The Effect of Information System's on Quality Performance of Human Resource Management Functions through Using Human Resource Information Systems in Banking Industry of Jordan.

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ABSTRACT: This study aimed at exploring the impact of information systems on human resource management and its quality through using a mediator called Human Resource Information System. Organizational leaders overlooked the role of human resources it plays in the success of implementing new technologies to foster organizational success in the era of transformation. To achieve this objective a questionnaire was developed and distributed to a quota sample consist of 22 banks operating in Jordan. The return completed questionnaires were (20) at ratio of 90.9%.

After Data analysis and hypothesis testing, the following results have been achieved:

1. The HRIS is operating with a medium level at all 22 banks operating in banking industry of Jordan.
2. There are obstructs hampering HRIS to performed well in banking industry of Jordan.
3. There is a significant evidence of statistical correlation (at α =0.05 and 0.01) between HRIS components and Effectiveness of the banks implemented HRIS software.
4. There a significant impact of bank size, number of branches, and date of bank Issuance on Effectiveness of HRIS implemented in banking industry of Jordan.

Researcher suggested some points to be placed in order to get the full benefits of HRIS used; a transformational leadership must be well capable and skillful to manage the deficits of HRIS. Environmental factors must be considered well to eliminate obstructs of HRIS implementations. Finally, more conducted studies on HRIS correlated with decision making processes are highly recommended.

Keyword: HRIS, Human Resources, Effectiveness.

Introduction

The expansion of organizational size and the diverse services, it plays, organizations computerized its offices and generated new database and systems that include information about each department it contained. Therefore, Loughman et. al., (2000) mentioned major influences that shaped the understanding the role of information systems played in organization. Firstly, public awareness about information is an asset, basic resource and accomplishment for any organization to coordinate its activities generating its sustainability and performance. Second, the conviction of managers that workforce should be highly skilled and committed to their works. Third, alignment between individuals and computers is made. Fourth, inseparable systems which means changing in one systems leads to changing in other systems as all systems works together. Finally, the reciprocity of individuals and technology in shaping each other comes to develop a deep understanding of the systems required by organization.

Information technology affects almost all organizations offices where the need for a rapid flow of information in a complex, hectic and often dynamic environment has made it critical to manage effectively the associated technology (Barry, 1989; Martinsons, 1993). While Information systems have evolved from an administrative role to a strategic orientation, the systems are available with the potentials to alter the nature of the work performed by human resource managers and all staffs in the organization (Martinsons, 1995; kossek et. al., 1994). They are now commonly used not only to enhance productivity and profitability, but also to improve the effectiveness, performance, and efficiency and create a competitive edge. Generally, increasing numbers of computer-based information systems are being applied to cross-functional and even inter-organizational activities, especially as core business processes are fundamentally redesigned (Hammer, 1990). Nevertheless, there is still a clearly recognized need to develop specialization information technology applications within a functional business are (Venkatraman, 1994). Over the past two decades, the accelerated explosion in new technologies with its implementation and its impact is well researched in the context of business organization

where the personnel human resource management was neglected in such literatures both in terms of theory and evidence as a small amount of case study and survey work exists (Ball, 2001; Kinnie & Arthurs, 1996; kossek et. al., 1994, Broderick & Boudreau, 1992; Torrington & Hall, 1989; Hall & Torrington, 1986; Legge, 1989; Martinsons, 1994, 1996; Ball & Shipton, 2001).

Background of the Problem
In late twentieth century, most business organization seeks to invest in modern technologies and starting deploying it in its administrative departments and units to improve both organizational and individual's performance. These technologies characterized by dynamism and velocity of switching off according to management activities and functions development including human resource management functions which aims to give attention to Human capitals as a strategic resource for achieving goals and objectives.

Unfortunately, increasing attention with new technologies stems only from the point of improving productivity and profitability processes and ignoring the main role of human resource it plays in achieving business purposes. The main problem epitomized in show up the necessity of emerging new systems dealing with human resources activities and functions to maximize the benefits of human resource management as a business strategy.

Statement of Objectives
Hopefully, this study is going to achieve the following objectives:
1. Emphasizing on the importance of human resource information system in business environment as a basic resource mainly used in organizations.
2. Measuring the effectiveness of human resource information systems and its impact on improving human resource management functions.
3. Driving another studies concerning human resource information systems in the context of development of both technology and business activities and functions.
4. Building infrastructure for another studies about impact of information systems on human resource management function and activities.

Statement of Questions
This study will answer the following questions:
Q1: Dose Human Resource Information System applied in banking industry of Jordan?
Q2: What are the main barriers behind applying Human Resource Information Systems in banking industry of Jordan?
Q3: What is the relationship between Human Resource Information Systems usage and the Effectiveness of Human Resource Management Functions represented by: Staffing (Recruitment and Selection), Training, Human Resource Planning, and Performance Appraisal?
Q4: Are there any statistical differences between Effectiveness of Human Resource Information Systems due to education level, experiences, bank size, date of bank issuance and number of branches?

Research Methods

1. Data Collection
Questionnaire was developed and used to ask certain questions on human resource information systems, the impact of HRIS on quality performance, and the basic barriers impeding HRIS applications (Kinnie & Arthurs, 1996; Thomas et. al., 2001; Ball, 2001; Tansley, 2001). 20 questionnaires were sent out to HR managers who are in the first level and 20 questionnaires returned (100%). Another 130 questionnaire were sent out to HR managers who are below the first level and 91 questionnaires were returned (74%).

2. Sample
The target community of this study was all working banks in Jordan where two samples were taken. First, all Human Resource managers, who are considered the first level, were included. Second, a random sample was driven from all Human resource managers, who considered below the first level, from the working banking in Jordan.

Literature Review

Despite the fact that the most literatures take place and concentrate on human resource functions through information systems usage, many studies, which comes as a case study and survey, wasn't sufficient to investigate the real impact of information systems on quality performance of Human resource management functions performed by both organizations and individuals. The most related studies concerning human resource information systems are:

(Martinsons, 1995) focused on knowledge-based systems through describing concepts and whether this technology contrasted with other computer-based information systems of applicability, benefits, costs, and limitations or not. Also he explained the role of knowledge-based systems applications by enhancing human resource management activities and functions in details. He concluded that the new generation of information technology has proved to be most effective when applied to narrow and well-defined areas of expertise. Moreover, an integrated management approach with KBSs can accelerate and amplify the benefits of an organization.

(Kinnie & Arthurs, 1996) discussed the potential contributions of information technology to human resource management functions and activities and how to exploit it since a little has changed in personnel specialists' approach to information technology. They revealed that the potential use of IT by personnel specialists still largely unfulfilled where most uses are concerned with transaction processing, reporting and tracking. The general use of IT should be explained by influences such as structure of the personnel functions, the knowledge skills, and attitudes of personnel specialists, and their exercise of political power.

(Doughman, 1997) analyzed the human resource information system at Jordanian textile companies, she concluded that the used HRIS, didn't yet meet the company's information needs. Providing information by applied HRIS wasn't enough to help Human resource objectives that support the purposes of the organization goals tied with other interrelated systems in a company. Although the HRIS was used in such companies, HRIS didn't represent all human resource management activities and functions where computer networks at those companies weren't used effectively. Eventually, she designed a new HRIS that can simplify the work of the end-user of the system.

(Ball, 2001) reviewed the issues surrounding the use of human resource information systems by personnel and Human resource departments. He presented empirical data, which profile system usage by 115 of UK companies in the service sector in terms of human resource functions. The main findings were that organizational size was a clear determinant of whether organization has an HRIS or adopts certain modules or how information is used and analyzed. The organizational size plays a critical role in applying HRIS where the biggest organizational size, the more likely human resource functions is to hold information.

(Tansley et. al., 2001) studied the effects of human resource management-style practices through integrated human resource information systems at UK engineering organizations. They demonstrated that the information technology stimulus didn't enable the design and implementation of an integrated HRIS that could enable significant changes in employee management practices. They stated that IT and IS didn't lead to fundamental changes in HR activities and practices due to; lack of knowledge and experience in how to design and implement such innovative systems, HR process owners are mapping their own processes without sharing/ involving line managers and others who are potentially impacted by the new IT systems, mapping each HR process separately, and lack of support for their HRIS applications or business process re-engineering.

(Ball & Shipton, 2003) explored the potential and actual uses of human resource information systems in supporting effective human resource development. They identified four contextual factors- HR strategies, communication, culture, and the role of HR in the organization- that play a key role in determining the level of HRIS usage for HRD purposes that can improve organizational performance and empower individuals. Also they noted that an increasing degree of interest in the successful organizations of the future would make maximum use of any insights provided by technology usage that allow them to enhance the role of HRD.

(Hussain & Prowse, 2004) investigated the impact of human resource information systems on human resource managers' job roles by examining the nature of human resource information systems from one hand and the nature of human resource mangers' jobs role whether traditional or new emerging one. They revealed that HRISs were playing a critical and vital role in assisting HR managers, also the most using of HRISs wasn't only for operational tasks level but also for strategic level tasks despite the smallest role in late one. They concluded that the use of HRIS was making certain changes in HR managers works by learning new technological skills and focusing on the flow of HR information all over the business organizations.

Information Systems and Human Resource Management

The need for information varies at different levels of organizational hierarchy. Information required by top management differs from then required by middle or lower level management. Figure (1) illustrates that the information systems are used at three levels; strategic, tactical, and operational level; hence there are many types of information systems matching different needs of information for each.

As you moved up at vertical arrow, the number of employees making strategic use of information systems are usually low and situated in senior managerial positions in the organizational hierarchy, noting that there are fewer number of senior workers than those at the bottom of hierarchy and they have shorter time horizon for making decisions than those at operational levels (Hussain & Prowse, 2004). Within the strategic information systems environment, the information is often unstructured and the decision-making activities are higher uncertainty and risks as well as the information requirements are heavy external rather than operational level heavy internal (Elliott & Starkings, 1998). Information systems can be used at various different levels of then organization to accomplish different types of tasks by various levels of organizational workers (Chaffy et. al., 2003). The followings are a brief of types of IS:

1. **Transaction Processing Systems:** transaction processing systems (TPS) or operational systems carry out basic day-to-day activities, transactions, and functions that occur internally and externally within the business environment. A typical /TPS/ is characterized by processing large amount of numeric and alphanumeric data and information (Elliott & Starkings, 1998, p168; Turban, 2003). Transaction processing activities within /TPS/, usually involves the activities of data collection, data manipulation, data storage, and data or information generation and output, where data collection can be collected by different ways; data manipulation is a process of performing calculations on that data involving storing, aggregating, classifying, and summarizing the data; data storage is placing data in the correct and appropriate area; data or information generation involving outputting information decision making usage or which can be used as a data input source for another related IS within the business systems environment.

2. **Management Information Systems:** Management information systems /MIS/ are concerned with the provision of relevant, timely, and useful information for the management control of an organization's resources, which are often characterized by a semi-structured information environment. Therefore, MIS are not concerned with day-to-day operational decisions. The primary role of /MISs/ is to plan and coordinate the resources of business organization. The main goal of /MIS/ is to provide management with information, based on data from both internal and external sources, to enable timely and relevant decisions for planning, directing, and collecting the resources of the organization. The management information systems of an organization must be designed to deal with relatively more structured and mechanistic planning and controlling of resources if an organization operation is stable and relatively static and unchanging business environment. On the contrary, information systems should be adapted and responsive to deal with changes in the internal and external environment, where it is dynamic and volatile environment (Elliott & Starkings, 1998, p 51-52; Alter, 2002; Turban, 2003).

3. **Executive Information Systems:** Executive information systems support the executive or strategic decision making which concerned with the long-term effects of decisions and such decisions usually influence the future decision of the organization. EISs are designed to support high-level executive, responsive for an organization's strategic polices and directions, in the process and practice of decision-making. The environment in which strategic decision-making is undertaken is normally characterized by high levels of uncertainty within the information environments. Also EISs designed to eliminate information overload and provide clear, summarized information that usually highlights opportunities and holistic view of the strengths and weaknesses of the business organization within the competitive business environment.

4. **Decision Support Systems:** DSSs are used as support tools within management or strategic decision-making. The emphasis of DSS is on supporting decision making rather than an automation of the whole decision-making processes. Also DSS concerned with predicting and forecasting the future terms of trends in the internal and external environment and predicting the effects of business and technology

change. DSSs assist unique, non-recurring decision making in environments that are relatively unstructured.

5. **Expert Systems:** Ess is used in a wide range of business environment areas to assist business activities and decision-making. An expert systems are compromised of three main components; knowledge base, which captures and stores the knowledge, experience and reasoning of an expert; the inference engine, aims to seek information and understand relationships from knowledge base to provide answers to enquires; the user interface which emphasis on creating a clear communication channels between the human users and the expert systems. Finally, Broderick and Boudreau, 1992; Alter, 2002) states that Transaction Processing Systems match cost reductions, Expert Systems match service improvements, and Decision Making Systems match innovation.

Anatomy of Human Resource Information Systems (HRIS)

The major activity of human resource management functions is to utilize the optimal organizational resources in a more effective and efficient manner to achieve its goals and objectives and maximizing employee satisfaction that human resource department takes place it through attracting, staffing, and rewarding employees (Schular & Macmillan, 1984, p241). Due to the strategic importance of the human resource function with organizations is realized by the need to mobilize, nurture, and make use of people, most of human resource departments effectively collect, manipulate, analyze, and distribute pertinent information about people who provides the organization's goods and services.

With the subsequent evolution of human resource management (HRM), various computer-based information systems have been planned developed, and successfully implemented. Even today, computer-based information systems development efforts typically focus on clerical and operational tasks where manual processes are simply documented and replicated (Martinsons, 1995). Unfortunately, some automation with a review and possible redesign of the underlying process severely limits the benefits of IT (Hammer, 1990; Venkatraman, 1994).

Invading information technology business environment has emerged new human resource information systems. Therefore, many scholars and researchers stated definitions to human resource information systems. The best definition for human resource information systems is " a systematic procedure for collecting, storing, maintaining, retrieving, processing, saving, analyzing, distributing, evaluating, and validating data needed by an organization about its human resources, personnel activities, and organizational unit characteristics to improve human resource decisions (Walker, 1982; Safran, 1994; Kovach & Cathcart, 1999; Tannenbaum, 1990, Mathys & Lavan, 1982; Tannenbaum et. al., 1990).

Figure (2) illustrates the anatomy of human resource information systems, where HR functions need a highly skillful and competitor employees picked up from the labor market. In this context, HRISs consists of inputs, processes (continuity and maintenance), and outputs. Inputs comprehend most data about human resource workforce and data about the environment, which plays a major role in human resource functions and predictions. Processes comprehend the in going processes internally such as storing, updating, arranging, analyzing data and directly using new technology to simplify and distributed information for all organizational departments. Finally, outputs comprehend information about employees and jobs, information about business processes, reshaping human resource structure, and data distribution to end-user in order to take the decisions.

It should be understood that the role of HR in information management has to do with the management of people in all other departments of the organization. To make this happen effectively, HR must understand the information needs of these other departments and how functional modules influences and is influenced by the other functions. It must also be understood that external forces influence the management of information within HR and with HRIS as a whole. It might be necessary to integrate/interface information systems in other functions of the organization and outside the organization with the HRIS to realize information potential. HRIS stores employee data relationally. When a screen of information is input and system knows which piece of data belongs to which employee by storing it in data tables, the users manage data by way of specialized screens of information (functional modules/screens). Changes in any one screen will automatically result in related changes in other areas of the system.

Phases of Human Resource Information Systems Design

HRISs can be used in large organizations where the need for information varies at each level of organization hierarchy which itself vary from other organizations. In designing new systems, designers should take in their consideration organizational goals and objectives which determinate the type of information needed, at what level it will be used; operational, tactical, or strategically, how it must be structured, business size, number of employees, and nature of the activities (Awad, 1988, p33-35; Fisher et. al. 1999). Systems must be characterized by simplicity, flexibility, adjustability, and changeability according to developments may occur then.

The phases of HRIS designing contain three phases an HRIS needs a careful analysis and planning. Thus, the first phase is **Needs Analysis**, which is an in-depth study of the information collection, processing, storage and reporting demands of an organizational unit. A needs analysis must be done to determine what the HRIS should be able to do and what information demands the HR department has. The actual analysis takes the form of a written report. It is important to keep the information clear and in plain wording. The idea is to clearly document what the information needs is for the department. A good needs analysis will be able to effectively review systems against the information in the needs analysis. If needs are not met by a system, it is easily evident. Review each system, checking off and assessing how well each need is met. It is possible to find a system that meets most needs but some are not what you expect.

Mainly, organization must decide what its goals are for HRIS. Is HRIS intended to assist in managing HR data? By other word, is management looking for a better use of HR data or just trying to computerize a manual process? Will management need quick and easy access to HR information on an ad hoc basis? Will information be available mainly in regular and formal report form? Who will have access to the HRIS data? Will the system have interface with other systems? How might the organization's future needs be met by the systems or its available add-ons? What are the short and long benefits of HRIS? Answering to these questions form the type and size of HRIS designed. Need assessment is critical to getting a system that will suit the organizations and its users.

Building an HRIS within the organization requires a great deal of time, expertise, and money. This phase assess organizational needs especially HR department needs. Second phase is design and development, Designers, along with HR managers and Top Management, can determine the units, departments, and Jobs that must be automated through the HRIS. A detail plan must be done in every stage of HRIS designing, and the departments or jobs that are fully automated must be tested before the final application to determine the deficits and effectiveness of new systems and fully get the user acceptance. The final phase is implementation and tracing, systems designers must know who is permitted to access the systems or not? Who will implement these systems?. New systems should be implemented gradually in order to notice its capability and effectiveness in achieving organizational objectives. All workers are invited to make alignment between new system with old one incrementally to benefit much more than perplex all implementation process, new systems need to be revised and maintained through the whole implementation process.

Human Resource Information Systems in Human Resources Management

One of the primary reasons for existence of HRIS is to improve both organizational and human resource planning and decision-making (Lawler, 1992). The vast amount of data on employees and jobs in the organization provides the opportunity for management to use this information in many ways in making plans. The functions of HR, which must be managed through HRIS, must be identified and prioritized.

A. Job Analysis: includes collecting, recording, checking job information for accuracy, and using the information to determine what skills, abilities, and knowledge are required on the job for the successful job performance. Once a job analysis is completed, the information can be planned in the HRIS. As the job undergoes incremental changes, the ability requirements and task descriptions can be updated easy. Also, it includes job description, which is listing of job duties, responsibilities, and an explanation of organizational relationship pertinent to the jobs; job specifications, which outlines the specific skills, knowledge, abilities, and other physical and personnel characteristics, are necessary to perform the job (Hellriegel & Slocum, 1992; Fisher et. al., 1999; Milkovich & Boudreau, 1991, p 91).

B. Staffing: Once HR planning is determined, filling positions or acquiring HRs is followed. Staffing activities include **recruiting applications**, screening, and **selecting** the most qualified candidates and filling some vacant positions.

Figure (3) illustrates the **recruitment process** within the context of HRIS. Once a vacancy occurs and the recruiter gets authorization to fill it, a careful examination of the job and the list of skills, abilities, and experience needed to perform the job successfully is done, and existing job analysis documents can be very helpful. After careful planning the recruiting efforts, the recruiter uses one or more methods to produce a pool of potentially qualified candidates. A firm can generate candidates from many sources; internally through its present employees, who desire promotion or transfer; or externally through labor market using Internet or firms for employment. Organization then screens the candidates, evaluates some of them and offers the best for the position (Hellriegel & Slocum, 1992, p399; Fisher et. al., 1999).

Figure (4) illustrates the selection process within the context of HRIS. Computers can assist in employees' **selection process** by evaluating test performance and provide management with recommendation about the qualifications of the applicant. Interviewing applicants can generate information about their background, education, experiences, skills, interests, and general knowledge then screening them and HRIS can match these data with available jobs within the organization to hire "best fit" who perform well in the job posted (Fisher et. al., 1999, p299; O'Connell, 1991, p36-37).

C. Human Resource Planning: its essential to meet staffing needs that result in when complex and changing organization encounter dynamic business environment where it involves forecasting HR needs and developing programs to ensure that the right number and type of individuals are available at the right place and time (Milkovich & Boudreau, 1991, p116; Fisher et. al., 1999, p 13; Torrington & Hall, 1991, p 48-62).

Figure (5) illustrates the HR planning within the context of HRIS, where assign the primary objective of organizational strategy is to increase productivity, efficiency, effectiveness, profitability, and performance. HR strategy stems to concentrate on HR planning process as they diagnose the basic needs of employees (demand forecasting) from the (supply forecasting). Environmental influences maybe internal and external which includes organizational environment as well as other environmental influences that may affect both organizational and HR planning Activities (Torrington & Hall, 1991, p 49; Ivancevich, 1992, p 150; Cherrington, 1995, p 159). To be effective, any HR plan must be derived from the long-term and operational plans of the organization. In essence, the HR demands and needs are derived from the strategic and operating planning and then compared with HR availability.

D. Training: it is a systematic process of changing the behavior, knowledge and motivation of present employees to improve the match between employee characteristics and employment requirements.

Figure (6) illustrate training within the context of HRIS, where organization must determine the training needs then chose the training methods then gets the behavior and to straighten employee's performance. Training must be linked with other HR activities. Employment planning can identify skill shortages, which can either be filled through staffing or by strengthening the skills of the current workforce. Staffing can emphasize the trainability of those hired and promoted. Performance appraisal helps to identify gaps between desired and existing behaviors or outcomes and these gaps often become the targets of training.

E. Performance Appraisal: which the process of systematic evaluating each employee's job-related strengths and weaknesses as well as determining ways to improve the performance individuals. This is essential if the business is to reward fairly the efforts of good performance. However, an effective performance appraisal system is designed to help employees reach their potential and increase their productivity. The system can accomplish overall goals by three ways (Hellriegel & Slocum, 1992, p409) see figure (7):
   - Providing clear feedback to employees where they can decide how to improve performance and acceptable behavior.

- Providing a structure for personnel growth and development through examining potential as well as actual work behavior.
- Allowing managers to base short and long range administrative decisions about pay increases, promotions, and transfer on performance.

Barriers to Success of HRIS:

It is important to identify potential barriers before too much is invested (time and money) into HRIS. This process will allow the team to deal with issues quicker if they arise. The following are some of the more common barriers to the success of an HRIS:

1. Lack of management commitment.
2. Satisfaction with the status quo.
3. No or poorly done needs analysis.
4. Failure to include key people.
5. Failure to keep project team intact.
6. Politics / hidden agendas.
7. Failure to involve / consult significant groups.
8. Lack of communication.
9. Bad timing (time of year and duration).

Data Analysis

A. Target Population and Sample Characteristics

According to results shown in table (1), we noticed that more than 77% of personal characteristics are males and females are not yet take their parts in jobs. The main justifications behind these results are due to traditions and Islamic customs which prevent females to work out her home. Also, males are not only more capable than females in running business processes due to their physiological nature, but also they are most likely working under pressure. Clearly, results show that 55% of employees, who were employed, were over than 41 years, with prescription of working years employees were became valuable asset in organization and they become more stable than young employees who seek new opportunity to take it.

Table (1): Personal Characteristics   (N=100)

Personal characteristics		Frequency	Percent
Sex	Male	77	77%
	Female	23	23%
Age	< 25	8	8%
	26 – 30	11	11%
	31 – 35	11	11%
	36 – 40	15	15%
	> 41	55	55%
Education level	≤ Diploma	32	32%
	Baccalaureate	55	55%
	≥ Master	13	13%
Experience	< 5 years	23	23%
	6 – 10	16	16%
	11 – 15	13	13%
	16 – 20	14	14%
	> 21 years	34	34%
Number of computer Courses	< 3	28	28%
	> 4	72	72%

Considering sample educational level, we found that more than 55% were holding baccalaureate degree and more than 68% of them are well-educated. Justification behind higher educational level refers to their consciousness and open-mindedness with new developments that management decided to apply them inside their organization. Simplicity and deliberation are the major characteristics of well-educated employees. The logical result shown in table (1) illustrates that more than 34% were having well-experience. Obviously, a

positive relationship between experience and age were clearly identified, the older employees, the more well-experience they own.

Eventually, nearly (72%) of employees possess skills and knowledge needed to do their works through using computers as shown in table (1) due to the natural business activities and functions based on using information systems and computers to fulfill their works,.

Table (2) illustrates characteristics of bank; size, date of issue, and number of branches. As seen, 70% of included banks were nearly large which generally requires management information system and particularly Human resource information system to deal with large amount of employees employed to manage their affairs. Relatively, more than 40% of banks were issued after 1981 where it considered new. Whether the bank was old or new, it didn't constitute a difference because the nature activities of bank fully depend on using computers.

The number of branches of bank gave a clear evident on big size of the bank itself. So 70% of banks had less than 40 branches all over the world (internal or external). Another clear evident, that large size with many bank branches illustrated the need to adapt information systems that can manage human resource functions and activities.

Table (2): Bank Characteristics   (N=20)

Bank characteristics		Frequency	Percent
Bank Size	< 700	14	70%
	$701 - 1400$	4	20%
	> 1401	2	10%
Bank Date of Issue	≤ 1970	6	30%
	$1971 - 1980$	6	30%
	≥ 1981	8	40%
Bank Branches	< 40	14	70%
	$41 - 80$	4	20%
	> 81	2	10%

B. Questions Analysis
   1.   Human Resource Information System:
Table (3) shows human resource information systems characteristics. Results show that HRIS was fully adopted and implemented in banking sector. Reasons for implementing HRIS refer to:

- Increasing demands on qualified and well-experienced human resources in labor markets in order to achieve organizational goals and increasing organizational activities. Highly demand on HR forces HR departments as well as top management to employ HRIS to activate human resources activities and functions.
- Increasing bank size along with number of branches imposes on management to hire new capabilities and qualified employees which require providing top management with required information that makes them to take strategic decisions and to follow up employees' skills, knowledge, abilities, and performance.
- Sequences of information technology evolutions engender the employees' efficiency, effectiveness and performance as well as organizational departments and units.

However, the greater the integration and database development, the more the systems begin to consider strategic implications. Therefore, information systems, used for organizational purposes and human resource purposes, are need to be carefully planned and analyzed, where analysis information needs of the relevant areas of the organization to assess current data and future needs, to identify boundaries and solve commonality of data issues (Williams, 1997).

Table (3): HRIS Characteristics

Serial	Items	Means	St. Dev.	Agreement level
1	HRIS covers all bank activities and functions.	3.0620	1.253	High
2	HRIS integrated with other bank management information systems.	3.010	1.129	Medium
3	HRIS complies with bank management information systems.	2.960	1.309	Medium
4	Clear and reliable systems for determine salary, bonus, and other incentives.	3.720	1.135	High
5	HRM keeps integrated and updated database.	3.210	1.094	Medium
6	Information Technology has been used for HRM activities and functions.	3.160	1.212	Medium
7	Bank has applied reliable information system for compliance.	3.010	1.226	Medium
8	An employee's suggestion and opinion information system about work system development and problem system is used.	3.180	1.076	Medium
9	A precise and obvious HR relationship and communication systems with management and other systems are used.	3.150	1.122	Medium
10	Particular committee makes required information available in IS to cover expected HR needs.	3.130	1.228	Medium
11	Periodically, bank is making a comprehensive review of information systems.	3.200	1.222	Medium
12	A HR medical curative information system is used.	3.260	1.168	Medium
13	Information system provides management with occupational accident in the bank.	3.110	1.246	Medium
14	Information system used has been developed along with human resource information systems.	3.060	1.161	Medium
15	HRIS facilitates various activities and functions of the bank.	3.200	1.200	Medium
16	Use information system distinguished by flexibility and simplicity.	3.290	1.249	Medium
Result		**3.176**	**1.000**	**Medium**

2. Performance Appraisal System

Table (4) illustrates Performance Appraisal System results where most of human resource managers agreed on that performance appraisal system is intermediately used in most of businesses today. Managers permit only to employees to acquainted on their performance appraisal results as well as they used the system for their purposes. The ineffectiveness of the system refers to the lacunas in designation of the system and lack of information inputted. This leads to the common conclusion that information systems are needs to be more applicable and more fitting to the function designed to. This becomes particularly relevant in light of research showing that organizations operating in different types of supply chains may have different performance priorities (Lamming et al., 2000; Harland et al., 2001).

Stable networks consist of routinized supply chains focused on building efficient and lean operations flows. Their operations are dedicated to functional products with long life cycles and a low degree of innovation, such as in stable consumer goods industries (Harland et al., 2001). It is generally accepted that the benefits of adopting information systems in supplier coordination must be assessed in terms of their impact in operations performance areas including cost, delivery, quality, and flexibility (Walton and Marucheck, 1997; Stank et al., 1999; Frohlich, 2002). These priorities have been widely regarded as the major performance dimensions of manufacturing (Voss, 1995; Spring and Boaden, 1997; Schroeder et al., 2002).

Table (4): Performance Appraisal System

Serial	Items	Means	St. Dev.	Agreement level
17	Performance appraisal system designed to evaluate individual's performance.	3.170	1.128	Medium
18	Management provides employees with performance appraisal results through HRIS.	3.090	1.303	Medium
19	Performance appraisal results studied and analyzed through HRIS.	3.080	1.228	Medium
20	Department's performance appraisal results are compared with each other in bank.	3.010	1.077	Medium
21	HRIS connect employee's rewards and incentives with performance appraisal.	3.140	1.231	Medium
22	Employees participate in setting performance appraisal criteria.	3.180	1.140	Medium
Result		**3.111**	**1.016**	**Medium**

Specifically, systems operating in stable networks focused on cost, delivery, and quality, while systems operating in dynamic networks had flexibility, quality, and delivery as priorities. Thus, our study investigates not only whether human resource information systems affect performance, but also if this effect can be particularly associated to stable and dynamic supply networks. Dyadic systems appear to be more commonly associated with practices and priorities of stable networks, while multilateral systems appear to support mostly the practices and priorities of dynamic networks (Malone et al., 1987; Choudhury, 1997; Holland and Lockett, 1997).

A dynamic performance measurement system should have (Bititci et, al., 2000):

- An external monitoring system, which continuously monitors developments and changes in the external environment;
- An internal monitoring system, which continuously monitors developments and changes in the internal environment and raises warning and action signals when certain performance limits and thresholds are reached;
- A review system, which uses the information provided by the internal and external monitors and the objectives and priorities set by higher level systems, to decide internal objectives and priorities; and
- An internal deployment system to deploy the revised objectives and priorities to critical parts of the system.

3. Training Information System

Table (5) clarifies the results of training information system application in Jordanian banking sector, where the level of agreement on such systems applications is medium. As seen, the components of HRIS, represented by training system, aren't appropriately used well in banks. This can be justified as the top management and Managers inattention with training process in their organization. Effective management absence that determines actual training needs for all levels accompany with determining strategic goals of training is highly apparent. Moreover, weaknesses of trainee efficiency and capability in such training programs along with systems-user create a wide short delay or support insufficient information for decision maker.

Table (5): Training information system

Serial	Items	Means	St. dev.	Agreement level
23	Reliable training information system designed to train employees after selection and appointment is used.	3.210	1.130	Medium
24	Top management supports training activities through using training information system in bank.	3.100	1.209	Medium
25	Constantly, training evaluation results inputted in HRIS.	3.090	1.140	Medium
26	New employees have been qualified and prepared for using HRIS before getting work in.	3.170	1.247	Medium

27	Training processes are done through available information and customary information systems.	3.180	1.160	Medium
28	Employees are trained on new information technology that bank is going to use it.	3.170	1.239	Medium
29	Information network explore and clarify methods, times, and training core.	3.200	1.137	Medium
Results		**3.160**	**1.004**	**Medium**

4. Staffing Information System

Table (6) indicates that lack and insufficiency information in staffing information system, with external influences and disregarding following staffing criteria under limited opportunities and plenty demanding on jobs, play a critical role in breaking down system usage. Paragraph (30) indicates that a reliable information system has been implemented in banking sector to demonstrate human resources needs, while paragraph (32) says that HR departments keep information about labor market and shares with other firms to attract qualified employees and appoint them to enhance its processes in a competitive edge. The results show that staffing information system has already intermediately implemented, mean (3.175) and standard deviation (1.041). Generally, a reliable information system has been used for selection processes to select and appoint skillful and well-experienced employees.

Table (6): Staffing information system

Serial	Items	Means	St. Dev.	Agreement level
30	A reliable information system used by managers to enunciate human resources needs.	3.200	1.200	Medium
31	A reliable information system deals with employee's selection processes.	3.100	1.314	Medium
32	HR departments keep sufficient information about external and internal labor market along with salaries for assisting selection and appointment decisions.	3.300	1.150	Medium
33	New appointed employees are relatively tracked by HRIS.	3.220	1.104	Medium
34	A lucid communication between HRM and specialized firms for employment searching for new employees is highly implemented.	3.130	1.300	Medium
35	Staffing information system empowered executive managers to participate in selection and appointment processes in bank.	3.100	1.218	Medium
Results		**3.175**	**1.041**	**Medium**

5. HR Planning Information System

Table (7) illustrates human resource information system which is morphology implemented in Jordanian banking sector. As seen, integral information system has been used in banking sector to maximize organizational planning and strategic role. Once organization had started to plan for its futuristic roles, it would be useful to use HR planning systems along with management information system to establish three levels of planning: short, medium, and long range. Moreover, HR planning system as well as others systems can not be works without reliance on other systems, which increase its efficiency and effectiveness. HRPIS draw information and data from other systems to present the forecasting of demands and supply of workforce, and arrange all other organizational processes based on requirements needed.

Table (7): HR Planning Information System

Serial	Items	Means	St. Dev.	Agreement level
36	Bank uses obvious and reliable information system to identify bank HRs requirements.	3.150	1.122	Medium
37	Various departments in bank associated with through information system in proposing and discussing HR plan.	3.020	1.180	Medium
38	HR plans are reviewed, estimated, and justified according to bank and labor market circumstances and conditions.	3.020	1.286	Medium
39	HR planning encompasses all qualified and unqualified employees in the bank.	2.940	1.023	Medium
40	Bank uses an integral information system for strategic HR planning.	3.100	1.218	Medium
41	HR planning information system assists bank to study labor market and salaries level within the compete peers and originate plans.	3.160	1.236	Medium
42	The bank prepares analytical studies for efficiency, effectiveness and cost of workforce.	3.200	1.214	Medium
Results		**3.84**	**0.993**	**Medium**

Table (8) addresses HRIS effectiveness items. As shown, the HRIS effectiveness wasn't achieved respondents' desires in running their duties and responsibilities. This result might be returned to the lack of employees' knowledge, skills, abilities, and capabilities to deal and running these systems from one hand, and the deficit and shortage in systems itself which hinder organizational processes from other hand. Contrary to expectations, despite newness of HRIS usage, most banks used these systems to increase its effectiveness, efficiency, productivity, and profitability. As a result, HRIS effectiveness has and will be increased in near future because of the world of electronically based systems.

Table (8): HRIS Effectiveness

Serial	Items	Means	St. Dev.	Agreement level
43	HRIS provides top management with information that helps them to set strategic planning for bank.	3.170	1.173	Medium
44	HRIS usage leads to improve employee's selection processes.	3.160	1.108	Medium
45	HRIS can predetermine suitable training programs for bank activities.	3.350	1.086	Medium
46	HRIS leads to increase performance appraisal process effectiveness.	3.160	1.012	Medium
47	HRIS improve HR planning effectiveness.	3.310	1.051	Medium
Results		**3.230**	**0.887**	**Medium**

Table (9) illustrates HRIS barriers, which obstruct HRIS application. As seen, all respondents agreed on most organizations faced barriers that hinder their using human resource information systems (mean= 3.348, standard deviation= 0.774). The first conformity about barriers was directed to paragraph (53) and (57) with means (3.470) respectively. This means that most of managers have lack of trust with systems because individuals are doing the job and the can take their responsibilities against defects or mistakes in running their duties, and systems just accelerating jobs productions. System designers didn't play a critical role in clarifying the importance use of HRIS or any system designed for organizational purposes. Plenty of modifications and developments on these systems make them confused and distrusted with systems efficiency and effectiveness. Lack of employee's knowledge and skills to deal with new technology can lessen systems efficiency as well as employee's effectiveness and efficiency.

Table (9): HRIS Obstructions

Serial	Items	Means	St. Dev	Agreement level
48	Multiplicity of HRIS modifications and developments.	3.420	0.997	Medium
49	Lack of employees' knowledge with new HR systems.	3.270	1.090	Medium
50	Lack of training courses in information systems.	3.370	1.031	Medium
51	High cost of recent escorting of information systems.	3.310	1.012	Medium
52	Bank reliance on one information system without updating it.	3.320	1.062	Medium
53	Lack of top management persuasion with information systems.	3.470	1.029	Medium
54	Tracing and updating information systems require much time, effort, and cost.	3.210	0.977	Medium
55	Lack of employees' participation with information system designation.	3.390	0.024	Medium
56	Lack of flexibility in applying information system.	3.250	1.038	Medium
57	Lack of sufficient role of system designers in emerging the importance of HRIS.	3.470	1.038	Medium
Results		**3.348**	**0.774**	**Medium**

Table (10) shows the results of matrix correlation between human resource information system and these systems effectiveness. As shown, most of correlations are positive which means that those variables are positively connected to each other. This result considered normal, as all organizational systems should be mutually connected in order to increase its effectiveness. Another implication, most these variables are statistically significant at $P \leq 0.01$. Moreover, results show us that integration between human resource information systems represented by performance appraisal, training, staffing (recruitment and selection), and HR planning refers to the strongest and positive correlations between them. The more used systems, the more application human resource information systems. Additionally, a clear and significant correlation appeared between HRIS and the effectiveness of HRIS in banking sector. The more implementation of HRIS or any of its subsystems, the more effectiveness and efficiency of HRIS appeared as a whole in supporting all decision makers with sufficient and accurate information.

Table (10): Correlations Matrix

Field	PAS	TS	SS	HR PS	HRIS Effectiveness
Performance Appraisal System (PAS)	-	0.960**	0.952**	0.950**	0.800**
Training System (TS)	-	-	0.942**	0.952**	0.817**
Staffing System (SS)	-	-	-	0.921**	0.812**
HR Planning System (HRPS)	-	-	-	-	0.809**

** Significant ($P \leq 0.01$)

Table (11) shows the results of impact of dependent variables on effectiveness, these variables are; educational level, experience, bank size, date of bank issue, and number of bank branches. As seen in table below, there is no statistical significant between the educational level and experience on effectiveness of HRIS in banking sector. This can be justified that the optimal usage of HRIS not necessarily connected with experience, but the results surprise the researcher about the impact of educational level, where its expected to have impact on HRIS effectiveness. This can also be justified that the employees nature based on adaptation and dealings with HRIS and knowing all what concerning HRIS. Results show that a clear significant impact, ($p \leq 0.01$), has been remarkable between bank size and HRIS effectiveness. This significant impact was referring to class (1401 and more of employees) with mean (4.140).

This can also be justified the more bank size id large, the more needs for HRIS to be used to activate and mange HR activities and functions. As we know, the basic mean banks depends on in running their activities is computer and its systems, therefore, information systems are well used in banks which takes big part nowadays. Incrementally, decision makers seek to implement HRIS in their businesses to engender the higher productivity and profitability, this impose on businesses to use flexible, changeable, and developed information systems that

facilitate processes. If we scrutinize on results, we will find another significant impact on HRIS effectiveness comes by date of bank issue ($p \leq 0.05$). This means that the more oldest bank issued, the more HRIS effectiveness due to length of experience of banks at implementing information systems which gives its right to be more knowledgeable than others with benefits and disadvantages of implementing such systems, also, they will be the professional in this field due to experience they had. Maybe most of banks used information systems long ago and they revealed the defects and defaults stems from such systems and management not only modified and developed many times these systems that excreted more suitable systems for its activities, but also updated theses systems to be harmonized for advanced requirements of new technology and renewal management which reflects organizational capability on using information systems and human resource information system effectively and efficiently in turn it reflects HRIS effectiveness.

Finally, a significant impact of number of bank branches on HRIS effectiveness has been actualized based on results appeared in table (10). Maybe when a number of organizational branches getting large, many qualified employees are highly required to run its activities which leads to use staffing system. Sequentially, these branches needs job description and specification, staffing (recruitment, selection, and appointment), and performance evaluation, this impose management to better use of HRIS to deal with this quantum data leading to increasing effectiveness of HRIS usage. Increasing organizational size needs to be clearly mass planning included HR planning to fill positions that may result from organizational expanding.

These results are mainly considered normal because strategic and tactical management levels required information that can be taken from management information system and human resource information system used in their organization to identify strategic planning, setting strategic goals, and taking decision making concerning organizations. Thus, human resources departments are effectively and efficiently required to collect information's and make it available for decision makers.

Table (11): Impact of Dependent Variables on Effectiveness

Field		Effectiveness		F- test	Significant
Factor		**Means**	**St. Dev.**		
Education level	≤ Diploma	3.331	0.826	0.366	0.694
	Baccalaureate	3.164	0.916		
	> Master	3.262	0.947		
Experience	< 5 years	3.252	0.818	0.422	0.792
	6 – 10	3.125	1.012		
	11 – 15	3.173	0.965		
	16 – 20	3.071	0.854		
	> 21 years	3.371	0.883		
Bank size	< 700	2.957	0.876	12.662**	0.000
	700 – 1400	3.576	0.682		
	> 1401	4.140	0.401		
Bank date of issue	≤ 1970	3.430	0.837	3.155*	0.047
	1971 – 1980	3.523	0.451		
	≥ 1981	3.063	0.880		
Bank branches	< 40	2.943	0.846	16.152**	0.000
	41 - 80	3.840	0.648		
	> 81	4.020	0.346		

* Significant at ($P \leq 0.05$)
** Significant at ($P \leq 0.01$)

Recommendations

This paper first explains and explores the emerging human resource information systems in Jordanian banking sector and the impact of these systems on human resource functions and activities. Then, this paper explores the effectiveness of HRIS for different human resource management functions. Additionally, it examines the barriers that obstruct HRIS application in organizations. Finally, it explores the impact of educational level, experience, organizational size, date of issue, and number of bank branches on effectiveness of HRIS.

Due to the results appeared earlier in this paper, we set some recommendations as follow:

(1) Top management should support human resource information systems applications processes through encouraging employees to use this system by rewarding them.

(2) Employees should submission to training course to make aware of HRIS importance and its impact on achieving effectiveness of HR functions.

(3) Management should be controlling and follow up steps of HRIS applications in order to achieve integration and consistency between systems within HRIS and organizational Systems.

(4) Eliminating barriers facing HRIS application processes and making those supporting instead of obstruct.

(5) Systems designers should be included in decision making processes and gave them limited time to collect information and data that makes them capable to design systems characterized by simplicity, flexibility, and easily in application.

(6) More studies should take place about HRIS effectiveness and application and its impact on HR functions and activities all at once, and examine the connectivity and flexibility of IS within organizations and between them.

(7) Environmental influences (external and internal) should be considered and investigated to determine the weaknesses and defects in systems applied, and setting up internal environment (and employees too) to introduce new information systems.

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Figure (1)

Information systems & Business Hierarchy

1	2	3	4	5	6	7	8	9
umber of mployees	time hrizone	decision authority	decision uncertainty	decision risk	Uniqueness of decision problem	impact on strategic goals	decision problem scope	information requirements
High	Low	High	High	High	High	High	Broad	Heavy External
High	short	Low	Low Decision Certainity	Low	Low	Low	Narrow	Heavy Intenal

Strategic level*   EIS

Tactical level**   MIS

Operational level***   Day-to-day Operational systems TPS

* Executive Information Sytems (EIS)   ** Management Information Systems (MIS)   *** Functional Systems (FS)   Transaction Processsing Systems (TPS)

Source: adopted from elliott & Starkings, 1998, P48.

Figure (2)

Anatomy of a Typical HRIS

Input   Processing   Output

Functional Model/Screens

| Personnel data/ core |
| Pay admninistration |
| Benefit administration |
| Perofrmance Management |
| Training administration |
| Skills Inventory |
| Health & Safety administartion |
| Time Management |
| HR Planning |
| Staffing (Recruitment & Selection) |
| Compensation |
| Labor relations |
| Legislative Complaince |
| Leadership style |

Data Input

HRIS

Other Systems Within and Outside Organization

Data Distribution such as:
- Information about employees and Jobs.
- Information about Business processes.
- Information about planning, staffing,and evaluations
- reports about Human Resources affairs.
- reshaping HR structure.

End User

- Record, catch, and store data.
- Audit, retrieve, and update data.
- Rank and arrange data.
- Explain and analyze data.
- Use new technology.
- Processing all data inputted.

External Environment
Governmantal Legislatives, Economy, Society, Technology, Competition, Policies....etc

Figure (3)
Recruitment Process & HRIS

HRIS creates a job posting which is (or manually done):
- Posted a internet/ intranet
- Sent to print media
- Search firms

A position vacancy is determined in HRIS (new, replacement or short term staff) this is reflected in Position control as a vacant Position – for new jobs, a description code would be created and position opened.

SELECTION MADE:
Candidate notified via automatic letter or e-mail.
Applicant information is now moved to employee side of HRIS and position vacancy status is filled.

Resumes/ applications are received electronically or on paper from one of these sources:

Organization intranet (internal postings).

External Posting (internet) and Internet posting firms

Paper resumes or applications

HRIS

HRIS matches applicant data from applicant tracking side with the Job description/ job specification or any other criteria.
Short lists of applicants are reported. Further short listing can be performed by changing the qualifications

HRIS already has job Description/Specification data

Electronic resumes are sending directly to the applicant tracking side of the HRIS.

Paper resumes/ applications are scanned in or manually input to the application tracking system.

At each step of selection process, applicants and candidates can be notified via automatic letter or e-mail. The progression of each individual will be recorded on the applicant tracking side.

System will also keep statistics on applications from various sources.

Future performance can be matched up with effectiveness of various sources of applicants.

Figure (4)
Selection and appointment Process & HRIS

Data Inputs

Job analysis

Workforce

Recruitment results

Specifications & Descriptions Required

Environmental analysis (External & Internal)

Data information about skills, abilities, experiences and applicants' historical background that should be entired to HRIS to be processed and stored.

Processes

HRIS includes:
- application receipt
- initial interview
- tests
- application reviewing
- final test

Data Output

The decision that specify who will be selected from the pool of candidates to fill the vacant position.

Selection process should be matched with the suitable candidates, interviewed them, and finally appoint the fitter one to the position

Figure (5)

HR Planning & HRIS

| Organizational Strategy | → | Human Respurce Startegy |

| HR Planning process |

| Demand Forecasting | | Supply Forecasting |

Quantity of people required
Quality of people required
Timing of people rquired

Quantitiy of people available
quality of people available
Timing of people available

Shortage or surplus

Environment
Internal – external Influnces

Strategy	Governmental requirements
Goals	Regulations
Organizational Culture	Economic Conditions
Leaders style	Composition of the workforce
And experience	location of the organization
Technological Forecasts	Organizational Planning
Annual Operating Plans	Market Forecasts

High quality employees
That characterized by:
1. capablility
2. motivational
3. high skills
4. enthusiastic

Data Distribution

Data

Collection

Job Analysis	←	Orgnization Charts
Staffing Tables	←	Skills Inventory
Postioning control succession plan		Performance Management
Compensation		Training & development

Figure (6)

Training Process & HRIS

Assessment Phase　　　　**Training & development Phase**　　　　**Evaluating Phase**

Assess training needs and training sources

Identify training objectives

Develop Criteria → Pretest trainees

Select training programs, methods, and learning principals.

Conduct training → Monitor training → Compare training outputs with criteria

HR Planning
Staffing (Recruitement & Selection)
Performance Appraisal
Employee Safet & Health
Labor Market Other Environemntal nflunces

HRIS

Eliminate perofrmance deficiencies and change & modify undesired employees' behaviors to increase their knowledge, skills, capablilites, effectiveness efficiencies and productivity.

Figure (7)

Performance Appraisal and HRIS

Major target of management systems in organization is

Ensure and assert of achieving goals which is the main reason of organizational function by using new techniques.

Through

Performance planning which leads to achieving these goals.

Required

Performance Facilitation

- Evaluating fiscal HR moralities.
- Adapt organizational and administrative situations & conditions.
- Make information guidance and performance criteria.
- Make suitable conditions for performance replacement.

To be assure of aligning goals must be

Performance Follow up and Review should be determining the possibility of success.

feedback

Directed

Performance Improvements.

- Improving Performance
- Satisfying customers and Consumers Desires
- Meeting high Competition.

Performance developments processes should be continuously taking apart to certain changes.

Because of changing situations, conditions, and means of changes and technology.

HRIS

With all HR Functions And Activities

Change and modify Behavior.

Icreasing Productivity, effectivness, and efficiency

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