


**Applications of Human Resources Information Systems (HRIS) in
Jordanian Public Universities**

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**A Thesis Submitted in Partial Fulfillment of the Requirement of the
University of Abertay Dundee for the Degree of Doctor of Philosophy**

January 2010

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ABSTRACT

Human Resources Information Systems (HRIS) are normally used by organizations to acquire, store, analyze, retrieve, and distribute pertinent information regarding their human resources. They are important techniques that provide the HR department and managers with accurate and reliable information that helps in the decision making process. Hence the aim of this is to identify the current status of HRIS, their specifications, and the extent of their usage in Jordanian public universities. It also attempts to find out the obstacles that hinder the implementation of HRIS at these universities.

Using an exploratory research approach, the primary data for this study were obtained through a field survey. The data were gathered from HR managers at nine Jordanian public universities. A total of 130 questionnaires were distributed and 95 were returned. Out of the 95 questionnaires, 92 were valid for statistical analysis. The response rate was 72%. The SPSS package was used for statistical analysis through using descriptive analysis frequencies, percentages, means and standard deviation. Also, ONE ANOVA analysis was used as well as Scheffe' test to show the differences between the means of the participants' responses.

The findings of the study showed that the Computer centre at each university plays a prominent role in planning, designing, developing, operating and maintaining HRIS. The overall utilization of HRIS in Jordanian universities is concentrated on reward and compensation management more than other HR functions. The lack of support and commitment from top managers was the most frequently cited barrier to the implementation of HRIS. This research represents the first exploratory study of its kind to offer a description and explanation of HRIS applications in Jordanian universities. Therefore, it is claimed that this research contributed to filling the theoretical gap in the HRIS literature found in Arabic and Jordanian context. In practice, the study contributes to the understanding of applications of IT in HRM in Jordanian universities (e.g. private universities), and other universities in Arab countries, which are subject to similar circumstances to the universities studied.

DEDICATION

This thesis is dedicated to:

My dear mother, for her love and prayings

My dear husband for his endless support,

and

My beloved sons Ahmad and Faris

and my daughter Majd

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All praise and thanks are to Allah, the Lord of the universe, I thank God for giving me the patience, good health, and the ability to conduct and take this study to its final conclusions.

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CHAPTER ONE

INTRODUCTION

1.1 Background and Rationale for the study

This study takes an exploratory approach on the applications of human resources information systems (HRIS) in Jordanian public universities. It is hoped that the study will develop a description and explanation of the human resources information systems that contribute to a better understanding of using information technology in human resource management functions. The justifications for the research interest on this subject are threefold:

Firstly, Human Resource Management (HRM) is viewed as an integral part of management. It is increasingly considered among the most significant functions in the organization. The reason is that HRM is concerned with employees who are the main drivers of production (Schuler and Jackson, 2005). It is very important for organizations to efficiently organize human resources management (HRM) programs and activities in order to achieve organizational effectiveness (Mckean and Wyse, 1995). HRM has changed from an inactive and problem-solving role to a strategic one, focusing on the retention and development of the best human resources (Clemmons and Simon, 2001). HRM has become part of the strategic plans of organization. Traditional HR practices consisted of activities such as rewarding, hiring activities, records management, reporting, appraising, and termination activities (Dressler, 2000). Nowadays, HRM takes more of a full service role providing employee support beyond pension planning and career development. People are the ones who run the organization. Without the right people at the right place, with the required skills, training, and motivation, organizations cannot achieve their goals (DeNisi and Griffin, 2001). Also,

the effective use of the HRM helps the organization to improve its performance and competitive advantage through the best utilization of human resources (Becker and Huselid 1998; Delery and Doty 1996). It will be very important to study the use of information technology in HRM.

Secondly, organizations operate in an increasingly turbulent environment where information is a valuable resource that enables organisations to compete in an increasingly competitive environment. In addition, technology is increasingly playing a crucial role in the success of organizations in the information age. The impact of Information Technology on business has been enormous. Computers and the information they process and store have permeated every aspect of the business world.

Thirdly, Information Systems (IS) play a significant role in supporting management decisions. The importance of using such a tool in universities can never be overlooked. Information systems and technologies play a critical role in supporting both the strategic and operational activities of universities.

It is clear that both the general and higher educational systems are critical for continuing the progress in the workplace and in the society as a whole. Jordan has a tradition of high literacy rates and extensive access to higher education. It should build on these traditions to introduce modern technological approaches to work, education, and public services (ESCWA, 2003). Also, the performance of higher education is of great significance for the competitiveness of nations (Porter, 1990). Therefore, using IT in higher education institutions is of the utmost importance, and determining the applicability of information systems to universities is highly significant exercise.

Jordanian universities are selected for this study because of their great importance as higher educational institutions, in general, and in the Jordanian society specifically, and the large size of these universities in terms of the numbers of their students, and staff (academic and administrators), and its great influence in a large stake of the Jordanian society. These universities are among many organizations that use computers in different operations and departments in Jordan. These universities are known for their dedication to service, their innovative approaches to academic management and human resource development, and their continuous pursuit of excellence in all fields of research and management.

1.2 Aims and objectives of the study

The main aim of this study is to investigate the usage of information technology (IT) in HRM functions within Jordanian public universities. Since this study is the first to be carried out in Jordanian public universities, its primary aim is to provide exploratory findings, rather than concrete conclusions. The study intends to help in understanding how to maximize the utilization and management of IT in human resources functions at Jordanian public universities.

In particular, the specific key objectives of the research are:

- To identify the current status of HRIS in Jordanian public universities.
- To investigate the specifications and features of HRIS in Jordanian public universities.
- To study the applications of HRIS in HRM functions in Jordanian public universities
- To identify the barriers of implementing HRIS in Jordanian public universities.

1.3 Problem definition, Propositions and research questions

From the rationale, as stated above, it can be concluded that the research problem is to investigate the use and applications of Human Resources Information Systems in Jordanian public universities. HRIS may be utilized to support top management in universities to make decisions by providing a comprehensive and integrated overview of available human resources and their skills. Besides, these information systems could indicate necessary links between the university management and employees' objectives, career plans, competence development and the strategic goals of the university. However, not much research has been done on the implementation of human resources information systems in Jordanian universities. It is necessary to know the applications of HRIS and the barriers of implementing these systems at these universities. Besides, new information is needed to ensure further development of using information technology in human resource management in universities.

Computers were first introduced in Jordanian organizations in 1969. There were only five Jordanian organizations that had used computers in 1977 (Naseer, 1987). The use of computers increased gradually and by 1989 there were about 3192 public and private Jordanian organizations that used computers (Al-Shammari and Al-Shaikh, 1993). Currently most organizations in Jordan have computers that are used for different purposes. A new jump in information technology (IT) began to emerge as a result of many political, economic, and educational factors.

To explore the current status of HRIS in Jordanian universities, the researcher made seven preliminary interviews. The interviews were conducted with two human resource managers,

two HR head departments, and one HR staff at two Jordanian universities (which are Yarmouk University, and Jordan University of Science and Technology). Also, the researcher conducted two interviews with two academic teachers, one from Al-AlBait University and the other from Yarmouk University. These two academics were specialized in Human Resources Management, and Management Information Systems, respectively. The researcher found out through this preliminary investigation that the research problem is presented in the deficiency in using HRIS in all different activities of HRM at these universities. Accordingly, this affects the efficiency of using HRIS in practicing activities and policies of HRM in these universities. The researcher concluded through these preliminary interviews that the present HRIS is facing the following problems:

- Although there are adequate staff at each HR department, they are not qualified and trained to manage the HRIS effectively.
- Lack of current, detailed and complete data about potential candidates for vacancies at these universities that are available in Jordanian labour market.
- Lack of information about staff at other Jordanian universities, to identify and evaluate potential candidates for jobs.
- End users (employees that are dealing with HRIS) are unable to work properly with their information systems, and unable to access all personal data through HRIS.
- HR managers lack support from their HRIS staff in decision making process.
- Lack of new technical equipments and instruments that are necessary for building effective HRIS.
- Current HRIS found in universities has limited use in performing different HR functions. It does not cover all the activities and functions of HRM.

- There is lack of integration between information systems found in HR department and other systems at other administrative units at each university. Nevertheless, the bulk of data independently collected by each unit represents a common core.
- Also, there have been difficulties that HR departments at these universities had experienced for many years in collecting and processing of staff data. Administrators of HR departments at these universities also need reliable data on staff to help plan issues of infrastructure development and human resource planning.
- Incompatibility among unit-specific databases at each university. For example, data fields have different lengths and different types between different information systems at the university. In a Human Resources Information Systems (HRIS), data fields related to the faculty name are different when compared in a Student Information System (SIS). Similarly, the field definitions of variables in Financial Information Systems (FIS) are incompatible with those in HRIS or SIS in the case of common variables across the databases.
- Initially, it was found that human resource information system (HRIS) had intended to support transaction processes and maintain management control in HR departments of these universities. These systems were not used sufficiently in other activities such as decision making processes and strategic planning.

Hence, in response to the problems stated above, this study had to be carried out. It investigates the extent of use of information technology in various human resource management functions in public universities.

In an attempt to investigate applications of HRIS in Jordanian public universities, five main propositions with sub-propositions have been put forward for this research. They are as follows:

Proposition 1: Human resources information systems are not well managed, operated, maintained, and planned at Jordanian public universities.

Proposition 2: Human resources information systems at Jordanian public universities are not having adequate level of specifications and features.

Proposition 3: Human Resources Information Systems are implemented in Human Resource Management functions at Jordanian public universities.

- *Proposition 3a:* There are no significant differences in implementing HRIS in 'recruitment and selection' function between Jordanian universities.
- *Proposition 3b:* There are no significant differences in implementing HRIS in 'training and development' function between Jordanian universities.
- *Proposition 3c:* There are no significant differences in implementing HRIS in 'compensation management' function between Jordanian universities.
- *Proposition 3d:* There are no significant differences in implementing HRIS in 'performance appraisal' function between Jordanian universities.
- *Proposition 3e:* There are no significant differences in implementing HRIS in 'HR planning' function between Jordanian universities.

Proposition 4: There are no obstacles facing the implementation of Human Resources Information Systems at the Jordanian public universities.

The study seeks to answer the main research question which is 'What are the applications of Human Resources Information Systems in various functions of human resource management?'. To have a clear understanding of the research area, question can be divided into the following sub-questions:

1. What is the current status of Human Resources Information Systems in Jordanian public universities?
2. What are the specifications and features of Human Resources Information Systems at HR departments of Jordanian public universities?
3. What is the extent of applying Human Resources Information Systems in HRM functions in the Jordanian public universities? In relation to this question, the following sub-questions have to be answered:

3.1 What is the extent of implementing HRIS in 'Recruitment and Selection'?

3.2 What is the extent of implementing HRIS in 'Training and Development'?

3.3 What is the extent of implementing HRIS in 'Compensation and Benefits administration'?

3.4 What is the extent of implementing HRIS in 'Performance Appraisal'?

3.5 What is the extent of implementing HRIS in 'Human Resources Planning'?

4. What are the obstacles facing the implementation of Human Resources Information Systems at Jordanian public universities?

1.4 Research Methodology and Approach

The research questions this thesis sets to address call for an exploratory study. The rationale is that an exploratory study aims at discovering new ideas and identifying new issues for future investigation. Also, an exploratory study aims to establish the facts, to gather new data and to determine whether there are significant patterns in the data. Exploratory research is very useful in the absence of clearly researched and fully understood a subject, and/or in the premature stages of development of theories (Johnson and Christensen, 2000). Hence, a quantitative research approach was selected for this study. The quantitative approach is used in order to explore the applications of Human Resources Information Systems at Jordanian universities.

The main research method used in this study is the questionnaire. The rationale is that questionnaires will provide the study with more detailed and written data about the nature of HRIS used by the HR departments at the Jordanian universities. The aim is to give the respondents the chance to express their opinions freely as they will be anonymous. The questionnaires were completed by the top level human resource managers, heads of HR divisions, and HR employees at Jordanian universities.

The questionnaire was pilot-tested in order to avoid ambiguity and test it for both validity and reliability. For this study, the focus is on higher education organisations and to explore issues that relate to human resources information systems at the departmental level. Therefore, the unit of analysis for this study is the HR department at each of the nine Jordanian universities. 130 questionnaires were distributed to the participants at the nine universities and 95

questionnaires were returned. Out of these 95 questionnaires, 92 questionnaires were valid for statistical analysis. The response rate was 72%.

The researcher used the SPSS package for statistical analysis through using different statistical techniques such as descriptive analysis frequencies, percentages, means and standard deviation. Also, ONE-WAY ANOVA analysis was used as well as Scheffe' test to show the differences between the means of the participants' responses.

1.5 The Scope of the Study

Higher education institutions are considered as one of the most important resources that provide society with prepared and capable individuals to play important roles in the different fields of society's life (Baum and Payea, 2005). They are responsible for matching the theory with the practice, launching the academic, research and administrative processes in different fields (Sarayrah, 2003). Information systems, found in these institutions, have a considerable importance for their successful operations.

This study is important for both universities and society. Universities are considered to be one of the most important institutions in the country. Being academic institutions, they try always to gain competitive advantage and to improve their efficiency by finding out and implementing new information technologies in their various functions (Hosie, 1995). Universities' managers realise that information technology and management information systems in higher education are critical to their survival and continuous success. So, with the invention and innovation of new technologies, the usage of computers in universities rise to new levels, and universities are trying always to find new ways to improve performance, and

efficiency of its various functions (Hubbard, 1993). So, this research is trying to help universities, in Jordan, to find new ways of improving their efficiency and academic performance.

Human resources management has been chosen for this study, specifically, as it is generally recognised that it is a major contributor to the success of an enterprise (Schuler and Jackson, 1999). Today, HRM is being renewed in organizations and becoming one of the fundamental functions of the project management. Therefore, from an academic standpoint, it is surprising that HRIS issue has not been given more consideration in Arab countries. Few studies have focused on the use of information systems in higher education institutions, particularly universities, in Arab countries and very few are available on the Jordanian universities. The main reason for selecting Jordanian universities is the important role universities play in the national development and progress (Baum and Payea, 2005). Moreover, the nature of their activities and tasks performed require large amounts of data, and for a continuous flow of data. The revolution of information technologies (IT) along with changes in society, have placed great pressure on higher education institutions and universities to create efficient IT infrastructures to deal with the continued growth in the numbers of incoming students while ensuring the delivery of high-quality education and services. Universities are challenged to work harder, to do more work with fewer resources, and to improve the quality of services and support to their staff (Al-Jarrah and Yaseen, 2007).

Improving the quality and relevance of higher education is expected to enhance Jordan's human capital and to increase economic productivity, thereby increasing the country's capacity to compete in the global economy (ESCWA, 2003). The idea of globalisation and

the worldwide recognition of the importance of information technology for national development, the creation and implementation of information technology in human resource management , which is the focus of this study, has become a major area of interest for most organisations.

The effects of HRIS are expected to extend beyond the main department, HR department which uses these systems to the organization as a whole. Expectations raised from the use of HRIS include: lower personnel operation costs and turnaround time for the delivery of its services, better HR ratios, higher employee satisfaction, greater efficiency in the delivery of services, a decreased probability of making mistakes, and overall, the prospect of increasing the ways in which talent is managed in the firm (Lawler and Mohrman, 2003). In conclusion, the potential that HRIS have in improving HR function, deserves scholarly attention.

The outcomes of this study is expected to provide top management, decision makers, and planners at universities with valid and reliable information that help them to make more informed decisions and manage their departments more efficiently.

1.6 The Structure of the Thesis

The thesis is divided into eight chapters.

Chapter One, 'Introduction', introduces the rationale for the research topic and explains the research problem, questions and propositions. Also, it presents aims and objectives, methodology, and the scope of the study.

Chapter Two, 'Human Resource Management (HRM) and The Use of Information Technology (IT) in HRM Functions: A Review of Literature', provides a review of some topics related to Human Resource Management (HRM), definitions, functions of HRM, and the use of Information Technology (IT) in HRM functions. Also, this chapter provides a description of different types of IT used in HRM functions, and a discussion of the role of internet applications in HRM functions.

Chapter Three 'Human Resources Information Systems (HRIS) in Organizations: A Review of Literature', provides a review of some topics related to definitions, evolution, features and characteristics of HRIS. Also it presents other topics related to HRIS such as advantages of adopting HRIS, users and components of HRIS. The chapter also provides a review of some previous studies of HRIS and highlights the subject of using information systems and technologies in Jordanian universities. The literature review provided in this chapter will help the researcher to put the findings of the study in a theoretical perspective and to relate these findings to similar ones of other studies. This chapter is important as it will allow the researcher to relate the findings of the study and make better judgments on how to improve applying HRIS in public Jordanian universities

Chapter Four, 'Jordan - Higher Education System, HRM, and HRIS in Jordanian Universities', provides a background about the education system in Jordan, and specifically, the higher education system and public Jordanian universities. It starts with an overview of Jordan, in terms of its location, borders, area, number of population, age categories of population, origins of populations, population categories according to religion, and official language. Also, in this chapter a brief economic overview is provided. The chapter also

provides a review of some previous studies related to human resources management in Jordan and highlights the subject of using information systems and technologies in Jordanian universities. Also, the chapter presents a description of information technology sector in Jordan, and the use, components, and types of information systems at Jordanian public universities.

Chapter Five, 'Methodology and Design of the Study', discusses the methodological procedures that were followed by the researcher for this study. It starts by stating the design of this research and then the method used. The method utilized in collecting data is a questionnaire which is also explained. The statistical methods used in analyzing the data are described and the major steps are developed to ensure the validity and reliability of this research.

Chapter Six, 'Presentation and Analysis of Results', constitutes the presentation of the findings of the study from the questionnaires. The chapter is divided into consequential sections with each section summarizing answers of respondents to a relevant question. The first section deals with responses to the question regarding the current status of HRIS in Jordanian public universities. The second section of the chapter deals with responses to the question relating to specifications and features of HRIS in Jordanian public universities. The third section summarizes the respondents' answers to the question concerning the applications of HRIS in five different HRM functions. The fourth section presents the responses related to the question on the differences in implementing HRIS in HR functions in Jordanian universities related to the name of university. Section five deals with the opinions and thoughts of respondents in relation to the obstacles of implementing HRIS in Jordanian

public universities. This chapter provides the main source of information for analyzing different issues concerning the applications of HRIS in nine public universities in Jordan.

Chapter Seven, 'Discussion', presents a discussion of the issues raised from the study results that are illustrated in Chapter six. The discussion provided in this chapter enables the researcher to make recommendations on how to improve the use and application of HRIS in Jordanian public universities in the future.

Finally, **Chapter Eight, 'Summary and Conclusion'**, draws conclusions of the main findings of the study. It also highlights the contribution of this study to knowledge. It includes a set of recommendations for future implementation of HRIS. It also highlights some limitations of the study and makes suggestions for future research.

CHAPTER TWO: HUMAN RESOURCE MANAGEMENT AND THE USE OF INFORMATION TECHNOLOGY (IT) IN HRM FUNCTIONS: A REVIEW OF LITERATURE

2.1 Introduction

This chapter provides an overview of the major studies and publications that deal with human resource management (HRM) and using Information Technology (IT) in the functions of HRM. In addition, the relations and interactions between these two components are explained. Thus, after the introduction, this chapter covers aspects of human resource management (HRM) such as; the definitions, and the functions. The issues of using Information Technology (IT) in HRM, and different types of IT used in HRM functions are discussed in section five. Section six discusses the role of internet applications in HRM functions. In addition, section seven presents the approaches of sourcing Human Resources Information Technologies (HRITs).

2.2 Human Resource Management (HRM)

One of the primary keys for organizational success is the management of people at work (Mathis and Jackson, 2003). Human Resource Management (HRM), the approach emphasizing people as resources, emerged more than two decades ago in the context of the American labor market and is regarded by many as an American management approach to people (Guest, 1994). The concept of human resource management has attracted considerable attention over the last two decades from scholars and practitioners alike. While part of the debate has centered on its application and theoretical underpinnings (Pinnington and Edwards, 2000; Armstrong, 1999; and Storey, 1992), the other has been focused on its

prescriptive value for the survival of organizations in a turbulent and a volatile business environment (Anthony et al, 1996; Brewster and Larsen, 2000). There are two basic assumptions underlying the concept of HRM. First, human resources are valuable assets and second, that human resources can provide as a source of competitive advantage (Verburg et al., 1999). According to Jackson and Schuler (2003), these basic assumptions can be translated into human resource practices, policies and overarching philosophies that are integrated with business policy, reinforce the desired organizational culture, promote commitment and encourage willingness in employees to act flexibly in the interests of the organization. Fisher et al. (1999) added that HRM involves all management decisions and practices that directly affect or influence the people or human resources that work for the organization. Armstrong (2000) stated that an organization gains competitive advantage by using its employees effectively, drawing on their expertise and ingenuity to meet clearly defined objectives.

2.3 Human Resource Management (HRM) definitions

HRM has been variously described as an evolving set of competing theories and a group of interrelated policies with an ideological and philosophical groundwork (Pinnington and Edwards, 2000). Writers (Byars and Rue, 2000; DeNisi and Griffin, 2001; Armstrong, 1999; Dressler et al., 1999; Bratton and Gold, 2003; Ferris et al., 1995) have developed differing, yet complementary definitions of HRM. For the purpose of this study, two definitions of HRM are stated.

Bratton and Gold (2003) defined HRM as the strategic approach to managing employment relations which emphasizes that leveraging people's capabilities is critical to achieving

sustainable competitive advantage. This is achieved through a distinctive set of integrated employment policies, programs and practices. Moreover, Abecker and Ernst (2004) stated that HRM is a strategic and target oriented composition, regulation and development of all areas that affect human resources in a company. Efficient and effective management of these resources to a large extent, affects human resource behavior, and consequently the performance of the organization as a whole. They identified HRM with the field it covers. These include planning aspects- personnel requirements analysis and personnel asset analysis, and change aspects- recruitment, personnel development and labor displacement.

According to Torrington et al., (2005) HRM is fundamental to all management activities and has evolved from a number of different strands of thought. It is best described as a loose philosophy of people management rather than a focused methodology. Thus, a distinction has been made between HRM as a body of management activities on one hand (generically described as personnel management) and then on the other as a particular approach to execute those activities (carrying out people-oriented organizational activities than traditional personnel management).

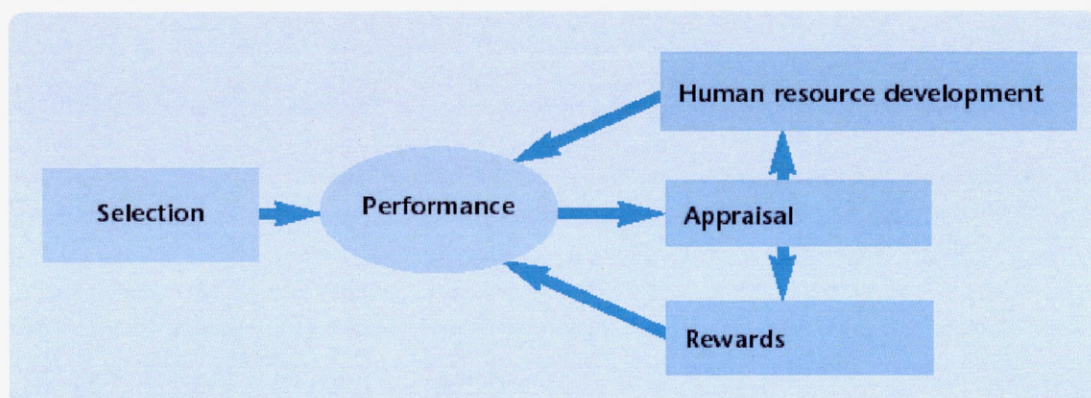
2.4 Functions of Human Resource Management

Human Resource Management (HRM) is concerned with the effective and efficient utilization of human resources to achieve the organization's goals and objectives and enhance employees' satisfaction and well being (O'Brien, 2004; Ivancevich, 1995). The effective utilization of human resources in the organization could be achieved through the different functions performed by the human resources department to attract, retain and motivate employees (Armstrong, 1995). There were differences in defining the main functions of

HRM among researchers through reviewing literature. For example, Fisher, et al., (1999) classified human resource management functions to include staffing, promotion, delegation, decision-making, communication, information, and compensation. In addition to the above HRM functions, Bolton (1997) added control of employment, nature of relations, conflict, and labor management.

Fombrun, et al (1984) simply explained the four generic functions of HRM such as: selection, rewards, development and appraisal. These functions “are ideally designed to have an impact on performance at both individual and organizational levels” (Fombrun et al., 1984, p. 41). As Figure 2.1 illustrates, Fombrun et al. (1984) developed a model based on these four interrelated HRM functions. The model is called “human resource cycle”. It represents sequential managerial tasks, and performance is a function of all human resource components. While the concept of HRM seems very broad, it is possible to distinguish some generally accepted practices.

Figure 2.1 The Fombrun, Tichy and Devanna Model of HRM



Source: Fombrun et al. (1984). Strategic Human Resource Management, John Wiley and Sons, Inc. , NewYork.

Other HRM functions that were included by other researchers such as; union/labor relations (Byars and Rue, 2000, Currie, 1997), socialization (Sparrow and Marchington, 1998), managing change (Ivancevich, 1995; Braton and Gold, 2003), and jobs and roles (French, 1998). It is concluded that authors have a variety of ways in defining HRM functions. However, most of the literature that discusses HRM practices does that in terms of the responsibilities and functions that are performed by HR specialists in the organization.

Reviewing related literature of HRM functions was utilized to specify the appropriate functions of HRM found in Jordanian Universities. In addition, an exploratory study was done; and five interviews were conducted with HR academics and practitioners at Jordanian universities to help in assisting the main functions of HRM at these universities. The five core HRM functions that will be discussed in this study are; recruitment and selection, compensation administration, human resource planning, performance appraisal, and training and development. These functions were found to be suitable for the activities of HRM in Jordanian universities. A brief explanation of these core functions is given below.

2.4.1 Recruitment and Selection

Recruitment is specifically the set of activities and processes used to legally obtain a sufficient number of the right people at the right place and time so that the people and the organization can select each other in their own best short-run and long-run interests (Schuler and Huber, 1997). Another definition of recruitment by DeNisi and Graffin (2001) is the process of searching for and attracting an adequate number of qualified job candidate, from whom the organization may select the most appropriate to fill its staff needs. The process begins when the need to fill a position is identified and it ends with the receipt of

résumés and completed application forms. The result of this process is developing a pool of qualified job seekers who are interested in working for the organization and from which the individual best matching the job requirements can be selected. The steps in recruitment process include identification of job openings, determination of job requirements, choosing appropriate recruiting sources and methods, and finally, generating a pool of qualified recruits. Job openings are identified through human resource planning or manager request. Next is to determine the job requirements. This involves reviewing the job description and the job specification and updating them, if necessary. Appropriate recruiting sources and methods are chosen because there is no one, best recruiting technique. Consequently, the most appropriate for any given position depend on a number of factors, which include organizational policies and plans, and job requirements.

Traditional recruitment practices were based on “word-of-mouth and employee referral networking; the use of executive search and referral firms. Currently, many employers are using innovative recruitment methods. Examples of high technology job posting and recruitment methods is web based/internet (Riccucci, 2002).

Selection is the process of gathering legally defensible information about job applicants in order to determine who should be hired for long-or short-term position (Schuler and Huber, 1997). The Selection Process is concerned with identifying the best candidate or candidates for jobs from the pool of qualified applicants developed during the recruiting process (DeNisi and Griffin, 2001).

In employee selection, a major function of the HR department is to develop a set of selection criteria based on the needs of the job and the culture of the organization. This is an essential function of the HR department as the process facilitates growth and the continued success of the firm. According to Stone (1998), selection practices often start off with job analysis, followed by job description and finally job specification. Some of the common selection methods and devices used include interviews, written tests and performance simulation tests, such as assessment centers. As the selection is critical for future achievements, the process involves five steps of finding the right candidate, with the right characteristics to meet the criteria set for the job and the organization's needs. The first step being preliminary screening followed by employment interview, employment tests, reference checks and recommendations and finally, physical examinations. Criteria for selection often include formal education, experience or past performance, physical characteristics and personal characteristics, and personality type (Ivancevich, 1995).

2.4.2 Performance Appraisal

Another major function of HRM is performance appraisal, which is intended to provide accountability, ensure fairness and determine the future well being of the firm. Performance Appraisal is the specific and formal evaluation of an employee in order to determine the degree to which the employee is performing his or her job effectively (DeNisi and Griffin, 2001). Performance Appraisal is a formal method that provides a periodic review and evaluation of an individual's job performance. Performance Appraisal System (PAS) refers to the method used to gather the appraisal data, the job analysis conducted to identify the appropriate criteria against which to establish standards to be used in evaluating the appraisal data, establishing the validity and reliability of the methods used, the characteristics of the

rater and ratee influencing the appraisal and the appraisal feedback and interview process (Schuler and Huber, 1997).

Performance appraisal is becoming more frequent as many firms become more result oriented. According to Snape et al. (1998), performance appraisal often involves activities used to assess training and development needs, to review past performance and improve current performance, to set objectives, to assess promotion potential and to determine salaries. One common process of performance appraisal's process, according to Stone (1998), is to start from the organization mission, followed by objectives. Organization objectives are first developed; functional objectives are followed by, before setting the unit or group objectives and finally individual objectives. With the objectives clearly set, performance can then be appraised at the end of the intended period since the objectives will be used as the benchmark. Appraisals or evaluations generally take a number of forms. Ivancevich (1995) mentions three common methods: 1) individual evaluation method; 2) multiple person evaluation method; and 3) management-by-objective method. Sometimes, firms may mix the methods together or administer all of them instead of just one to prevent any potential problems such as rater problems, system design and operating problems for example.

Hence, there are three main things that are evaluated or appraised: 1) individual task outcomes; 2) behaviors; and 3) traits. Those who undertake performance appraisal can be immediate superiors, peers, self and immediate subordinates. Common methods used include written comments, critical incidents, graphic rating scales, behaviorally anchored rating scale and multi-person comparisons.

2.4.3 Training and Development

There are many different definitions of training. Dressler (2000) defines training as “The process of teaching new employees the basic skills they need to perform their jobs” (p. 248). Schuler and Huber (1997) suggest that “Employee training and development is any attempt to improve current or future employee performance by increasing an employee’s ability to perform” (p. 512). Moreover, enhancing the ability of current or future managerial employees to achieve the desired levels of performance in specific jobs necessary in order for their organization to achieve its strategic mission.

Most firms have a comprehensive set of training activities accessible to their employees. Training is essential as it often starts off new employees with a general orientation to the organization's history, policies, mission, objectives and future goals (Ivancevich, 1995; and Stone, 1998). Existing employees also need to be trained to attain new skills and knowledge. Changes, particularly in technology and organizational restructuring, often require the employees to obtain new learning. Training, according to Ivancevich (1995), is extremely significant for both new and existing employees. Training, briefly is an attempt to improve current or future employee performance. It is the systematic process of changing the behavior of employees in a direction to achieve organization’s goals. Stone (1998), on the other hand, outlined that training focuses on immediate improvements in job performance via the procurement of specific skills. In addition, training also benefits employees throughout their entire career. Training is the beginning. The next step is reinforcement. There are two usually adopted methods, namely, on-the-job training (OJTs) and off-the-job training like Computer-Assisted Instructions (CAIs) (Ivancevich, 1995). In addition, according to Stone (1998), there is Computer-Based Training (CBT), involving capability profiling, selecting the training

programs or other learning events, producing a personal training plan and lastly, assessing the competency. Other less common forms of training include the use of corporate universities such as McDonalds Hamburger University, or training within the industry.

2.4.4 Compensation and Benefits Administration

Compensation is the set of rewards that organizations provide to individuals in return for their willingness to perform various jobs and tasks within the organization (DeNisi and Griffin, 2001). Employee compensation involves all forms of pay or rewards accrued to employees and arising from their employment. This consists of two main components: direct financial payments, and indirect payments. While direct financial payments are in the form of wages, salaries, incentives, commissions, and bonuses, indirect payments are in the form of financial benefits like employer-paid health and life insurance, vacations, pension, education plans, and discounts on company products. Furthermore, income and medical benefits to victims of work-related accidents or illness and/or their dependents, regardless of fault are all part of employees' compensation. Moreover, legal considerations in compensation, union influences, compensation policies, and equity and its impact on pay rates are the four basic considerations influencing the formulation of any pay plan.

Establishing pay rates involves five steps: First, conducting a salary survey to determine the prevailing wage rates for comparable jobs. Second, determine the relative worth of each job (evaluating job) by comparing the job content in relation to one another according to their efforts, responsibility, and skills. Third, group similar jobs into pay grades, a pay grade comprises of jobs of approximately equal value or importance as determined by job

evaluation. Forth, using wage curves to price each pay grade. Fifth, fine-tuning pay rates. This involves correcting developing rate ranges (Dessler, 1999).

2.4.5 Human Resources Planning (HRP)

Human Resource Planning (HRP) is the process of forecasting the supply and demand for human resources within an organization and developing action plans for aligning the two (DeNisi and Griffin, 2001). This process reviews human resources requirements to ensure that the organization has the required number of employees, with the necessary skills, to meet its goals, also known as employment planning. HRP is a proactive process, which both anticipates and influences an organization's future by systematically forecasting the demand for and supply of employees under changing conditions, and developing plans and activities to satisfy these needs. Key steps include forecasting demand for labor considering organizational strategic and tactical plans, economic conditions, market and competitive trends, social concerns, demographic trends, and technological changes (Dressler, 2000).

When carrying out HRP, HR managers should be alerted to seek out opportunities, because of turnovers, and need for new competencies. The results of a HRP process might identify a surplus of personnel or budget shortfalls or a change in government priorities that would result in restricted hiring, early retirements and reductions in force (Mondy et al., 1993).

2.5 The use of Information Technology (IT) in HRM

HRM focuses on specific issues such as: recruitment and selection; remuneration; training and development; career management; management of competencies; management of hierarchical levels; internal communication; and evaluation of staff. In this framework,

the issue of HR and technology is not a new one but it is currently undergoing significant renewal with the emergence of pervasive new technologies, especially in the field of Information Technology (Townsend et al, 1998). One of the main challenges facing HR departments is the dramatic advances in technology which necessitate the redesign of jobs and constant modifications in recruitment, selection, training and appraisal techniques (Mayfield et al, 2003). Other challenges are; the globalization of businesses and the need to educate and train managers in dealing with the complexities of a global economy, the move towards a knowledge based economy, where value of the company depends on its employees' skills and knowledge, are just some of the challenges facing the HR departments in many organizations (Teo et al., 2001).

The use of Information Technology (IT) in Human Resource Management (HRM) functions promises an unprecedented revolution in the effectiveness and the efficiency within which HRM functions can be performed in organizations nowadays (Lengick-Hall and Moritz, 2003). The Human resource functions at organization have usually been burdened with laborious, paper-intensive operations, as it seeks to serve its internal and external stakeholders. Automating HR operations was not an easy task during the 20th Century, when the computational demands were significant, as also were prices and customization needs of hardware and software required for HRM tasks (Olivas-Luján, 2003). Yet, technologies that have emerged during the past twenty years seem to finally have reached the point in which their characteristics make their use vital for HR departments. HR practitioners are adding a new, technology-focused, dimension to their more traditional roles as HR experts, business partners, employee advocates, change agents, and human resource management leaders (Hussain et al., 2007; Lawler and Mohrman, 2003).

Information Technology helps to transform the way in which HR functions work, as roles and tasks that traditionally had been handled by means of paper forms can be substituted by electronic forms and automated data flows. As the information needs grew within the HR function, also did the availability and affordability of computer information systems. Before the 1980s, large, multi-user computers such as mainframes (or, depending on size and computing capability, computers, minicomputers, etc) were characterized by high prices, customized software development, and batch (as opposed to online or interactive) processing. Then, the personal computer (PC) was invented.

Human Resources Information Technologies (HRITs) have a significant impact on HR department and the organization as a whole. Expectations raised from using these technologies include; lower personnel operation costs and turnaround time for the delivery of its services, better HR ratios, higher employee satisfaction, greater efficiency in the delivery of services, a decreased probability of making mistakes, and better ways in which talent is managed in the firm (Broderick and Boudreau, 1992)

Information technologies are being known as one of the crucial tools in transforming HR functions from labor-intensive to technology-intensive (Florkowski and Olivas-Luja'n, 2006). Also, HR managers may use automation for more important activities such as finding better ways to compensate, train, or upgrade employees' capabilities.

2.5.1 Types of Human Resource Information Technologies (HRITs')

There are different types of information technologies used in HR functions (HRIT). The following eight HR Information Technologies (HRITs) are most common; 1) HR functional applications; 2) Integrated HR software suites; 3) Interactive (or Automated) Voice Response (IVR/AVR) systems; 4) HR intranets; 5) Employee Self-Service applications (ESS); 6) Manager Self-Service applications (MSS); 7) HR extranets; and 8) HR portals (see Appendix 1). A description of these eight types is presented below:

1) HR Functional Applications

These applications introduce software-enabled automation of discrete tasks and responsibilities assigned to the HR function. These applications are mostly used for compensation purposes (e.g., payroll, benefits). These technologies were among the first used to make the HR department's tasks easier, faster and more structured. Over years, a broad range of computer programs automating the full array of actions carried out by HR staff have been developed by different vendors (Florkowski and Olivas-Lujan, 2006).

2) Integrated HR Software Suites

Integrated HR Software Suites are portrayed as integral solutions for the HR function.

Also, these systems provide access to larger databases through various modules that automate diverse sub-functions of HR. Most importantly, there is an ability to share data easily across applications. Also, there might be interfaces between the HR suite and other non-HR applications such as; production scheduling, and financial company management. The industry for separate HR applications is consequently more diverse and fragmented than the group of competitors for Integrated HR Software Suites. On the other hand, the occurrence of

personal computers enabled less expensive and more common development of HR applications (Florkowski and Olivas-Luján 2006).

3) Interactive/Automated Voice Response systems (IVR/AVR)

Progress in computer hardware and software also brought in the ability to interact with computers in other ways, such as this technology. These systems were originally designed to channel phone calls automatically by pressing dial buttons (Florkowski and Olivas-Luján 2006). Also, they were used by HR department in the delivery of different services such as benefit plan enrolment, training registration, company announcements, phone surveys, etc (Groe et al., 1996). These systems have the ability to take voice commands, and react to dial tones. They have also allowed employees to verify their status or income levels, and access more complete and up-to-date information about policies by calling the appropriate numbers (Barr et al., 1998). The use of IVR allows fewer employees to provide information to a larger audience faster and at a lower cost.

4) HR Intranet applications

The use of the company Intranet for HR purposes has been labeled increasingly. Intranet technologies allow companies to process most common HRM applications over their corporate intranets. Intranets allow HR department to provide continuous services to their employees. They can also disseminate valuable information faster than through previous channels. Intranets can collect information on line from employees for input to their HRM files, and they can enable employees to perform HRM tasks with little intervention by the HRM department (O'Brien, 2004). For example, employee self-service (ESS) intranet applications allow employees to view benefits, enter travel and expense reports, verify

employment and salary information, look up individual payroll and benefits information online, access and update their personal information, and enter data that has a time constraint to it (Barr et al., 1998).

Another benefit of the intranet is that it can help as a superior training tool. Employees can easily download instructions and processes to get the information or education they need, and can view training videos over the intranet on demand (Gasco et al., 2004). Employees can also use the intranet to produce automated pay sheets, which made it easy for them, and for HRM professionals, to view, enter, and adjust payroll information (O'Brien, 2004). Moreover, the use of intranets also helps in many ways to support HRM functions. Intranets bring benefits such as their role in enabling activities including communication, information retrieval and database access, and their ability to establish a company information system. Companies are making employee profiles, skills inventories, policy manuals and company telephone directories available to their employees (Ngai et al., 2008).

5) Self Service applications

The fifth and sixth technologies on Table (2.1) are closely related. Employee Self Service (referred to as ESS) and Manager Self Service (MSS) applications are considered to be self service applications. At that point, company's employees or managers are no longer in need to interact with HR personnel to update their individual records, registering online for training, managing job openings or recording performance evaluations. The use of ESS and MSS applications reduced drastically the need for HR employees to act upon each and every transaction that involved its domain. These applications improve service levels for employees and managers through the elimination of unnecessary steps in HR processes that add time and

frustrating delays in HR-related transactions (Weatherly, 2005). Meanwhile, there are always exceptions and special cases that need direct intervention from HR personnel, but many HR processes that created no- or low-value added for the organization have been streamlined through the use of these technologies (Olivas-Luján, 2003).

According to O'Connell (1990), an organization can fulfill the HR needs of different employees by applying self-service technologies through the internet. The internet and the web are making virtual HR applications not only possible, but economically viable. It allows employees to serve themselves from anywhere, at any time – at their convenience.

The self-service applications take HR people out of the transaction. Several HR tasks can be handled by employees and managers themselves, for example updating employee records can be carried out by the employees themselves (Weatherly, 2005). Other good choices for self-service include allowing employees to enter data on time and labour, review their pension balance, transfer funds, choose their benefits, set annual performance plans, and update their personnel data (Robertsb, 1999). Moreover, employees using self-service functionality can easily update and verify personal information, consult online lists of internal job vacancies, access corporate handbooks, and receive notices about upcoming training sessions (Ashbaugh and Miranda, 2002).

Managers self service (MSS) applications allows managers to analyze job candidate profiles online, construct salary models, view benefits programs, monitor absentee trends, and retrieve government labour regulations and forms for compliance purposes. In addition, individual employee performance, evaluation, and career development can all be

accomplished through an ESS and MSS (Lippert and Swiercz, 2005). Also, these systems empower employees in non-traditional ways. Employees now have continual access to their personal information as well as the responsibility of ensuring that data in these systems are accurate and complete. Organizational members at all levels can quickly and efficiently access data while managers and supervisors can use the information for decision making. Systems empower employees by enabling them to have 24/7 access to their critical personal information via a web-based ESS applications. These applications not only make the HR function more effective but also serve individual employees by enabling them to become self-sufficient and in greater control of their personal data. On the positive side, if the employee is able to see a benefit in using the system, he/she is more likely to be motivated to input timely, accurate and comprehensive data. By providing employees with access to their personal employment record, self administered applications can provide the immediate feedback and validation essential to effective motivational program design (Sobkowiak and LeBleu, 1996).

7) HR Extranets

HR Extranets links between HRM departments at the organization and external institutions, such as pension providers, health benefit administrators, etc. This technology enables direct contact between the HR department (in some cases also non-HR employees) and those service providers. Large companies have well-established extranets to access the required personnel information quickly and efficiently (Ngai et al., 2008). Two different business models can govern these relationships. In the first one, the HR department shares workforce data with vendors who use the information to effectively manage HR services under their stewardship. Lacking authorization to communicate with vendors, employees continue to go to their employer to update service choices, revise personnel records, and voice complaints

about services rendered. The second model saddles vendors with broad responsibility for database management and service administration. Here, workers use the extranet to directly initiate or modify service delivery from external providers (Florkowski and Olivas-Luja'n, 2006).

8) HR Portals

This type of applications offers a personalized, web-based single access point to all sources of information, tools and systems needed to effectively use the HR services offered by the company through the Internet (Weatherly, 2005). Depending on the roles, privileges and responsibilities that employees have, they can access a variety of HR services, or even external products and services such as online shopping, discounts, etc. HR Portals are highly configurable through code modules (also called 'pagelets' or 'applets') that can be added to or taken from the entry page that employees would see after logging into the system (Florkowski and Olivas-Luján, 2006).

A web portal provides a two-way communication channel to improve an individual's relationship with an organization. The portal has become the primary home for employees while they are in their working space and logged on to their computer (Weatherly, 2005). The web portal provides employees with the latest information concerning the relationship between employees and organizations, such as reports or applications (Ngai et al., 2008). Other types of technological developments that affect HRIS include touch-sensitive screens, voice-activated keyboards and interfaces, expertise systems that use artificial intelligence, advanced graphics and image display, and external databases. Gara (2002) stated that through mobile units, laptops and using web browsers, more of these HR processes will be automated.

Examples of such automated HR processes are: Performance evaluations; benefits enrollment; Training enrollment; providing managers with on-line salary surveys; pay-related decision-making tools; access to real-time HR information; providing analytics and decision trees; smart self-service; Internet web-based applications, and wireless/mobile computing.

2.5.2 Approaches of Sourcing Human Resources Information Technologies

An important issue that is related to the use of different HRITs deals with the approaches for making them available ,or sourcing them, to the organization. The decision as to whether 'make or buy' a computer system has been compounded in recent years by the surfacing of Application Service Providers (ASPs). Those firms attempt to offer integral technological solutions on a range of needs (IOMA, 2001; Kimball, 2001).

HR departments interested in using information technology may source it by two approaches; in-sourcing, and out-sourcing. In-sourcing means making technology in-house. Out-sourcing means buying a pre-packaged solution, or hiring an ASP company. A large number of HR sub-functions are currently available through ASPs (Lepak and Snell, 1998). These new solutions providers, have effectively demonstrated that traditional in-house solutions are not the only effective source for human resources information systems (Kimball, 2001).

McClendon et al., (2002) found in their study that payroll administration, benefits administration, employee assistance programs, and training were the most heavily outsourced activities. Moderate levels of outsourcing were observed for HRIS. Decisions about the use of sourcing and the impact of these decisions are likely to vary with the HR activities being outsourced. The use of outside vendors for IT services is increasingly being viewed as a mean

of reshaping organizations to enhance flexibility, reduce costs, and acquire specialized expertise (Weatherly, 2005). With the advent of outsourcing and the emergence of Application Service Providers (ASPs), firms in an extreme case might have both the HR and IS functions outsourced. Other possibilities might include the use of partnerships or strategic alliances. It is important to recall that, even in the extreme case in which both functions are outsourced as much as possible, firms need to retain some level of control and responsibility over some of their HR- or IS-related tasks. In other words, a firm might outsource some HR tasks such as recruiting or training or some IS tasks such as code-generation or infrastructure maintenance, but many other tasks will remain under internal control. It is in those HR tasks that remain local that the firm will have an incentive to operate it as efficiently as possible, in many cases through automation, possibly in collaboration with the IS function (King, 2001).

2. 6 The role of Internet Applications in HRM functions

The internet is the largest implemented network in the world, linking as it does hundreds of thousands of individual networks all over the world. As the use of the internet and the World Wide Web (WWW) has been growing at a phenomenal rate, the IT application of the internet has become one of the most important issues in HRM functions (Ensher et al., 2002). The advent of the WWW on the internet represents a great change by providing an easy-to-use technological solution to the problem of administrative functions, and even more diverse sources of HR support. Santos and Kuzmits (1997) highlighted the growing number of internet users, and suggested that HR professionals cannot afford to miss out on the benefits of using the internet. The internet provides communication cost reductions, improvements in information management, internal and external communications through comprehensive electronic mail facilities, and access to information from external sources through the searching of web sites (Lai, 2001).

The internet has triggered a revolution in the functions of HRM, a revolution that has allowed companies to shift some HR activities to specialized online service providers. Although researchers have proposed various ways in which internet support can be useful for HRM (Hendrickson, 2003; Singh and Finn, 2003), these proposals are scattered across the literature. A comprehensive literature search, which focused on scholarly journals including peer-reviewed ones, was conducted using several well-known online databases. Figure 2.3 summarizes the recent frequently cited applications of internet support for HRM. Each of the HR applications is discussed below:

(1) Recruitment and selection.

Studies of the use of the internet to support HRM have been conducted for areas such as online recruiting (Cappelli, 2001; Feldman and Klaas, 2002), personnel selection (Mohamed et al., 2001) and pre-employment testing (Mooney, 2002). Online recruiting is one of the worldwide trends for HR functions (Kumar, 2003; Kuzmits and Santos, 2003; Dineen et al., 2004).

The internet has dramatically changed the employment practices in organizations for both job seekers and employers. CVs sent through the internet can be scanned for keywords identifying the required knowledge, skills, competencies and experience. This information can then be stored in the information system for immediate or future use.

(2) Training and development.

Many HRM studies (DeRouin et al., 2004; Gasco et al., 2004; Hsieh, 2004; Byers, 2005) describe the use of internet support for the function of training and development. Web-based

training (WBT) is a popular approach to distance learning using the technology of the Web, the internet, intranets and Extranets. Individuals use the commonly available Web browsers of Internet Explorer (IE) and Netscape to access different types of information – text, pictures, audio and videos – over the internet.

(3) Payroll, benefits and compensation management/administration.

Many organizations are moving HR activities involving pay and benefits services to the Web to improve efficiency (Perrin, 2001). Studies of the payroll interface have been conducted for areas such as record keeping, pension calculations, and retiree payments and statements (e.g. Andrew and Satish, 2001). The internet provides a real-time way of allowing employees to review information on the breakdown of salaries, deductions and accumulated balances. Organizations gather data on salary, wages and other benefits to streamline inputs to the payroll, benefits and compensation application online.

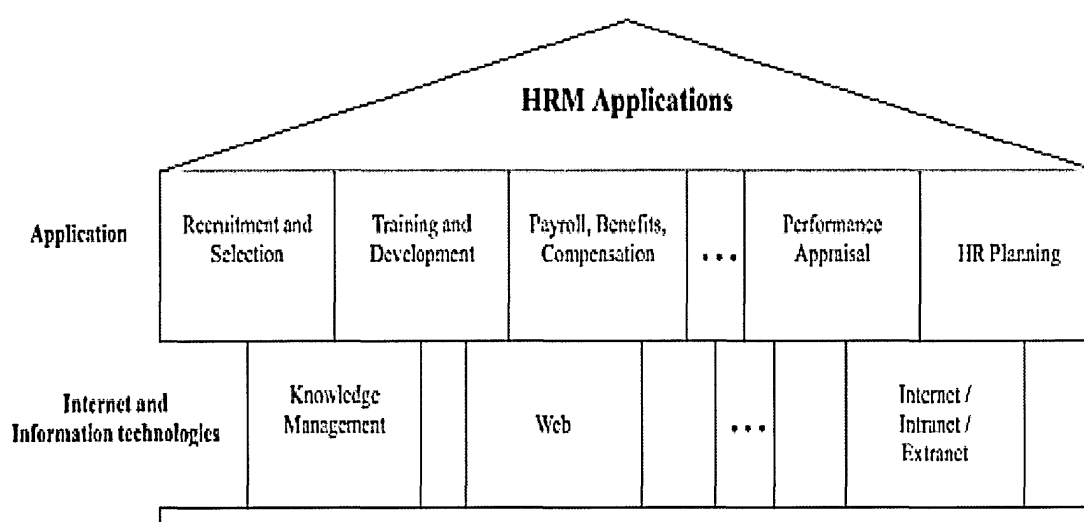
(4) Performance appraisal.

Although relatively few research studies have focused on the online application of performance appraisal (Holtz, 1997; Hansen and Deimler, 2001), the internet plays an important role in reducing the effort and suffering of managing performance evaluation. Typically, individuals have their performance evaluated at regular intervals. Performance evaluations can easily be tracked online by one or more sources such as supervisors, peers, customers or subordinates.

(5) HR planning.

Effective HR planning is the process or system that assigns the correct number of qualified employees to the right task at the right time (Lin, 1997). One reason for the increased use of the internet to support HRM is that the internet is essential if HR managers are to achieve business-related goals (Walker, 1993). These technological changes are thought to increase the ability of HR practitioners to monitor the workforce, produce reports easily, utilize employee skills effectively and even reduce labour costs (Kavanagh et al., 1990).

Figure 2.3 Applications of the internet and information technologies in HR functions



Source: Ngai E.W.T, Law C.H., Chan S.C.H, Wat F.K.T, (2008), "Importance of the internet to human resource practitioners in Hong Kong", *Personnel Review*, Vol. 37, No. 1, pp. 66-84.

2.7 Conclusion

The role of human resource management in organizations has been undergoing changes from measuring individual productivity among the employees and administration routines towards a more strategic management of the human resources. The increasing importance of

technology – especially information technology (IT) – has had an impact on how human resources programs and services are delivered in today's workplace. Currently, no area of human resources remains untouched by technology. Advances in information technology are fostering a revolution in the delivery of HR services worldwide. Dynamic human resource management systems run through the breadth of the company enabling employees and managers self-service applications. These applications provide line managers with operational information, HR managers with decision-making information on every function, and employees with information on their schedules, leave balances, pension contributions, etc. Human resources professionals are not only learning to use information technology effectively; in many cases they are leading the way.

Meanwhile, in this chapter it was attempted to identify and review the literature streams that more directly aid our understanding of the aspects related to HRM. Issues such as development of Human Resource Management (HRM), and the use of IT in HRM functions were reviewed.

Studies show that there are core functions for human resource management that comprises the main reason for the existence of HR departments. The fulfillment of human resources department will have a great impact on the overall performance of the organization. Every organization seeks to improve its business status and achieve its goals; for that reason organizations start using the applications of information technology and information systems that lead to effective and efficient use of resources and increase the satisfaction of customers at all levels. In the next chapter an overview of literature related to the subject of Human Resources Information Systems (HRIS) will be presented.

CHAPTER THREE: HUMAN RESOURCES INFORMATION SYSTEMS: A REVIEW OF LITERATURE

3.1 Introduction

This chapter explains some aspects of Human Resources Information Systems (HRIS) and provides a review of the literature on human resources information system. This section consists of the definitions, evolution, applications, development and implementation, components, the use of HRIS and the role of HR professionals, and barriers of implementing HRIS. Section five of this chapter consists of a brief description of the major studies in the field of human resources information systems.

3.2 Human Resources Information Systems (HRIS) in Organizations: Scope and Definition

Since the emergence of the Internet throughout the world, many business functions have been transformed. After dealing with accounting, finance, and marketing, many companies are shifting their attentions to find a better way of monitoring their Human Resource Management (HRM). Many companies are transforming their HRM functions from manual workflow to computerized workflow. Computers have made the tasks of analyzing the tremendous amount of human resource data into a simple task. Computer hardware, software, and databases help organizations maintain and retrieve human resource records better and simpler (Kovach and Cathcart, 1999).

HRIS is a tool that supports the HR management function and assists managers in managing their human resources more effectively (Targowski and Deshpande, 2001). Moreover, HRIS

is a tool used by the whole organization to provide better information for the management, HR professionals and personnel to increase the organizational effectiveness and well-being (Poutanen, 2005, Ruel, 2003). HRIS shape an integration between human resource management (HRM) and Information Technology. It merges HRM as a discipline and in particular basic HR activities and processes with the information technology field (DeSanctis, 1986). As is the case with any complex organizational information system, an HRIS is not limited to the computer hardware and software applications that comprise the technical part of the system, it also includes people, policies, procedures, and data required to manage the HR function (Hendrickson, 2003). Even though these systems may rely on centralized hardware resources operationally, a small group of IS specialists residing within the personnel department increasingly manage, support, and maintain them. HRIS support planning, administration, decision-making, and control (Tannenbaum, 1990). The system supports applications such as employee selection and placement, payroll, pension and benefits management, training plans, career-pathing, equity monitoring, and productivity evaluation. These information systems increase administrative efficiency and produce reports capable of improving decision-making (DeSanctis, 1986).

According to Walker (1982), a Human Resource Information System (HRIS) will help organizations to keep an accurate, complete, updated database that can be retrieved when needed from reports. Human resources information system has been in existence for a long time but integrated human resources information system (HRIS) using the IT is a new phenomenon (Sulieman, 1998). HRIS is a tool used by the whole organization to provide better information for the management, HR professionals and staff to increase the organizational effectiveness and well-being (Liff, 1997). Poutanen (2005) stated that the key

to the effective planning of manpower and improvement of people productivity is to use an effective HRIS. It is required to provide the necessary information for decision making and policy formulation.

HRIS has been defined by different researchers (Tannenbaum, 1990; Haines and Petit, 1997; Ball, 2001; Broderick and Boudreau, 1992; Tansley et al., 2001; Carrell et al., 1992) in different ways. Walker's definition (1982) is that HRIS is a computer-based method for collecting, storing, maintaining, analyzing, retrieving, validating data and distributing information needed by an organization about its human resources, personnel activities, and organization unit characteristics. Other definition by Dessler (1999) of HRIS is as an information management system accessible to staff at all levels, designed to ensure that the organization's human resources are recruited, selected, developed, employed, deployed, and supported effectively.

The researcher concluded from the review of literature on definitions of HRIS that it is an integrated system which consists of interactive components that are used to collect, store, analyze and manipulate data related to human resources in the organization. The data can help users and managers in making decisions, and achieving organizational effectiveness and efficiency as a whole. Through this definition, different aspects should be considered: 1) the existence of systematic and *interactive components* presented in the input, operation process, output and feedback. These components are acting together in presence of the effects of internal and external environment; 2) the *procedures* of operating the system are presented in collecting, storing, operating the data, and manipulating the results presented in the information and the reports. These reports are useful for different levels of users; 3) HRIS

aimed to provide users with necessary information in order to increase the *efficiency* of the individuals and activities and achieve the organization's *effectiveness*.

3.3 Evolution of Human Resources Information Systems (HRIS)

The development of HRIS has been evolutionary. Before the 1960s, computer systems had a very limited purpose in human resource management and were used only to monitor employee records and payroll activities, in other words administrative purposes (Lin, 1997; Walker, 1982; Kavanagh et al., 1990). Payroll administration and compensation was identified as the first function automated within the HR functions, in some large companies, since the 1950s (DeSanctis, 1986; Walker, 1993; Martinsons, 1994). Employee data were first automated in the 1960s. The first systems were made to store the tremendous amounts of record-keeping and reporting associated with personnel administration at the late of 1960s, because of the high prices of hardware and software, HRIS was affordable only the largest firms. From the evolution of these activities into human resource activities, various computer-based human resource information systems were planned, developed and successfully implemented (Martinsons, 1997). Most human resource information systems (HRIS) had been developed in-house on mainframe computers in order to automate the most basic HR functions. Mainframes were accessed through "dumb terminals" controlled by technical computer analysts who employed FORTRAN and COBOL to engage in a rather "linear model of data processing" (Greengard, 1999).

Many HRIS managers shifted from the role of project manager to the role of consultant to an ever increasing number of HRIS users. With the advent of client-server networks and LANs

and WANs, personal computers have become available, with a terminal on almost every desk (Groe et al, 1996).

As the information needs within the HR function grew, accordingly, did the availability and affordability of computer information systems. During the 1970s, in the USA, most organizations of more than a few thousand employees developed some form of personnel data system (DeSanctis, 1986). Decreasing computer costs also helped encourage the establishment of HRIS. Earlier, HRIS was used in HRM to support transaction processing and maintain management control. HR Functional Applications were mostly used for compensation purposes (e.g., payroll, benefits), running on those computing facilities. These applications were the first of the information technologies, used in HR, to appear in the market.

Technological progress in all computing areas during the 1980s and 1990s brought about an enlargement in capabilities for the mainframe-based systems on one hand, and in pervasiveness and availability of microcomputers or PCs on the other (Kramar, 2000). Housed frequently on corporate or central computers, these systems provide access to larger databases through a variety of modules that automate the different HR sub-functions. HRIS has brought big help to the handling and counting of different personnel data. Salary payments, statistics and basic information have been calculated and used more effectively (Targowski and Deshpande, 2001). However, HRIS has brought at the same time many changes to HRM, and not only to daily processes but also to skills of HR professionals and the managers. These changes are: 1) HR professionals and managers had to understand what

is an information system and what does it take to plan, design and implement a human resource information system; 2) database management skills help the HR professionals understand what data to store, why and how that data can be manipulated to develop reports for purposes of decision-making (Byars and Rue, 2000); 3) managers and HR professionals have to be aware of how to specify the data technically, what the changes to the old systems are and which data are overlapping in different systems and can now be linked together (Schuler and Huber, 1997).

Information technology is a continuous process and organizations can lose a large amount of resources if they do not realize it (Barratt, 2001). Just because a task has always been done in a certain way, it does not mean that it is the best way. Information Technology changes processes, job specifications and collaboration of employees (Poutanen, 2005).

3.4 Features and characteristics of Human Resources Information Systems (HRIS)

The main feature of HRIS is having comprehensive database with the following functionalities; unique employee data, staffing issues (vacancy, approvals, hiring dates), skill set and applicant tracking, data access, sharing of data, reporting and data analysis (Doran, 2002, O'Connel, 1990, Rampton et al., 1999). In addition, there is strict demand for data security that allow only authorized users access to sensitive data. Moreover, physical security (e.g. diskette handling, and secure housekeeping), and information security (e.g. locking diskettes and hard drives, document PC applications, backup procedures, and network safety precautions are needed (Adams, 1992).

Also, data should be expandable, and responsive to changes in regulations and conditions (Castelino, 2005). Moreover, other features of HRIS should be its ability to interface with other HR systems such as Time and Attendance and payroll. It should allow easy import and export with other packages, for example, word processing, spreadsheets, graphics package, and databases. Relationally, the system should be capable of accepting global updates, for example, when salary scales are changed or when parts of the organization change their names.

HRIS should have the ability to produce standard reports and self-generated reports, plus the capability to produce cross-tabulated reports and perform 'what if' calculations. The system should be capable of storing images such as graphs, application forms, and scan in the signatures of the original standard letters. The system should have personnel record system; hence it should be able to provide selected information on an individual or group of individuals (Bee and Bee, 1999).

Other features of HRIS are that they should have both high utility and high usability. Utility is referred to the system's potential to meet performance expectations as designed by its managerial sponsors. In contrast, usability refers to how the system is experienced by actual users. McLaughlin and Skinner (2000) suggested that there are six related but distinctive characteristics of HRIS, which are; checkability, confidence, control, ease of use, speed, and understanding. The following Table No. 3.1 describes each of the six components according to McLaughlin and Skinner (2000).

Table 3.1 McLaughlin and Skinner characteristics of HRIS

Component	Description
Checkability	The system has protocols for checks and balances that ensure accuracy and verification of input and output data
Confidence	Users have confidence both in their capability to use the system and in the system itself
Control	Users have control over the operation of this system, particularly information supplied and retrieved
Ease of use	Users perceive the system as easy to use
Speed	The system can be quickly and efficiently used
Understanding	The system and its outputs are easily understandable to the user

Source: McLaughlin J., and Skinner D., (2000), "Developing usability and utility: a comparative study of the user of new IT", *Technology Analysis & Strategic Management*, Vol. 12, No. (3), pp. 413–423.

Moreover, HRIS specifications can be measured using information comprehensiveness, timeliness, and understandability. Information comprehensiveness includes relevant depth and scope, and completeness of the information. Timeliness includes updating of the information. Understandability includes ease of understanding and clearness of the information (Hong et al, 2001, Delone and Mclean, 2003; Wixom and Todd, 2005).

3.5 Advantages of adopting Human Resources Information Systems (HRIS)

Any HRIS system represents a large investment decision for organizations of all sizes. Therefore, persuading decision makers about the HRIS benefits is necessary. The common benefits of HRIS included; improving accuracy, providing timely and quick access to

information, create more useful, sophisticated results, and increase productivity (Castelino; 2005, McElroy; 1991).

In addition, HRIS generally help in saving cost and provide the capability to more effectively plan, control, and manage HR costs (Burbach and Dundon, 2004; Broderick and Boudreau, 1992). Using HRIS to automate HR information management practices can therefore reduce overhead costs by task mechanization and process automation through the substitution of the human agency of HR specialists (Tansley et al., 2001). Moreover, HRIS would reduce cost by reducing the need for large numbers of HR employees and helping employees to control their own personal information (Awazu and Desouza, 2003). In addition, cost will be reduced through using HRIS by allowing managers to access relevant information and data, conduct analysis, make decisions, and communicate with others without consulting an HR professional (Ball; 2001, Martinez; 1999,).

Beyond cost reductions and productivity improvements, HRIS potentially and fundamentally affect revenue channels. However, establishing direct and objective benefits measures is more difficult to achieve (Boateng, 2007). There are few clear cut ways to measure the value of HRIS. While there are measurements for administrative HRIS such as cost reductions in HR departments, it is difficult to measure precisely the return on investment and specific improvements in productivity within the HR departments (Mayfield, et al., 2003). Indeed, while the ideal assessment of HRIS success might include hard measures such as return on investment (ROI), the control of irrelevant variables makes this type of measurement of success difficult if not impossible (Beadles et al., 2005).

Other advantages of HRIS are shifting the focus of HR professionals from the processing of transactions to strategic HRM (Niederman, 1999). IT release HR from its traditional, bureaucratic, "paper-pushing" tasks and enable it to become a proper strategic partner in the organization (Forrer et al., 1991; Palframan, 2002; Ulrich, 2000, Anthony et al, 1996).

Increasing competitiveness by improving HR practices, producing a greater number and variety of HR operations, making employees part of HRIS, and reengineering the entire HR function are among other HRIS advantages (Beckers and Bsat, 2002; Berry 1994; Glatzer 1995).

Moreover, increasing efficiency by streamlining, automating and eliminating repetitive and routine HR functions is another advantage of HRIS (Bassett et al, 2003; Berardine, 1997). Also, HRIS can improve decision making (Kovach and Cathcart (1999), and support competitiveness (Berardine, 1997; Niederman, 1999; Sadri and Chatterjee, 2003).

In addition, HRIS help in human resource planning, forecasting of future HR needs can be created and used to develop recruiting plans, to restructure promotion paths, or to assist in planning organizational structuring, mergers, and acquisitions. Also, complex simulation models can be used to forecast outcomes under a number of alternate scenarios or HR policies, and long range planning, with information for labor force planning, (Fisher et al., 1999; Lippert and Swiercz, 2005; Kovach et al., 2002).

Among other perceived benefits through adoption of HRIS are; reducing data re-entry as data may be used immediately, allowing for fewer error in performing HR processes,

standardizing programs and procedures, reducing manpower, tracking and control of the different HR functions, and improving customer service (Ngai and Wat, 2006).

3.6 Users of Human Resources Information Systems (HRIS) applications

There are a variety of potential users of HRIS. Because user needs should drive the system, it is important to understand their different needs when developing and managing HRIS (Tannenbaum, 1990). The pool of HRIS users are a complex group with different skills, roles, desires and expectations.

There are a number of HRIS user trends that can affect the way an HRIS must be developed and managed such as; decentralization of HR information throughout the organization, increasing the use of the system, the increasing diverse needs, demands, and expertise of users, increasing complexity of the HR field, and increasing computer sophistication among HR managers and degree of the users' familiarity and understanding of computer-related issues (Cholak and Simon, 1991). Moreover, other factors stated by Tannenbaum (1990) are; expectations of users about HRIS and what it should be able to do, the level of aggregation they are interested in (the individual, the unit or division, the company, and/or the system itself), the types of information they require, how frequently they use the system, the different methods to access information, and whether they are hands-on users of the system (as programmers, application developers, data retrievers, analysts) or simply receive reports.

The HRIS is of interest to all managers in the firm. Among the most common HRIS user groups are:

(1) HR Functional Specialists

Those are HR professionals who depend on the HRIS in achieving job functions (regulatory reporting and compliance, compensation analysis, payroll, pension, and profit sharing administration, skill inventory, benefits administration etc.). Benefits administration and compensation analysis are two areas in which continual changes and heightened complexity have created a need for well trained functional specialists. In general, the increasing sophistication of HR field forces most organizations to hire a greater number of HR specialists (Tannenbaum, 1990). Thus, for the HR professionals there is an increasing reliance on the HRIS to fulfill even the most elementary job tasks such as information reporting and data administration (Kavanagh et al., 1990).

(2) Functional managers (production, marketing, engineering etc.) expect the HRIS to provide functionality to meet the unit's goals and objectives. Those managers are concerned with individual-level data regarding their employees or summary-level data regarding head counts and labor expenses. They receive information from standard reports and retrieve information on their terminals (Tannenbaum, 1990). Managers rely on the HRIS's capabilities to provide superior data collection and analysis, especially for performance appraisal and performance management. Additionally, it also includes skill testing, assessment and development, résumé processing, recruitment and retention, team and project management, and management development.

(3) Individual employees become end users of many HRIS applications. The increased complexity of employee benefit options and the corresponding need to monitor and modify category selections more frequently has increased the awareness of HRIS functionality among employees (Mcleod and Schell, 2001). Web-based access and self-service options have simplified the modification process and enhanced the usability of many benefit options and administration alternatives for most employees. Also, some organizations have established information kiosks or dial-in services for employees to enable them to query the HRIS regarding their benefits, payroll, or other data (Kavanagh et al, 1990).

(4) HR managers. Those have some knowledge of all areas of HR but have less specific expertise than the functional specialists. HR managers look for HRIS efficiency to free their time from administrative activities (e.g. payroll processing) so they can focus more on strategic pursuits. In addition, they may look for data from the HRIS to guide or justify strategic decisions. They may ask for relational types of questions that require data from across different HRIS modules. HR managers expect that HRIS are easy to be uses and to provide them with needed information in minimal waiting time (Tannenbaum, 1990).

5) Senior managers. Their computer sophistication is minimal and their HR expertise is also fairly low. They receive information from standard reports or through specific request to the HRIS specialists. Their focus is at a high level of aggregation, mainly summary reports comparing divisions/ functions or highlighting opportunities or problems through the use of variance reports. Their primary interest at the individual level is with key promotions or succession plans. They may be infrequent users of the systems but using them may impact critical decisions (Kavanagh et al., 1990).

However, no matter how compelling the technology, the information presented is still the heart of a system's value. So, it is important to consider the users, and how they employ the information system. In many of today's organizations, employees, line managers, and a variety of human resource and other staff use the information in the HRIS directly through their PCs, telephones, or in written form. This trend is likely to continue with users demanding a more active role in functions of the HRIS.

3.7 Development and implementation of HRIS in organizations

When managers and HR professionals consider designing and implementing HRIS in organization they focus on developing administrative tasks and cutting the costs. There are three phases in the process of designing and implementing HRIS:

Phase one: HRIS's needs analysis

The objectives of this phase is to determine the HR functions that should be automated, which functions are most critical, what relationship of HRIS exist to other systems, Type of data that would be kept, reports to be generated by the system, costs and benefits of the system, and who would control the system, are determined in this phase.

The needs analysis should be done to ensure that it meets growing organizational needs, uses technology to cut costs, and provides a long range view for the organization. Moreover, gaining the support of top management in taking an assessment of the organization's human resource needs and requirements is important for this stage. Many researchers confirm that if

the needs assessment is not done properly or is not well justified, the entire HRIS will fail (Walker, 1982; Rodger et. al., 1998; Gara, 2002).

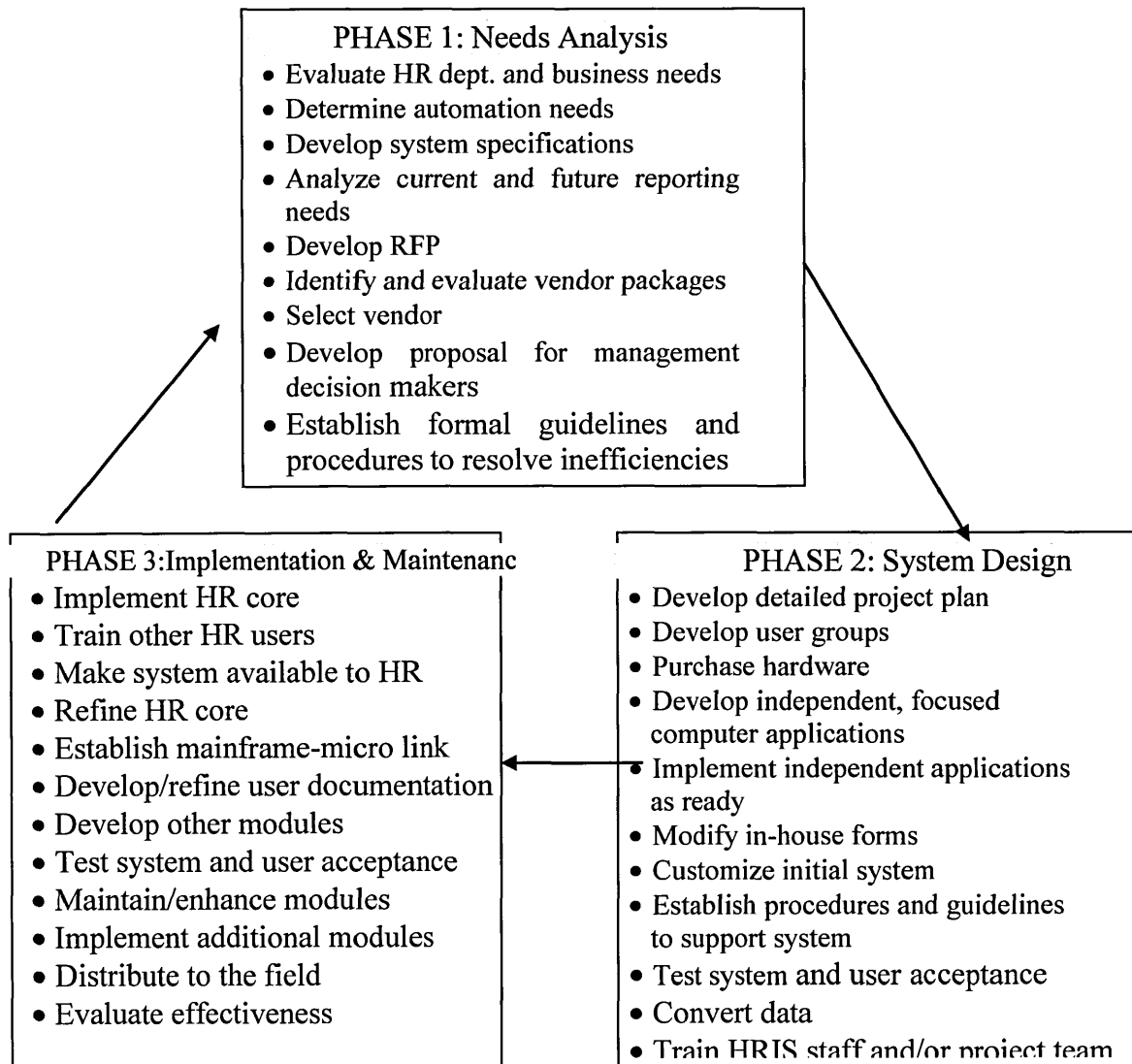
Phase two: Design process of HRIS

In this stage, the following technical considerations should be defined; description of database, hardware, software, security and control, conversion, and degree of modularity of the specific areas built into the system. The system is then tested at selected locations and evaluated. Once in operation, the system is evaluated, improvements are determined, and the process begins again. The design of the HRIS must also account for organizational and user characteristics. These organizational and user characteristics include the structure and composition of the HRIS staff, the link between the HRIS strategy and that of the larger organization, and the impact of the HRIS staff's efforts on the culture of larger organization (Kovach and Cathcart, 1999).

Phase Three: HRIS Implementation and Maintenance

At this stage the system programs are tested to insure that they operate correctly. The conversion stage then started from the old system to the newly designed one (Martin, 1995). The following Figure 3.1 summarizes the phases of HRIS's design and implementation.

Figure 3.1 Phases of HRIS's design and implementation



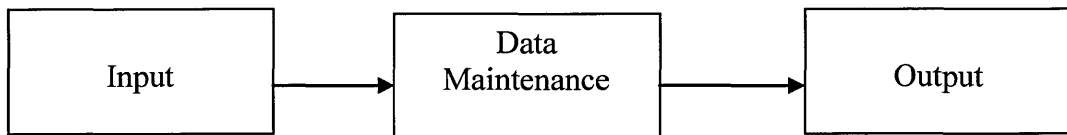
Source: Kavanagh, Gueutal, and Tannenbaum, (1990), *Human Resource Information Systems: Development and Application*, PWS-KENT Publishing Co., Boston, USA. P.98.

3.8 Components of Human Resources Information Systems (HRIS)

As any other management information systems, HRIS is considered to have three major functional components which are; Input, Data Maintenance, and Output. Simons (1983)

stated that HRIS have three components which are input, database, output. Simon's components of HRIS can be illustrated in the following Figure No. 3.2:

Figure 3.2 Components of HRIS



Source : Simon S. (1983) ,“The HRIS: what capabilities must it have?” *Personnel*, Vol. 60 No. (5), pp. :36-49.

The input component enters HR data into the HRIS. In the past, data entry was often one way. Currently, scanning technology allows computers to scan and store the actual image of an original document, including signatures and handwritten notes. After the data have been entered into the information system.

The data maintenance component updates and adds the new data to the database. In non-computerized systems, clerks do this by hand; they file paper documents and make the appropriate entries in the files. Computerized systems accomplish this function accurately and rapidly, often making the new data available only seconds after being input. This area is growing rapidly to allow for electronic data storage generated.

The most visible function of a HRIS is the output generated. To generate valuable output for computer users, the HRIS must process the input, make the necessary calculations, and then format the presentation in a way that is understandable for the user (Byars and Rue, 2000). Non-computerized systems do this by manually compiling statistics and typing reports.

However, no matter how compelling the technology, the information presented is still the heart of a system's value.

Simon's model of HRIS's components neglected some important issues, as it does not take into account the effect of environment (internal and external), the feedback, and the control process on the HRIS.

McLeod and Schell (2001) used the general format of input subsystems, database, and output subsystems for HRIS model (see Figure 3.3 below). A description of these subsystems will follow.

1. HRIS input subsystems:

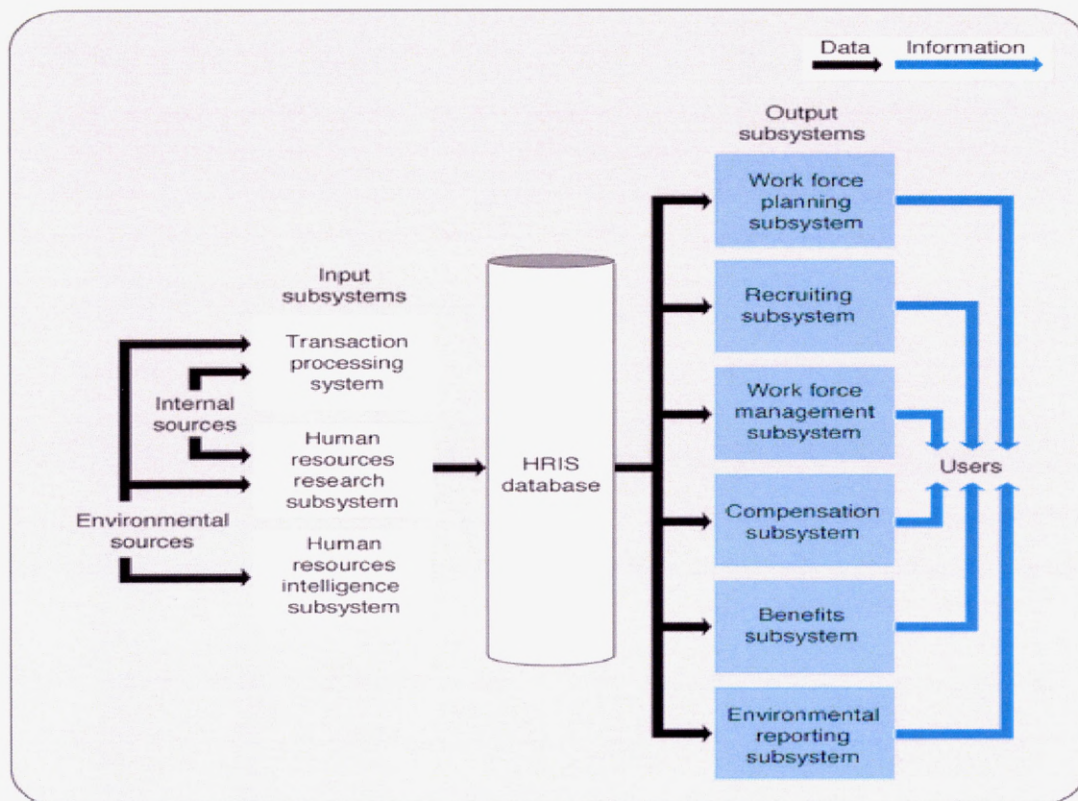
These subsystems can be divided into three components: transaction processing system which provides financial data about the firm's personnel; human resources research subsystem; which performs special studies of the firm's jobs such as; job analysis and evaluation, succession studies, and grievance studies; and human resources intelligence subsystem, which studies the current environmental influences that affect the personnel flow. It gathered information from different sources such as the financial community, suppliers, competitors, global community, and the government (McLeod and Schell, 2001).

2. HRIS Database

The increasing complexity of personnel-related issues has made it necessary to maintain the data in the computer. For the computer-based HR database, several alternatives exist in terms of contents, location, management, and data entry. The HRIS database can obtain data

describing not only employees but also organizations and individuals in the firm's environment. Some of these data are: Employee data: that is data concerning the current employees, such as address, date of birth, educational degree, salary, health plan, etc, and non employee data such as data describing dependents, beneficiaries, and survivors of the employee. HRIS databases can be located in the firm's central computers, or in HR department, or in operating division computer, or in outside service centres. HRIS units have implemented database management systems (DBMSs) to manage their HRIS databases. Data is entered into the database from several sources, such as non managers outside of HR, managers within HR, and managers outside of HR.

Figure 3.3 McLeod and Schell Model of Human Resources Information Systems



Source : McLeod R. Jr. and Schell G., (2001) Management Information Systems, 8th ed., Prentice Hall, Inc, USA..

3. HRIS output subsystems

The HRIS users usually received output in the form of periodic reports and responses to database queries. The HRIS model includes six output subsystems, each containing a number of applications. These subsystems are:

- ***Work force planning subsystem:*** includes all of those applications that help the firm anticipate its future HR needs, such as organization charting, salary forecasting, job analysis/evaluation, and work force modeling.
- ***Recruiting subsystem:*** which is used to track applicants prior to hiring, and to conduct internal searches to identify current employees who should be considered for job openings that develop within the firm.
- ***Work force management subsystem:*** which includes employee training and annual appraisal of employee performance. It is also used in making relocation decisions and in planning for the succession of key employees.
- ***Compensation subsystem:*** which is responsible for payroll system in the firm for employees such as determining merit increases, bonuses and executive compensation.
- ***Benefits subsystem:*** which includes applications that support both current and retired employees. Such benefits include stock purchase plans, defined contribution and benefit plans, and flexible benefits.
- ***The environmental reporting subsystem:*** it is the last subsystem which has the responsibility for reporting the firm's HR policies and practices to the government.

3.9 Barriers of Human Resources Information Systems (HRIS) implementation

Given the increased record-keeping requirements and current ease of using many computers, and reduced cost of computer technology relative to increased human resources costs, recent surveys have shown an increase in adopting computer-based HR systems at HR departments (Kavanagh et al., 1990). Further, from these surveys it is obvious that there are still other companies and public agencies, particularly those of medium size, have not yet installed computer systems. Among the most common obstacles to achieving the full potential of HRIS and that were reviewed in the literature by the researcher, are the following;

1. Lack of support and commitment of top management:

Since top management cannot see an immediate and direct relationship between HR functions and profit, as they can with capital and other fiscal resources, they find investing in an HRIS as a low priority. Support of top management is vital for creating a supportive climate and providing sufficient resources for the adoption and implementation of new technologies (Kovach and Cathcart, 1999).

With the active involvement and support of top managers, they would provide appropriate strategic vision and direction for the adoption and implementation of new innovations or information technologies. In addition their support would help in overcoming organizational resistance to accept HRIS in the organization. Meanwhile, as according to their important role as leaders, top managers would also be able to ensure that adequate resources will be allocated to adopt and implement HRIS. (e.g. Wong et al., 1994; O'Connell, 1990; Jones and Arnett, 1994).

2. Satisfaction with the status quo:

When offered the opportunity to have a computer-based human resources system, many HR managers respond that it is not needed since they are doing just fine with their current systems. This is one of the strongest arguments against computerizing the HR functions within an organization. The development of HRIS involves a great deal of tedious work, frequently with no additional staff to handle it. Moreover, some HR managers are defensive about revealing their operations, and a computer-based system can indeed make their operations more public (Kavanagh et al., 1990, Bsatt et al., 2003).

3. Lack of expertise of HR staff with computers and information technology and inadequate knowledge and skills in HRIS:

HRIS expertise refers to employees' knowledge of and technical competence in HRIS. HRIS staff need to be multidisciplinary and have a working knowledge of IS and all HR functions. Lack of having skills in HRIS applications and features is a major block in HRIS implementation (Elliot and Tevavichulada, 1999, Jones and Hoell, 2005, Roberts; 1999a).

In terms of individual training and preparation, most HR managers and professionals are poorly prepared to develop and implement HRIS. Lack of computer knowledge has been attributed to slowness in applying information technology to human resources departments in different organizations. HR skill level may be strongly related to the variance in attitudes toward the value of an HRIS (Kovach and Cathcart, 1999; O'Connell, 1990; Kossek et al., 1994).

4. Lack of communication and coordination between the IS and the HR functions in firms:

HRIS still requires the participation of IS department, particularly in the planning and developmental stages. In these stages, the IS department plays a major role in facilitating the computerization of human resource information systems (Cholak and Simmon, 1991; Kinnei and Arthurs, 1996).

5. Insufficient financial support and high cost of setting up and maintaining HRIS:

It is important to consider the amount of the purchasing, installing, programming, maintaining and ongoing support HRIS costs (Kanthawongs, 2004; Beckers and Bsat, 2002; Patterson, 2002; Kovach and Cathcart, 1999).

6. Resistance to change by HR staff:

Implementation of HRIS is an organizational change, and for any change, resistance is expected. Retooling the workforce not only introduces new technology, but more importantly it forces change within existing processes as well. Adopting a whole new way of doing things, regardless of the promised rewards, is discouraging for many. Potential displacement of HR staff is one of the possible changes that may be one of the reasons why some HR managers would not embrace automation more eagerly. Difficulty in changing organization culture is another possible change (McElroy, 1991; Tansley et al., 2001; Ngai and Wat, 2006, Turnbull, 1994).

7. Failure to include HR staff in developing HRIS and low level of user involvement:

This leads to low level of their commitment to these systems. Since user participation is a critical factor to successful implementation, clerical HR staff have considerable responsibility in system operations, and their support is crucial (Castelino, 2005).

8. Lack of perception of HR managers and employees about the good advantages of applying new IS on performing their jobs, or on the organization as a whole, misinterpretation of HRIS specifications, and underestimation of conversion efforts (Rodger et al., 1998; Ball, 2001; Kossek et al., 1994; Tansley et al., 2001).

In addition to the previous barriers of implementing HRIS, other influential factors found to be effective. For example, lack of suitable HRIS's applications/software for HR users (Kovach and Cathcart, 1999; Ngai and Wat, 2006), difficulty of implementing the HRIS by HR staff, unclear goals and objectives, inability of the system to solve the related system problems, improper vendor/product selection, neglecting the impact of planning on clerical procedures, unrealistic expectations by management, lack of overall plan for human resources record management, and lack of support of HR staff (Castelino, 2005).

3.10 Previous studies of Human Resources Information Systems (HRIS)

After discussing some of the main aspects and issues that are related to the subject of this study, which is Human Resources Information Systems, this section presents some selected studies that are considered to be most related to subject of this study. These studies will be presented according to their subject, studies related to HRIS usage, role and impact of HRIS, and HRIS implementations and influential factors to implementation (see Appendix 2 for

a summary of some selected previous studies). A number of previous studies in Arabic will be presented also in this section. This review of literature is important not only to present their results to be compared with those of this study, but to also describe the research tools that will be used after.

3.10.1 Studies of Human Resources Information Systems (HRIS) Usage

1) Ball (2001) reviewed the issues surrounding the use of HRIS by personnel and human resources departments in smaller organizations the service sector organizations in UK. The study examined the nature of information stored electronically in three core areas: personnel, training and recruitment, and the type of information analysis being performed. Additionally, the paper evaluated system usage in terms of previous research, its sophistication, and other debates, which apply to larger firms. The study employed empirical data, which profiled system usage by 115 UK companies in the service sector in terms of information stored on personnel, training and recruitment and information processing features used.

Ball (2001) found that the more people employed in an organization, the more likely the HR function was to hold information electronically both on the individual and the organization. Similarly, the more people organization employed, the more likely it was that information analysis with HRIS would occur. However, only half of the firms who employed less than 500 employees use HRIS and those who used only core HR modules, rather than additional training and recruitment modules. Moreover, the more people employed by the organization the less likely it was to purchase additional non-core HR modules. Consequently, organizations that had purchased HRIS were more likely to buy additional modules.

In general, the researcher concluded that HRIS had wider usage administratively, although those who used HRIS in training and recruitment were beginning to move away from this. Finally, time and attendance module was the most frequent integrated additional module.

Moreover, Ball's (2001) results indicated that organizational size is a clear determinant of, first, whether an organization has an HRIS at all and, second, whether it adopts certain modules (example, core personnel administration) over others (example, training and administration), and third how information is used and analyzed. Similarly, the type of software chosen by new HRIS users was typically a low-cost option. In-house database development was an equally popular option for smaller organization adopting HRIS for the first time.

2) Thomas et al. (2001) attempted to explore the understanding of HRIS in ten leading construction companies in Australia. The HR needs of the companies were examined by identifying the HR-related functions and activities conducted, the internal and external users of HR information, the type of data needed, and the specific purpose of those data. Twenty-three HR activities were identified and grouped into seven major functions: project management and control, strategic planning, review and analysis, employee profile, employee performance, HR development, payroll and accounting support, and information systems outside the company. The HR information for each function was established.

Thomas et al. (2001) stated that the casual nature of employment in the construction industry makes planning human asset requirements unclear exercise. He added that Human resource information systems (HRIS) offer a means of coping with these problems through

improvements in the reliability, accuracy and accessibility of the human resources (HR) information. The findings of this study facilitate the development of a HRIS for construction companies.

3.10.2 Studies of the role and impact of Human Resources Information Systems (HRIS)

1) Hussain et al., (2007) studied the use and impact of human resource information systems on human resource management professionals in UK organizations. They sought to determine whether HRIS usage was strategic, a perceived value-added for the organization, and its impact on professional standing for HR professionals. They used two techniques to investigate the IS impact on HRM; questionnaire survey and in-depth semi-structured interviews.

The results of Hussain et al., (2007) study showed that, on average, there are few differences found between SME and large company HRIS' usage. Further, the authors observed that the professional standing of HR professionals has been enhanced by the specific HRIS usage for strategic collaborating. They noted that strategic use of HRIS was increasingly the norm for senior HR professionals, regardless of company size. This has led to the HR profession providing a value-add for the company. Moreover, most HR professionals viewed HRIS as enabling software, providing timely and accurate information to HR professionals and top management in support of strategic decisions making, regardless of organization size. In addition, they observed that strategic use of HRIS enhanced the perceived standing of HR professionals within organizations; senior non-HR executives however did not share this

view. Nonetheless, these executives acknowledge that HRIS has provided value-add and increased the status of the HR profession as a whole.

2) Florkowski and Olivas-Luja'n (2006) evaluated the diffusion of eight information technologies that were transforming HR service-delivery in North America and Europe. Such information technologies include HR functional applications, integrated HR suits, IVR systems, HR intranets, employee and manager self-service applications, HR extranets, and HR portals. The study applied external, internal, and mixed-influence models of Human Resource Information Technology (HRIT) -adoption decisions of cross-sectional sample of US, Canada, UK and Irish firms.

Florkowski and Olivas-Luja'n (2006) found that overall diffusion was best characterized as a result of internal influences, fueled primarily by contacts among members in the social system of potential adopters. Similar results were obtained when controls were introduced for national setting, targeted end user and technology type. The study showed that the modest correlation between the number of acquired Information Technologies (IT) and HR-transactions automation supports the general call for more formalized HR-technology strategies at the firm level to coordinate purchasing and implementation decisions.

3) Gardner, Lepak and Bartol (2003) investigated the extensive use of IT influence on jobs in one professional occupational segment, human resources (HR). They sought to examine how HR professionals handled HR information as well as the expectations placed on them resulting from an increased reliance on IT.

The results indicated that extensive use of IT enabled HR professionals to have more information autonomy. Furthermore, extensive use of IT was positively related with HR professional spending more time on IT support activities. In addition, functional specialists reported increased time demands for both transformational activities and IT support activities. The study also suggested that IT related to two distinct aspects of HR professional roles: enabling aspects as well as time shifting aspects. The study however noted the likelihood that additional factors may influence the relationship between IT use and the job of HR professionals. The findings of the study stated that IT could lead to profound changes in the nature of professional work by reducing routine work whilst also allowing greater information responsiveness to clients and affording greater autonomy with respect to information handling.

3.10.3 Studies of HRIS Implementations and influential factors to implementation

1) Tannenbaum and DuPree-Bruno's (1994) surveyed 40 state agencies in the New York. Their study aimed to find out the extent to which contextual variables (e.g., size, climate, organizational structure, external conditions, and nature of workforce variables) relate to HRIS applications in 40 government agencies in the state of New York.

The researchers found that agency size and the external condition variables of labor availability and public scrutiny exhibited the strongest linear relationships with HR innovation. They found no relationship between innovative supportive organizational climates and adoption of innovative HR practices including employee involvement, communications, and team-building processes. Moreover, their investigation found that formalization and centralization demonstrated somewhat weaker linear effects with HR

innovation. Moreover, external favorability of labor, particularly a scarcity of labor as in today's economy, exhibited a nonlinear relationship with HR innovation.

2) Ngai and Wat (2004) presented a comprehensive literature review of human resource information systems and reported the results of the survey on the implementation of HRIS in Hong Kong. They also aimed at examining the use and applications of HRIS. Moreover, the purpose was also to identify the perceived benefits of and barriers to implementation of HRIS.

According to Ngai and Wat (2004) most Hong Kong industries perceived that the greatest benefits to the implementation of HRIS were the quick response and access to information that it brought, and the greatest barrier was insufficient financial support. Moreover, there was statistically significant difference between HRIS adopters and non adopters, and between small, medium and large companies, regarding some potential benefits and barriers to the implementation of HRIS.

Ngai and Wat (2004) revealed that the size of a company might have an impact on the achievement of a number of benefits and on the obstacles faced when implementing HRIS. They indicated that support of top management was one of the most important factors in successful implementation of HRIS. In addition, they found that a comprehensive HRIS requires a sizeable budget to implement and maintain.

3) Haines and Petit's study (1997) aimed to identify the conditions for successful HRIS at 152 members of Canadian Association of Human Resource Systems Professionals. HRIS

success was conceptualized as user satisfaction and system usage. The study emphasized a number of individual/task, organizational and system conditions that support successful implementation of HRIS.

The results of this study showed that user satisfaction negatively predicted by education level and work experience, and positively related to the presence of an HRIS unit, in-house training, documentation quality, on-line applications running, ease of use, usefulness, flexibility, and perception of increments in personal productivity. Moreover, they found out that user satisfaction is higher when HRIS supports more HRM applications. Also, they found out that system conditions such as training, documentation, number of HR applications, ease of use and the perceived usefulness of HRIS were the most important conditions of HRIS success. Other organizational conditions like the availability of internal support for users also represented critical antecedents for success.

3.10.4 Summary and analysis of previous Human Resources Information Systems (HRIS) studies

Within the last decade, the explosion in information systems related literature confirms that information technology, its implementation, use and “impact” is a very well researched area in foreign studies. The earliest studies on Information Systems for the HR function that were found in the research literatures starting from the 1980s (e.g., DeSanctis, 1986; Torrington and Hall, 1991). The earliest empirical study was conducted by Mathys and LaVan (1982).

They conducted a survey to examine stages in the development of HRIS. Nearly 40% of the surveyed organizations did not have a computerized HRIS. Other survey results similarly

revealed a relatively low implementation of HRIS (Murdick and Schuster, 1983). Later, DeSanctis (1986) also surveyed the status of HRIS and assessed its operation and relationships to the management information system (MIS) function. Martinsons (1994) compared the degree and sophistication in the use of IT for HRM between Canada and Hong Kong. He found that the use of HRIS was less common in Hong Kong than in Canada. In a recent study, Ball (2001) conducted a survey of the use of HRIS in smaller organizations. Her study and others such as Martinsons (1994) showed that smaller organizations are less likely to use HRIS.

There has been a small amount of case study and survey work but a surplus of articles from more popular personnel/HR publications containing “checklists” of how to implement and run HRIS. Recent practitioner literature examining the use of HRIS in small companies advanced the view that the issues they face regarding HRIS use are slightly different to their larger counterparts, yet research in HRIS mostly is oriented to the larger organization.

Academic work in the field of HRIS has been commonly descriptive in nature; focused more on practitioners than on the academic research community (Forrer et al.1991; Kavanagh et al., 1990; Palframan 2002; Walker 1993). Many studies concentrated on describing how automation of the HR function should be aligned with the strategic drives of the firm (Broderick and Boudreau 1992; Hannon et al., 1996). Some studies have focused on the type of applications that dominate in HRIS (DeSanctis, 1986; Broderick and Boudreau, 1992; Martinsons, 1994), the contexts needed for the successful implementation of HRIS (Yeh, 1997), comparing the use of HRIS in different countries (Martinsons, 1994; Florkowski and Olivas-Luja'n, 2006), and the conditions that support successful HRIS (Haines and Petit,

1997). In addition, studies have reported that firms which have adopted HRIS have used it mainly for administrative purposes, rather than strategically (Martinsons, 1997; Groe et al., 1996).

Many authors discussed the missed chances that results from HR's managers' lack of awareness about using IT and its good advantages on the HR functions and on the organization as a whole (e.g. Ball; 2001; Kossek et al., 1994, Rodger et al., 1998, Tansley et al., 2001). They argued that automation should provide an approach to improve the roles and activities of HR function to make a stronger involvement to the interests of the organization's staff (Olivas-Lujan, 2003). Therefore, it becomes obvious that most of the recent research in the field of HRIS has utilized a very general definition of HRIS, without focusing specifically on the types of Information Technologies (such as web-based systems, or IVR systems or integrated HR suites) used by HRM. Similarly, in Jordan, HRIS is seldom discussed in human resource articles and academic literature. This study is a timely and important one. It tries to examine the current status of HRIS, and to investigate the extent of automation that exists in HR functions within Jordanian public universities.

The efficient performance of an organization is dependent very much on the internal performance of the organization's resources. HRIS can be used to monitor the performance of human resources; an organization's output performance is directly related to the motivation and performance of its human resources (Hussain et al., 2007). A high staff turnover rate which is monitored by the HRIS and identified as occurring in particular department can indicate poor performance on the part of the employer. Also, a high turnover rate of clerical staff may indicate that management practices do not assist in providing for

career progression, personal development or training opportunities. Through the identification of poor human resource management, corrective measures may be taken which will in turn improve the organization's output performance (Adeoti-Adekeye,1997).

3.10.5 Previous studies of Human Resources Information Systems (HRIS) in Arabic

As the researcher faced difficulty in finding relevant Arabic studies in general, and in Jordan specifically, in the field of HRIS, the following section will present few selected previous Arabic and Jordanian studies that are most related to the subject of management information systems in general and HRIS in specific.

A summary for each of these studies is presented in this section in terms of aims and results of these studies. For example:

1) Al-Madhoun and Abu-Rahmeh (2008) attempted to identify the Human Resources Information systems (HRIS) efficiency within the ministries of the Palestinian National Authority (PNA) in Gaza Strip, and the factors that affect HRIS efficiency, as well as the effectiveness of personnel departments. Their findings are based on the data collected via a questionnaire distributed to the target population that includes managers of personnel departments and their deputies.

The most important findings of their study were the following:

1.The applied HRIS can provide highly precise employee information ranging from 64% to 95%. Precision degrees vary between low and medium ranging from 9% to 66% for the

information relevant to total workers, jobs and other information. As for low efficiency of HRIS relevant to quick provision of information concerning the employee, total workers, jobs and other information by ratio ranging from 11% to 66%. Furthermore, the availability of HRIS relevant to the employee, total workers, jobs and other information in variable appropriate degrees for applications, ranging from 11% to 82%.

2. Lack of technical, administrative and organizational efficiency are the most important reasons of the low efficiency of the HRIS.
3. Low efficiency of HRIS is one of the most important factors that affect the effectiveness of personnel department.

2) Al-Garaidih (2006) evaluated the impact of human resources information system in the Ministry of Education in Jordan. He developed an evaluation model to measure the degree of the impact of HRIS in the Ministry of Education in Jordan consisting of 49 categories scaling under eight main dimensions which are; employee efficiency, programming fitness, computer equipment fitness, simplicity of using the data system, efficiency of the operations in system, data fitness, data flexibility, and data privacy.

The most prominent results of the study were:

1. Degree of effectiveness of the human resources information system in the Ministry of Education in Jordan is high among the eight fields of the study.
2. There is no statistical differences among the evaluation averages to the objects of the study due to experience years, educational qualification, work nomination.
3. Among the most important problems that limit the effectiveness of the human resources information system in the Ministry of Education in Jordan are; 1) lack of direct connection

between Education Directorates and the Ministry of Education aiming of data and information exchange related to the employees; 2) Lack of continuous up dating of the employee's information; 3) Low experience of the employees working in the field of human resources information system.

3) Jaradat's (2004) study aimed to investigate HRIS applications in different HRM functions in Jordanian banking sector. Also it aimed to identify the obstacles that hinder applying human resource information systems, the extent of HRIS effectiveness, and the relationship between the financial performance of banks and HRIS effectiveness. Jaradat's study included population of all working managers in human resources departments at 20 banks in Jordan.

The study revealed the following findings:

1. HRIS applications were used in four functions of HRM (performance appraisal, training and development, recruitment and selection, and HR planning) at Jordanian banks with a moderate level.
2. There were a number of obstacles that hinder applying Human Resource Information Systems such as lack of awareness of HR staff about HRIS and its advantages, lack of training courses in the field of HRIS for bank staff, and the HRIS is not updated frequently.
3. There was a statistical significant impact of performance appraisal System, training system, selection and appointment system, and human resource planning system on effectiveness of Human Resource Information Systems.
4. There was a statistical difference in effectiveness of human resource information system between Jordanian banks due to bank size, date of establishment, and number of branches.

5. There is no statistical relationship between financial indicators (e.g. return on investment and return on stocks) and effectiveness of human resource information systems in Jordanian banking sector.

4) Abu Ramadan's (2000) study evaluated the role of management information systems in administrative decision making at the University of Jordan.

The main conclusions of the study were:

1. Management information systems were employed in administrative decision making at the University of Jordan ranging between middle and high degree.
2. There was a relationship between the correctness, the suitability, and the quantity of information that is provided by MIS at the University of Jordan and the employment of this system in administrative decision making.
3. There was no relationship between the timing of the information provided by MIS at the University of Jordan and the use of these systems in administrative decision making.

5) Doughman (1997) analyzed the existing HRIS in one of the Jordanian textile companies, which deals with the European and American markets, and then design a new proposed system for this company.

Results of system's analysis showed that not all data inputs of the system were used to generate the output. Also, the reports that were generated by the system were not enough to give the required information needed to help the system achieve its goals. Moreover, the

analysis of the system revealed some mistakes in its processes of the system, where some of these mistakes were due to the process design, and some due to the systems design. Based on the analysis of the existing system, the researcher designed a new proposed HRIS system. Inputs, outputs, processes, and cost of the new proposed system were determined and explained in the researcher's study.

6) Al-Maqableh's (2003) study identified the status of the management information systems in the Directorates of Education in Jordan in terms of information accuracy, flexibility, appropriateness, timing, and flexibility. Also, the study aimed to investigate the degree of application of management information systems to managerial functions by heads of departments in these directorates.

Among the results of the study are the following:

- The management information systems which were applied by heads of departments in the directorates of education in Jordan were characterized by a high degree of information accuracy, appropriateness, comprehensiveness, appropriate timing and flexibility.
- The degree of application of management information systems in six managerial functions (which are directing, evaluating, planning, decision making, organizing, and controlling) was very high.
- There were statistically significant differences in the extent of applying of management information systems in managerial functions attributed to academic qualifications in favor of higher degrees' holders (doctorate holders).

3.10.6 Summary of previous studies in Arabic

Through reviewing the literature of previous studies in Arabic in the field of human resources information systems, it was found that they have different aims and focus. Some studies aimed to investigate the efficiency of using HRIS (e.g. Al-Madhoun and Abu-Rahmeh, 2008 study), while other studies aimed to evaluate the role of HRIS in administrative decision making process (e.g. Abu Ramadan 2000 study). The impact and effectiveness of HRIS also were investigated in some Arabic studies such as Algaraidih (2006) study.

The previous Arabic studies were conducted in public sector institutions (Al-Madhoun and Abu-Rahmeh, 2008; Algaraidih, 2006; Al-Maqableh, 2003) while other studies investigated HRIS subject in universities (Abu Ramadan, 2000). Other studies were conducted in private sector institutions such as Doughman's (1997) study.

In addition to the previous mentioned Arabic studies, there are other Arabic and Jordanian studies that investigate the effectiveness of information systems used in registry units in public Jordanian universities (Al-Mashaeleh, 1995), and the reality of HRIS practices in Jordanian industrial sector (Habib-Allah, 2006). The impact of using MIS on the HRM functions in Jordanian public corporations was investigated in Tartara's (2006) study.

Al-Hashem's (2004) study investigated the effects of output of MIS on the efficiency of management in Jordanian public and private universities. One of the earliest studies in HRIS was conducted by Bajaber and Al-Mufti (1987) which investigated the use of Human Resources Information Systems and its effect on effectiveness of personnel in Saudi Arabia.

The researcher found that there are very few number of Arabic studies that focused on implementation of IT in HRM various functions. There is no comprehensive study that focused on HRIS adoption and implementation in many types of private institutions such as banks or industrial/service institutions.

It is noted that there is lack in studies related to the subject of HRIS in Arab countries in general and in Jordan specifically. One possible reason for this lack may be due to the fact that HRIS is a new subject for Arab countries. Over the past two decades a large amount of literature has been published regarding IT adoption in developed countries. In contrast, few studies have concentrated on developing countries, in general, and Arab countries, in particular. This is due to the relatively recent and somewhat narrow utilization of IT in these countries (Al-Dahhan and Makhamreh, 1990; Al-Shammari and Al-Shaikh, 1993).

3.11 Conclusion

Human Resources Information Systems is an effective and efficient means for integrating human resource management and Information Technology. This was common with all the various definitions of HRIS.

Meanwhile, in this chapter it was attempted to identify and review the literature streams that more directly aid our understanding of aspects related to HRIS. Issues such as development of Human Resources Management (HRM), the use of IT in HRM, research studies and relevant literature on Human Resources Information Systems (HRIS) were reviewed.

The history of HRIS started in the late 1950's with payroll information and moved to automated employee data. In the 1990's new technologies conquered the information and communication technology field (ICT). The focus of HRIS was more on record-keeping and organizational effectiveness.

The new millennium has brought more technical solutions for information system design and also for HRIS. The purpose of the HRIS is to store, manipulate and provide data on employees. The usage of human resources information systems leads to a great development in the concept and practice of human resources management functions. It makes greater impact on staffing, training, performance appraisal, communication, payroll and compensation, and on general administrative activities of human resources departments.

HRIS claim to add-value to the organizational competences, help reduce costs, increase flexibility and provide enhanced service delivery to customers and organizational stakeholders. The range of activities associated with HRIS varies from simple electronic record keeping, to more sophisticated decision-making models that integrate corporate and human resource strategies.

The composition of HRIS includes input, data maintenance, and output. The three major groups that make use of HRIS are HR professionals, managers in functional areas, and employees.

However, there are different barriers that stand in front the implementation of human resources information systems in organizations. In order to increase the effectiveness of human resources departments, these barriers need to be taken into consideration.

In the next chapter an overview of Jordan and its higher educational system, and the status of HRIS in Jordan will be presented.

CHAPTER FOUR

JORDAN - HIGHER EDUCATION SYSTEM, HRM, and HRIS in JORDANIAN UNIVERSITIES

4.1 Introduction

This chapter provides an overview about economic, political and social system in Jordan as the context in which higher education system exists. It also reviews the educational system in general and the higher education system in particular. The chapter also provides description of public and private universities in Jordan in terms of faculties, staff and students. Moreover, in section five a discussion of the practice of Human Resource Management in Jordan in general, and in Jordanian public universities in particular is presented. A number of selected studies about HRM in Jordan is presented in section six of this chapter. In addition, a review of the information technology sector in Jordan is presented in section seven. The chapter also includes in section eight the development of using HRIS in Jordanian public sector, components of these systems and role and activities of computer centres at universities.

4.2 The socio-economic and political context in Jordan

The Hashemite Kingdom of Jordan is a small country located at the heart of the Middle East. It is situated in the southeastern coast of the Mediterranean Sea (as Figure no. 4.1 illustrated). The unique location of Jordan has given it strategic and economic importance, making it a vital trading and communication link between east and west. The country shares borders with Syria to the north, Iraq to the east, Saudi Arabia to the east and south, while Palestinian National Authority and Israel lie to the west (USAID, 2006). The area of Jordan is about 92,300 square kilometers (57,354 square miles). Amman is the capital and largest city of Jordan (Department of Statistics, 2008).

Figure 4.1 Regional Map of the Hashemite Kingdom of Jordan



Source: Department of Statistics (DOS), (2008), Jordan accessed online http://www.dos.gov.jo/home_e.htm on January 2009.

The estimated population of Jordan in November 2008 was 5.8 million (Department of Statistics, 2009). Most of the population is between 15 and 64 years old (59.4%), and only 3.3% are over 65 years of age. Ethnically it is estimated that 98% of the population is of Arab origin. The remaining 2% are divided between those of Circassian and Armenian descent (USAID, 2006). The great majority of the Jordanian people are Sunni Muslims, estimated at 92% in 2001, with an additional 2% divided between Shi'a Muslims and Druze. The remainder of the population consists of 6% Christians. Islam is the state religion and Arabic is the official language, but English is used widely in commerce and government (Microsoft Encarta Online Encyclopedia, 2003). The following table includes the distribution of estimated population according to gender and governorate (male and female) at end year 2008 (Department of Statistics, 2009).

Table 4.1 Estimated Population of Jordan by Governorate and Gender, at End-year 2008

Governorate	Male	Female	Total	
			No.	%
Amman	1164300	1100800	2265100	38.7
Balqa	203500	188400	391900	6.7
Zarqa	450900	420700	871600	14.9
Madaba	75300	71000	146300	2.5
Irbid	533200	508100	1041300	17.8
Mafrq	142500	132500	275000	4.7
Jarash	90300	85200	175500	3.0
Ajlun	68500	66000	134500	2.3
Karak	115500	112700	228200	3.9
Tafiela	41700	40200	81900	1.4
Ma'an	58300	52900	111200	1.9
Aqaba	71000	56500	127500	2.2
Total	3015000	2835000	5850000	100.0

Source: Department of Statistics (DOS), Population by Governorate and Gender, Department of Statistics, Jordan. Accessed online at http://www.dos.gov.jo/sdb_pop/sdb_pop_e/inde_o.htm, on January, 2009).

4.2.1 People in Jordan

Jordan has been home to many successive civilizations. Each group introduced new elements into the country's religion, language, and architecture. Except for the Crusader period, Jordan has remained under Arab rule from the 7th century to the beginning of the 16th century, by which time the Turkish Ottoman Empire had expanded to include many Arab Middle Eastern countries (USAID, 2006). The population represents a mixture of traditions. To be a Bedouin, or to come from Bedouin stock, is a matter of pride for many Jordanians. Bedouins are known as hospitable people of strong character, with a deep sense of family and tribal pride.

4.2.2 Economic overview

Jordan is a small Arab country with inadequate supplies of water and other natural resources such as oil and gas. The Persian Gulf crisis, which began in August 1990, aggravated Jordan's already serious economic problems, forcing the government to shelve the International Monetary Fund (IMF) program, stop most debt payments, and suspend rescheduling negotiations (USAID, 2006). Declining aid from Gulf Arab states, worker remittances, and trade led to serious balance-of-payments problems, poor GDP growth, and increasing demand for government resources. The economy rebounded in 1992, largely due to the influx of capital repatriated by workers returning from the Gulf. After averaging 9% in 1992-95, GDP growth averaged only 2% during 1996-99 (Seijaparova and Pellekaan, 2004). Debt, poverty, and unemployment are fundamental ongoing economic problems, but since assuming the throne in 1999 King Abdullah II has undertaken some broad economic reforms in a long-term effort to improve living standards. This reform includes partial privatization of some state owned enterprises. The government liberalized the trade regime sufficiently to secure Jordan's membership in the World Trade Organization (WTO) in January 2000, an association agreement with the European Union (EU) 2001 (entered into force in May 2002) (UNDP Report, 2007-2008). It sets more detail the specific areas in which the objectives of the Euro-Mediterranean Partnership can be developed bilaterally. On this basis, the EU-Jordan European Neighborhood Policy Action Plan was adopted in 2005, for a period of three years. In addition, Jordan had a free trade agreement with the United States in 2002. These measures have helped improve productivity and have put Jordan on the foreign investment map.

Three important external factors affected the Kingdom's economic and social development. The first was the oil crisis in the early 1990s that, despite obtaining about half of its imports

on concession terms, still increased the average price of Jordan's oil imports because it is one of the few Middle East countries that does not produce oil.

The second was the 1991 Gulf War that completely disrupted normal trade between Jordan and Iraq, Jordan's traditional trading partner. This war negatively impacted Jordan's economy, given Jordan's extensive trade relations with Iraq and dependence on Iraq for discounted oil. In addition, most Jordanians employed in the Middle East and elsewhere lost their jobs and were forced to return to Jordan (USAID, 2006).

The third was the 1999 Israeli/Palestinian conflict that disrupted normal trade and movement of people to and from the West Bank and directly affected many Palestinians who live in Jordan. These events provide the backdrop for the evaluation of the World Bank's program in assisting Jordan to reduce poverty and improve health and education services during the nineties and in 2000/2001. Several Gulf nations, as well as the United States, have provided temporary aid to overcome those challenges. Jordan's position in the Middle East makes it a crucial actor in mediating and supporting regional efforts for peace while rendering it highly dependent on geo-strategic developments which may have an impact on its economy (Seijaparova and Pellekaan, 2004).

The Jordanian economy performed well in the last few years in a more challenging external environment. It had witnessed fiscal adjustments in the last few years, reflected in reduced outstanding external public debt as percentage of GDP, (e.g. it decreases from %46.8 in 2007 to %25.6 in 2008), decreased budget deficit as % of GDP (e.g. decreased from %5.5 in 2007 to %4.9 in 2008), increased size of new investments (local and foreign) (e.g. from JD1.697

milliard in 2007 to JD2.268 milliard in 2008), the encouragement of tourism (e.g. tourism revenues increased from JD1.461 in 2007 milliard to JD2.097 milliard in 2008), decreased unemployment rate (e.g. decreased from %14.0 in 2007 to %12.7 in 2008) (Ministry of planning and International Cooperation, 2009).

However the rapidly rising world fuel and food prices put pressure on the fiscal and external accounts in the second half of the year 2008. The inflation rate grew rapidly to reach 14.9% at the end 2008. In the UNDP Human Development Index (indicators 2007-2008) Jordan ranks 86th out of 177 countries which puts it in the first quarter of the Medium Human Development countries(UNDP Report, 2007-2008). It is also the highest ranked of the Arab countries. According to official Department Of Statistics (DOS) information the percentage of the population below the poverty line (JD560 per year) is 13%. It is clear that the number of the families around the poverty line has risen sharply in recent years. According to the recent household survey issued in 2007, the gap between rich and poor families is widening. The poorest are becoming poorer and the middle class income group is being forced to reduce its spending and make use of its savings to support the increasing cost of living (+19.7% of the Consumer Price Index in 2006) (European Training Foundation, 2009).

Although a national interest in fighting poverty has been declared, it is puzzling that the way economic reforms have been conducted does not seem to have favoured poverty reduction. With a population of 5.6 million, Jordan has one of the highest fertility rates in the world – about 3.7% (4.2% in rural areas), high demographic pressure with the under 15 years age forming some 37.3% of the population and an average age of 20.3 years. It is estimated that 60,000 new entrants are joining the labour market on a yearly basis, posing a major challenge

for the government and society at large. In addition, an estimated 500,000 Iraqi refugees have entered Jordan since 2003. Most of them are highly dependent on savings or transfers. But if the situation does not improve the vast majority of them will be competing with the less qualified Jordanian workers (European Training Foundation, 2009).

Currently, Jordan faces a number of challenges: it must generate sufficient new jobs at appropriate levels for the burgeoning number of new entrants to the labour market, projected to grow at 4% annually; it must increase the skills of the labour force to support greater competitiveness of Jordanian enterprises (particularly micro and small enterprises) in coping with new market requirements as required by economic integration (Mayen et al., 2006).

4.3 Educational system in Jordan

Education is the key to the development of a country into a knowledge economy. That is as true of Jordan as it is of others, and it has been well recognized by Jordan's leaders. Accordingly, Jordan is undergoing a substantial process of reform in its higher education system. In this process, it is supported by the World Bank, which is sponsoring a number of programs aimed at improving the nation's human resources. In particular, it is supporting the Higher Education Development Project (HEDP), which is intended to enhance the quality, relevance and efficiency of the higher education system and to improve its governance (ESCWA Report, 2003).

4.3.1 Definition and scope

Education is one of the most important things that the Jordanian government and people care about. Jordanian people believe strongly in Education and they think that is the key for the future. The Education system in Jordan is one of the best systems in the Middle East. It concentrates a lot on the person and it tries to take care of the children to put them on the right start (Ministry of Higher Education and Scientific Research, 2004).

The Jordanian society is often described as students' society as almost one third of the entire population are students. Specifically, Jordan has a student population of 1.4 million (122,000 in secondary schools), of which 840,000 are enrolled in public schools. The average educational attainment of the adult population range from 9.5 years in 2001 to 10 years in 2005 (Khasawneh et al., 2008). There has been a continuing but slow increase over the last five years due to relative increase of the proportion of the population attaining secondary and tertiary education. Nearly 72% of the adult population attained basic, secondary or tertiary education. A further 9% on average attained post secondary education. The largest proportion of the adult population has basic education as the terminal degree, but the percentage of those attaining higher levels is increasing with time (Khasawneh et al., 2008).

The Jordanian education system is divided into the following three stages:

- *Pre-school Stage*: a non-compulsory stage run by the private sector only. Children from the age of 3 and over can be admitted to kindergartens based on the parents' decision since it is not a mandatory stage in the Jordanian education system.

- *Basic Education Stage*: a compulsory stage of ten years ranging from the first grade to the tenth grade. The subject matter taught is unified across the Kingdom and pupils are evaluated annually. Based on the academic achievements of the pupils in the 8th, 9th, and 10th grades, they are assigned to one of the various streams in the next stage. If the student elects to end his or her education at this stage, a certificate would be issued for the purposes of employment. However, it would not qualify the student for entrance to a college or university.

- *Secondary Education Stage*: a two-year stage that ends with sitting for the general certificate examination, or the *Tawjihi*. According to the grade the student achieves on the *Tawjihi*, he or she may qualify for different colleges and universities. The Ministry of Education (MOE) issues transcripts and certificates to the students who pass the *Tawjihi*, who then move on to one of three main streams, a scientific, literary, or vocational specialization. The scientific stream includes such subjects as math, biology, chemistry, and physics, in addition to religion and language. The literary stream, on the other hand, includes language grammar, literature, literary criticism, religion, and a choice of one science class (MOE, 1996). The MOE is responsible for planning, implementing, upgrading, and evaluating all the educational components of public education for students (e.g., young, adult special education), teachers, and staff, including curricula, facilities, literacy centers, special education standards, and so on.

The development of Jordan's educational system can only be described as dramatic. Education indicators in Jordan are on average among the highest in the region. This is, to a large extent, due to public expenditures on education that are about 6.8 percent of GDP which is a high level of expenditure compared with other countries in the region and most

industrialized countries (Seijaparova and Pellekaan, 2004). Expenditures on public universities in Jordan amounted, on average, to 0.79% of GDP between 2003 and 2005 (Khasawneh et al., 2008).

Education expenditure as a percentage of GDP shows how a country prioritizes education in relation to its overall allocation of resources such as health care, social security, defense and security. Expenditures on public institutions of higher education in Jordan consist of tuition fees paid by students or their sponsors, public spending (government allocations), and donations from private entities (Al Khatib, 2006). Two public Jordanian universities, Jordan University and Yarmouk University, have also benefited over the last few years from returns accrued to their modest investment funds.

The Government's emphasis on education derives from its policy that the development of human capital (the Kingdom's main resource) is essential to prepare Jordanians for foreign as well as domestic employment (Seijaparova and Pellekaan 2004). Jordan has to focus on human resource development (HRD) to survive. Improving the skills and knowledge of employees in both private and public sectors is one of the greatest important priorities (Branine and Analoui, 2006). This policy was confirmed for primary and secondary education in a high profile national conference in 1987 (Seijaparova and Pellekaan, 2004).

Jordan has made significant strides in education in recent decades. Starting from almost nothing in the early 1920's, It has forged a comprehensive, high-quality system to develop the human capital of its citizens. In Jordan, access to basic education has been emphasized in all the country's development plans. Every village and community with 10 or more school-

going children is provided with a school, enabling citizens in poor and remote areas to gain access to education (USAID, 2006).

Education in Jordan is free for all primary and secondary school students, and compulsory for all Jordanian children between the ages of 6 and 15. It is estimated that Jordan has achieved over 95% enrollment for its school age children, as compared with only 47% in 1960. At the secondary level, about 80% of the male children and 78% of the female children go to school. Some 91% of the Jordanian population age 15 or older was literate in 2003 (Al Khatib, 2006).

In 1988, the Jordanian government launched on an ambitious ten-year, \$1 billion plan, to improve the quality and relevance of education in the nation by restructuring the curricula to focus on developing students' problem solving and critical thinking skills, and linking academic knowledge to real life (USAID, 2006). This was followed by another four-year plan ending in 2002 which focused on upgrading teachers' skills, school administration, educational information systems, pre-school education and education for children with special needs. The goal of the government's system reform initiative is to create and administer an educational system based on excellence, dedicated to high standards and contributing to the nation's wealth in a global knowledge economy. The reform targets all sectors of basic education, vocational training and non-formal education, as well as teachers, students, managers and educational institutions. Issues of structure of education, e-learning and computerization, examinations and evaluation, certification and training of teachers, curriculum and educational materials development, early childhood development, administration and organization, and financial administration are the main aspects of the reform process. Thus, anticipated results of reforms in education sector include an

improved curriculum, better trained teachers, and a standards and accreditation system that would ensure high quality, consistency, and competitive educational opportunities (Mayen et al., 2006).

The kingdom's education record has proven impressive by international standards, and results from the foresight of the country's leadership, who saw and continue to see the need to focus on building the country's human capital to meet the challenges of the future.

The structure of the educational system in Jordan consists of a two-year cycle of pre-school education, then ten years of compulsory basic education. At the end of grade 10, the grades of each student for the previous three years (8th, 9th, and 10th) are calculated to determine in which secondary stream that student can continue. Usually, the student's wishes are taken into account, but the final decision rests with the Ministry of Education. The secondary cycle of two years is divided into two main streams. The first is the comprehensive secondary education stream that ends with a general certificate of secondary education examination, the *Tawjihi*, and consists of a common core curriculum and optional specialized academic or vocational courses. The second is the applied secondary educational stream, which consists of specialized vocational courses; these prepare skilled labour through apprenticeship programs run by the Vocational Training Corporation or the Ministry of Education (Mayen et al., 2006)

4.4 Higher education System in Jordan - Background

The history of higher education in Jordan is brief. After his coronation in 1953, late King Hussein created a Royal Education Commission to make recommendations to the Crown for the development of the education system. The commission's first priority was basic literacy. Education Law No. 20 of 1955 made education compulsory for six years; Education Law No.

16 of 1964 extended the period to nine years. The resulting expansion of compulsory and secondary education created a college market for training teachers, with an increase in enrollment in teacher training institutes from 46 in 1952 to 7,000 in 1976. Since 1950, and even after, higher education developed within the country, advanced study abroad was the principal technique used by the government to resolve shortages of educated personnel (Burke and Al-Waked, 1997).

Higher education broadly defined consists of formal university education (private and public) and post-secondary higher technical education, which generally takes place in Community Colleges. The terms “higher education”, “universities” and “tertiary education” are used interchangeably. Many countries are now embracing the concept of "tertiary" education, and even "life-long" education. It is assumed that Jordan should follow the definition of the United Nations Educational, Scientific and Cultural Organization (UNESCO), which in its definition of “Tertiary Education” includes both.

According to “International Standard Classification of Education” (ISCED) levels ,as it is designed by UNESCO, tertiary education includes programs that are largely theory-based and are anticipated to provide adequate qualifications for gaining entry into advanced research programs and professions with high skill requirements. Moreover, according to ISCED, tertiary education includes programs that concentrate on practical, technical or occupational skills for direct entry into the labour market. So, on this definition, everything that takes place in both universities, public and private, and in community colleges constitutes tertiary education (Bekhradnia, 2006).

The higher education sector serves 3 major purposes in the Jordanian economy in addition to the traditional role of preparing qualified citizens for employment: 1) it attracts foreign students that bring with them valuable foreign currency, 2) it performs research and development initiatives to create new knowledge and technology, and 3) it serves Jordan's industries by preparing qualified technical and management professionals (Dahlman, (2007).

Higher education in Jordan consists of formal university education (4-6 years) and the community colleges (2 years). While formal university education focuses on traditional academic fields, the community colleges are intended to provide more practical skills that are needed in the labour market (though in this respect the theory and practice have been increasingly in conflict). Tertiary graduation rate in all levels has increased constantly over the years from 20% in 2001 to 35% in 2005 for Bachelor; from 2.9% to 4.3 for Masters and Diplomas, from 0.16 to 0.46 for Ph.D. over the same period (Khasawneh et al., 2008).

Formal public higher education in Jordan began in 1951 with a one-year post-secondary Teacher Training Institute. University education began with the establishment of the University of Jordan in 1962. The number of universities increased slowly thereafter, with 4 public universities created in the 1990s. Today there are 10 public universities. Faculty (academic staff) within public universities increased from 2600 in 1996-97 to over 4000 in 2005-06 (Bekhradnia, 2006).

Non-university education is offered at Community Colleges, which were created in 1981 by converting and expanding the existent Teacher Colleges. These institutions are meant to offer specialized, career-oriented training, and prepare their students for work in middle-level

professions. All community colleges are supervised by and affiliated to Al- Balqa Applied University, which is a Jordanian public university. Currently, there are 52 community colleges (half public and half private). Almost all the colleges (private and public) were established in the decades prior to the 1990s (Abu-El-Haija, 2003).

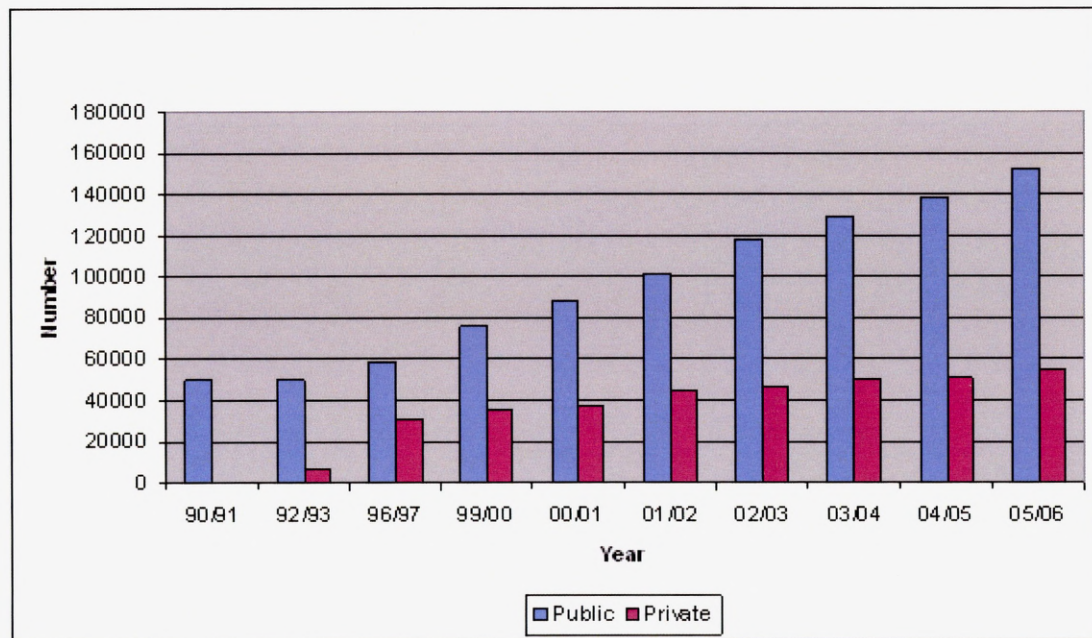
Private universities have also expanded rapidly, beginning in 1990-91 with the establishment of Al-Ahliya Amman University. In 1991 alone, 4 new private universities were established, and by 1999, there were 12 private universities with about 1500 faculty. Currently, there are 16 private universities (Ministry of Higher Education and Scientific Research, Jordan, 2008).

To complete the picture, overseas universities have the right to operate in Jordan if they do so in partnership with a Jordanian university, and subject to agreement of the Higher Education Council. At present there are nine such programs, mainly at postgraduate level, involving nine different overseas universities and 5 Jordanian universities.

As shown in Figure 4.2 below, the number of students enrolled in public universities nearly doubled from 40,000 in 1989-1990 to nearly 90,000 in 2000-01, and they were over 152,000 (Bachelors and postgraduates) in 2005-06, and 160,000 student in 2006-07. The number of students in private universities increased even more rapidly from 7000 in 1992-93 to over 37,000 in 2000-01 and nearly 56,000 in 2005-06 (MOHESR, 2008). The increase in the number of private university students in part reflects the restrictions on the number of publicly funded places available at public universities. In addition, public universities are permitted to take limited numbers of students who pay double fees (parallel students) over

and above the students provided for with state subsidy. The number of such students currently stands at over 20 per cent of the student population.

Figure 4.2 Enrolled students in Jordanian Universities (Public and Private)



Source: 1990-91 – 2004-05 – Ministry of Higher Education and Scientific Research (MOESR), Jordan.

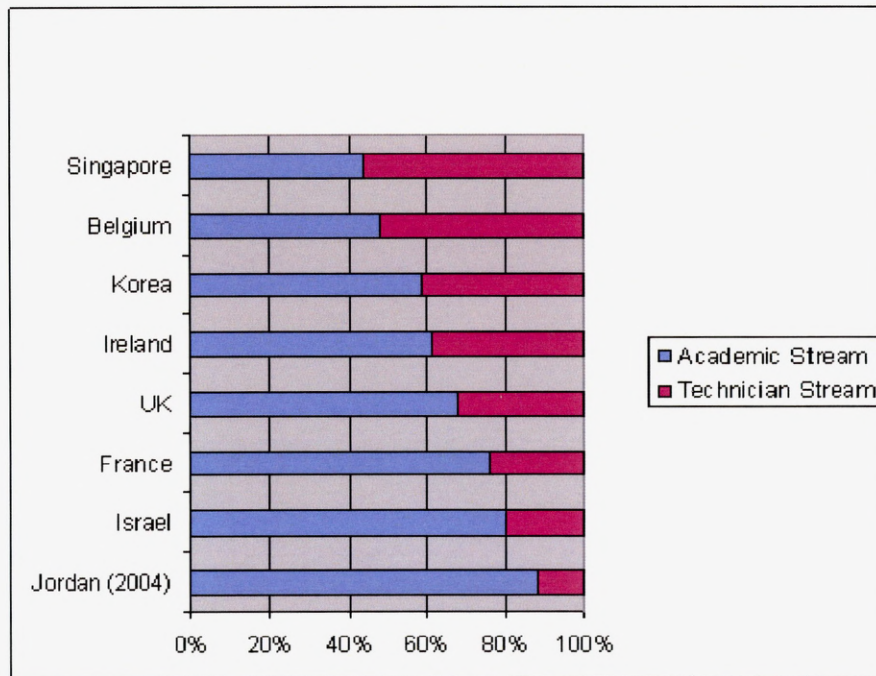
Source: 2005-06 - “Human Resource Indicators in Jordan for the Year 2005-06” – National Center for Human Resources Development

Female enrollments increased at an even faster pace, from over 23,000 bachelors students in public and private universities in 1992-93 to over 97,000 in 2005-06, increasing the share of women in total enrollment from 41.8 per cent in 1992-93 to over 50% in 2005-06 (National Center For Human Resources Development, 2007).

The number of students enrolled in community colleges was nearly 25,700 in 2005-06, though this has shown a decline in recent years. In 2005 community colleges accounted for nearly 22 per cent of secondary school graduates and universities 70 per cent (Ministry of

Higher Education and Scientific Research, 2008). It does indeed appear that Jordan has a relatively low proportion of its students attending community colleges, compared to other countries, as figure 4.3 below shows.

Figure 4.3 Comparison of the proportion of students following technical and academic levels programs in different countries



Sources: Ministry of Higher Education and Scientific Research, (2006), Statistics, (MOHESR), Amman, Jordan,

This is a trend that appears to represent a move away from practical and technical education towards a more academic orientation, which in turn has caused some concern since it coincides with an apparent decline in the employability of the outputs of Jordanian higher education. On the other hand, it has to be said that the data appear to show that unemployment is no greater among community college students than university graduates, and may actually be less. These are official statistics, but need to be treated with a little caution. The pattern shown here is surprising since, if the data are to be believed, graduates

have the highest level of unemployment, which is the reverse of the normal pattern in other countries .

4.4.1 The structure of Higher Education System in Jordan

The Jordanian Council of Higher Education was established in 1982 in response to the need for regulation and planning of higher education policies and coordination among Jordanian public universities. The Council formed the core for the Ministry of Higher Education & Scientific Research, which was established in 1985. The Ministry and the Council undertook the mission of applying the government's educational policies at post-secondary level, and of legislating up-to-date laws on higher education. The Ministry of Higher Education was canceled in 1998, but was re-established in August 2001 according to instructions by His Majesty King Abdullah II, and renamed as The Ministry of Higher Education and Scientific Research (Abu El-Haija, 2003).

4.4.2 The New Higher Education Law in Jordan

Consequently, a new Law on Higher Education was endorsed: Law no. 41 for the year 2001, which cancelled the previous Law. By this law, a Ministry of Higher Education & Scientific Research was established, and took over supervising all higher education issues, and includes the following Councils:

- The Higher Education Council (which comprises the Higher Committee for Scientific Research)
- The Accreditation Council .

The new Higher Education Law assigned the Ministry of Higher Education & Scientific Research the following prominent functions:

- 1- Implementing the general policy of higher education in Jordan.
- 2- Coordinating between higher education institutions and public and private centers for consultations and research.
- 3- Signing cultural and scientific agreements in the field of higher education and scientific research.
- 4- Representing Jordan in international conferences on higher education.
- 5- Recognizing foreign institutions of higher education and equating certificates issued by them.
- 6- Setting student eligibility rules for scholarships inside and outside Jordan.
- 7- Following up the affairs of Jordanian students abroad through Jordanian cultural counselors (Abu- El-Haija, 2003).

The Law gave the Higher Education Council the following main functions (MOHESR Report, 2004):

- 1- Formulating the general policy of higher education in Jordan.
- 2- Endorsing the establishment of new higher education institutions.
- 3- Issuing instructions concerning administration and finance of the higher education sector.
- 4- Coordinating between local higher education institutions.
- 5- Evaluating the quality of higher education in terms of sufficiency and efficiency.
- 6- Determining the basic admission requirements at higher education institutions.

The Accreditation Council is given by the same law the following major duties:

- 1- Defining the regulations for the accreditation of higher education institutions, amending and developing them in light of the general policy of higher education.
- 2- Supervising the performance of higher education institutions and their commitment to applying the rules of accreditation.
- 3- Appointing the specialized committees needed to carry out the tasks of the Accreditation Council.
- 4- Ensuring that institutions of higher education reach their pre-defined goals through continuous evaluation of their programs.
- 5- Proposing schemes for regulations and rules of the Council's duties.
- 6- Publishing the decisions the Council takes concerning accreditation in the official media (MOHESR Report, 2004).

Both public and private universities operate under specific Jordanian laws: for public universities the Jordanian Universities Law No. 29 of 1987 and for private universities the Private Universities Act No. 19 of 1989 (Burke and Al-Waked, 1997). Private universities also fall under the regulation of the Companies Law as public or private shareholding companies. According to law, each public university has a council of deans that is headed by the president and runs the university, a faculty council for each faculty or college, and departmental councils composed of the academic staff of a department. Each university also has a university council (advisory rather than administrative) that includes lay representation and interacts with the public. In addition each public university has government teaching staff regulations specific to the institution that cover matters such as academic freedom. In contrast, the highest governing body in private universities is the university's board of trustees rather than a president's council. There are no regulations that establish employment

conditions. The regulation of higher education that does exist is provided by the Higher Education Council. The council is chaired by the minister of education and higher education, and its additional membership consists of the ministers of planning and culture, the presidents of the public universities, representatives from the community colleges, and six lay members (Khasawneh et al., 2008).

The Higher Education Council has major power over private universities. The council must approve the types of studies and fields of specialization at various levels; set admissions criteria; approve acceptance of donations, gifts, and grants; review performance through examination of budgets and reports; and approve any cultural or technical cooperation agreements the university may wish to make with other institutions and bodies. Regulations are issued for licensing and accreditation with criteria so specific as the proper student/faculty ratio, proportion of full-time academic staff, the maximum teaching load for each academic rank, and the maximum number of credit hours a student may take per semester. Public universities, on the other hand, are not subject to the council's accreditation or review procedures, and may start new programs and build new buildings without council or other government approval (Burke and Al-Waked, 1997).

Recently, considerable dissatisfaction has been expressed with the financial state of the higher education institutions. Public universities are funded heavily from earmarked taxes such as customs duties and license fees. There is also a special "university tax" collected by the Ministry of Finance and distributed annually as decided by the Higher Education Council. Allocation of public monies to higher education is not well defined, and unfortunately the *wasta* (influence) of an individual president may play a significant role in how much his

institution is given. Students' tuition and fees make up about a quarter of the budget, but have been kept at relatively low levels and have increased in real terms over the past several years.

Neither private universities nor their students receive financial support from the government. Private universities must pay a one-time accreditation fee of J\$10,000 per department, and under the Companies Law they also pay an annual tax of 25 percent of their profit to the government (Burke and Al-Waked, 1997).

4.4.3 Public universities in Jordan

The country's first public university, **the University of Jordan**, was established, in the capital city of Amman in 1962. It is the largest and most important university in the kingdom. Many current and former staff members head important academic, administrative, and political positions in the Kingdom. Many have served as ministers in a number of government cabinets, top advisers to the Jordanian leadership, members of Parliament, and presidents of Jordanian public and private universities. Most faculty members are active participants in conferences and workshops abroad, and most of them take advantage of the various research and exchange awards. Given the global outlook, the progressive thinking and diverse background, these faculty members shoulder the responsibility of delivering a quality education to 33,374 students (for 2007-2008) who are pursuing a wide variety of undergraduate and graduate programs.

The University of Jordan started operation with only one faculty, the Faculty of Arts, with seven faculty members and 167 students. In 1970, the university focused on the fields of humanities, education, agriculture, medical sciences and engineering. The 1980s were

marked by the establishment of another medical faculty; the Faculty of Pharmacology and Dentistry (Abu- El-Haija, 2003). These components have increased to become, with the establishment of the Faculty of Commerce in 1965 (it was renamed as Faculty of Business Administration in 1997, 17 faculties and 14 centres by the year 2008, for research and studies in computers, continued education, manpower and human resources developments, strategic studies, and water resources. For those interested in graduate education, the University offers 22 doctoral programs, 61 Master's programs, 17 programs in Higher Specialization in Medicine, one program in Higher Specialization in Dentistry, five Professional Diploma Programs, and three interdisciplinary Master's programs across the wide spectrum of academic disciplines (www.ju.edu.jo accessed on March 2006).

The University has opened up two further opportunities of admission to individuals who wish to continue their university education without having to quit their jobs. The Evening Studies Program, which started in the fall semester 2001/2002, and Distance Education, which the University is keen on making it a success. In this respect, University of Jordan was chosen by the World Bank to be one of the centers of the Regional Distance Learning Network. This project establishes a distance-learning network for IT and facilitates information technology education for World Bank member countries in the Middle East and North Africa (ESCWA Report, 2003). The Center offers distance-learning courses and provides opportunities to get in contact with research Centers and universities worldwide. Both the public and private sectors will benefit from this Center.

All programs offered by the University combine traditional academic lecturing with the more liberal methodologies of instruction that are based on dialogue, research and creative

thinking. Theoretical instruction is further assisted with interactive multimedia teaching techniques and computer-based instructional materials to support, and eventually discard, traditional teaching methodologies. Field work, practical training, and applied research are essential components of most of the programs offered by the University. For sometime, the University of Jordan has been introducing and implementing the principles of Total Quality Management (TQM). With respect to Information Technologies, the University is very well-positioned (Abu El-Haija, 2003).

Yarmouk university (YU) was the second university in the country. It was established in 1976 by a Royal Decree, in the city of Irbid (90km north of the capital Amman), the second most populated governorate in the kingdom (Abu- El-Haija, 2003). YU has grown both in size and stature over the years. It has become a leading institution of higher education, known for its dedication to service, its innovative approach to academic management and human resource development, and its relentless pursuit of excellence in all fields of research and instruction. It is a governmental institution that enjoys a considerable degree of autonomy. The University is managed according to a set of laws specifically adopted for higher education in general and for YU in particular. The University's mission comprises three components. The first is to provide quality education to its students in the various fields of specialization and at different levels of achievements ranging from the undergraduate levels to the M. Sc. and Ph. D. levels. The second component is to engage its faculty and students in relevant and timely research programs that would be needed to fuel economic growth and development of the country, and that would also contribute to human welfare and prosperity in its wider context. The third is to render public service at the local, national, and international levels through fostering a dynamic environment of cultural enrichment, and

the provision of educational and training opportunities to non-student groups (www.yu.edu.jo, accessed on June 2006).

In discharging its mission, the University seeks to impart to its students the doctrine of free thought, and the ability to analyze the issues boldly and adopt the most appropriate stand called for. Students are tutored not only in the contents of textbooks and references, but also in what makes them good citizens and leaders of the future. They are given a truly rounded education. Extra-curricular activities are designed not only to laud the virtues of sound moral values steeped in the rich heritage of Arab Islamic culture, but also to strengthen their character with experiential knowledge. They are trained to employ the scientific method of analysis and problem solving to apply it in all walks of life (www.yu.edu.jo, accessed on May 2006).

The University is linked to many other universities through bilateral agreements for cooperation, collaboration, and exchange of faculty members and students. These include regional Arab universities, as well as European, North American, and Asian universities. The University of Yarmouk has eleven faculties and a number of centres for research and studies similar to those of the University of Jordan (www.yu.edu.jo, accessed on May 2006).

Mu'tah University, Jordan's third institution of higher education, was established in 1981 by a Royal Decree, to serve the southern region of the country. Unlike the two aforementioned universities, it was conceived as a military college to offer training in military arts and police techniques along with a curriculum of academic disciplines and civic specializations. As the university began to stress civic subject fields a civilian wing was added to the University

in 1986. Accordingly, more faculties in education, social science, arts and literature have been established in the 1990s (Younis, 1999).

Mu'tah University with its military/civilian nature is continuously endeavoring to supply the Jordanian society with competent graduates equipped with both scientific and cultural background coupled with leadership qualities. Until 1985, a Special Royal Commission acted both as the University Board of Trustees and the University Council. In 1985, the Council of Higher Education took over the responsibilities of the Board of Trustees and the special Royal Commission continued to perform its duties as the University Council until the University formed its own Council in 1997 (www.mutah.edu.jo, accessed on May 2007). The location of Mu'tah University in the southern part of Jordan, the less developed part of the country, is meant to serve as a source of enlightenment, modernization and development of this region. The Jordanian economic and social development plans have designated this region as a target area for some important and expensive investment projects. These include phosphate, potash, cement, fertilizers, electricity generation and tourism. The implementation and management of these industries and projects need highly trained human resources as well as new technologies and skills, which will hopefully be provided by Mu'tah University (Alhaseeb, 2008)

The University is currently undergoing vigorous expansions in all academic domains so as to enhance its role in serving the local community and the country as a whole in addition to providing quality education for the students.

At present, the University comprises eleven faculties, and a number of deanships and centres. All of the above faculties are equipped with the most modern laboratories and computers to serve teaching and research. The University ranks as number one amongst Jordanian Universities in enrollment for evening studies and is considered as one of the biggest universities in the country with a total student population of nearly 16,000 students from all over the country and abroad (www.mutah.edu.jo, accessed on May 2007).

Jordan University of Science and Technology (JUST) was separated from Yarmouk University in September 1986. Five faculties were detached from Yarmouk University to form an integral part of a new University, which include the faculties of engineering, medicine, public health, pharmacology, nursing, dentistry, veterinary medicine, and agriculture. The students' numbers rose from 2300 students in the year 1986/87 to more than 14500 students in the academic year 2003/2004 instructed by 610 faculty members compared with 110 in the year when the University was founded (www.just.edu.jo, accessed on March 2006).

Al-Al-Bait Universtiy was established in 1994. It is located on the outskirts of the city of Mafraq, 65 Kilometres to the north-east of the capital Amman. The aim of the University is to meet an urgent need for a new kind of university; one that combines the requirements of scientific methodology in teaching and research, on one hand, and the requirements of belief and clarity of vision on the other, thus, creating harmony between the rounded personality of the Muslim and his new environment (Abu-El-Haija, 2003).

With 38 undergraduate and graduate degree programs, the University offers a strong core of traditional academic disciplines with emphasis on multidisciplinary research that affects

people in their daily lives. The colleges of this university are the following; College of Islamic Jurisprudence and Law, Prince Hussein bin Abdullah Information Technology College, College of Arts and Sciences, College of Economics and Administrative Sciences, and College of Nursing. It also includes a number of institutes which are; The Institute of Earth and Environment, The Institute of Architecture & Islamic Arts, and The Institute of Bayt Al-Hikmah (House of Wisdom) (www.aaub.edu.jo, accessed on February 2005).

The Hashemite University was established in 1995. It is located on the outskirts of the city of Zarqa to the east of the capital Amman. Its mission is to fulfill the ever-increasing demands of secondary school (Tawjihi) graduates in the eastern region of Jordan for higher education. The idea of establishing the Hashemite University as the fifth official university in the Hashemite Kingdom of Jordan came into existence due to the increased number of students from Al-Zarqa Governorate which is the third most populated Governorate in the kingdom (Alhaseeb, 2008).

The provision of the local market with the required number of expertise and qualified personnel, especially when taking into account the fact that Al-Zarqa is one of the major industrial areas in Jordan because of the concentration of a number of industries, ranging from reproductional, nutritional to chemical industries, among many others (Abu- El-Haija, 2003).

Al-Balqa Applied University, established in 1997 in the city of Salt (20km west of Amman), is to form an umbrella for all (about 16) government community colleges scattered in different cities all over the country. Its major interest is in information technology and

applied sciences. It has over the years developed its own facilities and now offers its own degrees, undermining what was intended to be its unique function (Younis, 1999).

Al-Hussein Bin Talal University was established by a Royal Decree in April 1999. His Majesty King Abdullah II of the Hashemite Kingdom of Jordan named it after his late father King Hussein bin Talal. The university is located in the southern part of Jordan, where almost all educational disciplines are needed, particularly Tourism, Hotel Management, Science, Computer Engineering, Education, and Mining Engineering. The University's main campus is located 7Km to the west of the city of Ma'an (210 Kms. from the Capital Amman). This university comprises eight distinguished colleges which confer the Bachelor of Arts or Bachelor of Science degrees in 38 academic specializations. These faculties are; Arts, Educational Sciences, Science, Business Administration and Economics; Archaeology, Tourism and Hotel Management, Mining and Environmental Engineering, Computer Engineering and Information Technology (Alhaseeb, 2008).

In addition to the currently working academic centers, namely, the Computer Center and Academic Faculty Professional Development Center, the university is planning to establish a number of research centers concerned with the studies of environment, desertification, urban and rural affairs (www.ahu.edu.jo, accessed on March 2006).

Tafila Technical University (TTU) is the ninth and the newest public university in Jordan. It is located in the Tafila Governorate, 187 km from Amman. It was established following a Royal Decree on 17/1/2005 to replace Tafila Applied University College (TAUC), which had been known as Tafila Polytechnic since 1986 (Alhaseeb, 2008). TTU aims at reinforcing higher education and scientific research, and serving local community by providing it with experienced graduates from various majors.

Currently, the university comprises six colleges, two deanships and six scientific centers. The College of Arts, Sciences, Economics, Engineering, Education and the Technical College are colleges which admit qualified high school graduates. Additionally, there are six centres established at the university which are; the Languages, Computer and Information Technology, Community Partnership, Teaching Staff Development and Evaluation, Quality Assurance Management Center and the National Center for Oil Shale research (www.ttu.edu.jo, accessed on December 2008). The following Table 4.2 provides the name of public Jordanian universities, number of students enrolled, and number of staff (academic and administrative)

Table 4.2 List of Public Jordanian universities, number of enrolled students and academic staff for the year 2007-2008

	Name of university	Number of enrolled students*	Number of academic staff**
1	The University of Jordan	33374	1220
2	Yarmouk University	23998	729
3	Mu'tah University	14337	518
4	Jordan University of Science and Technology	18122	757
5	The Hashemite University	16913	503
6	AL Al - Bayt University	11560	262
7	AL-Balqa' Applied University	23079	374
8	AL-Hussein Bin Talal University	7126	158
9	Tafila Technical University	2934	163
	Total	151443	7283

* Bachelore students

** Jordanian and non Jordanian staff

Source: MOHESR statistics (2009) accessed online (<http://www.mohe.gov.jo/GUI/Sub.aspx?PID=1551&Stat=24> on December 2008).

4.4.4 Private universities in Jordan

During the 1980s, Jordan witnessed an increased demand for higher education as a result of the growing numbers of high school (Tawjihi) graduates who were eager to continue their education at the university level. It was also noted that public universities, regardless of their numbers and sizes, were unable to accommodate larger numbers of students over their enrollment capacities. They were also demanding higher grades for admission of new students (Abu-Eid, 1997). The Jordanian government responded positively to applications submitted by a number of Jordanian investors in the higher education sector to establish a number of private universities capable of accommodating national and non-national students who were experiencing difficulties in gaining admissions at public universities. Moreover, it was the desire of many parents and guardians, especially Jordanian expatriates, to see their children study in a genuine Arab environment, and to avoid paying higher tuitions and living expenses to foreign universities which many of them cannot afford (Burke and AlWaked, 1997).

Currently, there are 14 private universities in Jordan, 12 universities offer the bachelor degree programmes, and two universities are for postgraduate studies. Table 4.3 presents a list of these universities showing the year of establishment, and the number of faculty members and students of each for the academic year 2007/2008 (The Ministry of Higher Education and Scientific Research, 2009).

Table 4.3 List of Private universities in Jordan for the year 2007-2008

No.	Name of university*	Year of establishment	No. of enrolled students*	No. of faculty members**
1.	Amman University	1990	6229	288
2.	Applied Science University	1991	7749	314
3.	University of Petra	1991	5380	284
4.	Philadelphia University	1991	6974	312
5.	Al Isra University	1991	6798	254
6.	Princess Sumaya University of Technology	1991	1166	41
7.	Jordan Academy of Music	1992	66	17
8.	Al-Zaytounah Private University	1992	8090	282
9.	Jerash University	1992	4970	188
10.	College of Educational Sciences	1993	633	27
11.	Zarqa Private University	1994	4936	190
12.	Irbid National University	1994	4172	143
	Total		57163	2340

* enrolled students for Bachelore level ** Jordanian and non-Jordanian academics

Source: MOHESR, Jordan (<http://www.mohe.gov.jo/GUI/Sub.aspx?PID=1551& Stat=24>, accessed on December, 2008)

4.5 Human Resource Management (HRM) in Jordan

The practice of HRM in Jordan is profoundly influenced by national cultural values of tribalism and governmental bureaucratic procedures. There is no clear evidence of HR managers' participation in strategic decision making in either the public or private sector organizations (Branine and Analoui, 2006). Most companies have personnel or HR departments at their headquarters, with separate divisions at the regional and local level. The formal role of HRM department, as in most Arab countries, does not go beyond the traditional role of HRM in administering files of staff for purposes of recruitment,

retirement, and compensation, etc. All the terms and conditions of employment are regulated by decrees and statutes that are approved and signed by the king (Branine and Analoui, 2006).

4.5.1 Main factors that influence HRM practices in Jordan

Some of the key factors that determine different functions of HRM such as recruitment and selection, training and development, rewards and employee relations in Jordanian public- and private-sector institutions are explained as follows:

1) Recruitment and selection

In public institutions in Jordan, the process of recruitment and selection is hardly objective or systematic and is not based on ability and merit in many times. Vacancies are usually filled in through personal connections, and jobs are normally offered to family members, relatives and friends with very little consideration of competency and achievement. Acts of nepotism and tribalism are common practices in Jordan (Al-Rasheed, 2001). The process of recruitment and selection is heavily influenced by interpersonal relations and intermediaries in what is usually referred to as *wasta*. The concept of *wasta* means, literally, to go in between, but in practice it is a type of favouritism and nepotism, which gives precedence to family and relatives over organizational objectives (Al-Said and McDonald, 2001).

Job analysis is usually performed and job descriptions are produced but rarely referred to in recruitment and selection process. When employed, many employees are not aware of their job descriptions and they never ask for them. Job descriptions are produced as part of the personnel-administration process to satisfy bureaucratic needs. Therefore, it is not

surprising to find that a job application form is filled after a job had been offered. Some jobs are rarely advertised formally through newspapers for example, because the spoken word of mouth spreads quicker than that of the written text. When a job is advertised or heard of in informal ways, the person seeking employment will contact a friend or a relative who knows someone in the institution where the vacancy is available. If the right contact is made, this person will have the job offer at once regardless of any formal procedures (Branine and Analoui, 2006).

2) Training and development

Jordan has to focus on human resource development (HRD) to survive, with the limited natural resources it has. Improving the skills and knowledge of employees in both private and public sectors is one of the greatest important priorities.

The government in Jordan has introduced a number of initiatives with the intention of providing training to as many citizens as possible. Through the period 1993 to 1997, the Jordanian Institute of Public Administration (JIPA) introduced the 'National Training Plan' so as to prepare employees of the public sector for the challenges created by the economic reforms at the national and international levels. It was intended to increase the awareness of the public-sector employees towards the demands of a free-market economy. This plan was comprehensive, covered all types of employees at all levels and included workshops and seminars in different fields of business and management such as financial audit and leadership training.

The second major training programme was the Career and Training Paths Project, which was introduced between 1997 and 2001 by the JIPA to create a culture of continuous training in the public-sector enterprises (Branine and Analoui, 2006). It focused on training as a prerequisite for career development and progress for different managerial levels.

Currently, a number of training institutes and centres as well as universities, exist in Jordan that provide training to public- and private-sector employees. Some ministries have their own training units that are used for the training and development of their staff in diverse activities to help them to cope with the demands of their tasks. Training is seen as the responsibility of the ministry in charge at the national level. Usually, a central training centre is under the control of the ministry for all employees in organizations that come under the control of that ministry. For example, Al-Husan and James (2003) reported that training in the Jordanian water company was provided by a central training centre for the whole of the Water Authority that provided some technical, language and computer training, but not all employees attended such training courses. They also stated that 'the training expenditure was only around £3 per employee and overseas training was linked to the availability of external funding in the form of donations and aid from other countries and was further limited to a very few senior managers' (Al-Husan and James, 2003). Many private-sector companies have their own training and development units, but most of them suffer from a shortage of resources and a lack of credible training programmes that meet the real needs of employees for training and development. Training-needs analysis is seldom conducted, and many units are in urgent need of qualified trainers and developers (Branine and Analoui, 2006).

It is noted that training and development of employees is one of urgent prerequisites for the enhancement of the current socio- economic reforms in Jordan. Although Jordan is considered to be an educated society, there is still a need for more training programmes in general and management-development programmes in particular. These programs will help to meet the increasing demands for an efficient and competent workforce in the fields of ICT, tourism operations and hospitality management, HRM, marketing and corporate finance. Although considerable efforts have been made to develop and train as many people as possible through using different training and learning methods, some obstacles exist on the way to significant changes. Examples of these obstacles are the lack of financial and material resources, the prevalent uncertainty and uncertainty towards the reforms and free-market economy in general, and the lack of real commitment from within and outside the country to training and development potentials.

3) Compensation and employee relations

Employees in both Jordanian public and private sectors have the right to form and join trade unions, but the lack of a working-class perception and the lack of radical labour organizations have led to the deterioration of trade unions' power and to the control of the workers by management. Social-welfare issues and basic employee needs usually restricts the role of trade unions. Their activities are controlled by law and constantly observed by the government. The relationship between employees and employers is usually guided by written and unwritten rules. Some of these rules are imposed by the government while others are determined by the constituent norms and values in the Jordanian society. The unwritten rules of employee relations are tacit in people's relationships with each other in and outside the workplace. The written rules are employment acts that are introduced by the government

and approved by the king. They cover all aspects of employment relationships from the content of employment contracts to pay and pensions. The government decides on the levels of payment to all employees in different sectors. Educational qualifications, position, and experience usually influence pay rates for different jobs. Most employees receive a basic salary and bonuses depending on the nature of jobs and positions within the organization. However, the recent economic reforms have brought foreign investments and accordingly, new employee relations. There has been a shift towards linking pay to performance in an attempt to align Jordanian salaries with international standards, emphasizing individual employees' contributions and rewards. Different payment systems have been introduced so as to attract skilled and experienced employees as well as to maintain the good ones in their jobs (Branine and Analoui, 2006).

4.5.2 Human Resource Management at Jordanian public universities

Human Resource Management (HRM) at a university includes a group of functions, activities and programs that are related to HR staff at the university, and aimed to achieve the goals of staff, university and society. Meanwhile, HRM can be considered as an administrative unit in the university, named 'Personnel Department' or 'Human Resource Department'. It performs all the functions and responsibilities related to workforce at a university's colleges, scientific centres, and administrative units (Durrah and Baerah, 1989). This department is located in organizational structure of the university as an administrative unit linked directly, most of the time, to the 'Vice President for Administrative Affairs Office' at the university.

Each public Jordanian university is having a Department/unit of human resources which is considered to be one of the major University units. It is charged with carrying out

the university policies concerning recruitment of qualified academic, administrative, technical and services manpower and providing them with all that caters for the functional and psychological security in accordance with the university laws, and regulations (Al-Ibrahim, 1997). For example, in Jordan University, this department performs its duties through the following six divisions (www.ju.edu.jo):

Faculty Staff Division which is charged with follow up and carrying out the procedures related to the appointment of the faculty members and their service at the University.

Non Faculty Staff Division is charged with the implementation of the administrative and technical Staff and daily wages employees' procedures and follow up of their affairs as long as they serve with the University.

Scholarships and Training Division which follows up the affairs of the scholarship holders until they have graduated and fulfilled their commitments, and deals with the personnel members who are sent for study or training courses.

Insurance Division, which checks medical claims and approves their reimbursement in accordance with effective rules and regulations, in addition to following up the life insurance procedures for all University working staff.

The Facilities and Travel Division which is responsible for securing entry visas for foreign countries, travel tickets to all those charged with official tasks outside Jordan and securing residence for non Jordanians working at the University.

Housing Division which is responsible for following up subscriptions to the Personnel Housing Fund, extension of loans to those entitled therefore and collection of loan instalments that fall due, and implementation of the decisions related to securing suitable housing for the academic staff in addition to supervision and maintenance of their flats.

Although there are differences between public Jordanian universities regarding naming the Personnel Unit or its related sections and divisions, the main purpose and activities they are performing remain the same. These differences are due to many factors such as the size of the university in terms of its number of academic and administrative staff, the year of its foundation, changes in their top management policies and styles (AL-Ibrahim, 1997). In general, the Units execute the relevant procedures to provide efficient administrative services to the academic staff and employees. These Units consistently aim at simplifying work procedures to render effective services and properly implement the University regulations related to the appointment of academic and administrative staff.

4.6 Some selected studies about Human Resource Management (HRM) in Jordan

There is an obvious lack of Arabic studies in general, and Jordanian ones specifically, that discuss the different functions of human resources management as a whole and in both sectors (public and private). Instead, there are many studies that discuss the various functions of HRM functions in Jordan separately.

For example, Abu-Doleh and Salhieh (2004) investigated the reality of practices of human resource management functions in the Jordanian public and private organizations according to the contemporary business literature and practices. HRM functions which were investigated are: human resource planning, job analysis and design, staffing, training and development, performance appraisal system, compensation reward systems, promotion system, and healthy and safety regulations. It also investigated the differences between the Jordanian organizations in the two sectors in the practices of these functions.

The researchers found that most of the activities of human resource planning, job analysis, staffing, training and development, performance appraisal, compensation and reward systems, and promotion system were applied at a minimum level. Whereas, health and safety activities were applied at a moderate level in the investigated Jordanian organizations. Also, they concluded that there were no statistically significant differences between the two sectors of the study in practicing the investigated human resource management functions, except, in the practice of compensation and reward function.

Abu-Zaid (2003) conducted a study aimed to investigate the current status of strategic planning process for HR at different institutions of public and private Jordanian sectors. The study included a sample of 100 HR managers in both sectors. The results of the study concluded the following:

- Both public and private sectors do not partially benefit from computers in the field of human resource strategic planning.
- The shortage of feedback system is one of the most important obstacles facing managers.
- There are significant differences in the activities related to compensation and benefits, and selections systems between the public and private sectors, in favour of private sector.
- There is a positive relation between the administration and the activities of strategic planning of human resource in private and public sectors.
- One of the most important barriers that render adopting a strategic plan for managing HR at these institutions is the low managerial position of HRM at these institutions.

A study conducted by Elywat (1996), aimed at investigating the status of training needs of employees in Jordanian banking sector (public and private), found that 83.2% of banking

institutions in both sectors had special units for training employees. Also, they found out that the private banking institutions are more interested than public ones regarding defining the training needs for their employees. In addition, it was found that public and private banking institutions do not rely mainly of job description and performance evaluation in the process of specifying training needs at these institutions. The results showed that the trainers at these banking institutions are not qualified properly, as they are lacking years of experience and having low educational level.

Also, a study by Makhamreh (1993) aimed to investigate the different practices related to out-side training activity in Jordanian companies. The results of this study showed the wide spread of using training activities in the companies surveyed. Most training activities are done out-side the company in Jordanian or foreign institutes. Moreover, the study found out that the extent of training needs, and personal and financial factors play major role in determining the size of training activities at the company. Also, the study found that there is a lack in following up the impact of training on the employees after finishing their training course.

Another study was conducted by Abu-Doleh and Weir (1997) to analyze training-needs in twenty-eight financial and manufacturing companies in Jordan. The researchers found that less than one-third of the manufacturing companies, while more than two-thirds of the financial companies had a formal management training and development programme, making the services sector more advanced in training and developing managers than other sectors. Moreover, they also found that in both sectors training-needs analysis had been used for lower managerial levels without taking into consideration any organizational needs.

They observed that line managers in the financial sector, for example, were more active in attending training programmes than their counterparts in manufacturing. They also found that the absence of job descriptions in the manufacturing companies was a barrier for conducting systematic training-needs analyses.

Another study that was conducted by Makhamreh (1991) aimed to identify the compensation systems that are followed in organizations in the private sector in Jordan. The results of his study showed that most of the surveyed companies use similar compensation system in spite of the different nature of work found in these companies. The results indicated also the lack of these compensation systems to many related incentives for the employees (e.g. life insurance). Only services of medical insurance and saving system are included to the employees' compensation systems.

After reviewing the previous Arabic and Jordanian studies, it is concluded that most of these studies concentrated on one function of HRM (Abu-Zaid 2003; Elywat 1996; Makhamreh, 1991), while few studies focused on all functions of HRM (Abu-Doleh and Salhieh, 2004). Some studies were applied in organizations in private sector, while others were in public sector, and some were in both sectors.

4.7 Computerization in Jordan

In 1969, the first computer system was adopted by the Jordanian public sector (Al-Shammari and Al-Shaikh, 1993). In the early 1970s, the Arabian Bank adopted a computer system to develop and modernize the country's banking system and to conform to the increasingly

technologically sophisticated international financial markets. By the end of 1977, only five public organizations used computers (Naseer, 1987).

The year 1977 can be considered as a benchmark in computer adoption in both Jordanian private and public sectors. During the next decade, increased number of public institutions adopted mainframe, minicomputer, and microcomputer-based systems (Ahmad and Zink, 1998). By 1987, it was found that nearly 3,200 computers were in use in Jordan. Approximately 17 percent of that number, were identified as being located in the public sector institutions (Al-Shammari and Al-Sheikh, 1993).. Computers were mainly used at these institutions to achieve speed, accuracy, cost reduction, storage and retrieval of data, and performance of complex operations (Al-Shammari and Al-Sheikh, 1993).

The microcomputer was the predominant platform in use compared to the minicomputer and mainframe (Naseer, 1987). The main reasons behind the rapid growth in the use of the microcomputer were its relatively low cost, ease of installation, and its more distributed nature.

The expansion of computer usage in Jordan suggests not just that computing is becoming increasingly affordable and easier to use, but that there is a perceived, if not actual, positive impact of this technology in enhancing the efficiency and the effectiveness of Jordanian public organizations.

Meanwhile, Jordanian government recognized the important role IT plays in a modern economy and a number of government initiatives have been undertaken throughout Jordan to integrate IT into the public sector (Gabbard and Park, 1996). At that time, institutions of public sector in Jordan had exerted efforts on automation of record-keeping, cellular

communications, and construction of networking infrastructure. Many of the projects were carried out in conjunction with the private sector in the form of foreign joint venture (Ahmad and Zink, 1998).

The Royal Scientific Society was one of the earliest and the most active proponent for adopting IT in Jordanian government. The Society had conducted technical studies to identify IT needs of the Ministries of Justice, Foreign Affairs, Agriculture, the National Aid Fund, the National Library, the Department of Press and Publication, and the Department of Income Tax. Moreover, the Society had provided technical consultation services; developed software for various governmental applications; supervised information systems implementations; participated in IT standards setting, information research and retrieval services; and offered training in computing and IT applications (Ahmad and Zink, 1998).

Computers were initially used in Jordanian public sector, then private sector use followed. Both have experienced steady growth as its uses and implementation have continued to expand. The private sector utilization, however, has remained the fastest adopter of computers at that time (Al-Dahhan and Makhamreh, 1990).

In general, computerization of government activities has brought, to varying degrees, considerable changes to many facets of public sector institutions. Computer systems have a primary influence on how these institutions conduct their operations. Moreover, increased efficiency and effectiveness; enhanced employee and manager satisfaction; having faster and more accurate job performance; improved decision-making, control and supervisory functions; increased quality and reliability of information; and improved customer service satisfaction, all can be attributed to the use of these systems (Esser, 1996; Babcock et al., 1995).

Regarding educating IT fields in Jordanian universities, it's found that up to 2,000 Jordanian are being trained as IT specialists annually. Graduating students with degrees in computer science and engineering-related fields at the end of the academic year (1997 / 1998) were 1125 (ESCWA Report, 2003). On average, Jordanian universities and colleges graduate about 2000 semi-skilled IT professionals to the open labor market. The Jordanian government realizes the importance of education in developing the IT Sector and forced radical reforms to introduce computer-based education in public and private schools. Public and Private educational and training institutions specializing in IT-core and IT-related fields are considered to be national development flagship centers. The University of Jordan, Jordan University for Science and Technology (JUST), Hashemite University and other Jordanian universities established IT dedicated colleges and are running specialized software development and programming courses all year round (ESCWA Report, 2003). The following table shows the IT sector potential in Jordan in terms of gross output, employment, investments and exports.

Table No. 4.4 Information Technology (IT) Sector Potential in Jordan

IT Sector	End 2004	2010	2015	2020
Gross output	\$440m	\$900m	\$1.3 Bn	\$1.75Bn
Employment	8523	16000	20000	25000
Investments cumulative from 2001 (in million)	\$83	\$140	\$200	\$300
Exports (in million)	\$80	\$140	\$200	\$300

Source: Al Khatib, S, (2007), "Investing in the Future Jordan's Leadership Drive Change", Ministry of Information and Communication Technology (MICT), Jordan.

4.8 The development of using (HRIS) in Jordanian public sector

Most of Jordanian government institutions are increasingly using the computerized IS, especially those which have a huge size of data such as 'Jordan Customs' and 'Department of Lands and Survey' and Department of Civil Service . There are many factors that influence the Jordanian working environment and affect the utilization of IS such as:

- The Jordanian working environment is characterized by its limited resources, and that will affect negatively the possibility of full utilization of IS, especially the small organizations.
- The difficulty of long range planning that top management at Jordanian organizations are facing as many of the managers and supervisors at these organizations are not having the necessary training in management. Accordingly, these managers are facing difficulties of identifying their needs of information that is required for long range planning.
- Lack of support afforded for new and developed IS, even from the end users of these systems. Possible reasons for this are: cost of IS, organizational change, and finally commitment to use technology (Makhamreh and Lutfi, 1996).

Public sector is considered to be the largest component in the Jordanian economy which plays an extensive and strategic importance to this economy. Recent governmental reforms focused on adoption and use of technology to better manage traditionally large, slow, and cumbersome bureaucracies found in public sector organizations (Ahmad and Zink, 1998). Computerization of HRIS is increasingly catching management's attention in Jordan. Investments in off the shelf HR information systems, outsourcing of customized systems, and self developed systems are observed (Makhamreh and Lutfi, 1996).

4.9 Using Information Systems at Jordanian public universities

During the past two decades, the role of institutions of higher education in Jordanian society has fundamentally changed. Universities no longer have an exclusive franchise as the primary producers of knowledge, disseminators of knowledge, or the validation of professional workers (Hashemite Kingdom of Jordan Update, 2001).

The public universities represent the traditional methods in teaching and learning with some demand from the government to improve these traditional methods via ICT adoption in their daily work and pedagogy (Mobaideen, 2006). Jordanian universities are in urgent need of services of information systems than other organizations for the following reasons; 1) The increased number of employees, students, and academic staff that are joining universities every year. 2) The variety and complexity of activities that are performed at the university campus. 3) The huge size of information flow between different departments and colleges at the university, with varied in its importance. 4) Large IT staff is available at the university, which is specialized in IT, qualified and efficient in IS field (AlZoubi et al, 2007).

4.9.1 Components of Information Systems at Jordanian public universities

- **Hardware components**

Jordanian universities have central computers or mainframes. Other hardware that can be found at Jordanian universities are different terminals that are linked with the central computer. These terminals are being used for different managerial purposes by managers and administrators. Also, there are many laboratories that are having many sets of personal computers. These laboratories are distributed among the different units and faculties at each university. More specifically, the hardware available at Yarmouk University has Alpha

server, Oracle Cluster Database Servers, Oracle applications Servers, 18 computerized system, 250 users, 243 PS Term Terminals, 100 Gega Byte size of stored data at each computer (www.yu.edu.jo, accessed on May 2007). In addition, YU has a local network which is updated, link all the university's units and buildings on the network, with 4000 personal computer (PC) linked to this network, and 5000 outlets with the network. Moreover, this network is linked with networks at other Jordanian public universities (www.yu.edu.jo, accessed on May 2007).

- **Software components**

Different software at Jordanian universities are purchased form local/foreign companies. Customized software that is related to specific purposes (e.g. library, registration, HR departments) is developed by staff of Computer Centre at each university.

- **Procedures**

Steps and instructions on how to use the HRIS, and processing data are found to be necessary information at each university. A guiding framework and regulations governing HRIS practices and procedures are important components for these systems and are available and documented in manuals at each university.

- **Workforce (staff)**

It includes the individuals who are operating and controlling different parts and components of IS at each university. Those individuals work at the computer centre. They include administrators, technicians, and professionals. They are referred to as IS manager of computer centre, assistant manager, technician/system analyzers, technician/programmers, data enterers, computer engineer, etc.

4.9.2 Computer Centres at Jordanian public universities

To adapt and to deal efficiently with the expansion in computer use in Jordanian public universities, independent computer centre was established at each of these universities to better handle the increase in information and to provide up-to-date data. This centre is playing a major role to serve both administrative and academic staff. When started to work, computer centre performs main activities; the following are some of these activities:

- Providing the university with hardware (computer sets and required network to link with), different software that are operated by different users, and updated these hardware and software periodically to cope with the new developments in the field of IT.
- Providing needed training in the field of IT for academic and administrative staff, researchers, and students at different faculties and units at the university.
- Participating in putting the special policies of IT at the university and recommending to execute these policies.
- Building IS and leading the automation of academic and administrative activities, and establishing the Decision Support Systems for management at the university.
- Maintaining the computer sets at the university and providing the technical support for its users.
- Building up the electronic page of the university (web page), developing all websites related to the university, following up renewal of these sites, maintaining the internet and networks at the university.
- Operating and maintaining the current IS found at the university (e.g registration, HR, and financing systems).
- Providing different services for academic staff and postgraduate students (e.g. internet service)

- Providing different local public and private institutions with necessary consultations about IT and IS issues.
- Participating with the university management and other related parties in developing plans and strategies related with updating computer and network services.

Other recent achievements by the Computer Centre at the Jordanian public universities are the following:

- A Network project was executed at every university, as the various facilities at the university (offices, study rooms, and laboratories) were linked by this network which was used hardware with high quality. All Jordanian universities have now network infrastructure connecting their buildings together.
- Provided the universities laboratories with the needed PCs. For example, the computer centre at Yarmouk University provided 62 laboratory at the university campus with 1800 PCs, 5 laboratories with 105 PCs are accredited for the ICDL test. In addition, Computer centre follow up the PCs found at the laboratories through SMS (www.yu.edu.jo).
- Provided the necessary requirements for video-conferencing educational facilities and servers.
- Universities have significantly improved their ICT infrastructure and the connectivity among themselves over the past couple of years.
- The development of the 'Center of Excellence' at Yarmouk University. This center links all public universities' library services and resources online together.
- The availability of Internet service that is provided at Yarmouk University has the following features; Web server, E-mail server, security system, Firewalls, and Bandwidth content management, 60 RAS Dial-up lines, 10 websites published for different

units of the university, increased speed of the internet to 12 Mbps, fiber communications, Router set with a speed of 12 Mbps, 4000 subscribers in the E-mail service, and 350 subscribers in the internet service from houses (www.yu.edu.jo).

4.9.3 Types of Information Systems found at Jordanian Public universities

There are many types of IS that are available at Public universities in Jordan. These systems aim at facilitating the process of transferring, classifying data, and extracting the required information reports related to academic and administrative staff, or students. In general, the following Information Systems are found in public Jordanian universities:

1. Students affairs Information system

This system aims to process data related to the students at each university. It is characterized by accuracy in processing data, and speed in retrieving required information. This system performs the following activities:

- Entering information about student 'Identification Card'. It includes his name, age, and address.
- Any notes about the student while he's at the university. It includes information about postpone the student's study, issuing 'Identification Card', behavioral and academic notices through his being at the university.
- Employing students at the university. It includes information about students who work at the university on an 'hour basis' through his study at the university.
- Students' loans from the university and Ministry of Higher Education.
- Scholarships granted from Ministry of Higher Education to university's students.

2. *General accounts and financial system.*

It is responsible for organizing and monitoring the financial issues at the university (e.g. expenses, returns) and distributing these according to the college or department. All financial transactions related to expenses and returns are saved and transferred on a daily or monthly basis. Finally this information is used to extract the general budget of the university. This system is used for the following activities:

Budget and general accounts. The system is responsible for preparing the prospected annual budget for the university, monitoring expenses taken from the university budget, and extracting required reports about university's expenses and incoming transactions.

Saving Fund. The system is responsible for following up the prescriptions of staff and calculating the university's sharing for this fund, monitoring and calculating loans paid to staff, and distributing profits and interests to subscribers

Housing Fund. The system is responsible for following up the subscription of workers, distributing profits and interests to subscribers, following up loans and calculating interest rates for staff, rescheduling of overdue loans

Returns from students accommodations. The system is responsible for issuing receipts of fees to students staying at these accommodations, following up fees from students staying the university's accommodations, and following up number of students at each accommodation.

3. *Supplies Department Information System*

This system aims to monitor the inventory, and follow up issues of purchasing and checking stores. Each department of college issues orders with needed supplies, and this system helps to check if these supplies (items) are available, then it will be sent to the concerned part at

the university. If it is not available, the purchase order will be directed to external suppliers.

This system includes the following information:

- basic information (e.g. coding of items, information about storekeeper and supplies' representative)
- Movements of items (inside and out side stores), purchase, dispense, and reserve items.
- Converting purchase orders to other outside contractors according to the university tenders, and receiving orders from these contractors.
- Entering items to stores, dispensing these from stores, supplying items, replacing and deleting items.
- Printing reports according to special forms about current and needed future items at the university store.

4. Library Information system

This system is prepared to be compatible with other computerized information systems at each university. To cope with the new technologies in the field of library and information science, this system offer retrieved information services through a good number of necessary and comprehensive databases, which are published on online (internet) subscriptions. The main window of this system includes coding subsystem, users, suppliers, tenders, supplies, dedications and exchanges, classifications and indexes, borrowing and renewal of books and other resources at the library. The library system is also linked with the students' information system. Students who do not register for the academic semester (postpone/graduate) will not be allowed to borrow books from the library at that semester.

5. Human Resources Information System

This system is designed to organize the managerial information that is related to employees' career, and it includes the following information; Basic information about the employee (e.g. name, nationality, marital status, scientific qualifications, working experience, monthly salary, types of appointment (temporary, contracts), position, residency, ..etc.), Annual and medical vacations, Promotions, Health insurance details, Social insurance, Life insurance, and Appointments and resignations

6. Salaries Information System

This system has a main function which is controlling the transactions of salaries for each academic and administrative staff. It's also, responsible for executing the financial transactions that are related to salaries. This system includes the following information related to staff: annual increases in salary, bonus, deductions from salary, subscription to funds (e.g. savings,), and promotions.

7. Students' Registration Information System

This system helps the universities' students in:

- Processing the application forms presented to the university
- Informing the students about the procedures of their acceptances, transferring from one specialty to another, saving, analyzing, and following up data about accepted students at the university.
- Informing the students about the direct procedures of registration, addition, withdrawals from courses, study timetable, and rooms and halls of studying.

- Informing the students about the procedures of paying fees for registration, addition, and withdrawals of courses, postponed tuition fees, graduate students' fees, and financial penalties the student has to pay.
- Storing and processing students' marks, and calculating cumulative and term average of students, the status of putting students at the honour list.
- Providing number of query screens about data related to students at any time for various colleges and departments at the university.
- Printing the necessary lists, reports, and statistics periodically, or at any time. These outputs may include information about the student, his/her study timetable, term and cumulative average, number of credit hours that the student has passed, and still having to graduate, specialty of the students and other specialties that he can transfer to, print the transcripts of marks and number of students at each specialty.

Advantages of using students' Information Systems at Jordanian public universities can be summarized as the following:

- Speed and accuracy of getting and accessing data and information. (e.g. calculating some statistics about the total number of students can be done by IS within minutes instead of a couple of days and by one staff instead of many).
- Easiness of accessing data and information related to accepted and registered students (according to their numbers, specialties, colleges, gender, acceptance rates, kinds of acceptance, and sources of their Tawjihi certificates)
- The possibility of accessing any data saved at the main database within short and quick programs ('database programs').

- Accuracy and speed of registration procedures related to students for their courses every semester. As it is a direct process of registration, the student can monitor and correct any possible mistakes of registration.
- Providing immediate information when needed about the number of students registered in every course at the different departments and colleges at the university. The decision of opening new sections or closing or deleting others will be much easier by using these systems.
- Minimizing the level and extent of tiredness and stress that staff was bearing each semester, as the registration procedures can be done by the student online.

Jordanian universities pay lot of attention to follow up the new developments in the field of IS and IT, as top management at these universities believed that IT is very important and valuable that help in performing different works and activities of the universities.

4.9.4 Intranet and internet at Jordanian public universities

All Jordanian public universities have Intranet and Internet. The intranet links all the colleges and departments (internal and external) of the university, and link these colleges and departments with the computer centre at the university. Accordingly, each user can access what he or she needs of data and information saved at the central computer, or he can use the internet. Each Jordanian university is having an integrated internal computer network that links its different faculties, deanship offices, centers, and units together.

Each university is linked to an internet network, and has a website. The website gives detailed information about the activities of the university, its research and teaching

capabilities. A project of linking each university with another was executed. Each university is linked with other universities by an information network that linked it with the 'National Information Centre' website. Internet service at each public Jordanian universities has advances facilities and equipments such as Server Web, E-mail server, security system, Firewall, IDS and Bandwidth Content Management, 60 RAS Dial-Up lines, 10 published Web Sites for different university's units, increase the speed of internet service to JTC 12 Mbps, Router set with a speed of 12 Mbps, increased number of subscribers in E-mail service.

Jordanian universities are seeking always to provide their students with the needed information and skills to deal with the new technology through their studies and research. Also, these universities are seeking to provide their students to communicate with their colleges outside through the World Wide Website (internet). Different laboratories are prepared for these purposes to be used by students.

Also, each university is working hard to encourage its academic staff to use the new and developed IT in collecting data and information from different sites of the world. The university expects that each one of its staff to benefit from using the internet in the different types of research they are conducting, especially with their colleges and peers in other universities, and in getting access to the most famous and valuable databases and libraries. Also, each university has started to provide its academic staff in different faculties in using new and advanced IT. It has facilitated activities such as; e-learning process, joint supervision for postgraduate students, joining in international conferences by using different types of IT such as TV screens, telephones and different advanced communication methods.

Moreover, each university is exerting every effort to computerize, and update its current IS systems, all different practices and functions of all managerial activities in the university (e.g. all activities of financing, registration, supplies, library, etc.).

4.10 Conclusion

Jordan is characterized by its central location in the region and stable socio-political environment, strong infrastructure and human capital. An educated population is among Jordan's best asserts. In comparison to other countries in the region, Jordan has the highest rate of college-educated people. Higher education in Jordan did not begin to emerge as a significant economic sector until the beginning of the last decade but since then it has experienced extraordinary growth. Currently, higher education is potentially a very important factor in the Jordanian economy, and this has been recognised by the Government, which has expressed the determination to build on and extend Jordan's current success in this respect.

Jordan has achieved considerable results in providing access to education at all levels; nevertheless it still faces challenges as it continues to strive for economic and social development in the information age. Private and public educational sectors in Jordan cooperate to achieve competitiveness in a globalized world. Jordanian universities always try to adopt new information technologies in their activities.

In the information age, Jordan works to develop its human capital through targeted interventions in the following areas: economic and institutional regime, education, innovation, and information technologies (IT). The next chapter will discuss in details the research methodology utilized in this study.

CHAPTER FIVE

METHODOLOGY AND DESIGN OF THE STUDY

5.1 Introduction

This chapter presents the research design and methodology used in the study. Research methodology focuses on precise tasks and the methods that are carried out during the research process. This chapter presents the research strategy and methods that could be applied to address the research questions and pursue the research objectives as described in the introduction chapter. This chapter provides a discussion of the methodology issues in the study. Selecting the proper strategy and methods is very important for the reliability and validity of the findings. Actually, the academic study of information systems relies very much on the methods used to answer research questions and test research hypotheses, and on the careful application of these methods.

This chapter is divided into eight sections. After the introduction section, the research design will be outlined. The research approach will be explained in section three and the population of the study will be defined in section four. The research strategy will be explained in section five and the data collection instrument will be discussed in section six. In addition, issues of reliability and validity will be discussed. Section seven will explain the data collection procedures and the pilot study. In section eight the statistical data analysis procedures will be outlined.

5.2 Research Design

The research design is “a plan that will be followed during the study in order to answer a research question” (Babbie and Mouton 2002, p.72). The researcher decides on the research strategy that will be followed. According to the authors, the researcher must follow two steps in the research design. In the first step, the researcher must identify exactly what he or she intends to find out. In the second step, he or she must determine the best way to do it (Babbie and Mouton, 2002).

The design of a study can be classified into three different types; exploratory, descriptive and explanatory.

- An *exploratory* study is applied when the research problem is broad and not specifically defined and when a new phenomenon is studied (Yin, 1994). Exploratory research has the goal of formulating problems more precisely, clarifying concepts, gathering explanations, gaining insight, eliminating impractical ideas, and forming hypotheses. It can be formed using a literature search, surveying certain people about their experiences, focus groups, and case studies. Case studies can include contrasting situations or benchmarking against an organization known for its excellence. Exploratory research may develop hypotheses, but it does not seek to test them. The purpose of an exploratory survey is to elicit a wide variety of responses from individuals with varying viewpoints in a loosely structured manner as the basis for design of a more careful survey (Sekaran, 2003).

- A *descriptive* research is more rigid than exploratory research and it defines questions, people surveyed, and the method of analysis prior to beginning data collection. Descriptive research is often used when a problem is well defined and there is no aim to investigate cause/effect. A descriptive research is to find out what situations, events, attitudes, or opinions are occurring in a population. It aims at a description of the distribution of some phenomena in a population or among subgroups of a population. The researcher's concern is to construct a distribution or to make comparisons between distributions. It is often used to ascertain facts, not to test a theory (Pinsonneault and Kraemer, 1993).
- An *explanatory* research's purpose is to identify cause-and-effect relationships between variables, explaining what causes produced what effects. It aims at asking about relationships between variables and studies how and why the variables ought to be related from theoretically grounded expectations. It not only assumes that relationships of cause and effect exist between the variables, but also directionality between them. The research questions may not only address the existence of a causal relationship but may also orient toward asking why the relationship exists (Pinsonneault and Kraemer et al, 1993). Experiment is the most common method in explanatory researches .

Considering the nature of this research, the researcher selected the exploratory survey as the best method to explore and answer the research questions. It is an exploratory study that aims to generate some ideas and information about the usage of information technology in human resources management in public universities in Jordan. This study is largely

exploratory in nature because very little research has been conducted on applications of human resource information systems in Jordanian universities. In this respect, Tate (1998) stated, “A choice of whether a specific study is to be confirmatory or exploratory ...depends on whether there is an adequate basis in the research literature” (p. 4). Sekaran (2003) stated that exploratory studies are necessary when some facts are known, but more information is needed for developing a viable theoretical framework. He added that “exploratory studies are important for obtaining a good grasp of the phenomena of interest and advancing knowledge through subsequent theory building and hypothesis testing” (p. 120). Moreover, Johnson and Christensen (2000) stated that exploratory research is very useful in the absence of clearly researched and fully understood information about a subject, and/or in the premature stages of development of theories.

In this research, exploratory research is aimed to establish the facts, to gather new data and to determine whether there are interesting patterns in the data. The nature and the extent of the usage of information technology in the functions and activities of human resources departments are expected to be explored and investigated in this study. Therefore, the researcher selected the exploratory approach as the best method to explore and answer the research question.

5.3 Research strategy

A research strategy can be defined as the steps, that have to be carried out for studying the chosen phenomena. It outlines the sequence of data acquisition and analysis. Mutchnick and Berg (1996) defined research strategy as a set of guidelines and instructions to be followed in addressing the research problem. The main function of a research strategy is therefore to

enable the researcher to anticipate what the appropriate research decisions should be so as to maximise the validity of the eventual results. According to Babbie and Mouton (2002), the researcher must follow two steps in the research strategy. Firstly the researcher must pinpoint exactly what he or she intends to find out. Secondly, he or she “must determine the best way to do it” (p. 72). The choice of a strategy is greatly influenced by the nature of the problem to be solved. A researcher can use many different ways to collect data. Depending on the type of research questions, how much control the researcher has over behavioural events, and how much the study focuses on contemporary events, the researcher can choose a strategy that includes experiment, survey, archival analysis, history or case study. According to Yin (1994), the best way to know what strategy to use is to identify the type of research questions. Research questions built on how and why are of an explanatory kind that often results in a use of a case study. A *case study* is often used when control over behavioural events is not needed and when focus on contemporary events is needed.

A *survey* will be the main research strategy for this study. A survey is a system of collecting data through the use of self-reporting techniques. Leedy (1997) states that survey means “to look or to see over or beyond” (p. 190). Neuman (2000) points out that surveys are typically used when the objective of the study is to measure knowledge, attitudes, beliefs, opinions and behaviour. Survey research involves examination of a phenomenon in a wide variety of natural settings. Without the survey data, the observer could only make reasonable guesses about their areas of ignorance in the effort to reduce bias. Accordingly, survey could contribute to greater confidence in the generalized results. A survey is a means of gathering information about the characteristics, actions, or opinions of a large group of

people, referred to as a population. Survey analysis may be primarily concerned either with relationships between variables, or with projecting findings descriptively to a predefined population. Survey research is one of the most frequently used research methods in social sciences in general and in human resource management issues in particular.

Pinsonneaut and Kraemer (1993) stated that a survey research is most appropriate when:

- The research questions are of the type “what is happening?” and “how and why is it happening?” Particularly, a survey research is well suited for answering questions about “how many or how much”.
- Control of the independent and dependent variables is not possible or not desirable.
- The phenomena of interest have to be studied in their natural setting.
- The phenomena of interest occur in current time or occurred in the recent past .

The survey used in this study to investigate and explore the extent to which information technology is used in human resources functions in Jordanian public universities. This survey is based on a structured questionnaire, that was prepared and designed by the researcher to collect data. The reason why a survey was chosen for this study, and not any other kind of research strategy, is because survey is built upon questions starting with who, what, where, how many and how much. The strong suitability of the survey, in comparison with other alternative strategies, confirms that this is the most suitable strategy that will be used in this research. The questions of this study also deal with contemporary events which require the use of a survey. The main interest of this study is to construct enough knowledge of the applications and specifications of HRIS used at Jordanian universities, which requires the collection of detailed information from respondents.

5.4 Research Approach

The research approaches related with information system research can be classified in various ways. One of the most common distinctions of these research approaches is between qualitative and quantitative research (Myers, 1997).

- *Qualitative* research is described as “the non-numerical examination and interpretation of observations, for the purpose of discovering underlying meanings and patterns of relationships” (Babbie and Mouton, 2002). Particularly, qualitative research methods enable researchers to study social and cultural phenomena (Kaplan and Maxwell, 1994). In practice, qualitative research involves the use of qualitative data acquired in interviews, documents, action research, case studies or participative observation to understand and explain social phenomena. Qualitative research usually begins with an open-ended observation and analysis, most often looking for patterns and processes that could explain the “how and why” questions.
- *Quantitative* research methods were mainly developed in natural sciences to study natural phenomena. Quantitative methods are defined as “the numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect” (Babbie and Mouton, 2002). Quantitative research is sometimes linked to the notion of science as “objective truth.” Examples of quantitative methods are survey methods, laboratory experiments, and so on. Quantitative research usually begins with pre-specified objectives and hypothesis, focused on empirical testing.

Quantitative approach will be the main method for conducting this study, survey will be the main data collection procedure to investigate and explore the extent of the usage of information technology in human resources functions at departments at public universities in Jordan. The advantages of using quantitative techniques include objectivity and reliability (Taylor and Bogdan 1998). In a quantitative research approach, the researcher collects and studies statistical data. When the goal of the research is to gain a broad understanding of a problem, it is more practical to use a quantitative approach. A researcher must be able to draw conclusions on a more general base on the collected information and the conclusions must be presented in numbers (Yin, 1994). In a qualitative research approach, the researcher collects and studies data that have to do with feelings, attitudes and ideas. This type of study is used when the researcher wants to gain more detailed data. This results in deeper understanding of a single case study or a limited number of cases. Data collected from qualitative approach is harder to present in numbers, not like in quantitative approaches, but it can better be described in words (Yin, 1994). Therefore, the quantitative research approach has been chosen for this study because it is more suitable for the purposes and questions of this study. The main aim of this study is to identify and describe the applications of human resources information systems at Jordanian universities. Also, this study aims to describe the specifications of human resources information systems, and the obstacles of implementing these applications. Consequently, quantitative approach will be the main method for conducting this study. The quantitative research approach is designed on an objective view of the world and follows a positive model of controlling variables and testing specified hypotheses.

5.5 Population of the study

A population is a group of people who share the common traits or attributes, which are of interest to the researcher and of the population to whom the findings can be generalized (Salkind, 2003). When specifying the population of the study, the researcher should decide if it is possible to conduct the study to the entire population, or a sample should be drawn from the total population.

The target population for this study consists of the entire employees working in HR departments of nine public universities in Jordan. They are 130 employees at different personnel departments. The participants of this study are working in the HR departments of the university. All the employees working in the HR departments at these universities were asked to participate in the survey. They include general managers, assistant managers, head of departments and staff at these departments. The following table shows the distribution of respondents within HR departments.

Table 5.1 Distribution of respondents according to their managerial positions at nine Jordanian public universities

	Name of University	Manager/ assistant manager	Head/ department	HR staff	Total
1.	The University of Jordan	1	2	6	9
2.	Yarmouk University	1	6	11	18
3.	Mu'tah University	1	2	12	15
4.	Jordan University of Science and Technology	1	3	4	8
5.	Al-Al-Bayt University	1	4	3	8
6.	Hashemite University	--	1	7	8
7.	Al-Balqa Applied University	1	2	7	10
8.	Al-Hussain Bin Talal University	1	--	4	5
9.	Tafila Technical University	1	3	7	11
	Total	8	23	61	92

5.6 Data collection instrument

Data collection is a series of interrelated activities aimed at gathering information to answer emerging research questions. For the purpose of conducting this research, collecting valid data is of prime importance. Data collection should not only be planned carefully but also be organized properly. Data for this study were collected by means of structured questionnaires. A questionnaire refers to “a self-report instrument where the respondent writes his or her answers in response to the presented questions on a document” (Brink 2001, p. 154). The basic characteristic of a questionnaire is that all the respondents involved in the study answer the same set of standardized questions. In some cases,

researchers use an already existing tool, but in this study the researcher formulated a modified tool that is suitable for the setting of this study in Jordanian public universities.

Questionnaires offer such advantages to researchers as large number of subjects as well as subjects in more diverse locations can be surveyed, lower costs, increased accessibility to certain populations and guaranteeing confidentiality and/or anonymity. Questionnaires have the advantages of prompter returns, lower item non-response and more complete answers to open-ended questions (Leedy 1997).

In an effort to take advantage of these factors, this study utilized structured questionnaires as data collection method. A new tool suitable for this study was developed. The researcher could not find any tool appropriate for this study. Although many studies have been conducted on human resources information systems, the researcher did not find one appropriate for this specific study in the context of Jordanian universities.

One drawback of using questionnaires for primary communication might be that some respondents may misinterpret the questions. To resolve this problem simple and easy to understand questions were included in the questionnaire. The HR managers at each of the nine universities were first contacted through telephone calls, in an effort to convince them to participate in the research by explaining the significance of the research and how the results can be beneficial for the university.

Along with the questionnaire a detailed cover letter, which included the purpose and confidentiality, was included in the questionnaires distributed to all 130 employees at

different HR departments.

A questionnaire is one of the means used in a survey for observing the area of interest in research. Babbie and Mouton (2002) states that a survey is more appropriate in individually-based studies. Surveys can be used to collect a lot of data from a large number of people in a short space of time thereby saving on costs. In this study, the researcher distributed questionnaires to 130 respondents over a period of two weeks. There were lesser costs involved since the surveyed units are only nine public Jordanian universities

5.6.1 Questionnaire construction

Neuman (2000) stated that designing a questionnaire is the first phase in conducting a survey. The researcher designed the questionnaire after an extensive literature review of many studies related to human resources information systems, and after conducting a number of interviews with academics and HR managers and IT professionals at a number of Jordanian universities. Sekaran (2003) stated that "...questionnaires are an efficient data collection mechanism when the researcher knows exactly what is required and how to measure the variables of interest" (p. 236). Moreover, Brink (2001) advises that the tool must be formulated with the intention of addressing the research objective of the study. In this research, the objective was to study the applications of HRIS in Jordanian public universities. The next sub-section will present the contents of questionnaire.

5.6.2 Contents of the questionnaire

The questionnaire was accompanied with a covering letter which highlighted that the questionnaire is part of a PhD research studies and that the findings would benefit the Jordanian universities, and other sectors of economy in Jordan. The respondents were assured of the confidentiality of their responses and this was fulfilled. The respondents were also thanked in advance for their cooperation and kind support. The main sections of the questionnaire (see Appendix 3) are:

Section One:

This section is labelled as 'Profiles of the respondents'. It contained 5 statements numbered from one to five. This section identified the participants' demographic data which are; age, managerial level, educational level, years of experience in HR department, and years of experience in information systems.

Section Two:

This section is labeled as 'Information about current status of HRIS (planning, designing, operating, and maintaining HRIS) in Jordanian public universities. The first dimension of this study describes the current status of HRIS and the locus of responsibility for information technologies used in HRM functions. In other words, it explains the extent to which the HR and IS departments control decisions pertaining to information technologies used in HRM activities in the surveyed nine Jordanian public universities. Current status of HRIS in these universities was measured using six statements numbered from six to eleven. These statements were used to identify the organizational unit whose scope of responsibility included information technologies used in HR related activities such as leading

the development, implementation, standards setting, and planning of HRIS. This section consisted of multiple choice questions and the respondents were instructed to choose the answer they felt was more correct. In this study, the current status of HRIS was measured by four activities related to HRIS available at these universities; planning, designing, operating, and maintaining activities.

Planning activities of HRIS are undertaken before implementing HRIS. These activities include making needs analysis, feasibility to be generated, and type of hardware. Items related to planning HRIS are; item no.10 related to who's responsible for the activity, and item no.11 related to the time period for planning activities.

Designing and developing activities of HRIS are undertaken after the planning process of HRIS. These activities include setting up the infrastructure of IT (software and hardware components), and the availability of required networking capabilities. Items related to these activities are; item no.8 related to the responsible party for setting standards of computer software and hardware for HR departments, and item no.7 related to the responsible unit for designing and developing the new information technologies at HR departments.

Operating and maintaining activities of HRIS are concerned with implementation and following up implementation stages of these systems. The item related to these activities is item no.6 related to the responsible party for operation and maintenance of HR information technologies. Each item of this dimension has three different response options. These three responses have quantitative values ranging from 1 to 3 respectively and reflecting

the possible responses for each paragraph. The respondent is required to select for each item only one response according to his/her knowledge and experience.

Section Three:

This section is labeled as 'Specifications and Features of applied HRIS'. This was confined to measuring the specifications and features of applied HRIS at HR departments at Jordanian public universities, as perceived by the employees. Among these specifications are items about different forms of IT used by HRIS such as; Manager Self-Service (MSS), Fully integrated HR software, Separate HR applications (software), Intranets, Employee self-service (ESS), Extranets, and Interactive/Automated Voice Response (IVR or AVR; telephony-based) systems. Other specifications of HRIS that will be measured in this scale are related to availability of database, coordination between HRIS and other IS units and departments, easiness to operate HRIS software, indexing and documenting the procedures of using HRIS, the availability of a security system, and speed and timing of accessing the required information from the system.

Scales of HRIS's specifications and features were explained in some literature (Florkowski & Olivas-Luján, 2006; O'Brien, 2004; Caterinicchia, 2005; Lippert and Swiercz, 2005; McLaughlin and Skinner, 2000; Hussain et al. 2007). The researcher also reviewed some Arabic studies which are related to the measurement of HRIS features and specifications (Habib-Allah, 2006; Jaradat, 2004). From the review of these scales in previous studies, the appropriate scale for measuring HRIS specifications was formulated for this study.

The second dimension to be investigated in this study which is 'Specifications and features of applied HRIS' consists of 14 statements numbered from 12 to 25. Each paragraph demonstrates one characteristic or feature of HRIS. The respondents were asked to indicate the extent to which they agree about the extent of having each one of these features of HRIS at their departments. The possible responses that reflect their opinions, were scaled by 4-point Likert scale. Responses on the scale items were: not used, little use, moderate use, to extensive use. The scale had quantitative values of 0, 1, 2, and 3 respectively.

Section Four:

The extent of applying HRIS in HRMs' functions at HR departments of Jordanian universities. The extent of HRIS adoption can be used to measure the contribution of HRIS to the organization (Tye and Chau, 1995). The first measure of the extent of HRIS adoption in this study is the extent of HRIS adoption in the activities of five main HRM functions performed in HR departments at Jordanian universities.

Utilization of HRIS was measured by accessing the various modules that were made available and utilized in HRM functions at Jordanian universities. The main five functions of HRM that the study selected, and focused on are: recruitment and selection; training and development; compensation and benefits administration; performance appraisal; and human resources planning. The five HRM activities were identified and selected as they were the most common applications frequently mentioned in HRIS literature. While some of the modules related to these main functions were extracted and adapted from past researchers' studies (e.g. Kinnie and Arthur, 1996; Thomas et al., 2001; Tansley et al., 2001; and Ball, 2001). Moreover, studies that specifically measured HRIS's applications in HRM

functions from Arabic and Jordanian studies were also reviewed (e.g. Jaradat, 2004; and Habib-Allah, 2006). While these modules are added and modified by the researcher to cope with the special nature of HRM functions at the Jordanian universities' context, they provide a general description of HRIS that may be applicable to Jordanian universities.

This section includes statements numbered from 26-60. This section is divided into five parts according to five HRM activities as follows;

- Part one includes eight statements to applications of HRIS in 'Recruitment and Selection' function. These statements are numbered from 26 to 33.
- Part two contains six statements related to applications of HRIS in 'Training and Development' function. These paragraphs are numbered from 34 to 39.
- Part three consists of eight statements related to applications of HRIS in 'Compensation and Benefits Administration' function. These paragraphs are numbered from 40 to 47.
- Part four consists of four statements related to applications of HRIS in 'Performance Appraisal' function. These statements are numbered from 48 to 53.
- Part five consists of seven statements related to applications of HRIS in 'Human Resources Planning' function. These statements are numbered from 54 to 60.

Answers related to the statements in all parts were according to a 4-point Likert-type scale ranging from not used (0), to little use (1), to moderate use (2), to extensive use (3). Respondents were asked to indicate the extent of HRIS applications that are currently used in their HR departments .

Section Five:

This section is the last part of the questionnaire. It is labelled 'Barriers of HRIS's implementation at HRM departments'. The perception of barriers to the implementation of HRIS was measured by asking the respondents to rate each of nine potential barriers on a four-point rating. These barriers were identified and selected as the most popular barriers found from the review of the literature. Moreover, studies that specifically measured barriers of HRIS implementation in Jordanian organizations were also reviewed. While, there is no literature on measuring these barriers in Jordanian universities, the researcher interviewed a number of academics and professionals of information technology and human resource management, respectively the primary content of this scale was formulated.

This part contains nine statements numbered from 61 to 69. Participants answered each question according to a 4-point Likert-type scale, in which responses ranged from not a barrier (0), to little barrier (1), to moderate barrier (2), to large barrier (3).

5.6.3 Translation of the questionnaire

Since this study is about Jordanian universities, the researcher had to translate all the items of the questionnaire from the English language into the mother language of the respondents, which is the Arabic language. Indeed, the questionnaire was originally formulated in English then taken to professional language translator who translated it to Arabic. The main aim was to detect if the Arabic questionnaire still had the same meaning as the English questionnaire. Validity requires that questions in one language be translated into another language in such a way as to retain their meaning (Bulmer and Warwick, 1993).

Accuracy of the translation is important to maintain the validity of the research instrument, which is the questionnaire in this case. Therefore, after translating the questionnaire from English to Arabic, it was sent to two professional academics at Yarmouk University. The first academic was in the Business Administration Department, who held a Ph.D degree from one of USA universities who possessed proficient knowledge of English and had more than 20 years in teaching at the department. The second academic was from the Linguistics Department at the Faculty of Arts in the same university. Then, both translations were compared and the final Arabic draft of the questionnaire was prepared. To assure that the translation from English to Arabic did not distort the meaning of the translated questionnaire's concepts or terms, the translation of the questionnaire was double checked by two Arabic language academics to check its accuracy, and to ensure that respondents would find it easy to understand and answer the different questions included in the questionnaire.

Bulmer and Warwick (1993) stated that "the interview or questionnaire should be translated from the original language to the local language, then translated independently by another translator, back from the local language to the original language" (p.152). The final Arabic draft was sent also to another academic at the Linguistics Department to be translated into English again to be included in the study. Then the Arabic questionnaire was pilot-tested.

5.6.4 Validity and Reliability of the Instrument

The evaluation of the measurement tool is first addressed in this section through *validity* and *reliability*. Validity refers to the extent to which an instrument measures what it is designed to measure (Ary et al., 2002), while reliability refers to the consistency and accuracy of the measurement (Salkind, 2003). A valid instrument measures what the researcher claims to measure; a reliable instrument measures the data in a consistent and accurate manner.

Validity

To ascertain the *content* validity of the questionnaire designed for this study, the researcher distributed a draft of the questionnaire to qualified persons who critically analyze if the content presented in the conceptual framework was covered in the tool. Those persons are the following;

First: the supervisor of the this research, and a number of lecturers, instructors and professors teaching undergraduate and postgraduate studies at Yarmouk University (Department of Business Administration, and Department of Management Information Systems). Those academics were of great help in checking the linguistics, repetition, organization and order of the questions of the questionnaire. Their comments and notes were taken into consideration when finalizing the questionnaire.

Second: HRIS consultants and HR and MIS managers at four of the Jordanian Public universities. They were contacted to elicit their comments and suggestions about the questionnaire. They were asked to check the questionnaire for completeness, linguistic, clarity, relevance and to check the easiness of the questions. Several

useful comments were received from them and taken into account when the researcher constructs the final draft of the questionnaire.

Third: a number of experts and consultants in the field of Information Technology, Information Systems, and consultants at Computer Centre at two Jordanian public universities (Yarmouk University, and Jordan University of Science and Technology), were consulted. Those experts and consultants provided the researcher with a valuable feedback and suggestions about the questions and their relevancy to the Jordanian universities' settings, which were taken into consideration when preparing the final draft of the questionnaire.

Incorporating their suggestions (regarding the number of questions, scoring, and ambiguities in questions phrasing), some questions were rephrased as advised; some questions were removed to make the tool shorter. Then, the researcher prepared the final questionnaire which was approved by the supervisor.

Reliability

Reliability is defined as “the extent to which a measure yields consistent results; the extent to which scores are free of random error” (Ary et al., 2002, p. 566). According to Gay and Airasian (2000), “Reliability is the degree to which a test consistently measures whatever it is measuring” (p. 169). In this study, the reliability measure looks at how consistently respondents answered the statements regarding the features and applications of HRIS at their departments. More specifically, *internal consistency* is used to assess the homogeneity among the items of the questionnaire. The objective of this measure is to identify the degree

to which the measurement was free of random or unstable error as well as the degree to which the instrument was robust. To establish the questionnaire reliability, the researcher used two different methods in this study; Test-Retest and Internal Consistency by Cronbach's Alpha as follow:

Test-Retest

This method is done by administering the questionnaire twice on the same sample of people on two different occasions to see whether the second measurement is similar to the first one. Thus, the reliable instrument is the one that produces the same results consistently. For this study, the researcher distributed the instrument on a sample consisted of 25 employees from target population. After two weeks, the instrument was distributed and applied again to the same sample. Accordingly, data were entered into the computer and was statistically processed using SPSS package. The correlation coefficient between the first and second applications was calculated, and it was established that the scale had a reasonable reliability, as shown in the following Table:

Table 5.2 Correlation Coefficient between first and second applications

Using Test-Pretest method (N=25)

Dimensions	No. of items	Correlation Coefficient
Specifications and features of HRIS	14	0.74
Applications of HRIS in HRM functions	35	0.83
Obstacles of implementing HRIS	9	0.87
Total	58	0.83

It is evident that there were high correlations between the first and the second application at all dimensions of the study, as these coefficients range between 0.74 – 0.87.

- At the level of 'Specifications and features of HRIS' dimension, the correlation coefficient between the first and second application is 0.74.
- As for the dimension of 'Applications of HRIS in HRM functions' the correlation coefficient between the first and second application is 0.83.
- For 'Obstacles of implementing HRIS' dimension, the correlation coefficient between the first and second application is 0.87.
- At the level of the scale as a whole for all dimensions, the correlation coefficient between the first application and the second application is 0.83 which indicates that the scale, in general, has a high degree of reliability.

Internal Consistency

One of the most common methods for estimating reliability is the internal consistency measure, which uses Cronbach's alpha coefficient (Graziano and Raulin, 1997; Miller, 1995). *Cronbach's alpha* method was used to measure *internal consistency* and assess the significance of the items constituting the scale. Cronbach alpha can be considered an adequate index of the inter-item consistency reliability. As a rule of thumb, a cut-off point of .60 is common in exploratory research. Furthermore, when an instrument consists of scales measuring different constructs, the internal consistency coefficient must be calculated for each scale individually (Gliem and Gliem, 2003).

Statistical processing using the SPSS 14 statistical package, was completed for the data derived from the first application to the above sample of 25 employees.

The following Table 5.3 shows the values of alpha coefficient regarding the dimensions of the study.

Table 5.3 Chronbach Alpha Co- Efficient for the domains and the whole questionnaire Inter-Item Consistency Reliability Test (N=25)

Statements Number	Dimensions	Number of items	Co-Efficient of Reliability
12-25	1) Specifications of HRIS	14	0.81
	2) Applications of HRIS in HRM functions		
26-33	2.1 Recruitment and Selection	8	0.89
34-39	2.2 Training and development	6	0.85
40-47	2.3 Compensation and Benefits Administration'	8	0.73
48-53	2.4 'Performance Appraisal'	6	0.89
54-60	2.5 Human Resources Planning	7	0.91
61-69	3) Obstacles facing implementation HRIS	9	0.90
The Total		58	0.95

Cronbach's alpha, which is a reliability coefficient, was used for this study. A value of 0.6 or higher was considered to be acceptable and a value higher than 0.7 was considered to be good (Cavana et al., 2001). Tabachnick and Fidell, (2001) considered the value of Alpha coefficient at least 0.90 or higher to have high reliability.

The above table shows Alpha coefficient values ranging from 0.73 to 0.91 for the dimensions of the study. The total value of Alpha for the whole questionnaire is 0.95 as shown in Table no. 5.6. This is obviously a high value, a matter that reflects the strength of the internal consistency of the instrument. The aggregate Cronbach alpha values for

the dimensions of the study were above the 0.70 threshold. Hence, the values show that the instrument is highly reliable.

5.7 Pilot study

In this study, a pilot study was conducted before the actual collection of data to field test the instrument and its appropriateness for the Jordanian context. A pilot study is a small-scale replica and rehearsal of the main study (Yin, 1994). It allows the researcher to detect any faults with the method of data collection and to gain ideas with regards to the effective execution of the main study.

The questionnaire was pilot-tested by 16 HR head of departments and staff from 4 Jordanian universities. Four persons were chosen from each university, two head of departments and two HR staff. The four universities that were chosen for this pilot test are Yarmouk University, and Jordan University of Science and Technology (in Irbid), Al-Bayt University (in Al-Mafraq), and Hashemite University (in Al-Zarqa). A brief explanation about the research and instructions to fill the questionnaire was given to this pilot group before distributing the questionnaires. The respondents were asked to answer the questions based on their most recent job experience.

The questionnaire was also pilot tested with 20 MBA students at one of the nine Jordanian public universities (Yarmouk University). The researcher took permission from their teacher to allow the distribution of questionnaires to them. Those students agreed to check the survey during one of their management classes at the university. As they were not

working as HR staff, the MBA students were requested to scrutinize the content of the questions and the wording only not to answer the questions.

Based on the feed-back from the two pilot-test groups, the questionnaire was modified and a final questionnaire was developed. In this way the reliability of the study was ensured. .

5.8 Distribution of questionnaire

The survey packets that were distributed to respondents, consisted of the cover letter and the questionnaire in Arabic. The participants were asked to complete the questionnaire and were informed that there was an official permission from each of their universities (Presidency Office or HR manager) to participate in the study. The questionnaires were distributed to the expected respondents in two ways.

Table no. 5.4 shows the number of distributed and returned questionnaires to different Jordanian public universities and location of each university. As some of the respondents were located in the local areas (north of Jordan) or not very far away from where the researcher stayed (e.g. Yarmouk University, Jordan University of Science and Technology, Al-El-Bait University, Hashemite University, AL-Balqa Applied University, and University of Jordan), the questionnaires were distributed personally by hand by the researcher.

Respondents were given blank questionnaires which were collected from them by the researcher personally on completion after few days (and sometimes one week). The main advantage of using personally administered questionnaires is that the researcher

can collect all the completed responses within a short period of time. Any doubts that the respondents might have on any question could be clarified on the spot.

The researcher is also given the opportunity to introduce the research topic and motivate the respondents to offer their frank answers. Administering questionnaires to large numbers of individuals simultaneously is less expensive and consumes less time than other methods of data collection like interviews. In addition, it does not require as much skill to administer the questionnaire as to conduct interviews, for example.

In the universities that were far away from the researcher (such as Mutah University, Tafila Technical University, and Al-Hussein Bin Talal University), the questionnaires were sent by mail and delivered by a colleague at each of these universities. In turn, my colleague distributed the questionnaires to HR staff (manager and administrators) personally by hand. This procedure was necessary to avoid a low response rate. The completed questionnaires were then returned back to the researcher by post mail or by hand with a colleague. The choice of using the questionnaire as a data gathering method might be justified that the respondents are distributed in a wide spread geographical areas in Jordan. The main disadvantage of mail questionnaires is that the return rates are typically low, and any doubts the respondents might have, cannot be clarified. To improve the rates of response to mail questionnaires, the researcher used some effective techniques. Follow up telephone calls were done by the researcher to respondents, and the questionnaire was kept brief as much as possible. Also, the respondents were notified by telephone, in advance, about the forthcoming survey. The following table shows the number of distributed and returned questionnaires to the nine Jordanian universities with the location of each university.

Table 5.4 Distributed and returned questionnaires at nine Jordanian public universities

	Name of University	Location of university*	No. of distributed questionnaires	No. of returned questionnaires
1.	The University of Jordan	Amman (capital)	17	9
2.	Yarmouk University	Irbid (north)	20	18
3.	Mu'tah University	Al-Karak (south)	17	15
4.	Jordan University of Science and Technology	Al-Ramtha (north)	15	8
5.	Al-Al-Bayt University	AL-Mafraq (middle)	9	8
6.	Hashemite University	Al-Zarqa (middle)	12	8
7.	Al-Balqa Applied University	Al-Salt (middle)	20	10
8.	Al-Hussain Bin Talal University	Ma'an (south)	8	5
9.	Tafila Technical University	Tafila (south)	12	11
	Total		130	92

* according to Jordan geographical map.

A total of 130 surveys were distributed over one month period from 15th January to 15th February, 2007. While only 92 questionnaires were returned, it took another month period till 15th March 2007, to collect all the questionnaires from all the nine Jordanian universities. The delay in collecting the questionnaires was because some of the respondents, who were given the questionnaires by mail, were late, and many frequent follow ups were done by the researcher to urge them to complete the questionnaires.

The following table summarizes the number of distributed and returned questionnaires, and the response rate for each of the nine Jordanian public universities

Table 5.5 The response rate at each university of nine Jordanian public universities.

No .	Name of University	No. of distributed questionnaires	No. of returned questionnaires	Response rate
1.	Jordan University	17	9	53%
2.	Yarmouk University	20	18	90%
3.	Mu'tah University	17	15	88%
4.	Jordan University of Science and Technology	15	8	53%
5.	Al Al-Bayt University	9	8	89%
6.	Hashemite University	12	8	67%
7.	Al-Balqa Applied Univ.	20	10	50%
8.	Al-Hussain Bin Talal University	8	5	62.5%
9.	Tafila Technical University	12	11	92%
	Total	130	92	71%

The above table shows that the overall response rate is around 71% among the surveyed universities. This response rate is perceived to be high enough, as Al-Kassim (1996) stated that the response rate to survey questionnaires in the Middle East tends to be very low, in a range of around 30-40 percent.

5.9 Data Analysis Procedures

According to Gay and Airasian (2000), data analysis is a description of what has been found from the questionnaires, interviews, observations and various notes. Data analysis requires that the researcher must be comfortable with developing categories and making comparisons and contrasts. The analysis process began as soon as the questionnaires were returned. Raw data were sent to a professional statistician with extensive experience in quantitative study to do the coding. A meeting was held between the researcher and the statistician for discussions on themes and categories of data. The data obtained from the 92 questionnaires were translated into numerical values, entered into the computer using the statistical package SPSS Ver. 15 and the results were then interpreted statistically and accurately.

The data were analyzed using both descriptive and inferential statistics. Descriptive statistics are used to describe and summarize the properties of the data collected (Gay and Airasian, 2000). Inferential statistics, including correlations, and significance t-tests were used to explore relationships between the variables in the study.

Quantitative data were analysed using the Statistical Package for Social Sciences Version (SPSS) Ver. 15. The package is useful for descriptive statistics and inferential statistical methods. Specifically, the following tests and measures were used in this study:

- Descriptive statistics were used to describe the population study based on percentages, frequencies, means, rank and standard deviations to answer the questions of the study.

- One way ANOVA analysis was used to test the effect of demographic variables on the responses of individuals regarding the domains of the study.
- Tukey tests were used to compare between the results of responses from different respondents at different universities regarding the domains of the study.

Different major tests were carried out on the data with the aim to answer the research questions. The analysis procedures are described and laid out in a similar manner as the research questions. Table 5.6 below provides an outline of the research questions and the statistical methods that were used to answer them.

Table 5.6 Statistical Analysis Procedures Used to Answer main Research Questions

No.	Research Question	Statistical Method
(1)	What is the current status of Human Resources Information Systems at Public Jordanian universities?	Percentages, and frequencies
(2)	What are the specifications and features of Human Resources Information Systems at HR departments at public Jordanian public universities?	Means, and standard deviations
(3)	What is the extent of applications of Human Resources Information Systems in HRM functions at the Jordanian public universities?	Means, standard deviations, One Way ANOVA, Post Hoc Test
(4)	What are the obstacles facing the implementation of Human Resources Information Systems at Jordanian universities?	Means, standard deviations, One Way ANOVA, Post Hoc Test

5.10 Conclusion

Selecting the proper strategy and methods is very important for the reliability and validity of the findings of a research, because all researches are based on some underlying assumptions about what constitutes ‘valid’ research and which research methods are appropriate. As most academic studies of information systems depend very much on the methods used to answer research questions and test research hypotheses, and on the careful application of these methods, the survey strategy was selected for this study as a tool for collecting data. Structured questionnaires were selected as an instrument to collect data from respondents at Jordanian universities.

Quantitative approach was the major method for conducting this study as data collected was presented in numbers. The target population for this study consists of the total number of employees who work in HR departments at nine public Jordanian universities at different managerial levels.

The content of the questionnaire was divided into five sections contain a number of statements about; profiles of the respondents, information about current status of HRIS in Jordanian universities, specifications and features of applied HRIS, the extent of applying HRIS in HRM functions, and obstacles of implementing HRIS. The questionnaire was first prepared in Arabic language then translated into English language. A pilot study was conducted before distributing the questionnaire to the prospected respondents.

Validity measurement was constructed by distributing the questionnaire to specialized persons in HRIS (academics, consultants and professionals). Reliability measurement was also conducted for this study as internal consistency was used to assess the homogeneity among items of the questionnaire through Test-Retest, and Internal Consistency methods.

Different statistical methods were used in analyzing the data collected through the statistical package SPSS Ver. 15. Data were analyzed using different descriptive and inferential statistic techniques such as means, standard deviation, correlations, One way ANOVA, Tukey tests.

The presentation of the study results from the analysis of the data collected from the questionnaires related to this research are described in the next chapter.