

## HUMAN RESOURCE INFORMATION SYSTEMS -A REVIEW

Dr M Nishad Nawaz\*

### **Abstract:**

Over the last decade Human Resource Information Systems have been adopted by many companies as it contributes to the development and profitability of the organization by reducing costs, facilitating information flow and thereby helping the HR managers to take effective decisions and gain a competitive advantage. In the past few years HRIS has been acting as an effective tool for organizational performance. The objective of HRIS is to support creation, transfer and application of information related to human resources or employees in organizations. Thus, effective development and implementation of HRIS requires a foundation in several rich literatures. To be credible, HRIS research and development should conserve and construct upon the significant literature that exists in different but related fields. This paper presents the functions, applications and various concepts of HRIS with a focus on its potential role in an organization. Drawing upon the literature review and analysis of HRIS concepts, several important research issues surrounding the role of HRIS have been discussed.

Key words: HRIS, organizational development, information flow, decision making, cost saving.

\* Department of MBA & Research Centre, East West Institute of Technology, Bangalore, India.

A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories  
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A.

**International Journal of Management, IT and Engineering**

<http://www.ijmra.us>

**Introduction:**

In today's dynamic business environment and in the era of knowledge workers, Human Resource Information Systems (HRIS) has significantly contributed to the effectiveness of an organization. HRIS provides a lot of information to human resources (HR) professionals to become strategic partners with top management and they provide the future needs to the organization. The HRIS directs to make use of the HR functions in a more efficient manner and provides better information for decision making.

The job contents and the expectations from HR managers have changed over the last few years, with functional and strategic pressures ever growing on them. Armstrong (1984) (1994), Kinnie and Arthurs (1996) Ball, (2000) Mabey et al. (2000) state that HRIS is a system used to acquire, store, manipulate, analyze, retrieve and distribute pertinent information about an organization's human resources.

HRIS is often regarded as a service, provided to an organization in the form of information. However, the promise is that, as the use of these systems becomes more widespread, higher level forms of HRIS will evolve. Lengnick-Hall and Moritz (2003) have postulated that HRIS will be implemented at three different levels namely, evolving from information to automation and from automation to transformation. Walker, (2001) and Haines and Petit, state that HRIS will create informational efficiencies and cost savings such that HR departments can turn their attention to provide better analysis of current data and creative uses of the HRIS to provide better and more accurate data upon which the strategic decisions are made.

**Human Resource Information System Concept and Need**

There are different definitions of HRIS. It is defined as a process, as a tool and recently as a strategy Gerardine De Sanctis, (1986) states that HRIS is not limited to the computer hardware and software applications that comprise of the technical part of the system, it also includes the people, policies, procedures and data required to manage the HR function.

It is a system used to acquire, store, manipulate, analyze, retrieve, and distribute information regarding an organization's human resources. Kavanagh (1990) states HRIS is not simply a computer hardware and an associated HR related software. Although an HRIS includes hardware and software, it also includes people, forms, policies, procedures and data. Tannenbaum (1990) defines HRIS as a technology based system used to acquire, store, manipulate, analyze, retrieve

and distribute pertinent information regarding an organization's human resources. John Reh (1997) views Human Resource Information System is a system that lets you keep track of all your employees and information about them. Kovach Kenneth et., al.(1999) defines HRIS as a systematic procedure for collecting, storing, maintaining, retrieving, and validating data needed by organization about its human resources, personnel activities and organization unit characteristics. Haines, Victor Y et.al. (2000) is of the opinion that Human Resource Information System is a systematic way of storing data and information for each individual employee to aid planning, decision making, and submitting of returns and reports to the external agencies.

### **Historical Development of HRIS**

In the 1960's and 1970's, large companies felt a need to centralize their personnel data part to facilitate record keeping and meet regulatory needs. Programs were written on large mainframe computers that acted as a central data repository with little transactional processing, usually only for payroll. The Human Resource Information System (HRIS), also known as a Human Resource Management System (HRMS) became prevalent in the 1980's with the popularity of Enterprise Resource Planning (ERP) applications and the move from mainframe systems to client server technology. This trend was based on a new school of thinking, one that saw the transformation of transactions into business processes and data into information. HR information can empower companies with "intelligence" enabling management to make more timely and more informed decisions. All the tier One ERP software vendors such as Oracle, PeopleSoft and SAP included some flavor of human resource management in their suite of applications providing their users with a single, holistic view of their workforce.

At the same time, the 1980's saw a shortage in skilled workers, especially in the technology sector. Human Resource Management had long evolved from the basis of a skills management discipline to more of an employee satisfaction and productivity tool. However, by the 1980's, HRIS systems now included a host of feature sets and functional capabilities aimed at attracting, retaining and properly compensating the workforce. By 2000, the human resource software industry saw HRIS grow to include recruitment, benefits management, time management, payroll, compensation management, learning management, expense reporting and reimbursements, and performance management. Self-service applications built on top of the underlining data empowered employees to manage their own data and make timely changes.

Online employee portals further consolidated disparate systems, documents and information into one place.

As computer hardware prices fell and computing power simultaneously grew, more and more companies were able to afford enterprise software systems and vendors saw a market for standalone HRIS software. Data connectors and application programming interfaces empowered customers with HR systems that need not be delivered with their financial accounting software. They now have an a la carte option and can leverage a higher fit system that better fulfills their HRIS needs and can integrate information such as payroll and headcount to their financial system. Vendors such as Sage Software and Ultimate Software saw a niche in the midmarket sector for their HRIS offerings.

However, Software as a Service (SaaS) found significant adoption in a downsizing economy. Companies can now have all the advantages of an HRIS that fits their specific needs and requirements, integrate relevant information with their financial applications, massage the data with a business intelligence (BI) reporting suite and make management decisions based on facts, figures and trends. And they need not incur the burden or cost of managing the hardware or software environment themselves. Not to be left behind, the Tier One ERP software vendors follow the pack by providing their ERP solutions, packaged with HRIS, as a SaaS option. This offering usually benefits small to midsized companies. However, organizations looking for a SaaS option for their HRIS will have a host of choices.

### **Why is HRIS needed?**

According Beckers & Bsat (2002) there are several advantages to firms in using HRIS. They broadly include - providing a comprehensive information picture as a single and comprehensive database; this enables organizations to provide structural connectivity across units and activities and increase the speed of information transactions. Lengnick-Hall & Lengnick-Hall, (2006), increases competitiveness by improving HR operations and improving management processes, collecting appropriate data and converting them into information and knowledge for improved timeliness and quality of decision making, producing a greater number and variety of accurate and real-time HR-related reports, streamlining and enhancing the efficiency and effectiveness of HR administrative functions, shifting the focus of HR from the processing of transactions to

strategic HRM, reengineering HR processes and functions and improving employee satisfaction by delivering HR services more quickly and accurately to them.

In assessing the benefits and impact of an HRIS to an organization, typical accounting methods do not work with the HRM function Huselid et al., (2005), Ulrich & Smallwood,(2005). While there are several tangible benefits in implementing an HRIS, such as payroll efficiencies and reduction in labor costs due to automation, there are several intangible or hidden benefits as well. Furthermore, HR practices can help organizations untangle the rigidity and inertia associated with the mechanistic, routine nature of enterprise resource planning (ERP). ERP software applications are a set of integrated database applications or modules that carry out the most common business functions, including HR, general ledger, accounts payable, accounts receivable, order management, inventory control, and customer relationship management. Obviously, HRM's emphasis on knowledge management, human capital stewardship, and relationship building can provide considerable assistance in the implementation and use of ERPs Lengnick-Hall and Lengnick-Hall, (2006). Therefore, active engagement of HR professionals in the introduction and ongoing functioning of an ERP is important so that organizations can realize the strategic benefits associated with these systems Dery & Wailes, (2006).

### **Objectives of HRIS**

The common objectives of HRIS are to make the desired human resource information available in the right form to the right person and at the right time, at a reasonable cost, process the data by using most efficient methods, provide necessary security and secrecy for important and confidential information, and to keep the information up to date.

Processes of Human Resource Information System involves Data Collection and Data Management

### **Literature Review**

Research on human resource information system is of recent origin in India. There are many studies in other countries like UK and US. An attempt is made hereunder to brief the different studies that are made in India and abroad.

Usman Sadiq, Ahmad Fareed Khan, Khurram Ikhlaq and Bahaudin G. Mujtaba (2012) analysed The Impact of Information Systems on the Performance of Human Resources Department and

concluded that HRIS is positively used as a tool to achieve greater administrative efficiency by adding value in the department. Mohammad Al-Tarawneh, Haroon Tarawneh (2012) studied the effect of applying Human Resources Information System in corporate performance in the banking sector in Jordanian firms and found that there is a significant effect between the quality of the output of human resources information system and institutional performance; between motives and corporate performance; between training and organizational performance in the banking sector in the Jordanian firm. Manar Al-Qatawneh ,Bandar Abutayeh Fawwaz A and Al Hammad (2012) analysed the effect of the implementation of Human Resource Information Systems on job related decisions in commercial banks in Jordan and concluded that all Human Resource Information System implementations have a positive effect on the quality of job related decisions. Dr. Shikha N. Khera and Ms. Karishma Gulati (2012) made a research on Human Resource Information System and its impact on Human Resource Planning: A perceptual analysis of Information Technology companies and concluded that HRIS identifies occupied and unoccupied positions in an organization very effectively and accurately. K P Tripathi (2011) analyzed the role of Management Information System (MIS) in Human Resource and developed an MIS model to keep the control on working of the staff at various levels. The system has been tested in Birla Corporation Ltd and it helped in taking effective decisions concerned with human resource in attendance recording and capturing. Huub Ruël, Rodrigo Magalhães, Charles C. Chiemeke (2011) made a research on Human Resource Information Systems: An Integrated Research Agenda that aimed at setting an agenda for HRIS research from an integrative perspective. Bader Yousef Obeidat (2012) analysed the relationship between Human Resource Information System (HRIS) functions and Human Resource Management (HRM) Functionalities and it was found that performance development, knowledge management, and records and compliance as dimensions of human resources information systems have a relationship with human resources functionalities. According to Carole Tansley and Sue Newell (2009) before HRIS design HR managers and IS managers had to prepare agenda which includes theoretical, practical, real oriented and easy learning processes. John Edwards (2008) suggested that HRMS lifts the HR activities fast, in respect of streamline processes, reduces errors, collects more data, improves budgeting, simplified access, enhance distribution, reduce duplication, improve security, better hires easier compliance and enhances the employee morale. Jim Spoor.al.et.(2008) asserted strongly that working in Employee Self Service (ESS), updates the

employee and policy manuals, product brochures, organizational charts, phone numbers and in future HRIS can be used as personal digital assistants, pocket PCs, and web enabled phones. Mary Ipe (2008) studies suggested that HRIS sub modules like recruitment, employee self service are useful to organizations. Al Doran (2007) identified HRIS usage in request for proposal (RFP) module which generates daily activities reports, response data reports, number of copies etc. Asoke and Sathiyarayanan (2007) in their case study analyzed the issues faced by an organization while implementing technology in HR. Organization needed application oriented programs like HR portal SAP HR Module that integrates all areas of business. Employee Self Service (ESS) Module and HR Portal will have come like single gateway to customized and personalized information on one single place. Brijesh Kapil (2007) explained about IT impact on recruitment process among 1200 scientists in Ranbaxy Laboratories and concluded that HRIS acts as a wonderful decision making tool. Dipankar Sarkar (2007) identified the IT usage in HR the major objectives have been to find ways to reduce human costs and calculate human resource returns meaningfully, through a maze of indirect costs and long term benefits. Ellen Vebber (2007) studied Children's Memorial Hospital in Chicago, one of the nation's leading pediatric hospitals with more than 5,000 employees. It was found that manual loading of all information into HRIS system, creates a great risk of input errors. Joseph Rasquinha (2007) concluded that all HR consultants felt that implementation of HRIS enables to get more profit, like fast, effective and efficient work. Stuart Maguire and Tom Redman, (2007) examined the inherent weaknesses in the approaches that most organizations use to develop and implement information system in their organizations. It examined the role of information system development in human resources management practices. Steven Phillip Brown (2007) in his humble attempt identified issues raised in human resource with information technology, issues like new technology, data security, new updates and new legal policies.

Thompson.S.H.Teo (2007) examined the relationship between innovation, organizational and environmental characteristics, for adoption of HRIS. The results indicated that organization size has a significant relationship with the extent of HRIS adoption. In a study Tim Smedley (2007) from Canfield School of Management report, studied 10 UK organizations to study the impact and advantage of HR and Technology. The study concluded that HRIS empowers the line managers performance in improving the quality of information, reducing administrative burden etc. Vincent Kiarie (2007) conducted a study on the HRIS usage in Africa. He stated that an HRIS

database makes it easier to streamline collaborative work and shape the HRH (Human Resource for Health) policy in the developing countries. Ngai and Wat (2006) conducted a survey on the implementation of HRIS in Hong Kong. The researcher examined the use and applications of HRIS. Chartered Institution of Personnel & Development (2006) found that technology is supporting the HR activities and processes. Florkowski, Gary, W (2006) evaluated the diffusion of eight information technologies that are transforming HR service-delivery in North America and Europe. According to them such information technologies include HR functional applications, integrated HR suits, HR intranets, HR extranets, and HR portals. Hussain et al. (2006) made a study on 450 organizations in UK firms which confirmed that HRIS is playing a big role in development of professional status of HR professionals. Jose Fernandez (2006) conducted survey in Spanish firms to identify the use of HRIS in selection and recruitment processes and found that HRIS is adding competitive value to the firm as a whole and to the HRM department in particular. Sandeep (2006) studied the HRIS and its implementation in nine organizations in India and suggested that the problems of proper knowledge and consideration of HR department as unimportant could be solved with proper planning, implementation and monitoring. Stuart Maguire (2006) found that information system failure is often associated with lack of attention to softer management practices such as culture change, organization development and user involvement. Steven Landberg (2006) identified that Insurance and Financial Services Business are highly dependent on human capital for their success in their roles as financial intermediaries. HRIS and outsourcing are alternatives to lower transaction processing costs; the highest long term returns are possible via technology enablement of talent management processes. Aston Beadles (2005) in their research work on usage of HRIS in public sector held that HRIS contributed organization's a valuable information, decreased costs, improved communication and time spent on mundane activities, paved way for more strategic role in the organization. Laila Marouf (2005) made a study in 30 Kuwait corporate companies. The researcher selected five IT operations and found that the organizations widely used tools like web applications, system development and database management. Tanya Bondarouk, et.al (2005) suggested that before implementation of the reward system into human resource department, organizations have to provide adequate training for the employees regarding HRIS. Thomas, W. Ferratt (2005) studied 106 organizations and found that if organizations implement information technology into their human resource practices, such organizations find employee turnover to a large extent.



Buckley et.al (2004) in their study explained about the role of HRIS in US Universities. All universities were found to be doing their activities like enrollments of the students, applicants' details, hire professional performance scores and performance rating of the students with HRIS. Researcher found that HRIS can reduce employee turnover, staffing costs, and increase the hiring processes efficiency. Gasco.Llopis and Gonzalez (2004), investigated that IT is useful in the designing of flexible training model and success of organization was dependent on the training policy. Ordonez de Pablos (2004) the study built a causal model and tested it with a sample of firms from Spanish manufacturing industry. It provided a conceptual framework to establish a link between HRMS strategic organizational resources and the creation of a sustained competitive advantage of organization through the creation and development of knowledge-based resources. Al Doran (2003) in his study stated that HR managers need to realize the value of the security of personnel information of employees. Anthony.M.Toensed (2003) found that HRM in IT provides clear picture about the HR issues. Implementation of IT in HRM shows the future challenges and opportunities being faced by the HR professionals. Gardner et al., (2003) tried to study IT influence on HR professionals and they suggested that HR professionals need more training for effective use of HRIS. Mayfield (2003) proposed human resource information systems (HRIS) model. This model is based on general systems theory. The model addresses all major HRIS components and offers information on how these facets interact to support each other and larger organizational outcomes. These model units consist of organizational vision, strategic integration, personnel development, communication and integration, records and compliance, knowledge management, forecasting and planning. Penny Bassett (2003) made study on HRIS advantages. He found that HRIS is largely restricted and useful in administrative concern and basically acts as a payroll system and works like electronic filing cabinet. Amy Trappcy (2002) in his paper stressed the need for and the importance of HR module as it provides efficient and effective manpower management that leads to effective utilization of human resources for the development of distribution center operations. Andrew Winthorp (2002) highlighted the benefits of HRIS and stated that, a modern organization requires an integrated human resource system to replace manual processes for the effective utilization of human resources. This has resulted in reducing labour requirements and administrative work burden. Baran.et.al. (2002) conducted a study covering 253 firms in Turkey with reference to comparison of existing human resource practices and new practices, existing HR practices with manual base

system, new HR practices with base of technology. They suggested that new technologies are generating new problems and talented workers were suffering with stress and management was advised to apply new concepts and techniques for meeting those technology changes. Astrid (2002) concluded in his article that the Decision Support System provides an organization with a competitive advantage and guides an organization towards improving the value of what the organization brings to the marketplace. Gary S. Fields (2002) conducted a study on Engineering Solutions Company with 100 engineers and found that HRIS was the best tool for measuring the performance of employee for promotion. Haven Cockerham (2002) suggested after his study of merging the HRIS applications with Web stated that organizations found effectiveness in internet recruitment, cost savings, speed, accuracy and effectiveness in work. Hammers (2002) concluded in his study that some organizations were not successful in the implementation of human resource information systems. The HRIS failed because various software programs were not integrated and information was often missing and gave suggestions for the problem. Kanthawongs (2002) conducted a study on usage of HRIS in Thailand focusing on the usage of HRIS and found that HRIS is improving the HR administrative activities. Steven (2002) brought out a report on HRIS and the evolution of wireless HRIS in future. HRIS would work through mobile units like PDAs, laptops and using web browsers. Sue Shaw (2002) viewed that computer education becomes a strategic tool for human resources. Willard (2002) interviewed IT managers regarding how to manage new IT. Carole Tansley, Frank.Jossi (2001). Bill Roberts (1999) highlighted the importance of the training, before implementation of HRIS and suggested that organizations should impart adequate training. Klynveld Peat Marwick Goerdeler (KPMG) (2001) report on assessment of human resource information system (HRIS) identified the HR need in processing transactions and data reporting and recommended that usage of web based HRIS is very useful in day-to-day transactions. Rothman (2001) investigated 50 outstanding companies in the business world to determine how they achieved their success. Some of these companies are Apple computer, Netscape, Microsoft and Hewlett-Packard. IBM, Intel, and Yahoo and tried to establish how technology assisted the companies in improving their strategic alignment, business intelligence, efficiency, and effectiveness and how they can be examples for human resource information systems development. Jim Meade (2000) attempted to explain web HRIS multiple advantages in employee and manager self-service, basic personal information, pay, background information of the employee etc. Carole Tansley and Tony Watson (2000) in

their study mentioned that at the period of designing HRIS issues like implementation, strategic enhancement, career development will arise and found that issues get solution with HRIS. Walker (1999) found that most of the organizations wanted to establish good operational services and effective development in a way that organizations can keep all information of their employees using ERP applications or organizational design applications.

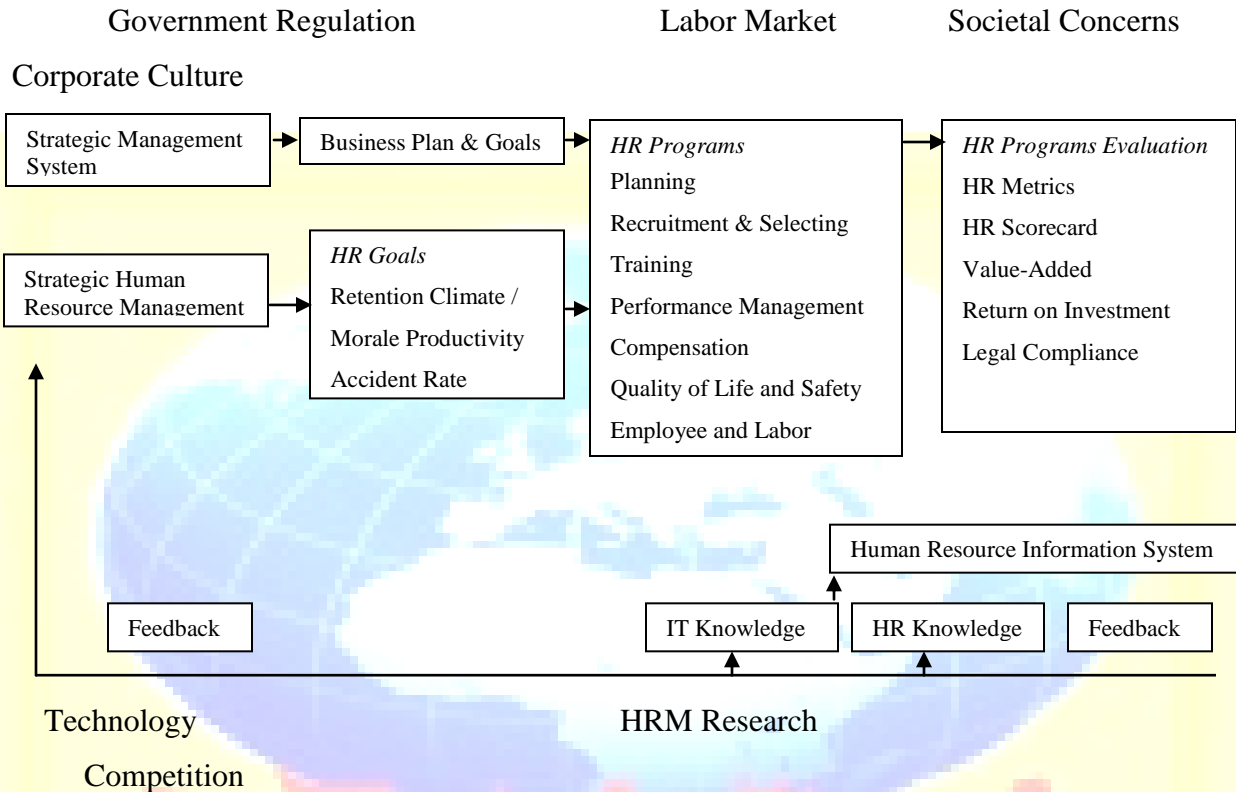
According to Wilson et.al (1999) implementation of information technology into human resources held that it directly develops the quality of product and services in any type. Joel Lapointe (1998) felt that in current scenario all organizations are implementing new HRIS and that there should be user adaptation and acceptance before implementation. All organizations have to provide training online support that will support the employees. Joan.C.Hubbard et.al (1998) concluded that HR managers must be constantly aware of the changing laws. The main role of HR Managers is to protect the ethical and legal issues at the time of designing of HRIS. Carolyeh Yun Lin (1997) study showed that HRIS usage is more to the top management, HR Staff and low level management. James Schultz (1997) in his study stated twelve parameters and cautioned that while implementing HRIS those are not expected to be included. Sonia Liff (1997) inferred that HRIS contains different types of data of the organization. It showed the total picture from the input data to strategy making. Victor and Andre Petit (1997) stated that computer-based HRIS professionals want to know the relationships between individual/task, organizational and system conditions. Two measures are taken for system's success i.e, individual/task and second condition is organizational conditions, size, availability of internal user support and organization computer experience. Third would be conditions involvement, training, support, documentation and applications development. The results of the study indicated that conditions were the most important antecedents of success. William Pyle (1996) in his paper titled "Information Technology and Human Resource" found that there is a significant role in information technology on human resources such as human resource planning, human function, human resource reengineering and system level problem solving. Arthur Yeung (1995) made a study in five organizations with five questions on reengineering of HR process done with the help of information technology in Hewlett-Packard, Apple Computer, AT & T, GE and Nuclear Energy. The study stated that reengineering is clearly in vogue and reengineering is one of the best tools to redesign the organization. Ken Gregson (1995) found that the information is very important resource for the organizations and also acquiring and storing the information,

making use of all information wisely and effectively towards the organization. Spencer (1995) pointed out that 80 per cent of the organizations are doing their human resource activities with help of information technology, through personal computers and interactive voice systems. Jeffrey B. Arthur Jun (1994) made a study on HRIS usage in cotton industry with two objectives. The first one to study HRIS and its impact in controlling employees' turnover and second is HRIS in developing of the organization and employees' commitment. Lado and Wilson (1994) discussed how HR systems facilitated the development and utilization of organizational competencies and how HR systems could destroy those competencies or inhibit their exploitations. Kinnie and Arthurs (1993) held that extending the use of IT into the strategic area is one way of showing the added value; extending IT usage in human resource function will enhance the speed of work and accuracy. Huo.P.Y. and Kearns (1992) was of the opinion that Human Resource Information System has a true value and powerful analytic tool for decision making especially in IT sector. Boudreau, John W (1991) made exploratory study in 500 firms and conducted interview with top HR leaders to know the usage of computers in HR department. The researcher hoped that the computers usage will be more in HR department in coming future. Gerardine De Sanctis (1986) made a survey in 171 U.S.Companies, to know whether HRIS is independent from the centralized MIS. To him if an organization chooses the independent HRIS, it supports following activities like human resource planning, selection, administration, decision making, placement, payroll, pension, and benefits management. Hall and Torrington (1986) concluded that computer was seen "as a tool to be used for record storage and to carry out routine clerical tasks". In other words, it was nothing more than an electronic filing cabinet.

**Model of HRIS**

**A Model of Organizational System Centered on HRIS**

National Culture Environment



**Source:** Lengnick-Hall.C.A.,Lengnick-Hall.,M.L.(2006).HR.ERP, and knowledge for Competitive advantage, Human Resource Management,26(3),15-29.

**Different Types of HRIS**

There are multiple typologies for the classification of computer based systems. One of the earliest books in the field of computer based systems (Sprague & Carlson, 1982) placed systems under three basic categories: Electronic Data Processing (EDP), Management Information Systems (MIS), and Decision Support Systems (DSS). EDP is primarily electronic storage of information and was first applied to automate paper work. In the MIS category, Sprague and Carlson (1982) state that the characteristics of MIS include an information focus, aimed at middle managers, structured information flows, integration of EDP jobs by business function (production MIS, marketing MIS ) and inquiry and report generation (usually with a data base).

Sprague and Carlson (1982) note that DSS are focussed still higher in the organization, with an emphasis on the characteristics like decision focused aimed at top managers and executive decision makers, emphasis on flexibility, adaptability and quick response, user initiated and controlled and support for the personal decision-making styles of individual managers. There is another type of HRIS, identified by Kavanagh (1990), which should be used in organizations to maximize the effect of computer generated knowledge on managerial decision making. All HRIS software is designed to generate a standard set of reports, but surveys and reports from both managers and HR professionals indicate that many of these reports are typically discarded.

Thus, it is apparent that another type of HRIS exists in the Human Resources Management Decision System (HRMDS). This system could be described as the ideal system since it provides critical information for decisions, involving the human resources of the company, and thus should be used as a standard for the development and application of any HRIS.

#### **System Development Process for an HRIS**

From the engineering and information processing literature, the formal design of any information processing system is supposed to follow a set of steps labeled, the System Development Life Cycle (SDLC). However, as Sprague & Carlson (1982) and other writers Aktas (1987); Davis, (1983) have noted, the traditional SDLC is difficult to use, but there are five general phases: Planning, analysis, design, implementation and maintenance. Kavanagh M J., Gueutal (1990) applying the main concepts and phases of the traditional SDLC to the HRM function, recommended the following system development process for an HRIS: “The HRIS development process refers to the steps taken from the time a company considers computerizing its human resources functions through the analysis, design, development, implementation, maintenance, evaluations, and improvement of the system” This system development process is quite similar to the one proposed by Walker (1982). He indicated that development of an effective HRIS should follow seven stages: Proposal to Management Needs Analysis System Specifications, System Design, System Development, Installation and Conversion and Evaluation.

This evaluation must be continuous and occurs not only after the system has been implemented but also at every stage of the development. The quality of these evaluations of the system will depend heavily on the documentation of the stages of the entire system development process. The documentation of the planning and development of a system is one of the most important determinants of successful system implementation and continued improvement.

## HRIS Architecture

It comprises of Single Tier that includes access to the mainframe (Computer) & could be via a desktop monitor; no processing was done locally (in the 1970), Two Tier [Client-Server] that means access to the computer via Structured Query Language, communication with DBMS (Database Management System) in the 1980, Three Tier [DBMS-SERVER-Application Server] i.e., access to the computer via DBMS, Server, Application Server in the 1990 and N-Tier [DBMS-Application Server-Web Servers-HTML] i.e. access to the computer via DBMS, Web Server, Application Server and HTML (Hypertext Markup Language) in the present

## HRIS - Applications

Some of the applications in HRIS include all the functional areas that are computerized like Personnel Administration application which contains each employee's name, address, date of birth, date of joining the organization and related personnel information, salary administration which details about present salary, last increment and the proposed increase are contained, Leave / Absence Recording that covers the leaves, absences, timings and rules, Skill Inventory that maintains and monitors the skills of the employee and the organization, Medical History that maintains the health, accidents and other health related records about the employee and Accident Monitoring that records and maintains accident information of the injured employees.

Performance Appraisal application helps in maintaining all the employee records about the performance appraisal data, like score of the employee in appraisal period, criteria, potential for promotion, Training and Development maintains the records of all employees with respect to the employee training & development, courses completed and under progress as well as training cost, Manpower Planning that is used for connecting employees' positions and keeping track of movements and identification of vacancies, present manpower and future requirements of manpower, Recruitment shows the recruitment activities like method of recruitment, cost, and total picture of the recruitment process, Career Planning maintains records that provide the success plans to identify which employees have been earmarked for which positions, Collective Bargaining module provides wages, hours, rules and working conditions.

According to Biswajeet Pattanayak (2006) the steps followed in setting up an HRIS in organization would be Inception of Idea i.e. idea might originate somewhere. Feasibility study i.e. the present system should be studied to highlight the problem areas and the likely benefit of an HRIS and it should carry out a cost benefit analysis of the HRIS in terms of labour and

material as also the intangible savings, such as increased accuracy and fewer errors, next step would be Selecting a Project Team i.e. once the feasibility study has been accepted and the resources allocated, a project team consisting of a human resource representative should be made. Defining the Requirements – a statement of requirements specifies in detail exactly what the system needs to do. Vendor Analysis - the purpose of this step is to determine what hardware and software are available that will best meet the organization's needs for the least price. Contract Negotiations i.e. the contract stipulating the price, delivery, vendor's responsibilities with regard to installation, service maintenance, training to organization employees. Training project team members to use the system and then they could train all users from other departments., Testing the System - purpose of testing is to verify the output of HRIS and make sure that it is doing what it is supposed to do. Audit- after a year or so, the project team should audit the performance of HRIS and if required corrective actions should be taken. While designing the HRIS, Raymond (1994) suggested that the companies have to follow the following steps in order to project the security to HRIS such as, training all users, not allowing passwords to be shared and changed frequently, running the software through a virus-detection program before using it on the system, ensuring that backup copies, data files, software, and printouts are used only by authorized users, making backup copies of data files and programs, ensuring that all software and mainframe applications include an audit trail (a record of the changes and transactions that occur in a system, including when and who performed the changes) and using edit controls (such as passwords) to limit employees' access to data files and data fields.

### **Potential benefits and uses of HRIS**

A survey in 1992 by Overman (1992) concluded that the potential advantages of HRIS are faster information processing, greater information accuracy, improved planning and program development and enhanced employee communications. Some authors like Awazu and Desouza (2003) have proposed that HRIS would reduce HR costs by automating information and reducing the need for large numbers of HR employees by helping employees to control their own personal information.

Many of these researchers believe the future to be bright for HRIS as it creates new paths for human resources and for the organizations that effectively use HRIS. A study even goes as far as to suggest that there is evidence that HRIS can improve shareholder value Brown David (2002). A significant problem with deciding whether HRIS benefits the organization is that of measuring



the effect of HR and more particularly HRIS on the bottom line. There are few clear cut ways to measure the value of HRIS. It is difficult to measure precisely the return on investment and specific improvements in productivity within the HR departments Mayfield, and Lunce (2003) user satisfaction and perception of the system has often been used as a proxy measure for the effectiveness of the system as the control of extraneous variables is difficult Haines and Petit (1997).

HRIS helps the organizations in HR Planning & Analysis which includes, manpower inventory, manpower requirement, skill requirement, turnover analysis, absenteeism analysis, placements, job matching, job descriptions and workforce utilization.

HRIS is used for HR Development in employee profile training requirements, succession planning, career interest & planning. It also aids in Staffing, acting as a source of recruitment and in application tracking and job offer refusal analysis. It is also useful in planning of compensation, like pay structure, compensation administration and incentive plans analysis and legal regulations implementation HRIS aids in Performance Appraisal functions like employee competency records and comparing actual performance with standards. It also assists the HR managers in Health Safety & Security such as safety training, maintenance of accident records, health records and compliance with acts. It also finds its use in Labour Relations as it helps in the maintenance of union negotiation records, attitude survey results, exit interview analysis and employee job history

### **Scope of Further Research**

Based on the secondary data, the researchers have to select and opt for wireless HRIS in various sub modules. The future of HRIS lies in SaaS and cloud computing. However, as more and more companies outsource their HR department's functionalities, outsourcing organizations such as Randstad and ADP are adding technology to their menus. HR outsourcing services such as TriNet and Achilles Group all offer HRIS tools and solutions for their clients. As the human resources outsourcing market is predicted by Gartner to reach \$1.102 billion worldwide by 2012, outsource companies will provide majority of HRIS processes and management. The immediate future of HRIS is a marriage between outsourced functions and outsourced technology. After that, the pendulum could swing in either direction further, whereby all workers are outsourced, not just in HR; or it could swing the other way, where organizations take back control of their workforce, workforce management but probably not the technology.

## Conclusions

Human Resource Information Systems, of late, have made much head-way in selecting right person at the right time and fitting him/her to the right job. If this process is systematically implemented, it will ensure the development of individuals' competence and reaps fruits of competitive advantage to the organization. Therefore, the importance of HRIS and its usage in HR processes has emerged as an important module for discussion, debate and research among all information technologists, management thinkers, corporate giants and host of others who are using HRIS for gaining a competitive advantage in various domains of HR processes especially in software companies.

## References

1. Al Doran, (2003).,Protecting our HR systems from Disaster, HR Professional pp 39-40.
2. Amy Trappcy (2002).,Human Resource Assignment System for Distribution Centers, Industrial Management Data Systems. Vol 102, pp 64-72
3. Andrew Winthorp (2002),Importance of A Human Resource System to an organization, Website: [http://EzineArticles.com/?expert=Andrew\\_Winthorp](http://EzineArticles.com/?expert=Andrew_Winthorp).
4. Anthony.M.,(2003),Toensed Human Resources and Information Technology, Journal of Labor Research Vol XXIV
5. Armstrong.M (1984)., A Handbook of Personnel Management Practice,2nd edition, Kogan Publisher Ltd, pp 47-48
6. Armstrong.M.(1994).,Using the HR Consultant: Achieving results, adding values, IPM, pp 23.
7. Arthur Yeung (1995)., Reengineering HR through Information Technology, Human Resource Planning, Vol.18,pp12-17.
8. Asoke and Sathiyararyana (2007).,E-Enable HR Management,IIPM Intelligence Unit Publication India, pp 46-55.
9. Aston Beadles (2005)., Impact of Human Resource Information System: An Exploratory Study in the Public Sector, Communication of the IIMA,Vol.5, Issue.4.pp39-46.
10. Astrid M (2002).,A DSS classification model for research in human resource information systems, Journal of information Systems Management,Vol.19, No.3, pp 41-50.

11. Awazu, Yukika., Desouza, Kevin .C., (2003) Knowledge Management, HR Magazine, 48(11), p107.
12. Bader Yousef Obeidat, The Relationship between Human Resource Information System (HRIS) Functions and Human Resource Management Functionalities, Journal of Management Research, 4, (4).
13. Baran.M., Karabulut, E., Semercioz.F., Pekdemir, I. (2002)., The new HR practices in changing organizations:  
an empirical study in Turkey, Journal of European Industrial Training, Vol.26 No.2/3/4, pp.81-7.
14. Beckers.A.M., Bsath.M.Z. (2002)., A DSS classification model for research in human resource information systems, Journal of Information Systems Management, 19, 3, pp 41–50.
15. Bill Robert (1999)., Who's change in of HRIS, HR Magazine Vol 3 pp 23-26
16. Boudreau, John.W. (1991)., the evolution of computer use in human resource management: interviews with ten leaders, Journal of Human Resource Management, Vol.30 issue 4, pp 485-508.
17. Brijesh Kapil (2007)., Focused Approach by Leveraging IT in HR, IIPM Intelligence Unit Publication India, 12 pp 17-18.
18. Brown, David., (2002)., eHR-Victim of Unrealistic Expectations, Canadian HR Reports, Vol15, pp 1- 6.
19. Buckley, Kathleen, Joy., Michaels (2004)., The use of an automated employment recruiting and screening system for temporary professional employees: A case study” Journal of the Intersection of Information Technology and Human Resource Management, Vol 43 Issue 2-3, pp 233-241
20. Carole Tansley and Sue Newell, (2009)., “A Knowledge-based View of Agenda-formation in the Development of Human Resource Information Systems”, Management Learning, Vol.38, No.1, pp 95-119.
21. Carole Tansley and Tony Watson, (2000)., Strategic exchange in the development of Human Resource Information Systems (HRIS), New Technology, Work and Employment, Vol 15 Issue 2, pp 108-122.
22. Carolyeh Yun Lin., (1997)., “Human Resource Information Systems: Implementation in Taiwan”, Research and Practice in Human Resource Management, Vol 5(1), pp 57-72

23. CIPD Report (2006)., HR and Technology CIPD,(Chartered Institution of Personnel & Development),  
Website: <http://www.cipd.org.hrtechnology.inc>.
24. Dery Kristine., Richard Hall.,Nick Wailes., (2006)., ERPs as technologies-in- practice social construction, materiality and the role of organizational factors, New Technology, Work and Employment Vol 21 Issue 3,pp 229-241.
25. Dr.Shikha N.Khera.,and Ms.Karishma Gulati,(Sep-Oct2012),Human Resource Information System and its impact on Human Resource Planning: A perceptual analysis of Information Technology companies (Delhi School of Management,Delhi Technical University, India) IOSR Journal of Business and Management (IOSRJBM),3,(6),pp06-13.
26. Ellen.Vebber,bswift (2007).,case study,Children's Memorial Hospital,22,4,North Des Plaines,6th floor Chicago.Website:[www.bswift.com](http://www.bswift.com)
27. Florkowski.Gary.W.(2006)., The diffusion of human-resource information technology innovations in US and non-US firms, Emerald Group Limited,Personnel, Review,Vol 35 No 6, pp 684-710.
28. Gardner.S.Lepak,D.P.,Bartol,K.M.(2003).,Virtual HR: The impact of information technology on the human resource professional. Journal of Vocational Behavior, pp159-179.
29. Gary S. Fields (2002).,"Predicting Potential for Promotion, How the Data in Human Resource Information Systems Can Be Used To Help Organizations Gain Competitive Advantage" Center for Advanced Human Resource Studies,(CAHRS),CAHRS Working Paper Series, Cornell University ILR School,pp 02-14.
30. Gasco, Llopis.,Gonzalez.,(2004)., The use of information technology in training human resources" An e learning case study,Journal of European Industrial Training,24,5,pp 281-290.
31. Gerardine De Sanctis,(1986)., Human resource information systems A current assessment, Journal of MIS Quarterly, Vol 10, (1), pp15-27.
32. Haines, Victor Y., Petit, Andre (1997), Conditions for Successful Human Resource Information Systems, Journal of Human Resource Management ,Vol 36( 2), pp 261-275.
33. Hall.L.,Torrington,D(1986).,Why Not Use the Computer? The Use and Lack of Use of Computers in Personnel, Personnel Review, Vol. 15,pp 3-7.

34. Hammers,(2002)., Website:<http://books.google.co.in/books?id=2pNfy7sKrRIC&pg=PA570&lpg=PA570&dq=Hammer,+M.+2002.+%22Recharging+your+HRMS>.
35. Haven Cockerham, (2002)., How Employers Save on HRIS Costs,HR FOCUS,pp 22-26.
36. Huub Ruël,Rodrigo Magalhães,Charles C.Chiemeke (2011),Chapter 2 Human Resource Information Systems: An Integrated Research Agenda,in Tanya Bondarouk,Huub Ruël,Jan Kees Looise (ed.) Electronic HRM in Theory and Practice (Advanced Series in Management, Volume 8),Emerald Group Publishing Limited,pp.21-39.
37. Huo.P.Y.,Kearns.J.(1992)., Optimizing the Job person Match with Computerized Human Resource Information Systems, Personnel Review,Vol.21, No.2, pp 3-18.
38. Huselid, M. A., Becker, B. E., Beatty, R. W. (2005)., The workforce scorecard: Managing human capital to execute strategy. Boston: Harvard Business School Press.p12.
39. Hussain.Z., Peter Prowse (2006)., the use and impact of human resource information systems on human resource management professionals, Working Paper by the Bradford University School of Management pp1-22.
40. James Schultz,(1997)., Avoid the DDTs of HRIS implementation-things to avoid in implementing human resource information systems,HR Magazine,Vol 3 pp1-9.
41. Jeffrey.B.Arthur, (1994).,“Effects of Human Resource Systems on Manufacturing Performance and Turnover” Journal of The Academy of Management,Vol.37,No.3,pp.670-687.
42. Jim.Meade,(2000).,Web-based HRIS Meets Multiple Needs” HR Magazine,pp 1-10.
43. Jim Spoor,(2008).,Do it yourself HRIS,Credit Union Magazine,pp10-15.
44. Joan C. Hubbard, Karen A.Forcht, Daphyne S. Thomas (1998)., Human Resource Information Systems: An Overview of Current Ethical and Legal Issues, Journal of Business Ethics Vol.17: pp 1319-1323
45. Joel Lapointe,(1998).,People make the system go or not human resources information systems, HR Magazine,pp 1-5.
46. John Edwards,(2008).,HRMS:Helping HR Out of the Cost Center,HR Review Vol 13 pp 12-37.
47. John Reh,(2006)., Key Performance Indicators (KPI), How an organization defines and measures progress toward its goals, Website:[http://management.about.com/cs/generalmanagement/a/keyperfindic\\_2.htm](http://management.about.com/cs/generalmanagement/a/keyperfindic_2.htm).

48. Jose Fernandez (2006), Use of HRIS in Recruitment Process the Spanish Case European and Mediterranean Conference on Information Systems (EMCIS), HRM Review, pp 1-7.
49. Joseph Rasquinha et al. (2007), Technology in HR Consulting, IIPM, Intelligence Unit Publication India, pp 11-12.
50. Kanthawongs, (2002), Website: [http://www.bu.ac.th/knowledgecenter//epaper/jan\\_june\\_2002/penjira.pdf](http://www.bu.ac.th/knowledgecenter//epaper/jan_june_2002/penjira.pdf).
51. Kavanagh, D. (1990), British Politics Today, Manchester: Manchester University Press, pp 11-13
52. Kavanagh, M. J., Gueutal, H. G., Tannenbaum, S. I. (1990), Human Resource Information Systems: Development and Application. PWS-KENT Publishing Company, Boston, Massachusetts, p10.
53. Ken Gregson (1995), Information resource management, Journal of Work Study 1995 Vol 44 Issue: 1 pp 20-21.
54. Kenneth A. Kovach (1999), Technology Transfer & Human Resource Development, Journal of Industrial and Commercial Training, Vol:26 (11) pp 17-21.
55. Kinnie, N., Arthurs, A. J. (1993), Will Personnel People Ever Learn to Love the Computer?, Journal of Personnel Management, Vol.25, pp.46-48.
56. Kinnie, N., Arthurs, A. J. (1996), Personnel specialists advanced use of information technology: Evidence and Explanations, Personnel Review Vol.25,(3), pp 3-19
57. KPMG (2001), Consulting Higher Education, University of California HRIS Need Assessment Journal of Information Technology, Vol 2 pp 34-39.
58. K P Tripathi, Role of Management Information System (MIS) in Human Resource, JCST, 2,(1), (2011)
59. Lado, A. A., Wilson, (1994), HRIS Impact, Academy of Management Review, (19), pp 699-727.
60. Laila Marouf (2005), Organizational & human resource aspects of IT management, A case study of Kuwaiti corporate companies, The Electronic Library, (23) pp383-397.
61. Lengnick-Hall, C. A., Lengnick-Hall, M. L., (2006), op.cit.
62. Lengnick-Hall, C. A., Lengnick-Hall, M. L. (2006), HR, ERP, and competitive advantage. Journal of Human Resource Management, (45), pp 179-194.

63. Lengnick-Hall and Moritz (2003), ERP and knowledge for competitive advantage, Journal of Labor Research, 24 pp.365-79
64. Manar Al-Qatawneh, (2012), The Effect of the Implementation of Human Resource Information Systems on Job Related Decisions in Commercial Banks in Jordan, European Journal of Economics, Finance and Administrative Sciences, 48.
65. Mary Ipe (2008)., Technology Interface with Human Resources, Journal of HRM, Review Vol 3 pp 51-56
66. May field.M., May field.J., Lunce.S.(2003)., Human resource information systems: a review and model development, Advances in Competitiveness Research, pp139-151.
67. May field,J., Mayfield,M., Lunce,S (2003)., Human Resource Information Systems: A Review and Model Development, Advances in Competitiveness Research. 11( 1), pp 139-151.
68. May field (2003), Human resource information systems: a review and model development, Advances in Competitiveness Research, pp 139-151.
69. Mohammad Al-Tarawneh, Haroon Tarawneh, The Effect of Applying Human Resources Information System in Corporate Performance in the Banking Sector in Jordanian Firms, Intelligent Information Management, 4,(2), 32-38, (2012)
70. Ngai.E.W.T., F.K.T. Wat (2006)., Human resource information systems: a review and empirical analysis., Personnel Review, 35 (3).
71. Ordonez de Pablos,(2004), Human resource management system and their role in the development of strategic resources, Journal of European Industrial Training, 28(6), pp 474-489.
72. Penny Bassett (2003), Use of Human Resource Information Systems (HRIS), Working Paper Series, School of Management, Victoria University, Melbourne, Australia.
73. Rothman (2001)., Information Technology in HRD, Journal of Management and Labour Studies, XLRI Jamshedpur India pp 39-42.
74. Sandeep (2006)., Issues and Concerns in the Implementation and Maintenance of Human Resource Information System, Journal of Information System Indian Institute of Management Ahmedabad, India, pp1-21.
75. Sonia.Liff,(1997)., Constructing HR information systems, Journal of Human Resource Management, 7 (2) pp18 -31.

76. Spencer,(1995).,Information technology is transforming human resource management,Journal of HRM, Vol 2 pp 23-34.
77. Sprague,H.R.,Carlson,E.D.,(1982).,Building Effective Decision Support Systems, Prentice Hall, Englewood Cliffs, New Jersey, pp 23-27.
78. Stuart Maguire., Tom Redman (2004)., the role of human resource management in information systems development, Journal of Management Decision, Vol 4,5 issue 2, pp 252-264.
79. Steven Landberg (2006).,Enabling Human Resources, Journal of Best's Review,p79.
80. Steven Phillip Brown (2007)., pp3-5,Website:  
[http://EzineArticles.com/?expert=Steven\\_Phillip\\_Brown](http://EzineArticles.com/?expert=Steven_Phillip_Brown)>
81. Steven (2002)., How an HRIS can Impact HR: A Complete Paradigm Shift for the 21st Century", Vol 12 pp 9-12.
82. Stuart.Maguire.,Tom Redman, (2007).,The role of human resource management in information systems development, Journal of Information Technology, Vol 45,2, pp 252-264.
83. Sue Shaw Integrating IT into the Human Resource Management Curriculum: Pain or Pleasure? Journal of Education Training 36 Issue 2 pp 25-30.
84. Tanya Bondarouk, Jan Kees.,Looise, (2005).,HR Contribution to IT Innovation Implementation,Results of Three Case Studies, Creativity and Innovation Management,Vol. 14,pp160-168.
85. Tannenbaum,(1990).S.I.,HRIS information: user group implications, Journal of Systems Management, Vol. 41 No.1 pp.27-32, 36.
86. Tim Smedley,(2007).,All Systems go, from CIPD Report HR and Technology Impact and Advantage.Website:  
[http://wps.pearsoned.co.uk/ema\\_uk\\_he\\_torrington\\_hrm\\_7/79/20384/5218344.cw/content/index.html](http://wps.pearsoned.co.uk/ema_uk_he_torrington_hrm_7/79/20384/5218344.cw/content/index.html)
87. Thomas.W.Ferratt (2005)., IT Human Resource Management Configuration and IT Turnover: Theoretical Synthesis and Empirical Analysis, Information System Research,16, No.3,pp 237-255.
88. Thompson.S.H.Teo (2007).,The adoption and diffusion of human resources information systems in Singapore, Asia Pacific Journal of Human Resources,45(1) pp 44-62.



89. Ulrich.D., Smallwood.N. (2005)., HR's new ROI: Return on intangibles, Journal of Human Resource Management, 44(2), pp137-142.
90. Usman Sadiq, Ahmad Fareed Khan, Khurram Ikhtlaq, and Bahaudin G. Mujtaba, (2012) Nova Southeastern University. The Impact of Information Systems on the Performance of Human Resources Department Journal of Business Studies Quarterly, 3(4), 77-91.
91. Victor.Y.Haines., André.Petit (1997). Conditions for successful Human Resource Information System, Journal of Human Resource Management, Vol.36, No.2, pp: 261-275.
92. Vincent Kiarie,(2007).,Information Technology and Human Resource Information Systems Assessment for the Christian Health Association of Ghana (CHAG)Report Draft,pp 23-34,Website: <http://www.hris.org/chag/hrisreport>.
93. Walker,A.J.(2001).,How the web and other key trends are changing human resources in Walker", A. (Eds), Web-Based Human Resources, McGraw-Hill,pp xiii-xxviii..
94. Walker (1999).,Information for Human Resource Management, School of public Health, University of the Western Cape Report.pp19-31.
95. Willard (2002)., Information technology is transforming HRM, Journal of Nida Development, Thai, pp 10-13.
96. Wilson.K.Cherukulath.,R.N.Raghuraman.,et.al.(1999).,Information management : An overview on human resource planning, Workshop on Information Management, Institute of Armament Technology, Pune,pp 23-26.
97. William Pyle (1996)., Information Technology and HR, Journal of Human Resource Planning, 19,pp 2-9.