------|
| a. Policy Making | ___ | ___ |
| b. Managing | ___ | ___ |
| c. Developing | ___ | ___ |
| d. Consulting/Advising/Planning | ___ | ___ |

Once again, thank you very much for your co-operation.

Please mail the completed questionnaire to:

c/o Mr. Omar Widyan,
 Royal Scientific Society,
 P.O. Box 6945,
 Amman, Jordan.

Sincerely yours,

Borhan N. Shrydeh

Borhan N. Shrydeh,
 Department of Management Studies,
 University of Technology,
 Loughborough, Leicestershire, England.

متطلبات تطوير نظام بنك معلومات اقتصاديه في بلد نام

استبيان

مقدمه

غاية هذا الاستبيان الحصول على معلومات من بعض المسؤولين في الجهاز الحكومي الاردني والمؤسسات التابعه له ورجال الاعمال في القطاع الخاص والادباء والباحثين ، وذلك بغرض تطوير متطلبات ومحتويات ومناشر انشاء بنك معلومات اقتصاديه في الاردن وستستعمل هذه المعلومات كجزء من اطروحة دكتوراه بعنوان " متطلبات تطوير نظام بنك معلومات اقتصاديه في بلد نام " ان نظام بنك للمعلومات الاقتصاديه يشمل نظاما " آليا سريعا " ودقيقا وفعالا لجمع وتنسيق واسترداد المعلومات الاقتصاديه لرفع مستوى التخطيط الاقتصادي واتخاذ القرارات .

آمل تعاونكم في تعبئة الاستبيان في اقرب فرصة ممكنه بلما بان الترجمة العربيه للاستبيان مرفقة للرجوع اليها اذا اقتضى الامر ، اما الاجابه فالرجاء تحيئتها على النسخه الانجليزيه وارسالها الي :

السيد عمرو ديان

الجمعية الدوليه للملكيه

ص.ب ٦٩٤٥٠

عمان - الاردن

وتفضلوا بقبول احترامي

برهان نجيب الشريده

جامعة لا فبرا للتكنولوجيا

لا فبرا - ليستر

بريطانيا

- ٣ -

ج - التحسين في اتخاذ القرارات *

د - مجالات اخرى (اذكرها)

٥ - نرى ان المجالات اثنائه ترى ان بننا للمعلومات الاقتصادية يعود على الاردن

بفائده فطليه (يمكنك الاشاره الى عدة مجالات) *

أ - الزيادة في سرعة الحصول على المعلومات الاقتصادية *

ب - الزيادة في توفر المعلومات الاقتصادية *

ج - الزيادة في دقة المعلومات الاقتصادية *

د - التقليل من التكرار والخسارة في جمع وتخزين وتجهيز المعلومات الاقتصادية *

هـ - التحسين في استرداد المعلومات الاقتصادية *

و - التحسين في تحليل المعلومات الاقتصادية *

ز - التحسين في التخطيط الاقتصادي *

ح - التحسين في اتخاذ القرارات *

ط - مجالات اخرى (اذكرها)

٦ - ما هو بامتنقادك الوقت المناسب للبدء بانشاء بنك للمعلومات الاقتصادية

في الاردن *

أ - في المستقبل البعيد (اكثر من ١٠ سنوات) *

ب - في المستقبل القريب (٥ الى ١٠ سنوات) *

ج - فوراً *

٧ - في عمالة انشاء بنك معلومات اقتصاديه في الاردن ، هل تعتقد بان للنواحي

الاجتماعيه (ديانات ، عادات ، الخ) والسياسيه دوراً هاماً في :

أ - وضع سياسة العمل وخطوات تنفيذها *

ب - اختيار وتعيين الموظفين *

ج - تدريب الموظفين *

د - ادارة وضبط المشروع *

٤

هـ - اختيار المعاسب الالكتروني *
 و - مراقبة المعلومات وسريتها

٨ - اختر خمس (٥) قطاعات اقتصادية التي تعتقد بان لها الاولوية في انشاء بنك للمعلومات الاقتصادية في الاردن * استعمل الارقسام من ١ الى ٥ للدلالة على اولوية القطاعات التي اخترتها بحيث يدل رقم ١ على اولها وهكذا
 أ - التمريض
 ب - البوصلات
 ج - النقل
 د - الزراعة
 هـ - الانشاء والتعمير
 و - الصحة
 ز - الصناعة والتعدين
 ح - السكان
 ط - السياحة والآثار
 ي - القوى العاملة والمستخدمين
 ك - المالى
 ل - التجارة والخدمات
 م - التعليم
 ن - المياه
 س - الاستثمارات المالية
 ع - الاسعار والاجور
 ف - قطاعات اخرى (اذكرها)

٩ - هل تعتقد بان من الافضل مبدئيا انشاء بنك للمعلومات الاقتصادية في الاردن

أ - لقطاع اقتصادي واحد

ب - لعدد من القطاعات الاقتصادية - اذكر عددها :

١٠ - من هي باعتقادك الجهة المسؤولة لاختيار لجنة عليا لوضع وضبط القوانين

والانظمة المتعلقة بانشاء بنك للمعلومات الاقتصادية في الاردن *

أ - القطاع المصرفي *

ب - الهيئة التشريعية (مجلس النواب) *

ج - القطاع الخدمي *

د - هيئة مشتركة من أ ، ب ، ج

١١ - هل تعتقد بان الوسائل التدريبية المتوفرة محليا في الاردن كافية لتدريب

القوى البشرية اللازمة لانشاء بنك معلومات اقتصاديه في الاردن

في المجالات التالية :

س ٥

- أ - وضع سياسة العمل *
- ب - إدارة العمل *
- ج - إنجاز العمل *
- د - استشارات / إرشاد / تخطيط *

١٢. هل تعتقد بان خبرات القوى البشرية المتوفرة محليا في الاردن كافية للبدء حاليا بانشاء بنك للمعلومات الاقتصادية فيه فسي المجالات التالية

- أ - وضع سياسة العمل *
- ب - إدارة العمل *
- ج - إنجاز العمل *
- د - استشارات / إرشاد / تخطيط *

APPENDIX C

QUESTIONNAIRE: DISTRIBUTION PARTICIPANTS

APPENDIX C

QUESTIONNAIRE: DISTRIBUTION PARTICIPANTS

<u>NAME</u>	<u>ORGANISATION</u>
A. Bakeer	Royal Scientific Society - EDB
J. Bdour	Royal Scientific Society - EDB
R. Kamal	United Nations Development Programme - Jordan
A. Khayat	Agricultural Credit Corporation
F. Kiswani	Ministry of Finance
M. Marroum	Royal Jordanian Airlines
F. Miri	Businessman (Private Sector)
Z. Murtada	Lawyer
M. Naser	Businessman (Private Sector)
J. Obaidat	Jordanian Cooperative Organisation
H. Shrydeh	Ministry of Education
J. Shrydeh	Ministry of Culture and Information
S. Shrydeh	Ministry of Tourism and Antiquities
S. Tayeb	Royal Scientific Society - EDB
H. Tell	Lawyer
O. Widyan	Royal Scientific Society - EDB
A. Zubi, Dr.	Institute of Public Administration

APPENDIX D

QUESTIONNAIRE: RAW TABULATION

Date: _____

1. Your duties: (check one)
- | | |
|----------------------------------|---|
| <u>8</u> a. Policy Maker | <u>60</u> b. Manager |
| <u>31</u> c. Staff | <u>30</u> d. Consultant/Advisor/Planner |
| <u>51</u> e. Educator/Researcher | <u>32</u> f. Businessman (private sector) |
| 212 | <u>TOTAL</u> |
2. Approximate number of employees under your supervision: (check one)
- | | | | |
|------------------|-------------------|--------------------|----------------------|
| <u>74</u> a. 1-5 | <u>18</u> b. 6-10 | <u>31</u> c. 11-50 | <u>55</u> d. Over 50 |
| 178 | <u>TOTAL</u> | | |
3. Do you require or gather economic data and information in performing your duties or use in your decision making and planning: (check one)
- | | |
|-------------------|-----------------|
| <u>168</u> a. Yes | <u>44</u> b. No |
| 212 | <u>TOTAL</u> |
4. In which of the following ways an EDB would be directly helpful to you if available for your use in Jordan: (check all applicable)
- | | |
|---|--------------|
| <u>149</u> a. Improved timeliness of economic data and information | |
| <u>140</u> b. Improved availability of economic data and information | |
| <u>140</u> c. Improved accuracy of economic data and information | |
| <u>118</u> d. Reduced redundancy and waste in economic data gathering, storage and processing | |
| <u>103</u> e. Improved economic information retrieval | |
| <u>107</u> f. Improved data analysis | |
| <u>130</u> g. Improved economic planning | |
| <u>126</u> h. Improved economic decision making | |
| <u>3</u> i. Other (List) ² Improved Marketing Information
1. Assists in Research and Feasibility Studies... | |
| 1016 | <u>TOTAL</u> |
5. In which of the following ways, in your opinion, and EDB would be an asset to Jordan as a whole: (check all applicable)
- | | |
|--|--------------|
| <u>160</u> a. Improved timeliness of economic data and information | |
| <u>162</u> b. Improved availability of economic data and information | |
| <u>151</u> c. Improved accuracy of economic data and information | |
| <u>139</u> d. Reduced redundancy and waste in economic data gathering, storage and processing | |
| <u>123</u> e. Improved economic information retrieval | |
| <u>138</u> f. Improved economic data analysis | |
| <u>166</u> g. Improved economic planning | |
| <u>153</u> h. Improved economic decision making | |
| <u>3</u> i. Other (List) ² Improved Marketing Information
1. Assists in Research and Feasibility Studies.... | |
| 1195 | <u>TOTAL</u> |

6. Do you believe that an EDB should be developed in Jordan starting: (check one)

9 a. In the long term (in more than 10 years)

69 b. In the short term (5-10 years)

134 c. Immediately

212 TOTAL

7. Do you believe that the sociological (religion, customs, etc) and political implications play a dominant role in the following activities related to the development of an EDB in Jordan: (check one under each category for each question)

	<u>Sociological</u>			<u>Political</u>		
	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Setting policies and procedures	<u>127</u>	<u>59</u>	186	<u>137</u>	<u>45</u>	182
b. Personnel selection and assignment	<u>139</u>	<u>46</u>	185	<u>118</u>	<u>55</u>	173
c. Personnel training	<u>104</u>	<u>72</u>	176	<u>76</u>	<u>74</u>	150
d. Project management and control	<u>110</u>	<u>68</u>	178	<u>92</u>	<u>69</u>	161
e. Computer selection	<u>76</u>	<u>98</u>	174	<u>57</u>	<u>90</u>	147
f. Security and audit features	<u>96</u>	<u>73</u>	<u>169</u>	<u>98</u>	<u>59</u>	<u>157</u>
<u>TOTALS</u>	652	416	1068	578	392	970

8.* Select five (5) economic sectors which, in your opinion, have the highest priority in developing an EDB in Jordan. Use numbers 1 to 5 for those selected where 1 indicates the highest priority among the 5 selected, and so on:

- 11(1),5(2),9(3),10(4),6(5) 3(1),7(2),7(3),6(4),6(5) 0(1),8(2),3(3),8(4),4(5)
- a. Electricity b. Communications c. Transportation
- 60(1),30(2),18(3),18(4),6(5) 3(1),3(2),14(3),13(4),11(5) 2(1),8(2),5(3),8(4),9(5)
- d. Agriculture e. Housing and f. Health
- 21(1),37(2),33(3),14(4),18(5) Construction 3(1),7(2),4(3),10(4),10(5)
- g. Mining and h. Population i. Tourism and
- Industry Antiquities
- 36(1),28(2),32(3),12(4),10(5) 12(1),7(2),16(3),15(4),16(5) 7(1),15(2),15(3),28(4),28(5)
- j. Manpower and k. Finance l. Trade and
- Employment Services
- 17(1),14(2),19(3),14(4),22(5) 6(1),9(2),8(3),12(4),17(5) 9(1),4(2),5(3),15(4),21(5)
- m. Education n. Water o. Investments
- 7(1),22(2),12(3),16(4),14(5) 1(1),0(2),0(3),0(4),0(5) p. Prices and q. Others (List) Social Planning....
- Wages 0(1),0(2),0(3),1(4),0(5) Income Distribution
- 0(1),0(2),0(3),0(4),1(5) Social Infrastructure

9. Should, in your opinion, and EDB cover: (check one)

87 a. One economic sector at a time

121 b. More than one economic sector - indicate number.* 11(2),33(3),9(4),53(5)

208 TOTAL

4(6),3(7),2(8),3(9),2(10)
1(13)

*Counts are provided in the form x(y) where: x is the number of respondents and y is the priority or selection made

10. Who, in your opinion, should be responsible for selecting a group of people at the national level with the responsibility of establishing and controlling policies and procedures required for the development of an EDB in Jordan: (check one)

36 a. Government

5 b. Parliament

13 c. Private sector

158 d. Mixture from the above (a, b and c)

212 TOTAL

11. Do you believe that the currently available national training facilities are adequate to train personnel in the following categories for the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy making	<u>97</u>	<u>107</u>	204
b. Managing	<u>96</u>	<u>110</u>	206
c. Developing	<u>80</u>	<u>124</u>	204
d. Consulting/Advising/Planning	<u>74</u>	<u>131</u>	205
<u>TOTALS</u>	347	472	819

12. Do you believe that the currently available manpower has adequate experience and training in the following categories to start immediately on the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy Making	<u>111</u>	<u>93</u>	204
b. Managing	<u>122</u>	<u>83</u>	205
c. Developing	<u>94</u>	<u>110</u>	204
d. Consulting/Advising/Planning	<u>76</u>	<u>127</u>	203
<u>TOTALS</u>	403	413	816

Once again, thank you very much for your co-operation.

Please mail the completed questionnaire to:

c/o Mr. Omar Widyan,
Royal Scientific Society,
P.O. Box 6945,
Amman, Jordan.

Sincerely yours,

Borhan N. Shrydeh

Borhan N. Shrydeh,
Department of Management Studies,
University of Technology,
Loughborough, Leicestershire, England.

Date: _____

Your duties: (check one)

- 8 a. Policy Maker
- b. Manager
- c. Staff
- d. Consultant/Advisor/Planner
- e. Educator/Researcher
- f. Businessman (private sector)

212 TOTAL

Approximate number of employees under your supervision: (check one)

- 0 a. 1-5
- 0 b. 6-10
- 4 c. 11-50
- 4 d. Over 50

8 TOTAL

Do you require or gather economic data and information in performing your duties or use in your decision making and planning: (check one)

- 8 a. Yes
- 0 b. No

8 TOTAL

In which of the following ways an EDB would be directly helpful to you if available for your use in Jordan: (check all applicable)

- 6 a. Improved timeliness of economic data and information
- 6 b. Improved availability of economic data and information
- 4 c. Improved accuracy of economic data and information
- 6 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 5 e. Improved economic information retrieval
- 6 f. Improved data analysis
- 5 g. Improved economic planning
- 6 h. Improved economic decision making
- 1 i. Other (List) Assists. in. Research. and. Feasibility. Studies.....

45 TOTAL

In which of the following ways, in your opinion, and EDB would be an asset to Jordan as a whole: (check all applicable)

- 7 a. Improved timeliness of economic data and information
- 7 b. Improved availability of economic data and information
- 4 c. Improved accuracy of economic data and information
- 7 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 6 e. Improved economic information retrieval
- 7 f. Improved economic data analysis
- 7 g. Improved economic planning
- 8 h. Improved economic decision making
- 1 i. Other (List) Assists. in. Research. and. Feasibility. Studies.....

54 TOTAL

6. Do you believe that an EDB should be developed in Jordan starting:
(check one)

0 a. In the long term (in more than 10 years)

3 b. In the short term (5-10 years)

5 c. Immediately

8 TOTAL

7. Do you believe that the sociological (religion, customs, etc) and political implications play a dominant role in the following activities related to the development of an EDB in Jordan: (check one under each category for each question)

	<u>Sociological</u>			<u>Political</u>			
	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>	
a. Setting policies and procedures	<u>5</u>	<u>3</u>	8	<u>7</u>	<u>1</u>	8	
b. Personnel selection and assignment	<u>7</u>	<u>1</u>	8	<u>6</u>	<u>2</u>	8	
c. Personnel training	<u>5</u>	<u>3</u>	8	<u>3</u>	<u>5</u>	8	
d. Project management and control	<u>6</u>	<u>2</u>	8	<u>3</u>	<u>5</u>	8	
e. Computer selection	<u>4</u>	<u>4</u>	8	<u>3</u>	<u>5</u>	8	
f. Security and audit features	<u>3</u>	<u>5</u>	8	<u>5</u>	<u>3</u>	8	
	<u>TOTALS</u>	<u>30</u>	<u>18</u>	<u>48</u>	<u>27</u>	<u>21</u>	<u>48</u>

8.* Select five (5) economic sectors which, in your opinion, have the highest priority in developing an EDB in Jordan. Use numbers 1 to 5 for those selected where 1 indicates the highest priority among

the 5 selected, and so on:

0(1),0(2),1(3),1(4),0(5)	0(1),0(2),0(3),0(4),0(5)	0(1),0(2),0(3),0(4),1(5)
a. Electricity	b. Communications	c. Transportation
1(1),4(2),1(3),0(4),0(5)	1(1),0(2),0(3),1(4),0(5)	0(1),0(2),0(3),0(4),0(5)
d. Agriculture	e. Housing and Construction	f. Health
2(1),0(2),3(3),0(4),1(5)	0(1),0(2),1(3),0(4),0(5)	0(1),1(2),0(3),0(4),1(5)
g. Mining and Industry	h. Population	i. Tourism and Antiquities
2(1),2(2),2(3),0(4),0(5)	1(1),0(2),0(3),0(4),1(5)	0(1),0(2),0(3),3(4),3(5)
j. Manpower and Employment	k. Finance	l. Trade and Services
0(1),0(2),0(3),2(4),0(5)	0(1),0(2),0(3),1(4),0(5)	0(1),0(2),0(3),0(4),1(5)
m. Education	n. Water	o. Investments
1(1),1(2),0(3),0(4),0(5)	q. Others (List)	
p. Prices and Wages		

9. Should, in your opinion, an EDB cover: (check one)

2 a. One economic sector at a time

6 b. More than one economic sector - indicate number: * 1(2),2(3),3(5)

8 TOTAL

* Counts are provided in the form x(y) where: x is the number of respondents, and y is the priority or selection made

10. Who, in your opinion, should be responsible for selecting a group of people at the national level with the responsibility of establishing and controlling policies and procedures required for the development of an EDB in Jordan: (check one)

- 4 a. Government
0 b. Parliament
0 c. Private sector
4 d. Mixture from the above (a, b and c)

11. Do you believe that the currently available national training facilities are adequate to train personnel in the following categories for the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy making	<u>1</u>	<u>7</u>	8
b. Managing	<u>3</u>	<u>5</u>	8
c. Developing	<u>1</u>	<u>7</u>	8
d. Consulting/Advising/Planning	<u>1</u>	<u>7</u>	<u>8</u>
	<u>TOTALS</u>	6	26
			32

12. Do you believe that the currently available manpower has adequate experience and training in the following categories to start immediately on the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy Making	<u>3</u>	<u>5</u>	8
b. Managing	<u>4</u>	<u>4</u>	8
c. Developing	<u>2</u>	<u>6</u>	8
d. Consulting/Advising/Planning	<u>1</u>	<u>7</u>	<u>8</u>
	<u>TOTALS</u>	10	22
			32

Once again, thank you very much for your co-operation.

Please mail the completed questionnaire to:

c/o Mr. Omar Widyan,
 Royal Scientific Society,
 P.O. Box 6945,
 Amman, Jordan.

Sincerely yours,

Borhan N. Shrydeh

Borhan N. Shrydeh,
 Department of Management Studies,
 University of Technology,
 Loughborough, Leicestershire, England.

Date: _____

1. Your duties: (check one)
- a. Policy Maker
 - b. Manager
 - 31 c. Staff
 - d. Consultant/Advisor/Planner
 - e. Educator/Researcher
 - f. Businessman (private sector)

2. Approximate number of employees under your supervision: (check one)
- 0 a. 1-5
 - 0 b. 6-10
 - 0 c. 11-50
 - 0 d. Over 50
- 0 TOTAL

3. Do you require or gather economic data and information in performing your duties or use in your decision making and planning: (check one)
- 23 a. Yes
 - 8 b. No
- 31 TOTAL

4. In which of the following ways an EDB would be directly helpful to you if available for your use in Jordan: (check all applicable)
- 24 a. Improved timeliness of economic data and information
 - 20 b. Improved availability of economic data and information
 - 19 c. Improved accuracy of economic data and information
 - 13 d. Reduced redundancy and waste in economic data gathering, storage and processing
 - 10 e. Improved economic information retrieval
 - 11 f. Improved data analysis
 - 21 g. Improved economic planning
 - 17 h. Improved economic decision making
 - 0 i. Other (List)
- 135 TOTAL

5. In which of the following ways, in your opinion, and EDB would be an asset to Jordan as a whole: (check all applicable)
- 25 a. Improved timeliness of economic data and information
 - 25 b. Improved availability of economic data and information
 - 21 c. Improved accuracy of economic data and information
 - 16 d. Reduced redundancy and waste in economic data gathering, storage and processing
 - 14 e. Improved economic information retrieval
 - 18 f. Improved economic data analysis
 - 26 g. Improved economic planning
 - 24 h. Improved economic decision making
 - 0 i. Other (List)
- 169 TOTAL

6. Do you believe that an EDB should be developed in Jordan starting:
(check one)

1 a. In the long term (in more than 10 years)

12 b. In the short term (5-10 years)

18 c. Immediately

31 TOTAL

7. Do you believe that the sociological (religion, customs, etc) and political implications play a dominant role in the following activities related to the development of an EDB in Jordan: (check one under each category for each question)

	<u>Sociological</u>			<u>Political</u>		
	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Setting policies and procedures	<u>19</u>	<u>9</u>	28	<u>22</u>	<u>7</u>	29
b. Personnel selection and assignment	<u>17</u>	<u>9</u>	26	<u>15</u>	<u>10</u>	25
c. Personnel training	<u>17</u>	<u>8</u>	25	<u>13</u>	<u>8</u>	21
d. Project management and control	<u>13</u>	<u>10</u>	23	<u>12</u>	<u>10</u>	22
e. Computer selection	<u>10</u>	<u>10</u>	20	<u>8</u>	<u>10</u>	18
f. Security and audit features	<u>10</u>	<u>11</u>	21	<u>15</u>	<u>7</u>	22
<u>TOTALS</u>	86	57	143	85	52	137

8. * Select five (5) economic sectors which, in your opinion, have the highest priority in developing an EDB in Jordan. Use numbers 1 to 5 for those selected where 1 indicates the highest priority among the 5 selected, and so on:

<u>3(1), 1(2), 3(3), 1(4)</u>	<u>1(1), 1(2), 1(3), 1(4), 2(5)</u>	<u>1(2), 1(3), 2(4), 1(5)</u>
a. Electricity	b. Communications	c. Transportation
<u>7(1), 3(2), 1(3), 5(4)</u>	<u>3(4), 2(5)</u>	<u>3(2), 2(4), 2(5)</u>
d. Agriculture	e. Housing and Construction	f. Health
<u>1(1), 7(2), 6(3), 1(4), 5(5)</u>	<u>4(1), 1(2), 2(3), 3(4), 2(5)</u>	<u>1(1), 1(2), 3(5)</u>
g. Mining and Industry	h. Population	i. Tourism and Antiquities
<u>2(1), 1(2), 7(3), 2(4), 1(5)</u>	<u>2(1), 1(2), 1(3), 1(4), 2(5)</u>	<u>2(2), 1(3), 2(4), 4(5)</u>
j. Manpower and Employment	k. Finance	l. Trade and Services
<u>4(1), 3(2), 2(3), 1(4)</u>	<u>3(2), 1(3), 1(4), 1(5)</u>	<u>4(1), 2(3), 3(4), 3(5)</u>
m. Education	n. Water	o. Investments
<u>1(1), 3(2), 3(3), 3(4), 3(5)</u>	<u>1(1)</u>	
p. Prices and Wages	q. Others (List) ..Social Planning.....	

9. Should, in your opinion, and EDB cover: (check one)

16 a. One economic sector at a time

15 b. More than one economic sector - indicate number: *6(3), 1(4), 7(5), 1(13)

31 TOTAL

*Counts are provided in the form x(y) where: x is the number of respondents, and y is the priority or selection made

10. Who, in your opinion, should be responsible for selecting a group of people at the national level with the responsibility of establishing and controlling policies and procedures required for the development of an EDB in Jordan: (check one)

- 1 a. Government
2 b. Parliament
3 c. Private sector
25 d. Mixture from the above (a, b and c) 1(No.b)
 31 TOTAL

11. Do you believe that the currently available national training facilities are adequate to train personnel in the following categories for the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy making	<u>24</u>	<u>7</u>	31
b. Managing	<u>21</u>	<u>10</u>	31
c. Developing	<u>16</u>	<u>15</u>	31
d. Consulting/Advising/Planning	<u>18</u>	<u>13</u>	<u>31</u>
<u>TOTALS</u>	79	45	124

12. Do you believe that the currently available manpower has adequate experience and training in the following categories to start immediately on the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy Making	<u>22</u>	<u>9</u>	31
b. Managing	<u>22</u>	<u>9</u>	31
c. Developing	<u>14</u>	<u>17</u>	31
d. Consulting/Advising/Planning	<u>13</u>	<u>18</u>	<u>31</u>
<u>TOTALS</u>	71	53	124

Once again, thank you very much for your co-operation.

Please mail the completed questionnaire to:

c/o Mr. Omar Widyan,
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 P.O. Box 6945,
 Amman, Jordan.

Sincerely yours,

Borhan N. Shrydeh

Borhan N. Shrydeh,
 Department of Management Studies,
 University of Technology,
 Loughborough, Leicestershire, England.

Date: _____

Your duties: (check one)

- a. Policy Maker
- b. Manager
- c. Staff
- d. Consultant/Advisor/Planner
- 51 e. Educator/Researcher
- f. Businessman (private sector)

212 TOTAL

Approximate number of employees under your supervision: (check one)

- 22 a. 1-5
- 1 b. 6-10
- 0 c. 11-50
- 28 d. Over 50

51 TOTAL

Do you require or gather economic data and information in performing your duties or use in your decision making and planning: (check one)

- 40 a. Yes
- 11 b. No

51 TOTAL

In which of the following ways an EDB would be directly helpful to you if available for your use in Jordan: (check all applicable)

- 33 a. Improved timeliness of economic data and information
- 34 b. Improved availability of economic data and information
- 28 c. Improved accuracy of economic data and information
- 29 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 25 e. Improved economic information retrieval
- 25 f. Improved data analysis
- 31 g. Improved economic planning
- 27 h. Improved economic decision making
- 0 i. Other (List)

232 TOTAL

In which of the following ways, in your opinion, and EDB would be an asset to Jordan as a whole: (check all applicable)

- 34 a. Improved timeliness of economic data and information
- 39 b. Improved availability of economic data and information
- 35 c. Improved accuracy of economic data and information
- 32 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 29 e. Improved economic information retrieval
- 30 f. Improved economic data analysis
- 36 g. Improved economic planning
- 35 h. Improved economic decision making
- 0 i. Other (List)

270 TOTAL

Questionnaire

Page 2

6. Do you believe that an EDB should be developed in Jordan starting:
(check one)

3 a. In the long term (in more than 10 years)

10 b. In the short term (5-10 years)

38 c. Immediately

51 TOTAL

7. Do you believe that the sociological (religion, customs, etc) and political implications play a dominant role in the following activities related to the development of an EDB in Jordan; (check one under each category for each question)

	<u>Sociological</u>			<u>Political</u>			
	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>	
a. Setting policies and procedures	<u>26</u>	<u>14</u>	40	<u>30</u>	<u>10</u>	40	
b. Personnel selection and assignment	<u>29</u>	<u>13</u>	42	<u>29</u>	<u>8</u>	37	
c. Personnel training	<u>19</u>	<u>21</u>	40	<u>20</u>	<u>16</u>	36	
d. Project management and control	<u>23</u>	<u>17</u>	40	<u>21</u>	<u>15</u>	36	
e. Computer selection	<u>13</u>	<u>27</u>	40	<u>11</u>	<u>21</u>	32	
f. Security and audit features	<u>23</u>	<u>15</u>	<u>38</u>	<u>26</u>	<u>9</u>	<u>35</u>	
	<u>TOTALS</u>	133	107	240	137	79	216

8. * Select five (5) economic sectors which, in your opinion, have the highest priority in developing an EDB in Jordan. Use numbers 1 to 5 for those selected where 1 indicates the highest priority among the 5 selected, and so on:

1(1), 2(2), 3(3), 0(4), 1(5)	0(1), 1(2), 2(3), 0(4), 3(5)	0(1), 0(2), 0(3), 1(4), 0(5)
a. Electricity	b. Communications	c. Transportation
<u>16</u> (1), 8(2), 5(3), 4(4), 2(5)	0(1), 1(2), 3(3), 3(4), 4(5)	1(1), 1(2), 1(3), 0(4), 3(5)
d. Agriculture	e. Housing and Construction	f. Health
6(1), 9(2), 4(3), 4(4), 2(5)	7(1), 2(2), 4(3), 3(4), 1(5)	0(1), 0(2), 2(3), 3(4), 3(5)
g. Mining and Industry	h. Population	i. Tourism and Antiquities
10(1), 8(2), 11(3), 1(4), 4(5)	0(1), 2(2), 4(3), 6(4), 2(5)	1(1), 4(2), 4(3), 9(4), 6(5)
j. Manpower and Employment	k. Finance	l. Trade and Services
2(1), 2(2), 4(3), 4(4), 10(5)	4(1), 2(2), 0(3), 3(4), 3(5)	0(1), 1(2), 2(3), 7(4), 6(5)
m. Education	n. Water	o. Investments
3(1), 8(2), 2(3), 2(4), 1(5)	0(1), 0(2), 0(3), 1(4), 0(5)	Income Distribution
p. Prices and Wages	q. Others (List)	

9. Should, in your opinion, and EDB cover: (check one)

15 a. One economic sector at a time

36 b. More than one economic sector - indicate number: *4(2), 8(3), 2(4), 16(5)

51 TOTAL

3(6), 1(8), 1(9), 1(10)

*Counts are provided in the form of x(y) where: x is the number of respondents, and y is the priority or selection made

10. Who, in your opinion, should be responsible for selecting a group of people at the national level with the responsibility of establishing and controlling policies and procedures required for the development of an EDB in Jordan: (check one)

- 14 a. Government
1 b. Parliament
2 c. Private sector
34 d. Mixture from the above (a, b and c)
51 TOTAL

11. Do you believe that the currently available national training facilities are adequate to train personnel in the following categories for the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy making	<u>21</u>	<u>28</u>	49
b. Managing	<u>13</u>	<u>36</u>	49
c. Developing	<u>15</u>	<u>34</u>	49
d. Consulting/Advising/Planning	<u>11</u>	<u>38</u>	49
<u>TOTALS</u>	60	136	196

12. Do you believe that the currently available manpower has adequate experience and training in the following categories to start immediately on the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy Making	<u>23</u>	<u>24</u>	47
b. Managing	<u>22</u>	<u>25</u>	47
c. Developing	<u>21</u>	<u>26</u>	47
d. Consulting/Advising/Planning	<u>18</u>	<u>29</u>	47
<u>TOTALS</u>	84	104	188

Once again, thank you very much for your co-operation.

Please mail the completed questionnaire to:

c/o Mr. Omar Widyan,
 Royal Scientific Society,
 P.O. Box 6945,
 Amman, Jordan.

Sincerely yours,

Borhan N. Shrydeh

Borhan N. Shrydeh,
 Department of Management Studies,
 University of Technology,
 Loughborough, Leicestershire, England.

Date: _____

1. Your duties: (check one)

- a. Policy Maker
- b. 60 Manager
- c. Staff
- d. Consultant/Advisor/Planner
- e. Educator/Researcher
- f. Businessman (private sector)

212 TOTAL

2. Approximate number of employees under your supervision: (check one)

- 25 a. 1-5
- 10 b. 6-10
- 19 c. 11-50
- 6 d. Over 50

60 TOTAL

3. Do you require or gather economic data and information in performing your duties or use in your decision making and planning: (check one)

- 48 a. Yes
- 12 b. No

60 TOTAL

4. In which of the following ways an EDB would be directly helpful to you if available for your use in Jordan: (check all applicable)

- 46 a. Improved timeliness of economic data and information
- 41 b. Improved availability of economic data and information
- 45 c. Improved accuracy of economic data and information
- 35 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 33 e. Improved economic information retrieval
- 36 f. Improved data analysis
- 38 g. Improved economic planning
- 38 h. Improved economic decision making
- 0 i. Other (List)

312 TOTAL

5. In which of the following ways, in your opinion, and EDB would be an asset to Jordan as a whole: (check all applicable)

- 48 a. Improved timeliness of economic data and information
- 47 b. Improved availability of economic data and information
- 45 c. Improved accuracy of economic data and information
- 42 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 40 e. Improved economic information retrieval
- 42 f. Improved economic data analysis
- 44 g. Improved economic planning
- 40 h. Improved economic decision making
- 0 i. Other (List)

348 TOTAL

6. Do you believe that an EDB should be developed in Jordan starting:
(check one)

3 a. In the long term (in more than 10 years)

25 b. In the short term (5-10 years)

32 c. Immediately

60 TOTAL

7. Do you believe that the sociological (religion, customs, etc) and political implications play a dominant role in the following activities related to the development of an EDB in Jordan: (check one under each category for each question)

	<u>Sociological</u>			<u>Political</u>		
	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Setting policies and procedures	<u>35</u>	<u>18</u>	53	<u>39</u>	<u>16</u>	55
b. Personnel selection and assignment	<u>41</u>	<u>14</u>	55	<u>34</u>	<u>20</u>	54
c. Personnel training	<u>33</u>	<u>19</u>	52	<u>24</u>	<u>21</u>	45
d. Project management and control	<u>36</u>	<u>19</u>	55	<u>33</u>	<u>17</u>	50
e. Computer selection	<u>27</u>	<u>26</u>	53	<u>19</u>	<u>25</u>	44
f. Security and audit features	<u>31</u>	<u>21</u>	52	<u>31</u>	<u>18</u>	49
<u>TOTALS</u>	203	117	320	180	117	297

8. * Select five (5) economic sectors which, in your opinion, have the highest priority in developing an EDB in Jordan. Use numbers 1 to 5 for those selected where 1 indicates the highest priority among the 5 selected, and so on:

6(1), 1(2), 0(3), 6(4), 2(5)	1(1), 2(2), 3(3), 1(4), 0(5)	0(1), 6(2), 2(3), 2(4), 1(5)
<u>7</u> (1), 6(2), 8(3), 3(4), 1(5)	0(1), 1(2), 2(3), 3(4), 2(5)	0(1), 4(2), 1(3), 2(4), 1(5)
3(1), 9(2), 9(3), 6(4), 5(5)	3(1), 0(2), 3(3), 4(4), 7(5)	1(1), 1(2), 1(3), 2(4), 2(5)
12(1), 7(2), 5(3), 2(4), 1(5)	5(1), 3(2), 5(3), 3(4), 7(5)	1(1), 3(2), 5(3), 9(4), 7(5)
5(1), 4(2), 6(3), 1(4), 5(5)	1(1), 2(2), 5(3), 6(4), 5(5)	4(1), 2(2), 0(3), 3(4), 5(5)
1(1), 9(2), 5(3), 7(4), 8(5)	0(1), 0(2), 0(3), 0(4), 1(5)	

a. Electricity b. Communications c. Transportation
d. Agriculture e. Housing and Construction f. Health
g. Mining and Industry h. Population i. Tourism and Antiquities
j. Manpower and Employment k. Finance l. Trade and Services
m. Education n. Water o. Investments
p. Prices and Wages q. Others (List) Social Infrastructure

9. Should, in your opinion, and EDB cover: (check one)

26 a. One economic sector at a time

30 b. More than one economic sector - indicate number: *3(2), 7(3), 2(4), 12(5)

56 TOTAL 1(6), 3(7), 1(8), 1(9)

*Counts are provided in the form x(y) where: x is the number of respondents, and y is the priority or selection made

10. Who, in your opinion, should be responsible for selecting a group of people at the national level with the responsibility of establishing and controlling policies and procedures required for the development of an EDB in Jordan: (check one)

13 a. Government

1 b. Parliament

2 c. Private sector

44 d. Mixture from the above (a, b and c) 2(No.b), 1(No.c)

60 TOTAL

11. Do you believe that the currently available national training facilities are adequate to train personnel in the following categories for the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy making	<u>32</u>	<u>24</u>	36
b. Managing	<u>32</u>	<u>26</u>	58
c. Developing	<u>27</u>	<u>29</u>	56
d. Consulting/Advising/Planning	<u>27</u>	<u>30</u>	<u>57</u>
<u>TOTALS</u>	118	109	227

12. Do you believe that the currently available manpower has adequate experience and training in the following categories to start immediately on the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy Making	<u>39</u>	<u>20</u>	59
b. Managing	<u>40</u>	<u>20</u>	60
c. Developing	<u>33</u>	<u>26</u>	59
d. Consulting/Advising/Planning	<u>31</u>	<u>27</u>	<u>58</u>
<u>TOTALS</u>	143	93	236

Once again, thank you very much for your co-operation.

Please mail the completed questionnaire to:

c/o Mr. Omar Widyan,
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P.O. Box 6945,
Amman, Jordan.

Sincerely yours,

Borhan N. Shrydeh

Borhan N. Shrydeh,
Department of Management Studies,
University of Technology,
Loughborough, Leicestershire, England.

Date: _____

1. Your duties: (check one)
- a. Policy Maker
 - b. Manager
 - c. Staff
 - 30 d. Consultant/Advisor/Planner
 - e. Educator/Researcher
 - f. Businessman (private sector)

212 TOTAL

2. Approximate number of employees under your supervision: (check one)
- 10 a. 1-5
 - 0 b. 6-10
 - 2 c. 11-50
 - 15 d. Over 50

27 TOTAL

3. Do you require or gather economic data and information in performing your duties or use in your decision making and planning: (check one)

- 17 a. Yes
- 13 b. No

30 TOTAL

4. In which of the following ways an EDB would be directly helpful to you if available for your use in Jordan: (check all applicable)

- 15 a. Improved timeliness of economic data and information
- 13 b. Improved availability of economic data and information
- 17 c. Improved accuracy of economic data and information
- 10 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 7 e. Improved economic information retrieval
- 8 f. Improved data analysis
- 11 g. Improved economic planning
- 15 h. Improved economic decision making
- 0 i. Other (List)

96 TOTAL

5. In which of the following ways, in your opinion, and EDB would be an asset to Jordan as a whole: (check all applicable)

- 18 a. Improved timeliness of economic data and information
- 18 b. Improved availability of economic data and information
- 18 c. Improved accuracy of economic data and information
- 14 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 10 e. Improved economic information retrieval
- 14 f. Improved economic data analysis
- 25 g. Improved economic planning
- 18 h. Improved economic decision making
- 0 i. Other (List)

135 TOTAL

6. Do you believe that an EDB should be developed in Jordan starting: (check one)

1 a. In the long term (in more than 10 years)

11 b. In the short term (5-10 years)

18 c. Immediately

30 TOTAL

7. Do you believe that the sociological (religion, customs, etc) and political implications play a dominant role in the following activities related to the development of an EDB in Jordan: (check one under each category for each question)

	<u>Sociological</u>			<u>Political</u>		
	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Setting policies and procedures	<u>20</u>	<u>6</u>	26	<u>16</u>	<u>4</u>	20
b. Personnel selection and assignment	<u>20</u>	<u>4</u>	24	<u>13</u>	<u>6</u>	19
c. Personnel training	<u>12</u>	<u>9</u>	21	<u>7</u>	<u>6</u>	13
d. Project management and control	<u>13</u>	<u>8</u>	21	<u>8</u>	<u>8</u>	16
e. Computer selection	<u>8</u>	<u>14</u>	22	<u>4</u>	<u>11</u>	15
f. Security and audit features	<u>11</u>	<u>9</u>	<u>20</u>	<u>7</u>	<u>7</u>	<u>14</u>
<u>TOTALS</u>	<u>84</u>	<u>50</u>	134	<u>55</u>	<u>42</u>	97

8.* Select five (5) economic sectors which, in your opinion, have the highest priority in developing an EDB in Jordan. Use numbers 1 to 5 for those selected where 1 indicates the highest priority among the 5 selected, and so on:

0(1),0(2),2(3),2(4),3(5)	1(1),0(2),1(3),2(4),0(5)	0(1),1(2),0(3),1(4),1(5)
<u>12</u> (1),5(2),1(3),2(4),1(5)	2(1),0(2),4(3),1(4),1(5)	0(1),0(2),1(3),3(4),2(5)
5(1),6(2),5(3),0(4),1(5)	0(1),2(2),2(3),0(4),3(5)	0(1),2(2),0(3),3(4),0(5)
4(1),5(2),3(3),4(4),0(5)	2(1),0(2),1(3),2(4),2(5)	1(1),2(2),2(3),1(4),3(5)
1(1),4(2),6(3),4(4),5(5)	1(1),2(2),1(3),0(4),4(5)	0(1),1(2),0(3),2(4),2(5)
1(1),0(2),1(3),3(4),2(5)		

9. Should, in your opinion, and EDB cover: (check one)

15 a. One economic sector at a time

15 b. More than one economic sector - indicate number: *4(3),3(4),8(5).

30 TOTAL

*Counts are provided in the form x(y) where: x is the number of respondents, and y is the priority or selection made

10. Who, in your opinion, should be responsible for selecting a group of people at the national level with the responsibility of establishing and controlling policies and procedures required for the development of an EDB in Jordan: (check one)

- 1 a. Government
1 b. Parliament
1 c. Private sector
27 d. Mixture from the above (a, b and c) 1(No.b)
30 TOTAL

11. Do you believe that the currently available national training facilities are adequate to train personnel in the following categories for the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy making	<u>12</u>	<u>16</u>	28
b. Managing	<u>17</u>	<u>11</u>	28
c. Developing	<u>12</u>	<u>16</u>	28
d. Consulting/Advising/Planning	<u>10</u>	<u>18</u>	<u>28</u>
<u>TOTALS</u>	51	61	112

12. Do you believe that the currently available manpower has adequate experience and training in the following categories to start immediately on the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy Making	<u>14</u>	<u>13</u>	27
b. Managing	<u>18</u>	<u>9</u>	27
c. Developing	<u>9</u>	<u>18</u>	27
d. Consulting/Advising/Planning	<u>5</u>	<u>22</u>	<u>27</u>
<u>TOTALS</u>	46	62	108

Once again, thank you very much for your co-operation.

Please mail the completed questionnaire to:

c/o Mr. Omar Widyan,
 Royal Scientific Society,
 P.O. Box 6945,
 Amman, Jordan.

Sincerely yours,

Borhan N. Shrydeh

Borhan N. Shrydeh,
 Department of Management Studies,
 University of Technology,
 Loughborough, Leicestershire, England.

Date: _____

1. Your duties: (check one)

- a. Policy Maker
- b. Manager
- c. Staff
- d. Consultant/Advisor/Planner
- e. Educator/Researcher
- 32 f. Businessman (private sector)

212 TOTAL

2. Approximate number of employees under your supervision: (check one)

- 17 a. 1-5
- 7 b. 6-10
- 6 c. 11-50
- 2 d. Over 50

32 TOTAL

3. Do you require or gather economic data and information in performing your duties or use in your decision making and planning: (check one)

- 32 a. Yes
- 0 b. No

32 TOTAL

4. In which of the following ways an EDB would be directly helpful to you if available for your use in Jordan: (check all applicable)

- 25 a. Improved timeliness of economic data and information
- 26 b. Improved availability of economic data and information
- 27 c. Improved accuracy of economic data and information
- 25 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 23 e. Improved economic information retrieval
- 21 f. Improved data analysis
- 24 g. Improved economic planning
- 23 h. Improved economic decision making
- 2 i. Other (List) Improved Marketing Information.....

196 TOTAL

5. In which of the following ways, in your opinion, and EDB would be an asset to Jordan as a whole: (check all applicable)

- 28 a. Improved timeliness of economic data and information
- 26 b. Improved availability of economic data and information
- 28 c. Improved accuracy of economic data and information
- 28 d. Reduced redundancy and waste in economic data gathering, storage and processing
- 24 e. Improved economic information retrieval
- 27 f. Improved economic data analysis
- 28 g. Improved economic planning
- 28 h. Improved economic decision making
- 2 i. Other (List) Improved Marketing Information.....

219 TOTAL

6. Do you believe that an EDB should be developed in Jordan starting: (check one)

- 1 a. In the long term (in more than 10 years)
- 8 b. In the short term (5-10 years)
- 23 c. Immediately

32 TOTAL

7. Do you believe that the sociological (religion, customs, etc) and political implications play a dominant role in the following activities related to the development of an EDB in Jordan: (check one under each category for each question)

	<u>Sociological</u>			<u>Political</u>				
	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>		
a. Setting policies and procedures	<u>22</u>	<u>9</u>	31	<u>23</u>	<u>7</u>	30		
b. Personnel selection and assignment	<u>25</u>	<u>5</u>	30	<u>21</u>	<u>9</u>	30		
c. Personnel training	<u>18</u>	<u>12</u>	30	<u>9</u>	<u>18</u>	27		
d. Project management and control	<u>19</u>	<u>12</u>	31	<u>15</u>	<u>14</u>	29		
e. Computer selection	<u>14</u>	<u>17</u>	31	<u>12</u>	<u>18</u>	30		
f. Security and audit features	<u>18</u>	<u>12</u>	<u>30</u>	<u>14</u>	<u>15</u>	<u>29</u>		
	<u>TOTALS</u>		116	67	183	94	81	175

8. * Select five (5) economic sectors which, in your opinion, have the highest priority in developing an EDB in Jordan. Use numbers 1 to 5 for those selected where 1 indicates the highest priority among the 5 selected, and so on:

- 1(1), 1(2), 0(3), 0(4), 0(5) a. Electricity
- 0(1), 3(2), 0(3), 2(4), 1(5) b. Communications
- 0(1), 0(2), 0(3), 2(4), 0(5) c. Transportation
- 7(1), 4(2), 2(3), 4(4), 2(5) d. Agriculture
- 0(1), 1(2), 5(3), 2(4), 2(5) e. Housing and Construction
- 1(1), 0(2), 2(3), 1(4), 1(5) f. Health
- 4(1), 6(2), 6(3), 3(4), 4(5) g. Mining and Industry
- 0(1), 3(2), 0(3), 2(4), 0(5) h. Population
- 1(1), 2(2), 1(3), 2(4), 1(5) i. Tourism and Antiquities
- 6(1), 5(2), 4(3), 3(4), 4(5) j. Manpower and Employment
- 2(1), 1(2), 5(3), 3(4), 2(5) k. Finance
- 4(1), 4(2), 3(3), 4(4), 5(5) l. Trade and Services
- 5(1), 1(2), 1(3), 2(4), 2(5) m. Education
- 0(1), 0(2), 1(3), 1(4), 4(5) n. Water
- 1(1), 0(2), 1(3), 0(4), 4(5) o. Investments
- 0(1), 1(2), 1(3), 1(4), 0(5) p. Prices and Wages
- q. Others (List)

9. Should, in your opinion, and EDB cover: (check one)

- 13 a. One economic sector at a time
- 19 b. More than one economic sector - indicate number: * 3(2), 6(3), 1(4), 7(5),
- 32 TOTAL 1(9), 1(10)

* Counts are provided in the form x(y) where: x is the number of respondents, and y is the priority or selection made

10. Who, in your opinion, should be responsible for selecting a group of people at the national level with the responsibility of establishing and controlling policies and procedures required for the development of an EDB in Jordan: (check one)

- 3 a. Government
0 b. Parliament
5 c. Private sector
24 d. Mixture from the above (a, b and c) | (No. b)
32 TOTAL

11. Do you believe that the currently available national training facilities are adequate to train personnel in the following categories for the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy making	<u>7</u>	<u>25</u>	32
b. Managing	<u>10</u>	<u>22</u>	32
c. Developing	<u>9</u>	<u>23</u>	32
d. Consulting/Advising/Planning	<u>7</u>	<u>25</u>	<u>32</u>
<u>TOTALS</u>	33	95	128

12. Do you believe that the currently available manpower has adequate experience and training in the following categories to start immediately on the development of an EDB in Jordan: (check one for each)

	<u>Yes</u>	<u>No</u>	<u>TOTAL</u>
a. Policy Making	<u>10</u>	<u>22</u>	32
b. Managing	<u>16</u>	<u>16</u>	32
c. Developing	<u>15</u>	<u>17</u>	32
d. Consulting/Advising/Planning	<u>8</u>	<u>24</u>	<u>32</u>
<u>TOTALS</u>	49	79	128

Once again, thank you very much for your co-operation.

Please mail the completed questionnaire to:

c/o Mr. Omar Widyan,
 Royal Scientific Society,
 P.O. Box 6945,
 Amman, Jordan.

Sincerely yours,

Borhan N. Shrydeh

Borhan N. Shrydeh,
 Department of Management Studies,
 University of Technology,
 Loughborough, Leicestershire, England.

APPENDIX E

INTERVIEWS: CORRESPONDENCE

23 June 1977

H.R.H. Crown Prince Hassan Bin Talal,
The Royal Palace,
Amman,
JORDAN.

Your Royal Highness,

May I first take this opportunity to express my best wishes, along with those of my colleagues at the University of Technology, to His Majesty King Hussein and to your Royal Highness.

This letter is in regard to Doctoral research currently being conducted by Mr. Borhan Najib Shrydeh at our University. His research focuses on Economic Data Bank Management Systems Development in a developing nation. Jordan was chosen by him as a model with our agreement and full support. His research requirements call for interviewing a number of key officials, both in the public and private sectors of Jordan. This is in addition to about one hundred responses to a prepared questionnaire from other officials in these sectors.

We are quite familiar with the tremendous efforts and substantial contribution of your Royal Highness in the area of economic and social planning for Jordan.

Therefore, it would be of the utmost importance if your Royal Highness would grant Mr. Shrydeh an interview. It would also be extremely helpful if your Royal Highness would assign someone who can assist him in his tasks, particularly that of arranging interviews with key officials. Mr. Shrydeh can be made available for these interviews during the months of October and November 1977. Enclosed, for review by your Royal Highness, is a resume of Mr. Shrydeh's background. As indicated, he has had fourteen years of business experience in the United States of America. This excellent experience was in the area of computer science, business administration and management science. He is currently on leave of absence from his position of Manager, Economic Data Bank Section, Royal Scientific Society, Amman, Jordan, and we believe that his research will be an asset and of great benefit to Jordan.

/2

We shall look forward to hearing from your Royal Highness regarding a convenient interview date for the period mentioned. We should also be grateful if you could send us the name and address of the person who may be assigned to assist Mr. Shrydel in his work.

We wish to express our gratitude to your Royal Highness in advance.

Yours faithfully,

A handwritten signature in cursive script, appearing to read 'G. Gregory'.

G. Gregory
Professor of Management Sciences

Royal
Scientific Society

ECONOMICS DEPARTMENT

P.O. BOX 6945 - AMMAN/JORDAN - TEL: 67111-4

TELEX: ERRAMAH 1276 JO

No. : (4) 264/16/1/4903

Date: 20 /7/1977

Professor G. Gregory,
Department of Management Studies,
University of Technology,
Loughborough, Leicestershire LE11 3TU,
England.

Dear Professor Gregory,

This is in acknowledgement of your letter of June 23, 1977, concerning Mr. Borhan N. Shrydeh, addressed to H. R. H. Crown Prince Hassan and forwarded to the Economics Department of the Royal Scientific Society, of which Mr. Shrydeh is an employee on leave of absence.

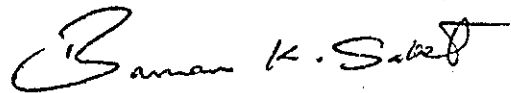
With regard to your request on behalf of Mr. Shrydeh for an interview by him with H. R. H., this can be arranged after Mr. Shrydeh's arrival in Amman. The same would also apply to his proposed interviews with key officials in Jordan.

Concerning your request for assigning someone to assist Mr. Shrydeh in his work, such assistance will only extend to arranging his interviews. I will be happy to coordinate this with our Public Relations staff and will try to be generally helpful to him in this regard.

We, at the RSS, are glad to have a staff member of our department studying at your university.

With every good wish.

Yours faithfully,

A handwritten signature in cursive script, appearing to read "Bassam K. Saket". The signature is written in dark ink and is positioned above the typed name.

Dr. Bassam Saket
Director, Economics Department

9 August 1977

Dr. Bassam Saket
Director, Economics Department
Royal Scientific Society
P.O. Box 6945
Amman
JORDAN

Dear Dr. Saket,

Thank you for your letter of 20 July concerning the arrangements for Mr. Borham Shrydeh during his forthcoming visit to Amman.

We greatly appreciate the offer of this assistance and I will pass on the suggestions made to Mr. Shrydeh.

With kind regards,

Yours sincerely,



G. Gregory

c.c. Dr. P.J. Stratfold

APPENDIX F

FIELD SURVEY: TABLES AND STATISTICAL ANALYSIS

APPENDIX F

FIELD SURVEY: TABLES AND STATISTICAL ANALYSIS

INTRODUCTION

The purpose of this Appendix is to present the field survey results in a tabular form along with the associated statistical tests and analysis performed. They were excluded from Chapter V, Field Survey: Results and Analysis, in order to avoid confusion and much repetition.

The Appendix is sectioned by issue, for each of the issues developed in the theoretical phase of the study, and appear in Chapter II, Section 2.3. For each issue, the related interviews and questionnaire raw tables are provided. In the questionnaire case, the results are provided at both the category and aggregate levels. The categories are in accordance with those listed in the first question appearing in the questionnaire regarding the duties of the respondents. The responses to this question appear in Table No. F - 1.

Table No. F - 1

Questionnaire Response - Duties of Respondents

<u>Category</u>	<u>Total Response</u>	
	<u>No.</u>	<u>%</u>
a. & b. Policy Maker/Manager	68	32
c. Staff	31	15
d. Consultant/Adviser/Planner	30	14
e. Educator/Researcher	51	24
f. Businessman	32	15
<u>TOTALS</u>	<u>212</u>	<u>100</u>

Only eight respondents checked the category of "Policy Maker". Several respondents, who checked the "Manager" category questioned if they could be considered as Policy Maker. This is due to being in highly responsible managerial positions and involved, to various extents, in policy making. Due to this situation, as well as that of interviewing all other policy makers contacted, it was decided to combine the two categories into one, which is that of the "Manager" category, throughout the analysis of the questionnaire results.

The statistical analysis include, where applicable:

1. Percentage distributions for a quick visualisation of contributions made by each category and listed area of interest. The areas of interest are those alternatives or parts appearing under each question in the questionnaire.
2. Comparisons of the expected and actual responses between categories and listed areas of interest. This is in order to determine whether the actual responses are significantly different between them. For every comparison, the hypothesis and a contingency table, which include the statistical test result, are provided. If the test result indicates that the hypothesis is rejected, then a table is provided showing the best estimate of the order of importance which is reflected by category or listed area of interest.
3. The use of other statistical techniques (e.g. ranking) where necessary.

The questionnaire included Question number 2 which does not relate

directly to any of the issues. It was included to obtain some information on the spread of responsibilities between the respondents to each category. The results are shown in Table No. F - 2.

Table No. F-2

Questionnaire Response - Supervision Level of Respondents

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
None	0	0	31	100	3	10	0	0	0	0	34	16
a. 1 - 5	25	36	0	0	10	33	22	43	17	53	74	35
b. 6 - 10	10	15	0	0	0	0	1	2	7	22	18	8
c. 11 - 50	23	34	0	0	2	7	0	0	6	19	31	15
d. Over 50	10	15	0	0	15	50	28	55	2	6	55	26
<u>TOTALS</u>	<u>68</u>	<u>100</u>	<u>31</u>	<u>100</u>	<u>30</u>	<u>100</u>	<u>51</u>	<u>100</u>	<u>32</u>	<u>100</u>	<u>212</u>	<u>100</u>

The responses of the categories of "Educator/Researcher" and "Consultant/Adviser/Planner", indicating their supervision of more than 50 people, were exceptionally high (55% and 50%). Further investigation of this matter uncovered that many educators are teachers who teach in excess of 50 students. In addition, several consultants, advisers and planners are in the social and academic fields, with functional and field responsibilities (e.g. inspection) for more than 50 people. The response of the "Staff" category was 100% for not having any employees under their supervision. This is consistent with the usual responsibilities and functions of staff personnel.

Several abbreviations were made for practical reasons. The underlined word(s) of each area of interest under each question is (are) used as an abbreviation for it. The categories (strata) were abbreviated as follows:

<u>Category</u>	<u>Abbreviation</u>
Policy Maker/Manager	Mgr
Staff	Staff
Consultant/Adviser/Planner	Consult
Educator/Researcher	Ed/Res
Businessman	Bus

Other abbreviations used are:

<u>Word</u>	<u>Abbreviation</u>
Abstained	Abs
Actual	Act
Expected	Exp
Number	No.

F.1. Issue Number 1 - Tables and Statistical Analysis

1. Interviews - Topic Number 1 Tables

Table No. F-3

Interviews Response - Immediate Need for an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	39	100
No	0	0
<u>TOTALS</u>	<u>39</u>	<u>100</u>

Table No. F-4

Interviews Response - EDB Benefits

<u>Benefit</u>	<u>Response (TOTAL=39)</u>	
	<u>No.</u>	<u>%</u>
a. Improved timeliness of economic data	21	54
b. Improved availability of economic data	21	54
c. Improved accuracy of economic data	16	41
d. Reduced duplication and redundancy of economic data	13	33
e. Improved economic planning	32	82
f. Improved decision making	32	82
g. Improved scientific research	12	31
h. Improved measuring and monitoring the achievements of development plans	17	44
i. Improved documentation and historical data availability	7	18

2. Questionnaire - Question Number 3 Table

Table No. F-5

Questionnaire Response - Need for Economic Data

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
a. Yes	56	82	23	74	17	57	40	78	32	100	168	79
b. No	12	18	8	26	13	43	11	22	0	0	44	21
<u>TOTALS</u>	<u>68</u>	<u>100</u>	<u>31</u>	<u>100</u>	<u>30</u>	<u>100</u>	<u>51</u>	<u>100</u>	<u>32</u>	<u>100</u>	<u>212</u>	<u>100</u>

3. Questionnaire - Question number 3 Statistical Analysis:

Hypothesis: Responses are not significantly different between the various categories as to the need for economic data and information.

Table No. F-6

Contingency Table: Need for Economic Data

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
a. Yes	56	53.9	23	24.6	17	23.8	40	40.4	32	25.4	168
b. No	12	14.1	8	6.4	13	6.2	11	10.6	0	6.6	44
<u>TOTALS</u>	<u>68</u>		<u>31</u>		<u>30</u>		<u>51</u>		<u>32</u>		<u>212</u>

Contingency coefficient: 0.28

Chi-square statistic: 18.63 (with 4 degrees of freedom)

Statistically significant at: < 0.001 (0.001 level = 18.46)

Statistical Test Result: Reject the hypothesis

Table No. F-7

Order of Need for Economic Data as Reflected by the Categories

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. "Businessman"	100
2. "Manager"	82
3. "Educator/Researcher"	78
4. "Staff"	74
5. "Consultant/Adviser/Planner"	57

4. Questionnaire: Question Number 4 Tables

Table No. F-8

"Manager": EDB Benefits to Respondent

<u>Response</u>	<u>MGR (TOTAL = 68)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	52	76	16	24
b. Availability	47	69	21	31
c. Accuracy	49	72	19	28
d. Reduced redundancy	41	60	27	40
e. Information retrieval	38	56	30	44
f. Analysis	42	62	26	38
g. Planning	43	63	25	37
h. Decision making	44	65	24	35
<u>TOTALS</u>	<u>356</u>	<u>65</u>	<u>188</u>	<u>35</u>

Table No. F-9

"Staff": EDB Benefits to Respondents

<u>Response</u>	<u>STAFF (TOTAL = 31)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	24	77	7	23
b. Availability	20	65	11	35
c. Accuracy	19	61	12	39
d. Reduced redundancy	13	42	18	58
e. Information retrieval	10	32	21	68
f. Analysis	11	35	20	65
g. Planning	21	68	10	32
h. Decision making	17	55	14	45
<u>TOTALS</u>	<u>135</u>	<u>54</u>	<u>113</u>	<u>46</u>

Table No. F-10

"Consultant/Adviser/Planner": EDB Benefits to Respondents

<u>Response</u>	<u>CONSULT (TOTAL = 30)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	15	50	15	50
b. Availability	13	43	17	57
c. Accuracy	17	57	13	43
d. Reduced redundancy	10	33	20	67
e. Informational retrieval	7	23	23	77
f. Analysis	8	27	22	73
g. Planning	11	37	19	63
h. Decision making	15	50	15	50
<u>TOTALS</u>	<u>96</u>	<u>40</u>	<u>144</u>	<u>60</u>

Table No. F-11

"Educator/Researcher": EDB Benefits to Respondents

<u>Response</u>	<u>ED/RES (TOTAL = 51)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	33	65	18	35
b. Availability	34	67	17	33
c. Accuracy	28	55	23	45
d. Reduced redundancy	29	57	22	43
e. Information retrieval	25	49	26	51
f. Analysis	25	49	26	51
g. Planning	31	61	20	39
h. Decision making	27	53	24	47
<u>TOTALS</u>	<u>232</u>	<u>57</u>	<u>176</u>	<u>43</u>

Table No. F-12

"Businessman": EDB Benefits to Respondents

<u>Response</u>	<u>BUS (TOTAL = 32)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	25	78	7	22
b. Availability	26	81	6	19
c. Accuracy	27	84	5	16
d. Reduced redundancy	25	78	7	22
e. Information retrieval	23	72	9	28
f. Analysis	21	66	11	34
g. Planning	24	75	8	25
h. Decision making	23	72	9	28
<u>TOTALS</u>	<u>194</u>	<u>76</u>	<u>62</u>	<u>24</u>

Table No. F-13

Total Response: EDB Benefits to Respondents

<u>Response</u>	<u>TOTAL RESPONSE (TOTAL = 212)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	149	70	63	30
b. Availability	140	66	72	34
c. Accuracy	140	66	72	34
d. Reduced redundancy	118	56	94	44
e. Information retrieval	103	49	109	51
f. Analysis	107	50	105	50
g. Planning	130	61	82	39
h. Decision making	126	59	86	41
<u>TOTALS</u>	<u>1013</u>	<u>60</u>	<u>683</u>	<u>40</u>

5. Questionnaire: Question number 4 Statistical Analysis:

Hypothesis: Responses are not significantly different between the various categories as to the EDB benefits to respondents.

Table No. F - 14

Contingency Table: EDB Benefits to Respondents

<u>Category</u>	<u>TOTAL RESPONSE</u>				<u>TOTAL</u> <u>Act</u>
	<u>Yes</u>		<u>Abs</u>		
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	
Mgr	356	325	188	219	544
Staff	135	148	113	100	248
Consult	96	143	144	97	240
Ed/Res	232	244	176	164	408
Bus	194	153	62	103	256
<u>TOTALS</u>	<u>1013</u>		<u>683</u>		<u>1696</u>

Contingency coefficient: 0.21

Chi-square statistic: 77.17 (with 4 degrees of freedom)

Statistically significant: $< .001$ (0.001 level = 18.46)

Statistical test result: Reject the hypothesis

Table No. F - 15

Order of Importance for the EDB Benefits to Respondents as
Reflected by Category

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. "Businessman"	72
2. "Manager"	65
3. "Educator/Researcher"	57
4. "Staff"	54
5. "Consultant/Adviser/Planner"	40

Hypothesis: The positive responses by category for the listed EDB benefits are not significantly different.

Table No. F-16

Contingency Table: Positive Response to EDBBenefits to Respondents by Category

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
a. Timeliness	52	52.4	24	19.9	15	14.1	33	34.1	25	28.5	149
b. Availability	47	49.2	20	18.7	13	13.3	34	32.0	26	26.8	140
c. Accuracy	49	49.2	19	18.7	17	13.3	28	32.0	27	26.8	140
d. Reduced redundancy	41	41.5	13	15.7	10	11.2	29	27.0	25	22.6	118
e. Inform. retrieval	38	36.2	10	13.7	7	9.8	25	23.6	23	19.7	103
f. Analysis	42	37.6	11	14.2	8	10.1	25	24.6	21	20.5	107
g. Planning	43	45.7	21	17.3	11	12.3	31	29.8	24	24.9	130
h. Decision making	44	44.2	17	16.8	15	11.9	27	28.9	23	24.2	126
<u>TOTALS</u>	<u>356</u>		<u>135</u>		<u>96</u>		<u>232</u>		<u>194</u>		<u>1013</u>

Contingency coefficient: 0.10

Chi-square statistic: 10.63 (with 28 degrees of freedom)

Statistically significant: $>$ 0.99 (0.99 level = 13.56)

Statistical test result: Accept the hypothesis

6. Questionnaire - Question Number 5 Tables:

Table No. F-17

"Manager": EDB Benefits to Jordan

<u>Response</u>	<u>MGR (TOTAL = 68)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	55	81	13	19
b. Availability	54	79	14	21
c. Accuracy	49	72	19	28
d. Reduced redundancy	49	72	19	28
e. Information retrieval	46	68	22	32
f. Analysis	49	72	19	28
g. Planning	51	75	17	25
h. Decision making	48	71	20	29
<u>TOTALS</u>	<u>401</u>	<u>74</u>	<u>143</u>	<u>26</u>

Table No. F-18

"Staff": EDB Benefits to Jordan

<u>Response</u>	<u>STAFF (TOTAL = 30)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	25	81	6	19
b. Availability	25	81	6	19
c. Accuracy	21	68	10	32
d. Reduced redundancy	16	52	15	48
e. Information retrieval	14	45	17	55
f. Analysis	18	58	13	42
g. Planning	26	84	5	16
h. Decision making	24	77	7	23
<u>TOTALS</u>	<u>169</u>	<u>68</u>	<u>79</u>	<u>32</u>

Table No. F - 19

"Consultant/Adviser/Planner": EDB Benefits to Jordan

<u>Response</u>	<u>CONSULT (TOTAL = 30)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	18	60	12	40
b. Availability	18	60	12	40
c. Accuracy	18	60	12	40
d. Reduced redundancy	14	47	16	53
e. Information retrieval	10	33	20	64
f. Analysis	14	47	16	53
g. Planning	25	83	5	17
h. Decision making	18	60	12	40
<u>TOTALS</u>	<u>135</u>	<u>56</u>	<u>105</u>	<u>44</u>

Table No. F - 20

"Educator/Researcher": EDB Benefits to Jordan

<u>Response</u>	<u>ED/RES (TOTAL = 51)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	34	67	17	33
b. Availability	39	76	12	24
c. Accuracy	35	69	16	31
d. Reduced redundancy	32	63	19	37
e. Information retrieval	29	57	22	43
f. Analysis;	30	59	21	41
g. Planning	36	71	15	29
h. Decision making	35	69	16	31
<u>TOTALS</u>	<u>270</u>	<u>66</u>	<u>138</u>	<u>34</u>

Table No. F-21

"Businessman": EDB Benefits to Jordan

<u>Response</u>	<u>BUS (TOTAL = 32)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	28	88	4	12
b. Availability	26	81	6	19
c. Accuracy	28	88	4	12
d. Reduced redundancy	28	88	4	12
e. Information retrieval	24	75	8	25
f. Analysis	27	84	5	16
g. Planning	28	88	4	12
h. Decision making	28	88	4	12
<u>TOTALS</u>	<u>217</u>	<u>85</u>	<u>39</u>	<u>15</u>

Table No. F-22

Total Response: EDB Benefits to Jordan

<u>Response</u>	<u>TOTAL RESPONSE (TOTAL = 212)</u>			
	<u>Yes</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Timeliness	160	75	52	25
b. Availability	162	76	50	24
c. Accuracy	151	71	61	29
d. Reduced redundancy	139	66	73	34
e. Information retrieval	123	58	89	42
f. Analysis	138	65	74	35
g. Planning	166	78	46	22
h. Decision making	153	72	59	28
<u>TOTALS</u>	<u>1192</u>	<u>70</u>	<u>504</u>	<u>30</u>

7. Questionnaire - Question Number 5 Statistical Analysis:

Hypothesis: Responses are not significantly different between the various categories as to the EDB benefits to Jordan as a whole.

Table No. F-23

Contingency Table: EDB Benefits to Jordan

<u>Category</u>	<u>TOTAL RESPONSE</u>				
	<u>Yes</u>		<u>Abs</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	401	382	143	162	544
Staff	169	174	79	74	248
Consult	135	169	105	71	240
Ed/Res	270	287	138	121	408
Bus	217	180	39	76	256
<u>TOTALS</u>	<u>1192</u>		<u>504</u>		<u>1696</u>

Contingency coefficient: 0.18

Chi-square statistic: 55.79 (with 4 degrees of freedom)

Statistically significant: $< .001$ (0.001 level = 18.46)

Statistical test result: Reject the hypothesis

Table No. F-24

Order of Importance for the EDB Benefits to Jordan asReflected by Category

<u>Category</u>	<u>Positive Response %</u>
1. "Businessman"	85
2. "Manager"	74
3. "Staff"	68
4. "Educator/Researcher"	66
5. "Consultant/Adviser/Planner"	56

Hypothesis: The positive responses by category for the listed EDB benefits to Jordan as a whole are not significantly different.

Table No. F - 25

Contingency Table: Positive Response to
EDB Benefits to Jordan by Category

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
a. Timeliness	55	53.8	25	22.7	18	18.1	34	36.3	28	29.1	160
b. Availability	54	54.5	25	23.0	18	18.3	39	36.7	26	29.5	162
c. Accuracy	49	50.8	21	21.4	18	17.1	35	34.2	28	27.5	151
d. Reduced redundancy	49	46.8	16	19.7	14	15.8	32	31.4	28	25.3	139
e. Inform. retrieval	46	41.4	14	17.4	10	14.0	29	27.9	24	22.3	123
f. Analysis	49	46.4	18	19.6	14	15.6	30	31.3	27	25.1	138
g. Planning	51	55.8	26	23.5	25	18.8	36	37.6	28	30.3	166
h. Decisionmaking	48	51.5	24	21.7	18	17.3	35	34.6	28	27.9	153
<u>TOTALS</u>	<u>401</u>		<u>169</u>		<u>135</u>		<u>270</u>		<u>217</u>		<u>1192</u>

Contingency coefficient : 0.03

Chi-square statistic: 9.42 (with 28 degrees of freedom)

Statistically significant: > 0.99 (0.99 level = 13.56)

8. Questionnaire - Question Number 6 Table:

Table No. F-26

Questionnaire Response - Time Frame forStarting the EDB Development

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
a. Long term	3	4	1	3	1	3	3	6	1	3	9	4
b. Short term	28	41	12	39	11	37	10	20	8	25	69	33
c. Immediately	37	55	18	58	18	60	38	74	23	72	134	63
<u>TOTALS</u>	<u>68</u>	<u>100</u>	<u>31</u>	<u>100</u>	<u>30</u>	<u>100</u>	<u>51</u>	<u>100</u>	<u>32</u>	<u>100</u>	<u>212</u>	<u>100.</u>

9. Questionnaire - Question Number 6 Statistical Analysis:

Hypothesis: Responses are not significantly different between the various categories regarding the time frame for starting the EDB development in Jordan.

Table No. F-27

Contingency Table: Time Frame forStarting the EDB Development

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
a. Long term	3	2.9	1	1.3	1	1.3	3	2.2	1	1.3	9
b. Short term	28	22.1	12	10.1	11	9.8	10	16.6	8	10.4	69
c. Immediately	37	43.0	18	19.6	18	18.9	38	32.2	23	20.3	134
<u>TOTALS</u>	<u>68</u>		<u>31</u>		<u>30</u>		<u>51</u>		<u>32</u>		<u>212</u>

Contingency coefficient: 0.19

Chi-square statistic: 8.17 (with 8 degrees of freedom)

Statistically significant at: 0.50 (0.30 level = 9.52)

Statistical test result: Accept the Hypothesis

F.2. Issue Number 2 - Tables and Statistical Analysis

1. Interviews - Topic Number 2 Table:

Table No. F-28

Interviews Response - Location of an EDB in Jordan

<u>Location</u>	<u>Response (TOTAL=39)</u>		<u>Alternate No.</u>
	<u>Primary No.</u>	<u>%</u>	
Central Bank	1	2.6	-
Decentralised EDB	1	2.6	-
Department of Statistics	1	2.6	3
Independent Agency	15	38.4	-
Ministry of Finance	0	0	1
Ministry of Industry and Commerce	1	2.6	-
National Planning Council	8	20.5	3
Private Sector	0	0	1
Royal Scientific Society	11	28.1	4
University of Jordan	1	2.6	1

2. Interviews - Topic Number 3 Table:

Table No. F-29

Interviews Response - the Need for New Laws Enactment, Code of Ethics, and Policies and Procedures for an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	32	82
No	2	5
No mention	5	13
<u>TOTALS</u>	<u>39</u>	<u>100</u>

3. Questionnaire - Question Number 10 Table:

Table No. F - 30

Questionnaire Response - The Responsibility forSelecting an EDB Board in Jordan

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
a. Government	17	25	1	3	1	3	14	27	3	9	36	17
b. Parliament	1	1	2	6	1	3	1	2	0	0	5	2
c. Private	2	3	3	10	1	3	2	4	5	16	13	6
d. Mixture	48	71	25	81	27	91	34	67	24	75	158	75
<u>TOTALS</u>	68	100	31	100	30	100	51	100	32	100	212	100

4. Questionnaire - Question Number 10 Statistical Analysis:

Hypothesis: Responses are not significantly different between the various categories as to the responsibility for the selection of an EDB Board in Jordan.

Table No. F-31

Contingency Table: Responsibility for the
Selection of an EDB Board in Jordan

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
a. Government	17	11.5	1	5.3	1	5.1	14	8.7	3	5.4	36
b. & c. Parliament/ Private	3	5.8	5	2.6	2	2.5	3	4.3	5	2.8	18
c. Mixture	48	50.7	25	23.1	27	22.4	34	38.0	24	23.8	158
<u>TOTALS</u>	<u>68</u>		<u>31</u>		<u>30</u>		<u>51</u>		<u>32</u>		<u>212</u>

Contingency coefficient: 0.30

Chi-square statistic: 21.17 (with 8 degrees of freedom)

Statistically significant at: 0.01 (0.001 level = 26.12)

Statistical test result: Reject the hypothesis

Table No. F-32

Order of Importance Reflected by Category for a
"Mixture" type of an EDB Board in Jordan

<u>Category</u>	<u>Response %</u>
1. "Consultant/Adviser/Planner"	91
2. "Staff"	81
3. "Businessman"	75
4. "Manager"	71
5. "Educator/Researcher"	67

F.3. Issue Number 3 - Tables and Statistical Analysis:

1. Interviews - Topic Number 4 Table:

Table No. F - 33

Interviews Response - Economic Sectors Priority in Developing
an EDB in Jordan

<u>Economic Sector</u>	<u>Priority</u>					
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Electricity	0	0	1	0	0	0
Communications	0	0	0	0	0	1
Transportation	0	0	0	1	1	0
Agriculture	14	5	4	2	1	0
Housing & Construction	0	0	1	0	1	0
Health	1	0	1	0	0	0
Mining and Industry	3	10	5	2	0	0
Population	4	2	0	0	0	0
Tourism	0	0	2	4	1	2
Manpower & Employment	10	9	4	1	4	0
Finance	2	1	0	0	0	0
Trade and Services	3	5	6	5	1	0
Education	1	0	1	1	0	0
Water	0	2	0	1	1	0
Investments	1	1	0	0	0	0
Prices and Wages	0	0	1	0	0	0
<u>TOTALS</u>	<u>39</u>	<u>35</u>	<u>26</u>	<u>17</u>	<u>10</u>	<u>3</u>

2. Interviews - Topic Number 4 Statistical Analysis:

Ranking Method: Inverted weights of 6 to 1 are given to the priorities 1 to 6.

Table No. F-34

Interviews Response - Economic Sectors Ranks

<u>Economic Sector</u>	<u>Rank</u>
Electricity	14
Communication	16
Transportation	13
Agriculture	1
Housing and Construction	12
Health	11
Mining and Industry	3
Population	5
Tourism	6
Manpower and Employment	2
Finance	7
Trade and Services	4
Education	9
Water	8
Investments	10
Prices and Wages	15

3. Questionnaire - Question Number 8 Tables:

Table No. F-35

"Manager": Assigned Priorities to Economic Sectors

<u>Economic Sector</u>	Priority:	<u>MGR (TOTAL = 68)</u>				
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
a. Electricity		6	1	1	7	2
b. Communications		1	2	3	1	0
c. Transportation		0	6	2	2	2
d. Agriculture		18	10	9	3	1
e. Housing		1	1	2	4	2
f. Health		0	4	1	2	1
g. Industry		5	9	12	6	6
h. Population		3	0	4	4	7
i. Tourism		1	2	1	2	3
j. Manpower		14	9	7	2	1
k. Finance		6	3	5	3	8
l. Trade		1	3	5	12	10
m. Education		5	4	6	3	5
n. Water		1	2	5	7	5
o. Investments		4	2	0	3	6
p. Prices and Wages		2	10	5	7	8

Table No. F - 36

"Staff": Assigned Priorities to Economic Sectors

<u>Economic Sector</u>	Priority:	<u>STAFF (TOTAL = 31)</u>				
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
a. Electricity		3	1	3	1	0
b. Communications		1	1	1	1	2
c. Transportation		0	1	1	2	1
d. Agriculture		7	3	1	5	0
e. Housing		0	0	0	3	2
f. Health		0	3	0	2	2
g. Industry		1	7	6	1	5
h. Population		4	1	2	3	2
i. Tourism		1	1	0	0	3
j. Manpower		2	1	7	2	1
k. Finance		2	1	1	1	2
l. Trade		0	2	1	2	4
m. Education		4	3	2	1	0
n. Water		0	3	1	1	1
o. Investments		4	0	2	3	3
p. Prices and Wages		1	3	3	3	3

Table No. F - 37

"Consultant/Adviser/Planner": Assigned Priorities
to Economic Sectors

<u>Economic Sector</u>	Priority:	<u>CONSULT (TOTAL = 30)</u>				
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
a. Electricity		0	0	2	2	3
b. Communication		1	0	1	2	0
c. Transportation		0	1	0	1	1
d. Agriculture		12	5	1	2	1
e. Housing		2	0	4	1	1
f. Health		0	0	1	3	2
g. Industry		5	6	5	0	1
h. Population		0	2	2	0	3
i. Tourism		0	2	0	3	0
j. Manpower		4	5	3	4	0
k. Finance		2	0	1	2	2
l. Trade		1	2	2	1	3
m. Education		1	4	6	4	5
n. Water		1	2	1	0	4
o. Investments		0	1	0	2	2
p. Prices and Wages		1	0	1	3	2

Table No. F - 38

"Educator/Researcher": Assigned Prioritiesto Economic Sectors

<u>Economic Sector</u>	Priority:	<u>ED/RES (TOTAL = 51)</u>				
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
a. Electricity		1	2	3	0	1
b. Communications		0	1	2	0	3
c. Transportation		0	0	0	1	0
d. Agriculture		16	8	5	4	2
e. Housing		0	1	3	3	4
f. Health		1	1	1	0	3
g. Industry		6	9	4	4	2
h. Population		7	2	4	3	1
i. Tourism		0	0	2	3	3
j. Manpower		10	8	11	1	4
k. Finance		0	2	4	6	2
l. Trade		1	4	4	9	6
m. Education		2	2	4	4	10
n. Water		4	2	0	3	3
o. Investments		0	1	2	7	6
p. Prices and Wages		3	8	2	2	1

Table No. F - 39

"Businessman": Assigned Priorities to
Economic Sectors

<u>Economic Sector</u>	Priority:	<u>BUS (TOTAL = 32)</u>				
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
a. Electricity		1	1	0	0	0
b. Communications		0	3	0	2	1
c. Transportation		0	0	0	2	0
d. Agriculture		7	4	2	4	2
e. Housing		0	1	5	2	2
f. Health		1	0	2	1	1
g. Industry		4	6	6	3	4
h. Population		0	3	0	2	0
i. Tourism		1	2	1	2	1
j. Manpower		6	5	4	3	4
k. Finance		2	1	5	3	2
l. Trade		4	4	3	4	5
m. Education		5	1	1	2	2
n. Water		0	0	1	1	4
o. Investments		1	0	1	0	4
p. Prices and Wages		0	1	1	1	0

Table No. F - 40

Total Response: Assigned Priorities
to Economic Sectors

<u>Economic Sector</u>	Priority:	<u>TOTAL RESPONSE (TOTAL = 212)</u>				
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
a. Electricity		11	5	9	10	6
b. Communications		3	7	7	6	6
c. Transportation		0	8	3	8	4
d. Agriculture		60	30	18	18	6
e. Housing		3	3	14	13	11
f. Health		2	8	5	8	9
g. Industry		21	37	33	14	18
h. Population		14	8	12	12	13
i. Tourism		3	7	4	10	10
j. Manpower		36	28	32	12	10
k. Finance		12	7	16	15	16
l. Trade		7	15	15	28	28
m. Education		17	14	19	14	22
n. Water		6	9	8	12	17
o. Investments		9	4	5	15	21
p. Prices and Wages		7	22	12	16	14
q. Other:						
(1) Social Infrastructure		0	0	0	0	1
(2) Social Planning		1	0	0	0	0
(3) Income Distribution		0	0	0	1	0

4. Questionnaire - Question Number 8 Statistical Analysis:

Ranking Method: Inverted weights of 16 to 12 are given to the priorities 1 to 5.

Table No. F - 41

Questionnaire Response - Economic Sectors Ranks

<u>Economic Sector</u>	<u>RANK</u>					<u>TOTAL</u>
	<u>MGR</u>	<u>STAFF</u>	<u>CONSULT</u>	<u>ED/RES</u>	<u>BUS</u>	
a. Electricity	9	8	11	13	15	12
b. Communications	16	13	15	15	9	15
c. Transportation	12	14	16	16	16	16
d. Agriculture	1	2	1	1	4	1
e. Housing	13	16	6	11	7	11
f. Health	15	11	12	14	13	14
g. Industry	2	1	3	3	1	2
h. Population	10	5	9	6	12	8
i. Tourism	14	15	13	12	8	13
j. Manpower	3	3	4	2	2	3
k. Finance	6	10	8	9	5	7
l. Trade	5	9	5	4	3	4
m. Education	7	7	2	5	6	5
n. Water	8	12	7	10	11	10
o. Investments	11	6	14	8	10	9
p. Prices and Wages	4	4	10	7	14	6

Table No. F - 42

Questionnaire Response - The Five Highest
Ranked Economic Sectors by Category

<u>RANK</u>	<u>MGR</u>	<u>STAFF</u>	<u>CONSULT</u>	<u>ED/RES</u>	<u>BUS</u>
1	Agriculture	Industry	Agriculture	Agriculture	Industry
2	Industry	Agriculture	Education	Manpower	Manpower
3	Manpower	Manpower	Industry	Industry	Trade
4	Prices & Wages	Prices & Wages	Manpower	Trade	Agriculture
5	Trade	Population	Trade	Education	Finance

5. Questionnaire - Question Number 9 Tables

Table No. F - 43

Questionnaire Response - EDB Initial Coverage

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
a. One sector	28	41	16	52	15	50	15	29	13	41	87	41
b. More	36	53	15	48	15	50	36	71	19	59	121	57
Abstained	4	6	0	0	0	0	0	0	0	0	4	2
<u>TOTALS</u>	68	100	31	100	30	100	51	100	32	100	212	100

Table No. F-44

Questionnaire Response - EDB Initial Coverage for
More Than One Economic Sector

RESPONSE (TOTAL = 121)

<u>No. of Economic Sectors</u>	<u>No.</u>	<u>%</u>
2	11	9
3	33	27
4	9	8
5	53	44
6	4	3
7	3	2
8	2	2
9	3	2
10	2	2
13	1	1

5. Questionnaire - Question Number 9 Statistical Analysis:

Hypothesis: Responses are not significantly different between the various categories as to the EDB initial coverage of economic sectors.

Table No. F - 45

Contingency Table: EDB Initial Coverage

<u>Response</u>	<u>MGR</u>		<u>STAFF</u>		<u>CONSULT</u>		<u>ED/RES</u>		<u>BUS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
a. One sector	28	27.9	16	12.7	15	12.3	15	20.9	13	13.2	87
b. More	40	40.1	15	18.3	15	17.7	36	30.1	19	18.8	125
<u>TOTALS</u>	<u>68</u>		<u>31</u>		<u>30</u>		<u>51</u>		<u>32</u>		<u>212</u>

Contingency coefficient: 0.16

Chi-square statistic: 5.29 (with 4 degrees of freedom)

Statistically significant at: 0.30 (0.20 level = 5.99)

Statistical test results: Reject the hypothesis

Table No. F- 46

Order of Importance Reflected by Category for an EDBInitial Coverage of More Than One Economic Sector

<u>Category</u>	<u>Response</u> <u>%</u>
1. "Educator/Researcher"	71
2. "Businessman"	59
3. "Manager"	53
4. "Consultant/Adviser/Planner"	50
5. "Staff"	48

F.4. Issue Number 4 - Tables and Statistical Analysis:

1. Interviews - Topic Number 5 Table

Table No. F-47

Interviews Response - Current Availability and Adequacy of Manpower for Developing an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	2	5
No	37	95
<u>TOTALS</u>	39	100

2. Questionnaire - Question Number 12 Tables

Table No. F-48

"Manager": Current Adequacy of Manpower for Developing an EDB in Jordan

<u>Response</u>	<u>MGR (TOTAL = 68)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	42	62	25	37	1	1
b. Managing	44	65	24	35	0	0
c. Developing	35	52	32	47	1	1
d. Consulting	32	47	34	50	2	3
<u>TOTALS</u>	153	56	115	42	4	2

Table No. F - 49

"Staff": Current Adequacy of Manpower for Developing
an EDB in Jordan

<u>Response</u>	<u>STAFF (TOTAL = 31)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	22	71	9	29	0	0
b. Managing	22	71	9	29	0	0
c. Developing	14	45	17	55	0	0
d. Consulting	13	42	18	58	0	0
<u>TOTALS</u>	<u>71</u>	<u>57</u>	<u>53</u>	<u>43</u>	<u>0</u>	<u>0</u>

Table No. F - 50

"Consultant/Adviser/Planner": Current Adequacy of Manpower
for Developing an EDB in Jordan

<u>Response</u>	<u>CONSULT (TOTAL = 30)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	14	47	13	43	3	10
b. Managing	18	60	9	30	3	10
c. Developing	9	30	18	60	3	10
d. Consulting	5	17	22	73	3	10
<u>TOTALS</u>	<u>46</u>	<u>38</u>	<u>62</u>	<u>52</u>	<u>12</u>	<u>10</u>

Table No. F - 51

"Educator/Researcher": Current Adequacy of Manpower
for Developing an EDB in Jordan

<u>Response</u>	<u>ED/RES (TOTAL = 51)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	23	45	24	47	4	8
b. Managing	22	43	25	49	4	8
c. Developing	21	41	26	51	4	8
d. Consulting	18	35	29	57	4	8
<u>TOTALS</u>	84	41	104	51	16	8

Table No. F - 52

"Businessman": Current Adequacy of Manpower for
Developing an EDB in Jordan

<u>Response</u>	<u>BUS (TOTAL = 32)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	10	31	22	69	0	0
b. Managing	16	50	16	50	0	0
c. Developing	15	47	17	53	0	0
d. Consulting	8	25	24	75	0	0
<u>TOTALS</u>	49	38	79	62	0	0

Table No. F-53

Total Response: Current Adequacy of Manpower for
Developing an EDB in Jordan

TOTAL RESPONSE (TOTAL = 212)

<u>Response</u>	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	111	52	93	44	8	4
b. Managing	122	58	83	39	7	3
c. Developing	94	44	110	52	8	4
d. Consulting	76	36	127	60	9	4
<u>TOTALS</u>	<u>403</u>	<u>47</u>	<u>413</u>	<u>49</u>	<u>32</u>	<u>4</u>

3. Questionnaire - Question Number 12 Statistical Analysis:

Hypothesis: Responses are not significantly different between the various categories as to the current adequacy of "Policy Making" manpower for developing an EDB in Jordan.

Table No. F-54

Contingency Table: Current Adequacy of "Policy Making"Manpower for Developing an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	42	35.6	25	29.8	1	2.6	68
Staff	22	16.2	9	13.6	0	1.2	31
Consult	14	15.7	13	13.2	3	1.1	30
Ed/Res	23	26.7	24	22.4	4	1.9	51
Bus	10	16.8	22	14.0	0	1.2	32
<u>TOTALS</u>	<u>111</u>		<u>93</u>		<u>8</u>		<u>212</u>

Contingency coefficient: 0.31

Chi-square statistic: 22.68 (with 8 degrees of freedom)

Statistically significant at: 0.01 (0.001 level = 26.12)

Statistical test result: Reject the hypothesis

Table No. F-55

Order of Importance Reflected by Category as to the CurrentAdequacy of "Policy Making" Manpower for Developingan EDB in Jordan

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. "Staff"	71
2. "Manager"	62
3. "Consultant/Adviser/Planner"	47
4. "Educator/Researcher"	45
5. "Businessman"	31

Hypothesis: Responses are not significantly different between the various categories as to the adequacy of "Managing" manpower for developing an EDB in Jordan.

Table No. F-56

Contingency Table: Current Adequacy of "Managing" Manpower
for Developing an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	44	39.1	24	26.7	0	2.2	68
Staff	22	17.9	9	12.1	0	1.0	31
Consult	18	17.3	9	11.7	3	1.0	30
Ed/Res	22	29.3	25	20.0	4	1.7	51
Bus	16	18.4	16	12.5	0	1.1	32
<u>TOTALS</u>	<u>122</u>		<u>83</u>		<u>7</u>		<u>212</u>

Contingency coefficient: 0.28

Chi-square statistic: 18.69 (with 8 degrees of freedom)

Statistically significant at: 0.02 (0.01 level = 20.09)

Statistical test result: Reject the hypothesis

Table No. F-57

Order of Importance Reflected by Category as to the Current
Adequacy of "Managing" Manpower for Developing
an EDB in Jordan

<u>Category</u>	<u>Positive Response %</u>
1. "Staff"	71
2. "Manager"	65
3. "Consultant/Adviser/Planner"	60
4. "Businessman"	50
5. "Educator/Researcher"	43

Hypothesis: Responses are not significantly different between the various categories as to the adequacy of "Developing" manpower for developing an EDB in Jordan.

Table No. F-58

Contingency Table: Current Adequacy of "Developing"
Manpower for the Development of an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u> <u>Act</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	
Mgr	35	30.2	32	35.2	1	2.6	68
Staff	14	13.7	17	16.1	0	1.2	31
Consult	9	13.3	18	15.6	3	1.1	30
Ed/Res	21	22.6	26	26.5	4	1.9	51
Bus	15	14.2	17	16.6	0	1.2	32
<u>TOTALS</u>	<u>94</u>		<u>110</u>		<u>8</u>		<u>212</u>

Contingency coefficient: 0.23

Chi-square statistic: 12.04 (with 8 degrees of freedom)

Statistically significant at: 0.20 (0.10 level = 13.36)

Statistical test result: Reject the hypothesis

Table No. F-59

Order of Importance Reflected by Category as to the Current
Inadequacy of "Developing" Manpower for the Development
of an EDB in Jordan

<u>Category</u>	<u>Negative Response</u> <u>%</u>
1. "Consultant/Adviser/Planner"	60
2. "Staff"	55
3. "Businessman"	53
4. "Educator/Researcher"	51
5. "Manager"	47

Hypothesis: Responses are not significantly different between the various categories as to the adequacy of "Consulting" manpower for developing an EDB in Jordan.

Table No. F - 60

Contingency Table: Current Adequacy of "Consulting" Manpower
for Developing an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u> <u>Act</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	
Mgr	32	24.4	34	40.7	2	2.9	68
Staff	13	11.1	18	18.6	0	1.3	31
Consult	5	10.7	22	18.0	3	1.3	30
Ed/Res	18	18.3	29	30.5	4	2.2	51
Bus	8	11.5	24	19.2	0	1.3	32
<u>TOTALS</u>	<u>76</u>		<u>127</u>		<u>9</u>		<u>212</u>

Contingency coefficient: 0.27

Chi-square statistic: 16.66 (with 8 degrees of freedom)

Statistically significant at: 0.05 (0.02 level = 18.17)

Statistical test result: Reject the hypothesis

Table No. F - 61

Order of Importance Reflected by Category as to the Current
Inadequacy of "Consulting" Manpower for Developing an
EDB in Jordan

<u>Category</u>	<u>Negative Response</u> <u>%</u>
1. "Businessman"	75
2. "Consultant/Adviser/Planner"	73
3. "Staff"	58
4. "Educator/Researcher"	57
5. "Manager"	50

Hypothesis: Responses are not significantly different between the various categories as to the adequacy of manpower for developing an EDB in Jordan.

Table No. F-62

Contingency Table: Current Adequacy of Manpower
for Developing an EDB in Jordan by Category

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	153	129.3	115	132.5	4	10.2	272
Staff	71	58.9	53	60.4	0	4.7	124
Consult	46	57.1	62	58.4	12	4.5	120
Ed/Res	84	96.9	104	99.4	16	7.7	204
Bus	49	60.8	79	62.3	0	4.9	128
<u>TOTALS</u>	<u>403</u>		<u>413</u>		<u>32</u>		<u>848</u>

Contingency coefficient: 0.25

Chi-square statistic: 55.94 (with 8 degrees of freedom)

Statistically significant at: ≤ 0.001 (0.001 level = 26.12)

Statistical test result: Reject the hypothesis

Table No. F-63

Order of Importance Reflected by Category as to the
Current Inadequacy of Manpower for Developing
an EDB in Jordan

<u>Category</u>	<u>Negative Response</u> <u>%</u>
1. "Businessman"	62
2. "Consultant/Adviser/Planner"	52
3. "Educator/Researcher"	51
4. "Staff"	43
5. "Manager"	42

Hypothesis: Responses are not significantly different between the listed areas of interest as to the current adequacy of manpower for developing an EDB in Jordan.

Table No. F-64

Contingency Table: Current Adequacy of Manpower
by Listed Area of Interest for Developing an EDB in Jordan

<u>Area of Interest</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
a. Policy Making	111	100.8	93	103.2	8	8	212
b. Managing	122	100.8	83	103.2	7	8	212
c. Developing	94	100.7	110	103.3	8	8	212
d. Consulting	76	100.7	127	103.3	9	8	212
<u>TOTALS</u>	<u>403</u>		<u>413</u>		<u>32</u>		<u>848</u>

Contingency coefficient: 0.16

Chi-square statistic: 23.08 (with 6 degrees of freedom)

Statistically significant at: < 0.001 (0.001 level = 22.46)

Statistical test result: Reject the hypothesis

Table No. F-65

Order of Importance by Listed Area of Interest as to the
Current Inadequacy of Manpower for Developing
an EDB in Jordan

<u>Area of Interest</u>	<u>Negative Response</u> <u>%</u>
1. "Consulting/Advising/Planning"	60
2. "Developing"	52
3. "Policy Making"	44
4. "Managing"	39

F.5. Issue Number 5 - Tables and Statistical Analysis:

1. Interviews - Topic Number 6 Table:

Table No. F-66

Interviews Response - Current Availability and Adequacy
of Training Facilities to Train the Personnel Required
for the Development of an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	2	5
No	37	95
<u>TOTALS</u>	39	100

2. Questionnaire - Question Number 11 Tables:

Table No. F-67

"Manager": Adequacy of National Training Facilities for
Training an EDB Personnel in Jordan

<u>Response</u>	<u>MGR (TOTAL = 68)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	33	48	31	46	4	6
b. Managing	35	51	31	46	2	3
c. Developing	28	41	36	53	4	6
d. Consulting	28	41	37	54	3	5
<u>TOTALS</u>	124	45	135	50	13	5

Table No. F - 68

"Staff": Adequacy of National Training Facilities for
Training an EDB Personnel in Jordan

<u>Response</u>	<u>STAFF (TOTAL = 31)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	24	77	7	23	0	0
b. Managing	21	68	10	32	0	0
c. Developing	16	52	15	48	0	0
d. Consulting	18	58	13	42	0	0
<u>TOTALS</u>	<u>79</u>	<u>64</u>	<u>45</u>	<u>36</u>	<u>0</u>	<u>0</u>

Table No. F - 69

"Consultant/Adviser/Planner": Adequacy of National
Training Facilities for Training an EDB Personnel in Jordan

<u>Response</u>	<u>CONSULT (TOTAL = 30)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	12	40	16	53	2	7
b. Managing	17	57	11	36	2	7
c. Developing	12	40	16	53	2	7
d. Consulting	10	33	18	60	2	7
<u>TOTALS</u>	<u>51</u>	<u>42</u>	<u>61</u>	<u>51</u>	<u>8</u>	<u>7</u>

Table No. F - 70

"Educator/Researcher": Adequacy of National Training
Facilities for Training an EDB Personnel in Jordan

<u>Response</u>	<u>Yes</u>	<u>ED/RES (TOTAL = 51)</u>				<u>Abs</u>	<u>%</u>
		<u>%</u>	<u>No</u>	<u>%</u>			
a. Policy Making	21	41	28	55	2	4	
b. Managing	13	25	36	71	2	4	
c. Developing	15	29	34	67	2	4	
d. Consulting	11	22	38	74	2	4	
	—	—	—	—	—	—	
<u>TOTALS</u>	60	29	136	67	8	4	
	—	—	—	—	—	—	

Table No. F- 71

"Businessman": Adequacy of National Training Facilities
for Training an EDB Personnel in Jordan

<u>Response</u>	<u>Yes</u>	<u>BUS (TOTAL = 32)</u>				<u>Abs</u>	<u>%</u>
		<u>%</u>	<u>No</u>	<u>%</u>			
a. Policy Making	7	22	25	78	0	0	
b. Managing	10	31	22	69	0	0	
c. Developing	9	28	23	72	0	0	
d. Consulting	7	22	25	78	0	0	
	—	—	—	—	—	—	
<u>TOTALS</u>	33	26	95	74	0	0	
	—	—	—	—	—	—	

Table No. F-72

Total Response: Adequacy of National Training
Facilities for Training an EDB Personnel in Jordan

<u>Response</u>	<u>TOTAL RESPONSE (TOTAL = 212)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Policy Making	97	46	107	50	8	4
b. Managing	96	45	110	52	6	3
c. Developing	80	38	124	58	8	4
d. Consulting	74	35	131	62	7	3
<u>TOTALS</u>	<u>347</u>	<u>41</u>	<u>472</u>	<u>56</u>	<u>29</u>	<u>3</u>

3. Questionnaire - Question Number 11 Statistical Analysis:

Hypothesis: Responses are not significantly different between the various categories as to the adequacy of the national training facilities for an EDB "Policy Making" personnel in Jordan.

Table No. F-73

Contingency Table: Adequacy of National Training Facilities for an EDB "Policy Making" Personnel in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	33	31.1	31	34.3	4	2.6	68
Staff	24	14.2	7	15.6	0	1.2	31
Consult	12	13.7	16	15.1	2	1.2	30
Ed/Res	21	23.3	28	25.8	2	1.9	51
Bus	7	14.7	25	16.2	0	1.1	31
<u>TOTALS</u>	<u>97</u>		<u>107</u>		<u>8</u>		<u>212</u>

Contingency coefficient: 0.32

Chi-square statistic: 25.02 (with 8 degrees of freedom)

Statistically significant at: 0.01 (0.001 level = 26.12)

Statistical test result: Reject the hypothesis

Table No. F-74

Order of Importance Reflected by Category as to the Inadequacy of National Training Facilities for an EDB "Policy Making" Personnel in Jordan

<u>Category</u>	<u>Negative Response %</u>
1. "Businessman"	78
2. "Educator/Researcher"	55
3. "Consultant/Adviser/Planner"	53
4. "Manager"	46
5. "Staff"	23

Hypothesis: Responses are not significantly different between the various categories as to the adequacy of the national training facilities for an EDB "Managing" personnel in Jordan.

Table No. F-75

Contingency Table: Adequacy of National Training
Facilities for an EDB "Managing" Personnel in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	35	30.8	31	35.3	2	1.9	68
Staff	21	14.0	10	16.1	0	.9	31
Consult	17	13.6	11	15.5	2	.9	30
Ed/Res	13	23.1	36	26.5	2	1.4	51
Bus	10	14.5	22	16.6	0	.9	32
<u>TOTALS</u>	<u>96</u>		<u>110</u>		<u>6</u>		<u>212</u>

Contingency coefficient: 0.32

Chi-square statistic: 23.40 (with 8 degrees of freedom)

Statistically significant at: 0.01 (0.001 level = 26.12)

Statistical test result: Reject the hypothesis

Table No. F-76

Order of Importance Reflected by Category as to the Inadequacy of
National Training Facilities for an EDB "Managing"
Personnel in Jordan

<u>Category</u>	<u>Negative Response %</u>
1. "Educator/Researcher"	71
2. "Businessman"	69
3. "Manager"	46
4. "Consultant/Adviser/Planner"	36
5. "Staff"	32

Hypothesis: Responses are not significantly different between the various categories as to the adequacy of the national training facilities for an EDB "Development" personnel in Jordan.

Table No. F-77

Contingency Table: Adequacy of National Training
Facilities for an EDB "Development" Personnel in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	28	25.7	36	39.8	4	2.5	68
Staff	16	11.7	15	18.1	0	1.2	31
Consult	12	11.3	16	17.5	2	1.2	30
Ed/Res	15	19.2	34	29.9	2	1.9	51
Bus	9	12.1	23	18.7	0	1.2	32
<u>TOTALS</u>	<u>80</u>		<u>124</u>		<u>8</u>		<u>212</u>

Contingency coefficient: 0.21

Chi-square statistic: 9.95 (with 8 degrees of freedom)

Statistically significant at: 0.30 (0.20 level = 11.03)

Statistical test result: Reject the hypothesis

Table No. F-78

Order of Importance Reflected by Category as to the
Inadequacy of National Training Facilities for an EDB
"Development" Personnel in Jordan

<u>Category</u>	<u>Negative Response %</u>
1. "Businessman"	72
2. "Educator/Researcher"	67
3. "Consultant/Adviser/Planner"	53
4. "Manager"	53
5. "Staff"	48

Hypothesis: Responses are not significantly different between the various categories as to the adequacy of the national training facilities for an EDB "Consulting/Advising/Planning" personnel in Jordan.

Table No. F-79

Contingency Table: Adequacy of National Training Facilities for an EDB "Consulting/Advising/Planning" Personnel in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	28	23.7	37	42.0	3	2.3	68
Staff	18	10.8	13	19.2	0	1.0	31
Consult	10	10.5	18	18.5	2	1.0	30
Ed/Res	11	17.8	38	31.5	2	1.7	51
Bus	7	11.2	25	19.8	0	1.0	32
<u>TOTALS</u>	<u>74</u>		<u>131</u>		<u>7</u>		<u>212</u>

Contingency coefficient: 0.28

Chi-square statistic: 17.41 (with 8 degrees of freedom)

Statistically significant at: 0.05 (0.02 level = 18.17)

Statistical test result: Reject the hypothesis

Table No. F-80

Order of Importance Reflected by Category as to the Inadequacy of National Training Facilities for an EDB "Consulting/Advising/Planning" Personnel in Jordan

<u>Category</u>	<u>Negative Response %</u>
1. "Businessman"	78
2. "Educator/Researcher"	74
3. "Consultant/Adviser/Planner"	60
4. "Manager"	54
4. "Staff"	42

Hypothesis: Responses are not significantly different between the various categories as to the adequacy of the national training facilities for an EDB personnel in Jordan.

Table No. F - 81

Contingency Table: Adequacy of the National Training Facilities by Category at the Aggregate Level for an EDB Personnel in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	124	111.3	135	151.4	13	9.3	272
Staff	79	50.7	45	69.0	0	4.3	124
Consult	51	49.1	61	66.8	8	4.1	120
Ed/Res	60	83.5	136	113.5	8	7.0	204
Bus	33	52.4	95	71.3	0	4.3	128
<u>TOTALS</u>	<u>347</u>		<u>472</u>		<u>29</u>		<u>848</u>

Contingency coefficient: 0.27

Chi-square statistic: 68.01 (with 8 degrees of freedom)

Statistically significant at: < 0.001 (0.001 level = 26.12)

Statistical test result: Reject the hypothesis

Table No. F - 82

Order of Importance Reflected by Category as to the Inadequacy of National Training Facilities for an EDB Personnel in Jordan

<u>Category</u>	<u>Negative Response %</u>
1. "Businessman"	74
2. "Educator/Researcher"	67
3. "Consultant/Adviser/Planner"	51
4. "Manager"	50
5. "Staff"	36

Hypothesis: Responses are not significantly different between the listed areas of interest as to the current adequacy of the national training facilities for training an EDB personnel in Jordan.

Table No. F-83

Contingency Table: Adequacy of National Training
Facilities by Listed Area of Interest for an EDB

<u>Area of Interest</u>	<u>Personnel in Jordan</u>						<u>TOTAL</u> Act
	<u>YES</u>		<u>NO</u>		<u>ABS</u>		
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	
a. Policy Making	97	86.8	107	118.0	8	7.2	212
b. Managing	96	86.8	110	118.0	6	7.2	212
c. Developing	80	86.7	124	118.0	8	7.3	212
d. Consulting	74	86.7	131	118.0	7	7.3	212
<u>TOTALS</u>	<u>347</u>		<u>472</u>		<u>29</u>		<u>848</u>

Contingency coefficient: 0.10

Chi-square statistic: 8.22 (with 6 degrees of freedom)

Statistically significant at: 0.30 (0.20 level = 8.56)

Statistical test result: Reject the hypothesis

Table No. F-84

Order of Importance by Listed Area of Interest as to the
Inadequacy of National Training Facilities for an EDB

<u>Area of Interest</u>	<u>Negative Response</u> %
1. "Consulting/Advising/Planning"	62
2. "Developing"	58
3. "Managing"	52
4. "Policy Making"	50

F.6 Issue Number 6 - Tables and Statistical Analysis:

1. Interviews: Topic Number 7 Tables:

Table No. F - 85

Interviews Response: The Sociological ImplicationDominant Role in the Developmental Activitiesof an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	34	87
No	1	3
No Mention	4	10
<u>TOTALS</u>	<u>39</u>	<u>100</u>

Table No. F - 86

Interviews Response: The Political ImplicationDominant Role in the Developmental Activitiesof an EDB in Jordan

<u>Response</u>	<u>No.</u>	<u>%</u>
Yes	31	79
No	1	3
No Mention	7	18
<u>TOTALS</u>	<u>39</u>	<u>100</u>

2. Questionnaire - Question Number 7 Tables:

Table No. F - 87

"Manager": Sociological Implication

<u>Response</u>	<u>MGR (TOTAL = 68)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	40	59	21	31	7	10
b. Personnel Selection	48	71	15	22	5	7
c. Personnel Training	38	56	22	32	8	12
d. Project Management	42	62	21	31	5	7
e. Computer Selection	31	46	30	44	7	10
f. Security and Audit	34	50	26	38	8	12
<u>TOTALS</u>	<u>233</u>	<u>57</u>	<u>135</u>	<u>33</u>	<u>40</u>	<u>10</u>

Table No. F - 88

"Manager": Political Implication

<u>Response</u>	<u>MGR (TOTAL = 68)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	46	68	17	25	5	7
b. Personnel Selection	40	59	22	32	6	9
c. Personnel Training	27	40	26	38	15	22
d. Project Management	36	53	22	32	10	15
e. Computer Selection	22	32	30	44	16	24
f. Security and Audit	36	53	21	31	11	16
<u>TOTALS</u>	<u>207</u>	<u>51</u>	<u>138</u>	<u>34</u>	<u>63</u>	<u>15</u>

Table No. F - 89

"Staff": Sociological Implication

<u>Response</u>	<u>STAFF (TOTAL = 31)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	19	61	9	29	3	10
b. Personnel Selection	17	55	9	29	5	16
c. Personnel Training	17	55	8	26	6	19
d. Project Management	13	42	10	32	8	26
e. Computer Selection	10	32	10	32	11	36
f. Security and Audit	10	32	11	36	10	32
<u>TOTALS</u>	86	46	57	31	43	23

Table No. F - 90

"Staff": Political Implication

<u>Response</u>	<u>STAFF (TOTAL = 31)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	22	71	7	23	2	6
b. Personnel Selection	15	49	10	32	6	19
c. Personnel Training	13	42	8	26	10	32
d. Project Management	12	39	10	32	9	29
e. Computer Selection	8	26	10	32	13	42
f. Security and Audit	15	48	7	23	9	29
<u>TOTALS</u>	85	46	52	28	49	26

Table No. F - 91

"Consultant/Adviser/Planner": Sociological Implication

<u>Response</u>	<u>CONSULT (TOTAL = 30)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	20	67	6	20	4	13
b. Personnel Selection	20	67	4	13	6	20
c. Personnel Training	12	40	9	30	9	30
d. Project Management	13	43	8	27	9	30
e. Computer Selection	8	27	14	46	8	27
f. Security and Audit	11	37	9	30	10	33
<u>TOTALS</u>	<u>84</u>	<u>47</u>	<u>50</u>	<u>28</u>	<u>46</u>	<u>25</u>

Table No. F - 92

"Consultant/Adviser/Planner": Political Implication

<u>Response</u>	<u>CONSULT (TOTAL = 30)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	16	53	4	13	10	34
b. Personnel Selection	13	43	6	20	11	37
c. Personnel Training	7	23	6	20	17	57
d. Project Management	8	27	8	27	14	46
e. Computer Selection	4	13	11	37	15	50
f. Security and Audit	7	23	7	23	16	54
<u>TOTALS</u>	<u>55</u>	<u>31</u>	<u>42</u>	<u>23</u>	<u>83</u>	<u>46</u>

Table No. F - 93

"Educator/Researcher": Sociological Implication

<u>Response</u>	<u>ED/RES (TOTAL = 51)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	26	51	14	27	11	22
b. Personnel Selection	29	57	13	25	9	18
c. Personnel Training	19	37	21	41	11	22
d. Project Management	23	45	17	33	11	22
e. Computer Selection	13	25	27	53	11	22
f. Security and Audit	23	45	15	29	13	26
<u>TOTALS</u>	<u>133</u>	<u>43</u>	<u>107</u>	<u>35</u>	<u>66</u>	<u>22</u>

Table No. F - 94

"Educator/Researcher": Political Implication

<u>Response</u>	<u>ED/RES (TOTAL = 51)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	30	59	10	20	11	21
b. Personnel Selection	29	57	8	16	14	27
c. Personnel Training	20	39	16	31	15	30
d. Project Management	21	42	15	29	15	29
e. Computer Selection	11	22	21	41	19	37
f. Security and Audit	26	51	9	18	16	31
<u>TOTALS</u>	<u>137</u>	<u>45</u>	<u>79</u>	<u>26</u>	<u>90</u>	<u>29</u>

Table No. F - 95

"Businessman": Sociological Implication

<u>Response</u>	<u>BUS (TOTAL = 32)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	22	69	9	28	1	3
b. Personnel Selection	25	78	5	16	2	6
c. Personnel Training	18	56	12	38	2	6
d. Project Management	19	59	12	38	1	3
e. Computer Selection	14	44	17	53	1	3
f. Security and Audit	18	56	12	38	2	6
<u>TOTALS</u>	<u>116</u>	<u>60</u>	<u>67</u>	<u>35</u>	<u>9</u>	<u>5</u>

Table No. F - 96

"Businessman": Political Implication

<u>Response</u>	<u>BUS (TOTAL = 32)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	23	72	7	22	2	6
b. Personnel Selection	21	66	9	28	2	6
c. Personnel Training	9	28	18	56	5	16
d. Project Management	15	47	14	44	3	9
e. Computer Selection	12	38	18	56	2	6
f. Security and Audit	14	44	15	47	3	9
<u>TOTALS</u>	<u>94</u>	<u>49</u>	<u>81</u>	<u>42</u>	<u>17</u>	<u>9</u>

Table No. F - 97

Total Response: Sociological Implication

<u>Response</u>	<u>TOTAL RESPONSE (TOTAL = 212)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	127	60	59	28	26	12
b. Personnel Selection	139	65	46	22	27	13
c. Personnel Training	104	49	72	34	36	17
d. Project Management	110	52	68	32	34	16
e. Computer Selection	76	36	98	46	38	18
f. Security and Audit	96	45	73	35	43	20
<u>TOTALS</u>	<u>652</u>	<u>51</u>	<u>416</u>	<u>33</u>	<u>204</u>	<u>16</u>

Table No. F - 98

Total Response: Political Implication

<u>Response</u>	<u>TOTAL RESPONSE (TOTAL = 212)</u>					
	<u>Yes</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>Abs</u>	<u>%</u>
a. Setting Policies	137	65	45	21	30	14
b. Personnel Selection	118	56	55	26	39	18
c. Personnel Training	76	36	74	35	62	29
d. Project Management	92	43	69	33	51	24
e. Computer Selection	57	27	90	42	65	31
f. Security and Audit	98	46	59	28	55	26
<u>TOTALS</u>	<u>578</u>	<u>45</u>	<u>392</u>	<u>31</u>	<u>302</u>	<u>24</u>

Table No. F - 99

Abstention: Sociological and Political

<u>Category</u>	<u>SOCIOLOGICAL ABS</u>		<u>POLITICAL ABS</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Mgr	41	20	63	21
Staff	43	21	49	16
Consult	46	23	83	27
Ed/Res	66	32	90	30
Bus	9	4	17	6
<u>TOTALS</u>	<u>204</u>	<u>100</u>	<u>302</u>	<u>100</u>

3. Questionnaire - Question Number 7 Statistical Analysis:

Hypothesis: Responses are not significantly different between the various categories as to the sociological implication in setting policies and procedures for an EDB in Jordan.

Table No. F - 100

Contingency Table: Sociological Implication for Setting Policies and Procedures for an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	40	40.7	21	18.9	7	8.4	68
Staff	19	18.6	9	8.6	3	3.8	31
Consult	20	18.0	6	8.3	4	3.7	30
Ed/Res	26	30.5	14	14.3	11	6.2	51
Bus	22	19.2	9	8.9	1	3.9	32
<u>TOTALS</u>	<u>127</u>		<u>59</u>		<u>26</u>		<u>212</u>

Contingency coefficient: 0.20

Chi-square statistic: 8.51 (with 8 degrees of freedom)

Statistically significant at: 0.50 (0.30 level = 9.52)

Statistical test result: Accept the hypothesis

Hypothesis: Responses are not significantly different between the various categories as to the political implication in setting policies and procedures for an EDB in Jordan.

Table No. F-101

Contingency Table: Political Implication in Setting Policies and Procedures for an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	46	43.9	17	14.4	5	9.7	68
Staff	22	20.0	7	6.6	2	4.4	31
Consult	16	19.4	4	6.4	10	4.2	30
Ed/Res	30	33.0	10	10.8	11	7.2	51
Bus	23	20.7	7	6.8	2	4.5	32
<u>TOTALS</u>	<u>137</u>		<u>45</u>		<u>30</u>		<u>212</u>

Contingency coefficient: 0.28

Chi-square statistic: 17.87 (with 8 degrees of freedom)

Statistically significant at: 0.05 (0.02 level = 18.17)

Statistical test result: Reject the hypothesis

Table No. F-102

Order of Importance Reflected by Category on the Political Implication in Setting Policies and Procedures

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. "Businessman"	72
2. "Staff"	71
3. "Manager"	68
4. "Educator/Researcher"	59
5. "Consultant/Adviser/Planner"	53

Hypothesis: Responses are not significantly different between the various categories as to the sociological implication in personnel selection for an EDB in Jordan.

Table No. F-103

Contingency Table: Sociological Implication in
Personnel Selection for an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	48	44.6	15	14.8	5	8.6	68
Staff	17	20.3	9	6.7	5	4.0	31
Consult	20	19.7	4	6.5	6	3.8	30
Ed/Res	29	33.4	13	11.1	9	6.5	51
Bus	25	21.0	5	6.9	2	4.1	32
<u>TOTALS</u>	<u>139</u>		<u>46</u>		<u>27</u>		<u>212</u>

Contingency coefficient: 0.21

Chi-square statistic: 9.81 (with 8 degrees of freedom)

Statistically significant at: 0.30 (0.20 level = 11.03)

Statistical test result: Reject the hypothesis

Table No. F-104

Order of Importance Reflected by Category on the
Sociological Implication in Personnel Selection

<u>Category</u>	<u>Positive Response %</u>
1. "Businessman"	78
2. "Manager"	71
3. "Consultant/Adviser/Planner"	67
4. "Educator/Researcher"	57
5. "Staff"	55

Hypothesis: Responses are not significantly different between the various categories as to the political implication in personnel selection for an EDB in Jordan.

Table No. F - 105

Contingency Table: Political Implication in Personnel Selection for an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	40	37.8	22	17.7	6	12.5	68
Staff	15	17.3	10	8.0	6	5.7	31
Consult	13	16.7	6	7.8	11	5.5	30
Ed/Res	29	28.4	8	13.2	14	9.4	51
Bus	21	17.8	9	8.3	2	5.9	32
<u>TOTALS</u>	<u>118</u>		<u>55</u>		<u>39</u>		<u>212</u>

Contingency coefficient: 0.30

Chi-square statistic: 19.63 (with 8 degrees of freedom)

Statistically significant at: 0.02 (0.01 level = 20.9)

Statistical test result: Reject the hypothesis

Table No. F - 106

Order of Importance Reflected by category on the Political Implication in Personnel Selection

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. "Businessman"	66
2. "Manager"	59
3. "Educator/Researcher"	57
4. "Staff"	49
5. "Consultant/Adviser/Planner"	43

Hypothesis: Responses are not significantly different between the various categories as to the sociological implication in personnel training for an EDB in Jordan.

Table No. F - 107

Contingency Table: Sociological Implication in
Personnel Training for an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	38	33.4	22	23.1	8	11.5	68
Staff	17	15.2	8	10.5	6	5.3	31
Consult	12	14.7	9	10.2	9	5.1	30
Ed/Res	19	25.0	21	17.3	11	8.7	51
Bus	18	15.7	12	10.9	2	5.4	32
<u>TOTALS</u>	<u>104</u>		<u>72</u>		<u>36</u>		<u>212</u>

Contingency coefficient: 0.23

Chi-square statistic: 11.70 (with 8 degrees of freedom)

Statistically significant at: 0.20 (0.10 level = 13.36)

Statistical test result: Reject the hypothesis

Table No. F - 108

Order of Importance Reflected by Category on the
Sociological Implication in Personnel Training

<u>Category</u>	<u>Positive Response %</u>
1. "Businessman"	56
2. "Manager"	56
3. "Staff"	55
4. "Consultant/Adviser/Planner"	40
5. "Educator/Researcher"	37

Hypothesis: Responses are not significantly different between the various categories as to the political implication in personnel training for an EDB in Jordan.

Table No. F - 109

Contingency Table: Political Implication in Personnel

Training for an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	27	24.4	26	23.7	15	19.9	68
Staff	13	11.1	8	10.8	10	9.1	31
Consult	7	10.7	6	10.5	17	8.8	30
Ed/Res	20	18.3	16	17.8	15	14.9	51
Bus	9	11.5	18	11.2	5	9.3	32
<u>TOTALS</u>	<u>76</u>		<u>74</u>		<u>62</u>		<u>212</u>

Contingency coefficient: 0.30

Chi-square statistic: 20.70 (with 8 degrees of freedom)

Statistically significant at: 0.10 (0.001 level = 26.12)

Statistical test result: Reject the hypothesis

Table No. F - 110

Order of Importance Reflected by Category on the

Political Implication in Personnel Training

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. "Staff"	42
2. "Manager"	40
3. "Educator/Researcher"	39
4. "Businessman"	28
5. "Consultant/Adviser/Planner"	23

Hypothesis: Responses are not significantly different between the various categories as to the sociological implication in project management and control of an EDB in Jordan.

Table No. F-111

Contingency Table: Sociological Implication in Project Management and Control of an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	42	35.3	21	21.8	5	10.9	68
Staff	13	16.1	10	9.9	8	5.0	31
Consult	13	15.5	8	9.6	9	4.9	30
Ed/Res	23	26.5	17	16.4	11	8.1	51
Bus	19	16.6	12	10.3	1	5.1	32
<u>TOTALS</u>	<u>110</u>		<u>68</u>		<u>34</u>		<u>212</u>

Contingency coefficient: 0.27

Chi-square statistic: 16.44 (with 8 degrees of freedom)

Statistically significant at: 0.05 (0.02 level = 18.17)

Statistical test result: Reject the hypothesis

Table No. F-112

Order of Importance Reflected by Category on the Sociological Implication in Project Management and Control

<u>Category</u>	<u>Positive Response %</u>
1. "Manager"	62
2. "Businessman"	59
3. "Educator/Researcher"	45
4. "Consultant/Adviser/Planner"	43
5. "Staff"	42

Hypothesis: Responses are not significantly different between the various categories as to the political implication in project management and control of an EDB in Jordan.

Table No. F - 113

Contingency Table: Political Implication in Project
Management and Control of an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	36	29.5	22	22.1	10	16.4	68
Staff	12	13.5	10	10.1	9	7.4	31
Consult	8	13.0	8	9.8	14	7.2	30
Ed/Res	21	22.1	15	16.6	15	12.3	51
Bus	15	13.9	14	10.4	3	7.7	32
<u>TOTALS</u>	<u>92</u>		<u>69</u>		<u>51</u>		<u>212</u>

Contingency coefficient: 0.28

Chi-square statistic: 17.80 (with 8 degrees of freedom)

Statistically significant at: 0.05 (0.02 level = 18.17)

Statistical test result: Reject the hypothesis

Table No. F - 114

Order of Importance Reflected by Category on the Political
Implication in Project Management and Control

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. "Manager"	53
2. "Businessman"	47
3. "Educator/Researcher"	42
4. "Staff"	39
5. "Consultant/Adviser/Planner"	27

Hypothesis: Responses are not significantly different between the various categories as to the sociological implication in computer selection for an EDB in Jordan.

Table No. F-115

Contingency Table: Sociological Implication in Computer Selection for an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	31	24.4	30	31.4	7	12.2	68
Staff	10	11.1	10	14.3	11	5.6	31
Consult	8	10.8	14	13.9	8	5.3	30
Ed/Res	13	18.3	27	23.6	11	9.1	51
Bus	14	11.4	17	14.8	1	5.8	32
<u>TOTALS</u>	<u>76</u>		<u>98</u>		<u>38</u>		<u>212</u>

Contingency coefficient: 0.29

Chi-square statistic: 20.09 (with 8 degrees of freedom)

Statistically significant at: 0.01 (0.01 level = 20.09)

Statistical test result: Reject the hypothesis

Table No. F-116

Order of Importance Reflected by Category on the Sociological Implication in Computer Selection

<u>Category</u>	<u>Negative Response</u> <u>%</u>
1. "Businessman"	53
2. "Educator/Researcher"	53
3. "Consultant/Adviser/Planner"	46
4. "Manager"	44
5. "Staff"	32

Hypothesis: Responses are not significantly different between the various categories as to the political implication in computer selection for an EDB in Jordan.

Table No. F-117

Contingency Table: Political Implication in Computer

Selection for an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	22	18.3	30	28.9	16	20.8	68
Staff	8	8.3	10	13.2	13	9.5	31
Consult	4	8.1	11	12.7	15	9.2	30
Ed/Res	11	13.7	21	21.6	19	15.7	51
Bus	12	8.6	18	13.6	2	9.8	32
<u>TOTALS</u>	<u>57</u>		<u>90</u>		<u>65</u>		<u>212</u>

Contingency coefficient: 0.29

Chi-square statistic: 20.16 (with 8 degrees of freedom)

Statistically significant at: 0.01 (0.001 level = 26.12)

Statistical test result: Reject the hypothesis

Table No. F-118

Order of Importance Reflected by Category on the

Political Implication in Computer Selection

<u>Category</u>	<u>Negative Response</u> <u>%</u>
1. "Businessman"	56
2. "Manager"	44
3. "Educator/Researcher"	41
4. "Consultant/Adviser/Planner"	37
5. "Staff"	32

Hypothesis: Responses are not significantly different between the various categories as to the sociological implication in security and audit of an EDB in Jordan.

Table No. F-119

Contingency Table: Sociological Implication in
Security and Audit of an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	34	30.8	26	23.4	8	13.8	68
Staff	10	14.0	11	10.7	10	6.3	31
Consult	11	13.6	9	10.3	10	6.1	30
Ed/Res	23	23.1	15	17.6	13	10.3	51
Bus	18	14.5	12	11.0	2	6.5	32
<u>TOTALS</u>	<u>96</u>		<u>73</u>		<u>43</u>		<u>212</u>

Contingency coefficient: 0.25

Chi-square statistic: 14.68 (with 8 degrees of freedom)

Statistically significant at: 0.10 (0.05 level = 15.51)

Statistical test result: Reject the hypothesis

Table No. F-120

Order of Importance Reflected by Category on the
Sociological Implication in Security and Audit

<u>Category</u>	<u>Positive Response %</u>
1. "Businessman"	56
2. "Manager"	50
3. "Educator/Researcher"	45
4. "Consultant/Adviser/Planner"	37
5. "Staff"	32

Hypothesis: Responses are not significantly different between the various categories as to the political implication in security and audit of an EDB in Jordan.

Table No. F - 121

Contingency Table: Political Implication in
Security and Audit of an EDB in Jordan

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	36	31.4	21	18.9	11	17.7	68
Staff	15	14.3	7	8.6	9	8.1	31
Consult	7	13.9	7	8.4	16	7.7	30
Ed/Res	26	23.6	9	14.2	16	13.2	51
Bus	14	14.8	15	8.9	3	8.3	32
<u>TOTALS</u>	<u>98</u>		<u>59</u>		<u>55</u>		<u>212</u>

Contingency coefficient: 0.34

Chi-square statistic: 26.83 (with 8 degrees of freedom)

Statistically significant at: < 0.001 (0.001 level = 26.12)

Statistical test result: Reject the hypothesis

Table No. F - 122

Order of Importance Reflected by Category on the
Political Implication in Security and Audit

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. "Manager"	53
2. "Educator/Researcher"	51
3. "Staff"	48
4. "Businessman"	44
5. "Consultant/Adviser/Planner"	23

Hypothesis: Responses are not significantly different between the various categories as to the sociological implication in developing an EDB in Jordan.

Table No. F - 123

Contingency Table: Sociological Implication by
Category at the Aggregate Level

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	233	209.2	135	133.4	40	65.4	408
Staff	86	95.3	57	60.8	43	29.9	186
Consult	84	92.3	50	58.9	46	28.8	180
Ed/Res	133	156.8	107	100.1	66	49.1	306
Bus	116	98.4	67	62.8	9	30.8	192
<u>TOTALS</u>	<u>652</u>		<u>416</u>		<u>204</u>		<u>1272</u>

Contingency coefficient: 0.21

Chi-square statistic: 60.61 (with 10 degrees of freedom)

Statistically significant at: < 0.001 (0.001 level = 29.59)

Statistical test result: Reject the hypothesis

Table No. F - 124

Order of Importance Reflecting the Sociological
Implication by Category at the Aggregate Level

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. "Businessman"	60
2. "Manager"	57
3. "Consultant/Adviser/Planner"	47
4. "Staff"	46
5. "Educator/Researcher"	43

Hypothesis: Responses are not significantly different between the various categories as to the political implication of developing an EDB in Jordan.

Table No. F-125

Contingency Table: Political Implication by
Category at the Aggregate Level

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
Mgr	207	185.4	138	125.7	63	96.9	408
Staff	85	84.5	52	57.3	49	44.2	186
Consult	55	81.8	42	55.5	83	42.7	180
Ed/Res	137	139.0	79	94.3	90	72.7	306
Bus	94	87.3	81	59.2	17	45.5	192
<u>TOTALS</u>	<u>578</u>		<u>392</u>		<u>302</u>		<u>1272</u>

Contingency coefficient: 0.27

Chi-square statistic: 99.72 (with 10 degrees of freedom)

Statistically significant at: < 0.001 (0.001 level = 29.59)

Statistical test result: Reject the hypothesis.

Table No. F-126

Order of Importance Reflecting the Political
Implication by Category at the Aggregate Level

<u>Category</u>	<u>Positive Response %</u>
1. "Manager"	51
2. "Businessman"	49
3. "Staff"	46
4. "Educator/Researcher"	45
5. "Consultant/Adviser/Planner"	31

Hypothesis: Responses are not significantly different between the listed areas of interest as to the sociological implication of developing an EDB in Jordan.

Table No. F - 127

Contingency Table: Sociological Implication by
Listed Areas of Interest

<u>Category</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
a. Setting Policies	127	108.7	59	69.3	26	34	212
b. Personnel Selection	139	108.7	46	69.3	27	34	212
c. Personnel Training	104	108.7	72	69.3	36	34	212
d. Project Management	110	108.7	68	69.3	34	34	212
e. Computer Selection	76	108.6	98	69.4	38	34	212
f. Security and Audit	96	108.6	73	69.4	43	34	212
<u>TOTALS</u>	<u>652</u>		<u>416</u>		<u>204</u>		<u>1272</u>

Contingency coefficient: 0.18

Chi-square statistic: 43.08 (with 10 degrees of freedom)

Statistically significant at: < 0.001 (0.001 level = 29.59)

Statistical test result: Reject the hypothesis

Table No. F - 128

Order of Importance Reflecting the Sociological
Implication by Listed Area of Interest

<u>Category</u>	<u>Positive Response</u> <u>%</u>
1. Personnel Selection	65
2. Setting Policies	60
3. Project Management	52
4. Personnel Training	49
5. Security and Audit	45
6. Computer Selection	36

Hypothesis: Responses are not significantly different between the listed areas of interest as to the political implication of developing an EDB in Jordan.

Table No. F-129

Contingency Table: Political Implication byListed Area of Interest

<u>Areas of Interest</u>	<u>YES</u>		<u>NO</u>		<u>ABS</u>		<u>TOTAL</u>
	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>	<u>Exp</u>	<u>Act</u>
a. Setting Policies	137	96.3	45	65.4	30	50.3	212
b. Personnel Selection	118	96.3	55	65.4	39	50.3	212
c. Personnel Training	76	96.3	74	65.3	62	50.4	212
d. Project Management	92	96.3	69	65.3	51	50.4	212
e. Computer Selection	57	96.4	90	65.3	65	50.3	212
f. Security and Audit	98	96.4	59	65.3	55	50.3	212
<u>TOTALS</u>	<u>578</u>		<u>392</u>		<u>302</u>		<u>1272</u>

Contingency coefficient: 0.24

Chi-square statistic: 80.19 (with 10 degrees of freedom)

Statistically significant at: \leq 0.001 (0.001 level = 29.59)

Statistical test result: Reject the hypothesis

Table No. F-130

Order of Importance Reflecting the PoliticalImplication by Listed Area of Interest

<u>Area of Interest</u>	<u>Positive Response</u> <u>%</u>
1. Setting Policies	65
2. Personnel Selection	56
3. Security and Audit	46
4. Project Management	43
5. Personnel Training	36
6. Computer Selection	27

APPENDIX G
INTERVIEWEES

APPENDIX G

INTERVIEWEES

Name	Position (Oct.-Nov.1977)	Organisation
Abdul-Jaber, Dr.T.	Secretary General	National Planning Council
Abu-Jaber, Dr. K.	Dean - Faculty of Economics and Commerce	University of Jordan
Ajluni, I.	Minister	Ministry of Labour
Ali, G.	Marketing Research Manager	Royal Jordanian Airlines
Anani, Dr. J.	Deputy Minister	Ministry of Labour
Arabiyat, Dr. A.	Director of Projects	Ministry of Education
Asad, S.	Director	Department of Statistics
Audeh, Dr. H.	President	National Planning Council
Azar, W.	Managing Director	Shair Management Services Ltd
Butros, Dr. A.	Director General	Royal Scientific Society
Dairi, S.	Deputy Director	Government Audit Bureau
Fanek, F.	Vice-President of Finance	Royal Jordanian Airlines
Gharaibeh, Dr. F.	Faculty of Economics and Commerce	University of Jordan
Ghawi, S.	Chief of Manpower Planning Division	National Planning Council
Hindi, Dr. A.	Director of Research	Central Bank
Hindiya, A.	Deputy Director	Amman Urban Region Planning Group
Hurani, Dr. H.	Faculty of Economics and Commerce	University of Jordan
Kamal, R. Ms.	Senior Programming Officer	United Nations Development Programme - Jordan
Kasem, H.	Deputy Governor	Central Bank
Kawar, M.	Director of Computer Services	Shair Management Services Ltd
Lubani, Dr. M.	Director General	Agricultural Marketing Organisation

Majali, Dr. A.	Minister	Ministry of Education
Masri, M.	Director - Vocational & Technical Training	Ministry of Education
Mdanat, S.	Programme Manager	Housing Corporation
Musa, Dr. R.	Faculty of Economics and Commerce	University of Jordan
Nabulsi, H.	Director General	Housing Corporation
Nabulsi, Dr. M.	Governor	Central Bank
Radaydeh, K.	Director General	Department of Social Affairs
Rawabdeh, A.	Minister	Ministry of Communications
Saqer, Dr. M.	Faculty of Economics and Commerce	University of Jordan
Sayegh, W.	Brigadier General	Jordan Arm Forces Headquarters
Shair, W.	Partner	Shair and Company
Sharaiha, N.	Inspector General	Civil Status Registration Dept.
Shukairat, S.	Brigadier	Jordan Arm Forces Headquarters
Sunna', Dr. S.	Deputy Director General	Agricultural Credit Corporation
Tell, M.	President	Civil Service Commission
Tell, Dr. S.	Dean - Faculty of Education	University of Jordan
Yaghlian, Dr. A.	Director of Planning and Foreign Relations	Ministry of Health
Zubi, Dr. A.	Director	Institute of Public Administration

APPENDIX H

DBMS SOFTWARE PACKAGES

APPENDIX H

DBMS SOFTWARE PACKAGES

INTRODUCTION

This Appendix provides basic information regarding some selected DBMS software packages.

There is a tremendous amount of research and development which is taking place in the computer hardware and software fields. Consequently, these fields are continuing to progress and advance at a rapid rate. Excellent knowledge and experience are being gained from further field applications and implementations.

The DBMS software area is no exception. It is highly dynamic, and the list of DBMS packages is rapidly expanding. Furthermore, the currently available packages are being revised, refined, and expanded in order to provide improved facilities and performance, as well as additional features and capabilities. Consequently, a comprehensive coverage of current DBMS packages would not be of great value.

A few popular DBMS packages were selected for coverage in this section.

These packages are:

1. ADABAS (Adaptable Data Base)
2. DMS 1100 (Database Management System 1100)
3. IDMS (Integrated Database Management System)
4. IDS II (Integrated Data Store)
5. IMS/VS (Information Management System - Virtual option)
6. System 2000
7. TOTAL 7

Only basic information is provided on each package in order to avoid bias. It is recommended that more comprehensive and up-to-date information should be obtained from DBMS vendors, users, researchers, scholars, and other reliable sources at the time of need. The information provided on each package is:

1. Introduction
2. Supplier
3. Environment
4. Costs
5. Data Structure
6. Other Pertinent Information

H.1. ADABAS

1. Introduction

ADABAS is a generalised data base management system which was developed by Software AG in Germany. The initial development of the package was for the Siemens series of computers.

The system is marketed extensively on the basis of comparative benchmarks.

2. Supplier

Software AG

Reston International Center

1180 Sunset Valley Drive

Reston, VA 22901

U.S.A.

Telephone: (703) 620-9577

3. Environment

- a. Minimum configuration: 156k bytes
- b. Hardware: Siemens 4004, IBM 360 and 370, and UNIVAC 9400
- c. Operating systems: OS and DOS

4. Costs

OS version price : \$120,000

DOS version price : \$ 80,000

Lease plans are available from about \$1,300/mo. to \$4,500/mo.

5. Data Structure

ADABAS supports hierarchical data structures. It offers fully inverted file facilities and has multiple search capability.

6. Other Pertinent Information

The ADABAS package provides:

- a. Automatic facility for data compression
- b. Phonetic searching capability
- c. Variable names which are limited to two characters requiring the use of codes
- d. Security facilities to the field level
- e. Checkpoint tape for back-up and recovery
- f. Automatic maintenance of a dictionary which provides statistics for tuning and optimisation
- g. Data independence at the item level
- h. Facilities to work with programmes written in Cobol, Fortran, PL/I, and assembler languages
- i. ADASCRIPt query language

- j. Report writer
- k. Teleprocessing interface and Software AG teleprocessing system "Com-plete".

H.2. DMS 1100

1. Introduction

DBMS 1100 is a data oriented batch and on-line system. It was developed by UNIVAC for internal use initially. The package was released in 1971, and by 1975 it had gone through five major levels (releases).

In their development of the package, UNIVAC have followed, to a great extent, the guidelines provided in the 1969 and 1971 reports of the CODASYL DBTG.

2. Supplier

UNIVAC
2276 Highcrest Drive
Roseville, MN 55113
U.S.A.

3. Environment

- a. Minimum configuration: 128 k words
- b. Hardware: UNIVAC 1100
- c. Operating system: UNIVAC 1100 Exec.

4. Costs

The cost of the DMS 1100 package is bundled in the price of the hardware.

5. Data Structure

DMS 1100 supports network data structures and index sequential access. The latter is the main departure from the DBTG philosophy.

6. Other Pertinent Information

The DMS package provides:

- a. Automatic roll-back and recovery facilities
- b. Data communications interface
- c. Password security to the field level through EXEC 8 only
- d. Data independence at the item level
- e. Capability for real-time, conversational, and batch programmes to concurrently access a shared data base
- f. One-line multi-access facility through CMS (Communications Management System) and TIP (Transaction Interface Package).
- g. Terminal-oriented nonprogrammer report preparation facility through RPS 1100 (Remote Processing System)
- h. Terminal-oriented facility for ad hoc queries and update through QLP 1100 (Query Language Processor)
- i. Facilities to work on the CALL level with programmes written in Cobol, Fortran and Assembler languages
- j. Limited statistical monitoring for tuning and optimisation
- k. No subschemas facilities, privacy locks, and data compression.

H.3. IDMS

1. Introduction

IDMS was originally developed by the B.F. Goodrich Chemical Company in 1971-1972. The Cullinane Corporation acquired the rights to market, maintain, and improve the package in 1973.

IDMS is considered a full CODASYL DBTG implementation.

2. Supplier

Cullinane Corporation

20 Williams Street

Wellesley, MA 02181

U.S.A.

Telephone: (617) 237-6601

3. Environment

a. Minimum configuration: 60 k bytes

b. Hardware: IBM 360 and 370, UNIVAC 70 (ex-RCA Spectra), and
UNIVAC 90

c. Operating systems: DOS, OS, VS, and DEC PDP-11

4. Costs

IDMS Purchase price : \$40,000

IDMS/CULPRIT price : \$20,000

Generalised communication interface price : \$10,000

5. Data Structure

IDMS supports a network data structure. It includes most of the features specified in the April 1971 proposal of the CODASYL DBTG for a network system.

6. Other Pertinent Information

The IDMS package provides:

a. Automatic on-line recovery

b. Checkpoint restart facility

- c. Generalised Communications Interface (GCI)
- d. CULPRIT as a generalised retrieval system and report writer
- e. Security facilities to the field level
- f. Data independence at the item level
- g. Facilities to work with programmes written in Cobol, PL/I, Fortran, and Assembler Languages (on the CALL level with Fortran and Assembler)
- h. RPG interface
- i. Facility to collect limited amount of statistics for tuning and optimisation

H.4. IDS II

1. Introduction

IDS is the oldest data base management system. It was developed in 1962 by General Electric for its GE 225 computer.

In 1970, IDS became a Honeywell product when the company took over the computer operations of General Electric. The latest software version is called IDS II.

2. Supplier

Honeywell Information Systems

200 Smith Street

Waltham, MA 02154

U.S.A.

Telephone: (617) 890-8400

3. Environment

- a. Minimum configuration: 32 k words
- b. Hardware: Honeywell 400, 600, and 6000 computers
- c. Operating systems: RTE II or RTE III

4. Costs

Data base control : \$400/mo
Subschema : \$100/mo
Interactive IDS II : \$ 75/mo

5. Data Structure

IDS II supports a network data structure. It includes most of the features specified in the April 1971 proposal of the CODASYL DBTG for a network system.

6. Other Pertinent Information

The IDS II package provides:

- a. Checkpoint restart facility
- b. Data communication interface using Honeywell NPS or GRTS
- c. Passwork protection to the field level
- d. Facilities to work with programmes written in Cobol language
- e. Nonprogrammer query language "Interactive"
- f. Data independence at the item level
- g. Facility to collect limited amount of statistics for tuning and optimisation

H.5. IMS/VS

1. Introduction

IMS/VS is a data base management and data base/data communication (DB/DC) system. The VS version of IMS is the latest introduced by International Business Machines Corporation (IBM), and has been available since 1974.

Originally, IMS was developed by North American Rockwell in association with IBM during the last decade and announced in 1969.

2. Supplier

IBM

Data Processing Division

1133 Westchester Avenue

White Plains, NY 10604

U.S.A.

Telephone: (914) 696-1900

3. Environment

a. Minimum configuration:

Batch facility: 90 k bytes and about 100 cylinders of an IBM 3336 disk bath and teleprocessing facilities: 400 k bytes and about 200 cylinders of an IBM 3336 disk

b. Hardware: IBM 370 virtual computers only

c. Operating system: OS/VS

4. Costs

- a. Data base batch facility : \$950/mo
- b. Data communications facility : \$1,150/mo
- c. Interactive Query Facility (IQF) : \$325/mo

5. Data Structure

IMS/VS supports hierarchical data structures. It is oriented towards the processing of hierarchies which are linked with physical pointers. It facilitates the specification of logical and physical pointer relationships between segments. In addition, IMS facilitates the definition of logical relationships between separate hierarchies. These facilities provide the ability to define a networklike structure, but the interface is always hierarchical.

6. Other Pertinent Information

The IMS/VS package provides:

- a. Automatic roll-back and recovery procedures
- b. Security facilities to the segment level
- c. Variable length segments
- d. Data independence at the segment level
- e. Interactive query facility for nonprogrammers
- f. Facilities to work with programmes written in Cobol, PL/I, and Assembler languages
- g. Message queuing and scheduling facilities
- h. Checkpoint restart and a system log report writer which produces statistical reports covering the operation of the system

- i. Monitors and simulators for tuning and optimisation
- j. Unbundled training and manuals which have to be paid for in the U.S.A.

H.6. System 2000

1. Introduction

System 2000 is a generalised DBMS which was developed by Management Research International (MRI). The first version of the package was released in 1970.

2. Supplier

MRI Systems

127575 Research Boulevard

Austin, TX 78766

U.S.A.

Telephone: (512) 258-5171

3. Environment

a. Minimum configuration

IBM computers: 40 k bytes

CDC computers: 16 k words

UNIVAC computers: 28 k words

b. Hardware: IBM 360 and 370

CDC 6000 and CYBER 170 and 1700, and UNIVAC 1100 computers

c. Operating Systems:

IBM: DOS, DOS/VSI, OS, VSI, MFT, MVT, and MVS

CDC: SCOPE and KRONOS

UNIVAC: EXEC 8

4. Costs

Basic system purchase price	:	\$30,000
Procedural Language price	:	\$10,000
Multithreading price	:	\$20,000
Sequential File Processor price	:	\$15,000
Teleprocessing Monitor price	:	\$25,000
Data Dictionary price	:	\$ 7,500

5. Data Structure

System 2000 supports hierarchical data structures although the data is stored using an inverted file technique. This means that it will construct tables for all the desired key fields, and retrieval of the given criteria is achieved by Boolean search of these tables rather than by chaining through the files.

6. Other Pertinent Information

The System 2000 package provides:

- a. Checkpoint restart and recovery features
- b. Optimising and debugging aids
- c. Password security to the data field level
- d. Audit trail facilities
- e. Query language for nonprogrammers
- f. Data independence at the segment level
- g. Teleprocessing monitor
- h. Facilities to work with programmes written in Cobol, PL/I, Fortran, and Assembler languages

H.7. TOTAL 7

1. Introduction

TOTAL 7 is a generalised data base management system which is a product of Cincom Systems Incorporated, an American software house. This version of the package was released in 1973.

Honeywell markets TOTAL, Control Data Corporation (CDC) has a non-exclusive franchise, and National Cash Register Company officially recommends it to its users.

2. Supplier

Cincom Systems Incorporated

2300 Montana Avenue

Cincinnati, OH 45211

U.S.A.

Telephone: (513) 662-2300

3. Environment

- a. Minimum configuration: 8 to 24 k bytes depending on the system
- b. Hardware: IBM 360, 370 and System 3, Honeywell 1200, UNIVAC 70 and 9000, NCR Century, CDC 6000, 7000, and CYBER 70 and 170, and several other computers.
- c. Operating systems:
 - IBM: DOS, DOS/VS, OS, MFT, MVT, VS/2, VS/2 Multitasking/CENTRAL
 - Honeywell: MOD 1 MSR OS - 200
 - UNIVAC: TDOS/DOS
 - CDC: SCOPE and KRONOS

4. Costs

Price: Varies from \$26,000 to \$45,000

Rent: Varies from \$825/mo. to \$2,400/mo.

5. Data Structures

TOTAL supports network data structures. It offers linked file facility with one-to-many relationship between each record in an owner file and records in one or more files.

6. Other Pertinent Information

- a. Restart and recovery facilities
- b. Password protection to the field level
- c. Automatic on-line recovery
- d. Several teleprocessing monitors and report generators
- e. Data independence at the element level
- f. Facilities to work with programmes written in Cobol, Fortran, PL/I, and Assembler languages
- g. Limited statistics for tuning and optimisation
- h. Bundled manuals and introductory training

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- Experience: Royal Scientific Society, Amman, Jordan
Sept. 1974 Manager - Computer Systems and Training
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Jan. 1979 from December 1976 to January, 1979)
- Dec. 1970 Montgomery Ward & Company, Chicago, Illinois, U.S.A.
to Manager - Store Merchandising Systems
Sept. 1974 Planning, supervising and participation in the development of Systems Design and Implementation. Applications are in Merchandise Planning, utilising data base and online conversational applications, and Inventory Management, utilising continuous and seasonal forecasting and replenishment techniques. In addition, managed the company's Timed Shared Computer Services
- June 1968 Admiral Corporation, Chicago, Illinois, U.S.A.
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Nov. 1970 Planning, supervising and participating in the development of Systems Design and Implementation (Department of about 30). Applications were in Manufacturing, Marketing and Accounting areas, developed an On-line Billing System.
- June 1965 Interlake Steel Corporation, Chicago, Illinois, U.S.A
to Project Manager. Design and Implementation of computer systems
June 1968 and direction of programming efforts. Applications were in Inventory Control, Shop Scheduling, Marketing and Accounting.
- June 1961 United States Steel Corporation, South Works, Chicago, Illinois, U.S.A
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June 1964 techniques to industrial problems. Major applications were in structural finishing end, 96" Plate Mill shear-line, Blast Furnace Linear Programme and Accounting Critical Path Study.
- Feb. 1960 Allen Bradley Company, Milwaukee, Wisconsin, U.S.A.
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Critical Path Method, Statistics and Project Management and Control 1976.
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Management Information Systems 1973
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Data Processing Mathematics 1967
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Calculus III 1966
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Mathematical Review, Statistics and Operations Research 1965 - 1968.
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