

HR TRANSFORMATION THROUGH HUMAN RESOURCE INFORMATION SYSTEM: REVIEW OF LITERATURE

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Abstract Human Resource Information Systems (HRIS) have increasingly transformed the functionality of Human Resource (HR) functions in today's organisations. Using HRIS, HR professionals are now able to perform HR functions and deliver quick and relevant HR services efficiently and effectively which was not feasible in manual information processing and sharing. However, despite the growing need, benefits, and importance of HRIS, not all organisations have been able to use HRIS optimally. This paper tries to unfold this situation through three angles, first, how HRIS has developed over the years at different organisations for managing HR; second, HR functions that are being used through HRIS; and third, the facilitating and inhibiting factors in the optimal use of HRIS; and lastly, the existing challenges in HRIS from the users and management perspective.

Keywords: SHRM, Human Resource Information System (HRIS), e-HRM, HR Functions

INTRODUCTION

Top management thinkers have endorsed that the 21st century's HR challenges for management professionals in general and for HR professionals is not technology, but the ability of being human and managing humane without which no IT tool will leverage any management practice in the long term (Drucker, Dyson, Handy, Saffo, & Senge, 1997). Though Human Resource Information Systems (HRIS) emerged for the first time at General Electric in the 1950s, over the years these have increasingly changed in their functionality and usage. Hyde and Shafritz (1977) visualised that HRIS would be the need of tomorrow's HRM gamut. As the organisation grows in headcount, the HR operations become more complex thereby the HR data also multiplies. Managing data of HR and managing the HR are complementary to each other, hence a comprehensive system is required to manage the entire life cycle of an employee in the organisation (Sanctis, 1986). Tannenbaum (1990) defined HRIS as a system used to acquire, store, manipulate, analyze, retrieve, and distribute pertinent information about an organisation's human resources. Tannenbaum's definition qualifies for the real need and development of an information system which could cater to the requirements of HR. Rapid changes in the operation level and dynamic business environment have paved the path for treating HR as strategic business partner

in organisation. Henson (1996) though attributing HRIS as a great support in decision making, said, technology alone cannot run a HR practice. For the efficient and effective HR operations and management of HR, it is essential to have tools which leverage the delivery of smooth HR operations in organisations. Industry experts from organisations like; IBM, Le Marche', Geant', NEC, A to Z Info. Solutions, Cedar LLC have also endorsed the need HRIS for efficient and effective HR operations. Despite the promising scenario, majority of the researches, which have been largely done internationally mainly in western and few Asian countries and a handful in India, convey that HRIS has not received its due. In a unique pursuit, this study as literature review tries to study the Indian context with respect to the development, role, benefits, usage and challenges and opportunities of HRIS at India Inc. This study has been done around the key HRIS's contexts like strategic human resource management (SHRM) & HRIS, importance & benefits of HRIS, HRIS model & design, application of HRIS for different HR functions, adoption & implementation of HRIS, and facilitating & inhibiting factors for the level of usage of HRIS.

RESEARCH METHODOLOGY

The present study is qualitative in nature wherein content analysis tool has been used for exploring the developments

and challenges in the domain of HRIS. 61 research papers on HRIS from national and international sources have been reviewed in addition to chapters from two books on HRIS. To enrich the study with industry perspectives, five industry interviews have also been conducted. The underlying objectives of the study were mainly to examine the background and development of HRIS; explore the challenges and opportunities in the usage of HRIS in organisations; and identify gaps in the domain of HRIS and research further for bridging those gaps for the practitioners and HR professionals. Though major works on HRIS are done and published in the international scenario, only handful available research papers have been reviewed from India while majority included foreign soil. To include as many citations as possible relevant to the study topic, the online journal databases that were searched with keywords such as HRIS, Human Resource Information System, HRM, e-HRM and HRMS included Emerald, Elsevier, ProQuest, ResearchGate, SCOPUS, EPICOR, Springer link, IEEE Xplore, Kluwer and Wiley, ABII Global, Social Science Research Network, and EBSCO. The electronic search was complemented by manual search through journals, periodicals, directories, research reports, conference papers, company white papers, and books on HRIS coupled with some personal interviews of industry experts. Relevant international and national researches on HRIS or HR related themes have been reviewed from fourteen countries between the periods 1977 to 2014.

LITERATURE REVIEW

Strategic Human Resource Management (SHRM) & HRIS

Human Resource Management towards 1990s got revamped with technological advancement and emergence of Strategic HRM due to rapid change in business practices. Historically, the HR functions have evolved drastically for HRM (human resources management) as a professional and scientific discipline. The era of 20th century, which treated employees as just one of the replaceable cogs in the organisational wheel, has been changed by the growing contribution of industrial economy wherein in 21st century knowledge economy employees have become a key source of sustainable competitive advantage (Thite, Kavanagh & Johnson, 2012).

Becker and Huselid (2006) voiced that the resources-based view of an organisation treats human capital as a strategic asset for competitive advantage in improving organisational performance. The increased use of technology and the changed focus of the HRM function, adds value to the organisation's product or service which has led to the emergence of the HR department as a strategic business

partner. Agrawal (2008) emphasized that earlier business strategy was formed largely on the basis of external analysis while its implementation rested on internal management. However, today internal capabilities are treated as the main driving force for competitive advantage and success of business strategy. Kovach and Cathcart (1999) enunciated that the most important elements of an HRIS are not the computers, but the information. Therefore, focus of any comprehensive HRIS should be on information validity, reliability and utility first and on automation of the process later. The strategic need of HRIS, highlighted by Kovach, Hughes, Fagan, and Maggitti (2002) is well reflected in the findings of Tansley and Watson (2000) who explained that any HRIS project cannot be successfully completed unless and until all the parties like HR, IT, vendors and consultants with the much needed and whole hearted support of top management, do not get to the job in a team form. Teo, Soon, and Fedric (2001) established through their survey in Singapore that a vast majority of the firms use HRIS mainly for administrative purposes, as traditional support role. Mohanty and Tripathy (2007) felt that HRIS implementation is a strategic decision for organisations. The role of HR department, vendor selection, and management of change are critical for the success of HRIS. HRIS forms the core of strategic HRM. Gautam and Kasuhik (2011) claimed that HRIS has a great role to support SHRM activities such as communication, HR development, workplace learning, career management, business process reengineering (BPR), and decision making depending upon the size of the organisation. Organisations are now more prioritising on business and strategic benefits and focusing less on customary HR functions such as recruitment, training and development, performance appraisal, and payroll. Strategic avenues are now more focused on team-oriented job designs, workforce analytics, quality issues, empowerment of employee and incentivizing compensation with the help of HRIS (Mehta & Mahajan, 2012). Adding on to strategic alignment of HRIS with HR functions, Chauhan, Sharma and Tyagi (2011) reflected that organisation-wide integrated information system, strategic objectives served-in, shapes and establishes organisational mission. Another important development in SHRM is HR metrics. HRIS leverages the calculation of HR metrics and strategically aligns the findings of HR metrics with organisations' business objectives (Kavanagh, Thite & Johnson, 2012).

Importance & Benefits of HRIS

Computer-based Human Resource Information System (HRIS) has made its own place while managing HR functions. Kanthawongs (2004) while emphasizing on the same, claimed that HRIS plays important roles for Human Resource Management (HRM) because HRIS functions improve HRM in terms of administrative and analytical

purposes. Corroborating with her view, Bal, Bozkurt, and Ertemsir (2012) reinforced that with the increasing effect of globalisation and technology, organisations use information systems in various functions. Aggarwal & Kapoor (2012) were also of the opinion that HR technology or HRIS shapes an interaction between HRM and IT. Kumar et al. (2013) enunciated that HR is the backbone of any organisation. To ensure that the right people are in the right place with the right skills; up to date and accurate information is needed. Arora (2013) found that HRIS is of great usage in today's modern organisations especially for HR functions like human resource planning, training & development, performance appraisal, etc. With development in IT as enabling factor for managing HR, Perriyasamy and Amsa (2014) claimed the HR departments already use Management Information System (MIS) and now it has been extended to the concept of HRIS with the emerging technology platforms such as cloud computing, mobile computing and software-as-a-service (SAAS). Gardner, Lepak, and Bartol (2003) found that extensive use of IT impacts the HR professional job role through influencing informational demands on employees. Hoff (1983) on the same front explained that the benefits of having an HRIS is just not limited to HR department driven HR operations, but it can be extended to employee self-service (ESS) too for accessing the HRIS and requesting, modifying, approving and validating the data into system. Ngai and Wat (2006) have concluded in their study that cost of adopting, operating and maintaining HRIS is relatively high, hence HRIS is mainly used as 86 percent for payroll and general information. Moving on from their findings; Bansal (2014), while emphasizing on the emerging role of HRIS in managing HR, said a computerised HRIS is the need of the hour to manage data about movement of human resources in the organisation. Nawaz (2012) assessed the importance and impact of HRIS in among the select software companies in Bangalore (India) and reported that information disseminating is the key benefit of HRIS in organisations.. Echoing Nawaz, Sadiq, Ahmad, Ikhlaiq, and Mujtaba (2012) claimed HRIS is an opportunity for organisations to make the HR department administratively and strategically participative in the overall operations of organisation.

HRIS Models & Design

Mayfield, Mayfield, and Lunce (2003) argued in their HRIS model that human resource information systems are an essential factor in a competent, learning organisation. According their model, a comprehensive HRIS should be woven around strategic integration, forecasting and planning, HR analysis, knowledge management, communication and integration, records and compliance, personal development factors with the organisation's vision in centre. On the same pattern but little contrary to Mayfield, Teotia (2012)

developed an HRIS model to investigate the success factors of an HRIS around the building blocks of her model which consisted of organisational vision, strategic integration, personnel development, communication and integration, records and compliance, knowledge management, HR analysis, and forecasting and planning. Strohmeier and Kabst (2012) claimed in their study that success of HRIS depends on whether a particular HR function is actually performed or not. Simply dumping a function in HRIS will lead to inefficiency and unexplored potential of HRIS. Duc, Siengthai, and Page (2013) came out with another interesting paradigm which none of the previous researchers touched before. They suggested that "trust" is very important in all stages of technology management for human resource management efficiency and effectiveness to improve organisational performance. Shaikh (2012) in his HRIS model namely HRIS design model, HRIS hexagonal and HRIS phases model to establish further that the success of an HRIS system can be mapped and achieved during HRIS design phase and further system development life cycle (SDLC).

Application of HRIS for Different HR Functions

The study by Huo and Kearns (1992) described that one of the several advantages through enormous functional capabilities of HRIS, is recruitment and staffing. A good match between jobs and persons can be done with ease through a computerised HRIS. Beadles, Lowery, and Johns (2005) opined that getting staff to accept a new system is an obstacle which can be managed by educating them about reduction in time spent on administrative processes and in tandem controlling information processing costs. Furthermore, Lengnick-Hall & Lengnick-Hall (2002) bearing to HRIS users and their authority also rightly reflect through suggestions managers and employees need to assume activities once considered the domain of HR professionals and administrative personnel. By examining the processes associated with transitioning to a new HRIS, Wiblen, Grant, and Dery (2010) adopted a social constructivist perspective to understand the relationship between talent management and technology. They explored how organisation's understanding of talent and approaches to talent management were shaped by the implementation of HRIS. Obeidat (2012) concluded in his study that HRIS functions such as strategic integration for HR forecasting and planning, HR analysis, and communication and integration which strong relationship with HR functions. Performance development, knowledge management, and records and compliance are the other functions of HRIS. Kundu and Kadian (2012) have found that scope of HRIS applications have broadened in India yet major HRIS applications are employee record and pay roll which remain the most popular applications.

Adoption and Implementation of HRIS

HRIS as a change agent, Kossek, Young, Gash, and Nichol (1994) said that the implementation of a new HRIS represents a major form of planned organisational change for the HR function. HRIS is received and perceived as a change catalyst while managing HR. Users' acceptance and rejection lies on this context at large (Dery, Hall, & Wailes, 2006). Ahmer (2013) examined six factors and their the role in adoption of HRIS in organisations which involved innovation factors of relative advantage, compatibility, complexity, organisational characteristics of top management support, HRIS expertise, and environmental characteristic of competition. To strengthen Ahmer's findings, Krishnan and Manjari (2007) emphasized that HRIS implementation is a critical decision for organisations. Successful implementation of HRIS requires thorough planning and monitoring. Teo, Lim and Fedric (2007) concluded that adoption decision of HRIS in organisations depend on five variables, viz. departmental relative advantage, compatibility, top management support, size of the organisation, and HRIS expertise. In order to have a smooth implementation of HRIS, Arnold (2007) suggested that HRIS team should plan ahead for a painless conversion to a new HRIS. To achieve this, he gave few tips to follow like assembling a project team, data requirement analysis, data validation, data mapping, and system testing. Samparkad (2013) in his study of adoption of HRIS in an Indian universities setup found that despite the huge investment in HRIS the universities and their affiliated colleges use HRIS for HRM activities; to obtain general information related to HR like job budgets and application tracking and transfers while undermining its other key usage.

Facilitating & Inhibiting Factors for the Usage of HRIS

The facilitating and inhibiting factors have been broadly discussed in terms of various factors for the success of HRIS such as size of the organisation, HRIS workforce competency, functional integration of HR functions, user autonomy, role perception of HR manager, specifically the core team of HRIS, system's complexity, system's user friendliness, HRIS & HR workforce motivation & satisfaction, and cost effectiveness. Mary and Nyagi (2012) believed that the transformation of HR through electronic human resource management (e-HRM) which is basically computerised HRIS technology, adds value to organisation only when the system in question is user friendly, cost effective and competency of HR department. Tyrrell (1999) elaborated that HR workforce must be competent to use internet driven functions like recruitment and selection of HR for generating quality pool of candidates. Connecting with this, Kassim, Ramayah, and Kurnia (2012) found and

suggested that information technology (IT) appears to serve as an empowering function for HR professionals, through which HR professionals can provide increased value in their work. Ball (2000) described that usually organisations use HRIS where large number of employees exist and the manual management of their data is a cumbersome task. Goyal and Kapoor (2013), differing from Ball, with respect to size of organisation for the success of HRIS argued that HRISs are being used extensively in organisations of all sizes as they found there is no significant variation in the usage of HRIS between small, medium and large organisations. Jawahar and Harindran (2013) defended that users often accept and welcome HRIS in organisation mainly due to user-friendly functional integration of HR functions. Adding on to the findings of Jawahar and Harindran, Kumar and Parumasur (2013) said HRIS system's impact on HR functions, time management, cost management, managerial satisfaction, and organisational efficiency is immense. Maier, Laumer, Eckhardt, and Weitzel (2012) while emphasizing on the facilitating and inhibiting factors for level of HRIS usage established HRIS and HR workforce motivation and satisfaction is quintessential.

Table 1 represents year-wise data of authors, country where research was done, various key contexts which researchers have talked about, during the period 1977 to 2014 as described above.

Table 1: Details of Works by Different Authors

Author(s)	Country	Reference	Context
Hyde and Shafritz (1977)	USA	28	Need & Development of HRIS
Hoff (1983)	USA	26	Importance & Benefits of HRIS
Sanctis (1986)	USA	54	Need & Development of HRIS
Tannenbaum (1990)	USA	61	Need & Development of HRIS
Huo and Kerns (1992)	USA	27	Application of HRIS for Different HR Functions
Kossek <i>et al.</i> (1994)	USA	34	Adoption & Implementation of HRIS
Henson (1996)	USA	25	Need & Development of HRIS
Drucker <i>et al.</i> (1997)	USA	18	Need & Development of HRIS
Tyrrell (1999)	Canada	67	Facilitating & Inhibiting Factors for the Level of Usage of HRIS

Author(s)	Country	Reference	Context
Kovach and Cathcart (1999)	USA	35	SHRM & HRIS
Roberts (1999)	USA	52	Challenges in HRIS
Ball (2000)	UK	8	Facilitating & Inhibiting Factors for the Level of Usage of HRIS
Tansley and Watson (2000)	UK	62	SHRM & HRIS
Teo <i>et al.</i> (2001)	Singapore	64	SHRM & HRIS
(2001)			
Kovach <i>et al.</i> (2002)	USA	36	SHRM & HRIS
Lengnick-Hall and Lengnick-Hall (2002)	USA	41	Application of HRIS for Different HR Functions
Mayfield <i>et al.</i> (2003)	USA	44	HRIS Models & Design
Gardner <i>et al.</i> (2003)	USA	21	Importance & Benefits of HRIS
Kanthawongs (2004)	USA	32	Importance & Benefits of HRIS
Gupta and Chhabra (2004)	India	24	Challenges in HRIS
Beadles <i>et al.</i> (2005)	USA	10	Application of HRIS for Different HR Functions
Becker and Huselid (2006)	USA	11	SHRM & HRIS
Ngai and Wat (2006)	H o n g Kong	48	Importance & Benefits of HRIS
Dery <i>et al.</i> (2006)	Australia	17	Adoption & Implementation of HRIS
Mohanty and Tripathy (2007)	India	46	SHRM & HRIS
Krishnan and Manjari (2007)	India	37	Adoption and Implementation of HRIS
Teo <i>et al.</i> (2007)	Singapore	63	Adoption and Implementation of HRIS
Arnold (2007)	USA	5	Adoption and Implementation of HRIS

Brown (2007)	USA	13	Need & Development of HRIS
Agrawal (2008)	India	2	SHRM & HRIS
Dery <i>et al.</i> (2009)	Australia	15	Challenges in HRIS
Wiblen <i>et al.</i> (2010)	Australia	68	Application of HRIS for Different HR Functions
<i>et al.</i> (2011)	India	14	SHRM & HRIS
Gautam and Kaushik (2011)	India	22	SHRM & HRIS
Shilpa and Gopal (2011)	India	57	Challenges in HRIS
Thite <i>et al.</i> (2012)	USA	66	SHRM & HRIS
Aggarwal and Kapoor	India	1	Importance & Benefits of HRIS
Kassimet <i>al.</i> (2012)	Malaysia	33	Facilitating & Inhibiting Factors for the Level of Usage of HRIS
Maier <i>et al.</i> (2012)	Germany	42	Facilitating & Inhibiting Factors for the Level of Usage of HRIS
Mary and Nyagi (2012)	India	43	Facilitating & Inhibiting Factors for the Level of Usage of HRIS
Obeidat (2012)	Jordan	50	Application of HRIS for Different HR Functions
Sadiqet <i>al.</i> (2012)	Pakistan	53	Importance & Benefits of HRIS
Strohmeier and Kabst (2012)	Germany	60	HRIS Models & Design
Teotia (2012)	India	65	HRIS Models & Design
Bal <i>et al.</i> (2012)	Turkey	7	Importance & Benefits of HRIS
Kundu and Kadian (2012)	India	40	Application of HRIS for Different HR Functions
Mehta and Mahajan (2012)	India	45	SHRM & HRIS
Nawaz (2012)	India	49	Importance & Benefits of HRIS
Shaikh (2012)	India	56	HRIS Models & Design
Arora (2013)	India	6	Importance & Benefits of HRIS

Goyal and Kapoor (2013)	India	23	Facilitating & Inhibiting Factors for the Level of Usage of HRIS
Jawahar and Harindran (2013)	India	31	Facilitating & Inhibiting Factors for the Level of Usage of HRIS
Samparkad (2013)	India	55	Challenges in HRIS
Ahmer (2013)	Pakistan	3	Adoption and Implementation of HRIS
Dery <i>et al.</i> (2013)	Australia	16	Challenges in HRIS
Duc <i>et al.</i> (2013)	Thailand	19	HRIS Models & Design
Kumar and Parumasur (2013)	India	38	Facilitating & Inhibiting Factors for the Level of Usage of HRIS
Kumaret <i>al.</i> (2013)	Pakistan	39	Importance & Benefits of HRIS
Flynn (2014)	USA	20	Challenges in HRIS
Jahan (2014)	India	30	Challenges in HRIS
Bansal (2014)	India	9	Importance & Benefits of HRIS
Bhargava (2014)	India	12	Challenges in HRIS
Perriyasamy and Amsa (2014)	India	51	Importance & Benefits of HRIS

DISCUSSION

Various researches have reflected that HRIS, though a very powerful tool in managing human resources, has been largely used as automated HR functions only. Dery, Grant and Wiblen's (2009) suggestion to enhance HR's role as strategic partner via HRIS, carries challenges like level of senior management's commitment to implement HRIS, managing the complex functionality of HRIS, and barriers associated with the acceptance of HRIS among key users. Linking HRM with business objectives, integration of HRM functions, support of line managers and top management for HRIS implementation are the key factors for HRIS success. This is what is believed by Gupta and Chhabra (2004) which is quite close to the suggestions of Dery *et al.* (2009). Shilpa and Gopal (2011) have endorsed that e-HRM though reduces paper works enormously, poses challenges of effective e-HR systems such as creating effective e-statements, standardising and centralising HR administration, assessing and ensuring the flexibility of the e-HR technology. Flynn

(2014) has seen three major challenges surrounding HRIS which include the challenges of global HRIS, HRIS security, and HRIS management. HR stakeholders therefore must address these issues in order to reap the real benefits of having an HRIS and smooth HR operations for competitive advantage. In order to make HRIS instrumental in strategic gains, researches have not been specific as how to do that. This is so probably, the focus of these studies has not covered the operational issues in HRIS. Challenges and opportunities are quite generically discussed and mostly inhibiting factors are assumed as the challenges in HRIS. While talking about HR transformation through e-HRM and HRIS technology, researchers have reasonably justified that user friendly, cost effective and competent HR workforce are the catalyst for the success of HRIS but very few researchers have talked about size and structure of organisation in the process, which are also highly critical. In terms of functional usage of HRIS, though Indian Inc. is investing hugely in sophisticated HRIS, basic verticals in HRIS investments are still limited to recruitment, payroll, administration, and disciplinary actions. In India, majority of the studies have been done on the traditional HRM, but not much work has been seen on the core HRIS domain in relation to strategic part. Return on investment (ROI) is a significant challenge in HRIS investments. Robert (1999) advocates that HR stakeholders' ROI view should be based on whether HRIS has been able to contain cost of HR operations in terms of timely, efficient and effective HR service delivery or not. However, he has missed on deliberating upon the timeline for realizing such benefits. Jahan (2014) resonated with Flynn in her study that challenges faced by HRIS include lack of top management support, complexity of the HRIS and its impact on the users' acceptance during change management. Dery *et al.* (2013) seemed to be unconvinced with the fact that the potential of HRIS for SHRM tool has not really produced the achievement of HR transformation. Strategic transformations are yet to be realised.

CONCLUSION & FUTURE SCOPE

HRIS is inarguably a great tool in facilitating, managing and influencing the HR operations, and can result in HR transformation. However, in organisations, like many other departments, HR is still seen as a cost centre despite the claim of strategic business partner. After reviewing a good amount of research papers, it was found that Indian studies are still in their infancy stage. Literature from Indian origin, have gone very little in depth on HRIS. The findings seem to be repetitive and more conceptual than empirical in nature. Researchers have been found to be unanimous on HRIS transactional and automation role HR process but very few researchers have tried to find out why HRIS's strategic objectives and gains not yet realised. In addition to their own intellectual value addition, their researches also

grossly lack industry perspectives on HRIS with the cases of HRIS. Any research finding should cater to the needs of its main beneficiary(s) (over here academia and industry), these research lack impetus which can leverage HRIS users. It is assumed that unavailability of data and cases of Indian organisations or the reluctance from organisations could be reason for this gap. Contrary to this, foreign authors have been found to be more firmly footed in their researches. They have addressed the concepts like HRIS planning, design, implementation, and maintenance and HRIS's strategic stakes have been dealt profoundly with academic and critical industry inputs. Consolidating the undertaken literature review study, this work calls for more in-depth and empirical studies from Indian origin. Future works in the HRIS field with a focus on; achievable strategic alignment of HR with business, metrics to gauge those gains, and ways to convert real and perceived challenges of HRIS, will leverage academia and industry for utilizing the tool of HRIS for sustained transactional and transformational HR practices.

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