

## Human Resource Information System and its impact on Human Resource Planning: A perceptual analysis of Information Technology companies

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**Abstract:** Human resource information system (HRIS) is not new concept but it is recuperating day by day with changing environment. Its major role is in human resource planning (HRP) which itself a crucial activity in any organization. Ineffective HRP can lead to extra or fewer numbers of employees than needed. Both over and under number of employees can create crappy situations. HRIS helps in proper planning of human resources. This paper focuses on the role of HRIS in HRP. The research is empirical in nature as 127 respondents from top 7 IT companies (as per their market share) are taken to see the sights of the objectives. The survey is done with the assistance of the questionnaire. After investigation it is concluded that HRIS has various benefits but the foremost is HRIS stores ample data about the employees of the organizations that helps in escalating the snail's pace of HRP. HRIS also helps in the strategic activities of HR managers and more in training and development, succession planning, applicant tracking in recruitment and selection and manpower planning. While analyzing the overall contribution of HRIS in HRP it is concluded that HRIS identifies occupied and unoccupied positions in an organization very effectively and accurately.

**Keywords** – Human Resource Information Systems (HRIS), Human Resource Planning (HRP), Information Technology companies, Advantages of HRIS, Uses of HRIS.

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### I. Introduction

#### 1.1 Human Resource Information System (HRIS)

“A human resource information system (HRIS) is software containing a database that allows the entering, storage and manipulation of data regarding employees of a company. It allows for global visualization and access of important employee information.”

Marcia Moore<sup>[1]</sup>

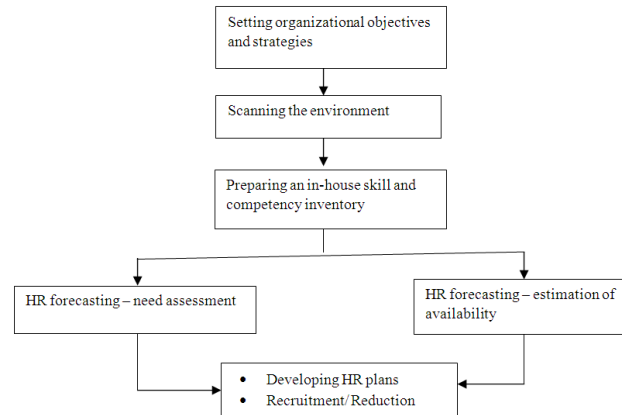
Kirstie S. Ball (2001)<sup>[2]</sup> explained the dearth of research in HRIS<sup>[2]</sup> in their work by quoting that the gigantic information system related literature including its implementation, use and impact clarifies that it is healthy researched area but its implementation with human resource is a deserted. Initially personnel systems were developed to stockpile the records and reports allied with personnel administration, but with time call for efficacy increases and thus computer-based HRIS is developed (Martinsons, 1997)<sup>[3]</sup>. But just computer based HRIS in not sufficient and Sherman et al. (1998)<sup>[4]</sup> supported this by citing that for long term strategic planning decisions a well designed HRIS aligned with HRD goals is the foremost management tool. Siriwal Tevavichulada (1997)<sup>[5]</sup> discussed that initially HRIS was caretaker of employees as it stores and administers data of line department but now HRIS is not limited to storing; but includes too many irons in the fire like manpower planning, manpower demand and supply forecasting, job descriptions for both jobs and applicants, recruitment and selection, training and development, negotiations, grievance management etc (Kenneth A. Kovach and Charles E. Cathcart (1999)<sup>[6]</sup>) and also provides information essential to assist the functional manager in decision making that will be an add on in the realization of the unit's strategic goals and objectives (Hendrickson, 2003)<sup>[7]</sup>. This increasing information processing efficiency of HRIS makes it useful for any size organization (Brian E. Becker et al., 2001)<sup>[8]</sup>. But still there is a perception that HRIS are not 'adding value' and the restricted way in which they are utilized is criticized (Carole Tansley and Tony Watson (2000)<sup>[9]</sup>). The usage of HRIS depends on some factors as illustrated by Broderick and Boudreau (1992)<sup>[10]</sup> that HRIS system usage is determined by human resources strategy, reciting a corresponding process between different strategies and different system practice. Beckers and Bsath (2002)<sup>[11]</sup> avowed that the main obstruction in the implementation of a HRIS is the sky-scraping cost of setting up and maintaining a HRIS in line with Kovach and Cathcart (1999)<sup>[6]</sup> who affirmed that a lack of funds and support of top management are the stumbling blocks in achieving the full potential of HRIS. Due to this obstacle in order to endorse the embracing of HRIS operations, primary it is necessary to make certain that bankers or organizations are agreeable to give their support for setting up a HRIS (E.W.T. Ngai, F.K.T. Wat, (2006)<sup>[12]</sup>). Apart from these difficulties HRIS has various advantages and the most crucial is the employee retention as employees as themselves crucial for the

organizations; it is also supported by Erik Beulen, (2009)<sup>[13]</sup> as the author contended that an HRIS blunt the edge of staff attrition by providing HR officers with the information they need.

## 1.2 Human resource Planning

Human resource planning (HRP) is generally overlooked in most organizations as the importance of HRP is not acknowledged (Vareta, 2010)<sup>[14]</sup>. Cherian (2011)<sup>[15]</sup> defined HRP as the process of forecasting the demand and supply human resource and recruiting the correct number of employees, with right skills (as per the job) as per the need of the organization.

The process of HRP is as follows:



**Figure 1: Human Resource Planning Process**

(Source: Pravin Durai (2010), Human resource Management, Pearson Education Publications)

## II. Rationale Of The Study

Human resources are asset for any organization and specifically the IT organizations where employees act as the talent warehouse. Due to the importance of human resources, human resource planning (HRP) is also in the limelight. To utilize the employee's efficiency it is imperative to have full description about the employee as well as the job for which he is available. Sometimes the employee could be the heritage for the organization but not doing well in his present position or role in the company. Also both, surplus and shortage of employees affects the organizations. HRP helps the organization to overcome from such challenges by scheming the number of employees, as well as their job description. Not only this, performance appraisal being the top motivating factors in the organizations need to be managed properly and HRP helps in this also by analyzing the employee's devotion to his work and his regularity in the organization. Doing this manually was a very complex task and HRIS blew away this obscurity. In this dynamic scenario, the importance of HRIS can't be neglected. This research work focuses on the contribution of HRIS in HRP. The literature review at hand highlighted the importance of HRIS and its various subsystems; but rare evidence is found for role of HRIS in HRP and specifically in IT organizations. The challenging aspect of HRIS discussed in this research paper is the overarching issue of the role of HRIS in HRP in the midst of its advantages and strategic applications.

## III. Literature Review

1. Madhuchanda Mohanty and Santosh Kumar Tripathy (2009)<sup>[17]</sup> analyzed the HRIS of NALCO in his study. The author exhibits that the present HRIS of NALCO has improved the overall pace and competence of HR functions, but still needs reengineering. The study supports that HRIS is used for administrative purpose and not analytical purpose. To gain cost effectiveness in-house development of HRIS is decided but it was very time consuming process. In addition to this there are some other drawbacks that have to be surmounted to make the HRIS of NALCO more proficient.
2. MD. Sadique Shaikh (2012)<sup>[18]</sup> developed three models in his research paper for HRIS designing namely basic HRIS design model, HRIS hexagonal and HRIS phase's model. The author emphasized on the payback of HRIS engineering and execution for all levels and domains of businesses; in the form of profitable strategic HR and related business plans and decision, to forecast and to control HR process inside and outside of business organization using HR-databases or HR-Knowledgebase's, which includes information related to human resource maintained and processed by HRIS.
3. Prof. Dr. Anil C. Bhavsar (2011)<sup>[19]</sup> discusses various advantages, applications and importance of HRIS. The author highlighted that "today's HRIS has the potential to be an enterprise wide decision support system that helps achieve both strategic and operational objectives".
4. Kenneth et. al. (2002)<sup>[20]</sup> discussed various administrative and strategic advantages of HRIS. Various administrative advantages underlined by the author includes employee self service, interactive voice

response etc. the author also propounded that businesses can leverage from the administrative cost savings, as well as strategic advantage in the course of information gathering, processing, and sharing.

5. Carole Tansley and Sue Newell, (2007)<sup>[21]</sup> thrash out that the knowledge and behavior of project leadership influenced project team trust and social capital development and stressed on the exploitation of this knowledge in the milieu of a global HR information systems. Project leaders relate this knowledge in three areas to develop trust inside the project team (external leadership, internal leadership and hybrid leadership), which is yet again a crucial prerequisite for the improvement and exploitation of social capital.
6. Albert C. Hyde and Jay M. Shafritz (1977)<sup>[22]</sup> conducted their study when HRIS was a new concept and just came into market. They portrayed HRIS as a system useful in planning and accountability of human resources and as a personnel management tool too. The authors also specified various modules, advantages, uses etc of HRIS at that time and future expectations from HRIS in human resource management.
7. Carole Tansley, Sue Newell, Hazel Williams, (2001)<sup>[23]</sup> contended that the term “Greenfield” conceptualizes the break with employee relations practices on hand, or to embark a philosophical break with the past. It is also emphasized that automate/informate/transformate potential of HR systems in the e-greenfield surroundings positively sways the nature and execution of HRM style philosophies, policies and practices. Not taking into concern the information sharing potential hamper the development of HR specialist’s knowledge of the needs of their clients. In the “knowledge era” of the future this may provide evidence of a very pricey missed prospect.

#### IV. Research Objectives

- a) To investigate the benefits of HRIS in IT organizations.
- b) To probe the role of HRIS in strategic activities by HR managers of IT companies.
- c) To explore the overall contribution of HRIS in human resource planning of IT organisation.

#### V. Research Methodology

##### 5.1 Data Collection

Sample of 127 respondents from top 7 IT companies (on the basis of their market share) have been taken to discern the role of HRIS in manpower planning of their organisations. The research design used is exploratory. Data for this study is acquired mainly from primary sources but secondary sources are also well thought-out. Primary sources include employees of the IT organizations who filled up the questionnaire geared up for the study. The data is also collected from the secondary sources including internet, websites of various IT companies etc. By means of survey and interviews, and SPSS statistical package (used for analyzing data), this exploratory research paper aims at exploring the role of HRIS in human resource planning in IT organization.

##### 5.2 Data Analysis and Findings

- 1) Investigation of benefits of HRIS in IT organizations

**Table 1: Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
better_supervision_and_control_manpower	127	1	5	2.43	1.165
anytime_access	127	1	5	1.82	1.269
reduce_labour_cost	127	1	5	2.40	.953
security_data	127	1	5	1.72	1.168
manage_ample_data	127	1	5	3.02	.766
statuary_compliance	127	1	5	2.40	.978
HR_decisions	127	1	5	2.62	1.147
Valid N (listwise)	127				

**Interpretation:** Table 1 clearly depicts the key advantage of HRIS is its ability to manage ample data; as it has the highest mean of 3.02. Other than this efficient HR decisions, better supervision and control of manpower, reduced labour cost and statutory compliance are other crucial advantages of HRIS with moderate means; in line with Hilka Poutanen (2010)<sup>[24]</sup>, Roberts (1999)<sup>[25]</sup> and Milton et al. (2003)<sup>[26]</sup>. Ngai and Wat (2006)<sup>[27]</sup> also validate that HRIS reduces various costs of an organisation. On the other hand, security of human resource data is also an advantage of HRIS (Kenneth et. al. (2002)<sup>[20]</sup>) but as it has the lowest mean, it shows that HRIS is not providing much security and confidentiality to the human resources data and must work on it. The result is supported by DeSanctis (1986)<sup>[28]</sup> as cited by Udani Chathurika Wickramaratna (2009)<sup>[29]</sup> that security and privacy are the problems of HRIS that are mainly allied with employee record keeping, interfacing with information systems of other functional areas, career path for HRIS employees, and deficit of cooperative interaction between human resource and MIS staff. Also, the lowest standard deviation of 0.766, shows that

*Human Resource Information System and its impact on Human Resource Planning: A perceptual*

people are comprehensible about the ability of HRIS to store voluminous data. This result is validated by various authors in their definition of HRIS. Some are as follows:

As cited by Prof. Dr. Anil C. Bhavsar (2011)<sup>[19]</sup>, Broderick and Boudreau (1992)<sup>[10]</sup>, defined HRIS as “the composite of data bases, computer applications, hardware and software that are used to collect, record, store, manage, deliver, present and manipulate the data for human resources”.

Madhuchanda Mohanty and Santosh Kumar Tripathy (2009)<sup>[17]</sup> stated HRIS as “a systematic procedure for collecting, storing, maintaining, retrieving and validating data needed by an organization about its HR”.

High standard deviation shows that respondents are somewhat dubious that HRIS gives anytime and anywhere access of human resource information and it provides security and confidentiality of the data.

- 2) Analyzing the role of HRIS in strategic activities by HR managers of IT companies  
To analyze the role of HRIS in strategic activities by HR managers of IT companies’ factor analysis is done.

**Table: 2 Communalities**

	Initial	Extraction
grievance_management	1.000	.753
personal_information_identification	1.000	.921
absentism_analysis	1.000	.925
work_scheduling	1.000	.850
cost_of_salary_benefit_per_employee	1.000	.837
union_negotiation	1.000	.710
turnover_analysis	1.000	.658
training	1.000	.904
performance_management	1.000	.956
cost_of_selection_per_employee	1.000	.852
applicant_tracking	1.000	.442
manpower_planning	1.000	.880
compensation_management	1.000	.394
succession_planning	1.000	.849
benefit_administration	1.000	.956
salary_planning	1.000	.965

Extraction Method: Principal Component Analysis.

**Table:3 Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.584	28.648	28.648	4.584	28.648	28.648	4.339	27.119	27.119
2	2.856	17.853	46.501	2.856	17.853	46.501	2.962	18.511	45.630
3	2.348	14.678	61.179	2.348	14.678	61.179	2.265	14.158	59.788
4	1.728	10.800	71.978	1.728	10.800	71.978	1.736	10.849	70.637
5	1.335	8.345	80.323	1.335	8.345	80.323	1.550	9.686	80.323
6	.821	5.130	85.453						
7	.663	4.146	89.599						
8	.490	3.064	92.663						
9	.449	2.809	95.472						
10	.299	1.870	97.342						
11	.163	1.017	98.359						
12	.115	.716	99.074						
13	.070	.436	99.510						
14	.051	.316	99.826						
15	.028	.174	100.000						
16	1.881E-16	1.175E-15	100.000						

Extraction Method: Principal Component Analysis.

**Table:4 Component Matrix<sup>a</sup>**

	Component				
	1	2	3	4	5
grievance_management	.059	.018	.572	-.320	.566
personal_information_identification	.907	-.303	.029	.061	-.045
absentism_analysis	.937	-.199	.079	.034	-.014
work_scheduling	.846	-.347	.032	.090	-.063
cost_of_salary_benefit_per_employee	.023	.218	-.333	.799	.200
union_negotiation	.056	-.092	.386	-.125	.730
turnover_analysis	.806	-.084	-.026	-.018	.022
Traning	.423	.811	-.184	-.177	-.051
performance_management	.078	.327	.834	.251	-.291
cost_of_selection_per_employee	-.003	.145	-.149	.826	.357
applicant_tracking	.408	.353	-.079	-.133	.356
manpower_planning	.346	.804	-.227	-.245	-.041
compensation_management	-.089	.415	.428	.164	.056
succession_planning	.397	.788	-.252	-.081	.028
benefit_administration	.078	.327	.834	.251	-.291
salary_planning	.931	-.289	.046	.088	-.063

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

**Table:5 Rotated Component Matrix<sup>a</sup>**

	Component				
	1	2	3	4	5
grievance_management	.013	.002	.211	-.211	.815
personal_information_identification	.958	.038	-.031	-.009	.014
absentism_analysis	.949	.133	.032	-.018	.067
work_scheduling	.921	-.031	-.031	.003	-.009
cost_of_salary_benefit_per_employee	-.009	.101	-.024	.894	-.163
union_negotiation	.043	-.080	.024	.050	.836
turnover_analysis	.775	.228	-.043	-.010	.056
Traning	.097	.935	.116	-.010	-.082
performance_management	.055	-.001	.975	-.036	.034
cost_of_selection_per_employee	-.007	-.016	.060	.920	.045
applicant_tracking	.220	.528	-.077	.086	.318
manpower_planning	.018	.931	.053	-.057	-.079
compensation_management	-.186	.171	.533	.123	.174
succession_planning	.081	.906	.055	.118	-.066
benefit_administration	.055	-.001	.975	-.036	.034
salary_planning	.981	.046	.002	.006	.000

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

**Table:6 Component Transformation Matrix**

Component	1	2	3	4	5
1	.932	.357	.026	.005	.051
2	-.337	.856	.362	.147	-.030
3	.059	-.271	.828	-.241	.424
4	.095	-.248	.293	.887	-.240
5	-.069	.072	-.311	.366	.871

**Table:6 Component Transformation Matrix**

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2	-.337	.856	.362	.147	-.030
3	.059	-.271	.828	-.241	.424
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Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

**Interpretation:** This clearly shows that 5 factors have been extracted out of the total 16 factors. The factors having the Eigen value greater than 1 are considered together as 1 factor. Summarized table is shown below.

**Table 7: Summary of factors extracted**

Factors	Variables	Factor loadings
Budgeting factors (F1)	Cost of salary and benefit per employee	.894
	Cost of selection per employee	.920
Employee management (F2)	Personnel information and identification (attendance tracking, etc)	.958
	Salary planning	.981
	Absenteeism Analysis	.949
	Turnover Analysis	.775
	Work scheduling	.921
Benefits and compensation (F3)	Compensation management	.533
	Performance management	.975
	Benefit administration. (retirement plans, medical and life insurance plans etc)	.975
HR development factors (F4)	Training and development management	.935
	Succession planning.(identification of key positions and their requirements)	.906
	Applicant tracking in recruitment and selection	.528
	Manpower planning	.931
Employee and labour relation (F5)	Grievance management	.815
	Union negotiation	.836

After analyzing the various factors, from table 3 it can be easily depicted that **these 4 factors contribute 80.323% of the total factors** as 80.323% of the total variance is related to these factors.

After computing new factors F1, F2, F3, F4 and F5, mean and standard deviation are calculated to know which factors are practiced more in the banks.

**Table 8: Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
F1	127	1	5	3.72	1.046
F2	127	1	5	3.76	1.134
F3	127	1	5	3.76	1.098
F4	127	1	5	3.87	.979
F5	127	1	5	3.19	1.208
Valid N (listwise)	127				

**Interpretation:** Table 8 draws that factor F4 (Training and development management, succession planning (identification of key positions and their requirements), applicant tracking in recruitment and selection and manpower planning) has the highest mean sketching out that HR development is the main use of HRIS in IT organizations and lowest standard deviation anticipating that there is no uncertainty for this to be the key use of HRIS. Second highest mean of F2 (Personnel information and identification (attendance tracking, etc), salary planning, absenteeism analysis, turnover analysis and work scheduling) and F3 (Compensation management, performance management and benefit administration like retirement plans, medical and life insurance plans etc) postulates that these are also the strategic uses of HRIS in IT organizations. The highest standard deviation of F5

(grievance management and union negation) depicts that respondents are not clear about HRIS use for grievance management and union negation.

- 3) Exploring the contribution of HRIS in HRP

**Table 9: Correlation between various stages and sub-stages of Human Resource Planning and Human Resource Information System implementation for Human Resource Planning**

<b>Independent variables</b>	<b>Dependent variable</b> HRIS implementation in IT organizations for Human resource planning
HRIS identifies quantitatively unoccupied positions accurately	.892**
HRIS identifies qualitatively unoccupied positions accurately	.439**
HRIS identifies quantitatively occupied positions accurately	1.000**
HRIS identifies qualitatively occupied positions accurately	.677**
HRIS analyses each job description.	.568**
HRIS maintains skill inventory (ability, capacity, qualification and career goals).	.537**
HRIS maintains relationships with individuals who register in a talent warehouse.	.184*
HRIS eliminates unsuitable applicants and focuses on promising candidates.	.252**
HRIS leverages employee's talent in the right place at the right time.	.347**
HRIS recruitment subsystem is implemented appropriately	.207**

**Interpretation:** Table 9 signifies HRIS mainly helps the IT organizations in identifying occupied positions quantitatively and accurately as it has the maximum correlation of 1 that is achieved very rarely. Also HRIS identifies quantitatively unoccupied positions accurately with high correlation of .892. These two results identifies that HRIS helps in quantitative analysis of jobs more as compared to qualitative analysis. All the values of correlation are significant in the above table interpreting that HRIS helps in all the stages of HRP including analyzing job description, maintaining skill inventory and relationships with individuals who register in a talent warehouse, eliminating unsuitable applicants and focuses on promising candidates, implementing recruitment subsystem appropriately and leveraging employee's talent in the right place at the right time.

## VI. Conclusion

Human resources are important asset for IT organization as it is the only face where if an organization lacks they have to recompense in form of their competitiveness. By implementing HRIS, IT organizations can have ball in their feet. HRIS helps the organizations in planning their human resources both quantitatively and qualitatively. Being an information system of human resources, it can store voluminous data about the employees, that not only helps in identifying the occupied and unoccupied positions but also whether the person at particular position is fit for the job or not. Other advantages of HRIS include healthier HR decisions and enhanced supervision and control of manpower. HRIS also helps in reducing various costs like labour cost, recruitment cost etc as it is computerized system. By adding the employee's information in HRIS and analyzing that information using the same helps in reducing various costs. Erstwhile these advantages, HRIS exert outstanding strategic activities by HR managers. These activities includes training and development management, succession planning (identification of key positions and their requirements), applicant tracking in recruitment and selection and manpower planning, personnel information and identification (attendance tracking, etc), salary planning, absenteeism analysis, turnover analysis and work scheduling. These deeds can be explained as HRIS compares the job position with candidate's qualification and capabilities and hence helps in identifying the training to be given to fill this gap. HRIS also helps in tracking the attendance of the employees to know their regularity and devotion for the organization. This not only helps in salary planning but performance management also. In gist, it is concluded that HRIS is an excellent tool for HRP but there is still some bones to pick up and the actions that HRIS has not absorbed, should need to work on it.

## VII. Limitations Of The Study

1. The foremost research limitation is on the subject of the industry perspective. HRIS role can be studied in any of the sector as human resources are assets of the organizations irrespective of the sector. Future research efforts could be focussed into exploring the impact of HRIS on HRP among more sectors.

2. The research study was restricted to those respondents who wish to be interviewed; therefore future research might focus on a generously proportioned sample of respondents, in order to validate the results of the study.
3. Other limitation is the static nature of the study, that is, the study is based on the existing scenario of the level and usage of HRIS; but HRIS can be enhanced in future. Consequently, same research can be conducted in future to know whether HRIS is improving with changing time or not.
4. Other limitation is that the questionnaire survey may endure with the reaction bias, although this is a cost-effective and reliable to some extent but not totally reliable. Therefore, field observations and qualitative interviews of managers or concerned persons from the sample are also anticipated.

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