

Leveraging Human Resource Information Systems: Alignment of Business with Technology

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ABSTRACT

Technology alignment helps organizations to do things better by supporting or shaping competitive strategies. Above all, it must have an impact on organizational performance. Technology has been instrumental in transforming the field of Human Resources in delivery, support and management of HR processes in an effective and efficient way. As companies begin to compete in the challenging business environment of the new millennium, success lies in the functioning of effective 'Human Resource Information System'. The objective of the work presented in this paper was to review human resource management practices from a business process perspective and to align it with technology. The paper first demonstrates the requirement analysis of HRIS irrespective of the industry it belongs to. It then proceeds to demonstrate the design considerations of an effective HRIS along with the concept of process mapping of five of the major modules (Illustrating Input- Output – Key Performance Indicators of the processes associated with each of these five modules) in today's global scenario. The paper concludes with the value added services, the risks associated with HRIS and its alignment with technology.

General Terms: Human Resource Information Systems , HRIS

Keywords: Human Resource Management, Human Resource Information Systems (HRIS), Process Mapping, Technology Adaptation, Integration.

1. INTRODUCTION

In the 1980's and 1990's, the role of the Personnel Department continued to transform. Most of them by mid 1990 had re- branded themselves as 'human resources' in an effort to align with the changing drivers at the work place. Till then the HR function was viewed as an expense. It started feeling the pressure from executives across the business to provide accurate and faster turnaround times where data or core information was concerned. The running joke amongst most CEO's was that if they asked for a headcount report from three different HR Managers, they would get different headcount numbers. Apart from the traditional data management a large part of the HR function consisted of tracking existing employee data which traditionally includes personal history, skills, capabilities, accomplishments and salary. To reduce the manual workload of these administrative activities and also to increase their efficiency and effectiveness, organizations began to electronically automate

many of these processes by introducing specialized Human Resource Information Systems (HRIS). In the late 1990's there existed various expectations of how HRIS should affect an organizations HR activities and business planning. An organization was considered efficient if it had technology and IS to support HR activities. Soon many players developed standardized HR systems to take care of routine functions of HR. Human Resources Information Systems (HRIS) , thus , can play an important part in organizations.

Implementing an effective HRIS is a sure hit for HR to stay on the cutting edge technology in its bid to deliver more effective and streamlined services. HRIS can assist human resources in their day-to-day duties by streamlining workflow processes through control processes, system interfaces and database validation. The last decade has seen a significant increase in the number of organizations gathering, storing and analysing human resources data using Human Resource Information Systems (HRIS) (Ball,2001; Barron et al., 2004; Ngai et al., 2006; Hussain et al., 2007;). HRIS has the potential to assist the HR function in developing business strategy and thus enhancing organisation performance (Broderick and Boudreau, 1992; Barney and Wright, 1998; Gueutal, 2003; Lengnick-Hall and Moritz, 2003).

Based upon a scan of professionally-oriented and academic journals, we can draw three types of goals for the adoption and implementation of HRIS:

- *Efficiency Gains:* The use of paperless forms for the collection of data and information about an employee, automated alerts for filling in forms not only save time, money and resources, but, also improves the response time of the HR function and in turn helps them to become more productive.
- *Facilitating Management and Employees:* It encourages a transparent working style. For example - availability of data to the employee on his leave status, his tax returns helps him manage his own affairs better. Availability of the same data to the manager helps him take an informed decision about an employee's leave request.
- *Improving the Strategic Orientation of HR:* It helps the organization to prove to the employees the importance of their participation in the governance of the company. For example - use of an employee opinion poll on the organization intranet to collect feedback about a change in any company policy impacts an employee to a great extent.

The objective of the work presented in this paper is to investigate HRM practices from a business process and technology perspective. The paper commences with the requirement analysis of HRIS irrespective of the industry it belongs to. The paper demonstrates the design considerations of an effective HRIS along with the concept of process mapping of five of the major modules (Illustrating Input-Output – Key Performance Indicators of the processes associated with each of these five modules) in today's global scenario. The paper concludes with the value added services, the risks associated with HRIS and its alignment with technology.

2. REQUIREMENT ANALYSIS

Based on the literature review, it has been observed that performance is driven in organizations by using the latest HR practices. Technology definitely plays a crucial role in this sphere. This section discusses the various requirements of HRIS along with the prerequisites which aids in aligning business with technology.

- *Automation:* This aids in saving time, effort and thereby helps in reducing the hiring of excess of manpower. HRIS is a boon to managers as it supports all necessary calculations and statistical reports.
 - *Integration and Centralization:* Integrating the data across various processes and workflows facilitates searching and selecting tasks. By centralizing the heterogeneous data HRIS provides single point of contact to all the stakeholders.
 - *Monitoring and Tracking:* All actions can be monitored and tracked e.g. Attendance reports, leave records, interview reports. Flexible-benefits can be administered and records can be tracked and monitored too.
 - *Support:* Projections can be made for HR planning and forecasting by using HRIS. It also helps in facilitating the strategic, tactical, and operational use of HR in a talent driven organization.
 - *Analytics:* It supports different analytics / KPI's and reports needed for effective management of HR in an organization. For example an intelligent software platform assesses and prioritizes organization gaps and identifies alignment opportunities. Similarly HR Alignment Inventory includes a unique and innovative process to assess alignment of business objectives and the entire range of capabilities within the HR ecosystem. The detail of the same has been mentioned in section 6.
- *Conducive Corporate Climate:* The corporate culture must be conducive to employee empowerment. If an HRIS is being introduced in large bureaucratic organizations, the mindset of senior management and employees must undergo a change, hence this requires some degree of change towards downsizing, team work and procedural review of the HR processes.
 - *Budget:* It is obvious that the budget must be approved by top management prior to commencement of an HRIS project. Although the overall cost will ultimately play a very large role in the selection of an HRIS, the costing should be secondary to the goal of finding a system that meets the overall business needs.
 - *Efficient and Effective Teams:* The human resource and technical teams must be effective and above all efficient to cater to the employee needs. HR employees must also view themselves as service providers and enablers and not as controllers.
 - *Technological Platform:* The organization will need to understand whether HRIS will be a standalone system, networked system or a web based system etc. The technology environment comprises of several key components that jointly delivers unsurpassed performance and a feature-rich user experience. Some of these include development environment, portability and response time

2.2 Assessing the Feasibility Study

At this point, it is important to consider whether or not the system will work. Although the system may meet all the requirements, as defined in the requirement specification, it still may not be able to implement the same for several reasons. Hence, it is important to undergo a feasibility study. This activity should comprise of the following major dimensions:

- *Economic Feasibility:* The goal is to determine whether the cost of developing, implementing and running the system are worth the benefits realized from its use, generally demonstrated by a cost/benefit analysis.
- *Technical feasibility:* It should focus on the current technological capabilities of the organization and those that are required for the implementation of the proposed system.
- *Legal and Ethical Feasibility:* The best design and best implemented systems can end up causing major headaches for the organization if it violates existing laws and regulations.
- *Operational Feasibility:* It focuses on how well the proposed system fits in with the current and future organizational environment. In addition, it assesses the extent to which the project fits within the overall strategic plan of the organization.

2.1 Pre requisites for HRIS

In order to realize the full potential of an HRIS, its business strategy must be aligned perfectly with its IT strategy to achieve competitive advantage. The following conditions must prevail to allow the use of HRIS for both the employee and managerial empowerment. Some important points to be noted in this regard are as follows:

The real value in HR Transformation involves both - the prerequisite needed for an HRIS and assessing the feasibility study which thereby aids in leveraging improvements to support and align it with broader business goals and strategy. In the next section, we would review the design considerations for an effective HRIS.

3. DESIGN CONSIDERATIONS for an EFFECTIVE HRIS

Successful employees, process and technology changes that enable a new level of productivity and performance leads to innovation. For designing any integrated solution such as HRIS, these three components play a very important role i.e. People, Process and Technology.

Human Capital Alignment: When the company is in the process of a budgeting exercise or has received a freeze on hiring, realigning the strengths of employees and managers can produce significant results with the same headcount. This could also be helpful in taking advantage of the production slowdown during a tough economy, so one is prepared for the upturn. The first step would be to examine the technical and personal traits one needs in each position within the new organization. Process and technology changes should be kept in mind too. Employees will have a wide range of skills. Some employees would have years of rewarding experience. Others would have interest in learning and applying new technologies. Some would prefer to follow a consistent process that could traverse the beaten track. Hence, the aim of HRIS should be to match the employee's interest with the organizations goals.

Process Improvements: Improved processes have opportunities galore; every organization has a set of unique processes that ensure quality of the products and services. All employees are aware that processes are needed, but, often inefficient in some areas, one could improve on the processes as they evolve, although the incremental changes may not yield significant benefits. Processes are designed in accordance with a set of defined design principles. Collaboration between the design and production team is a must for significant improvements in this process area. Those organizations that regularly collaborate and negotiate during such processes have achieved major improvements such as

quicker time to respond to employee and management queries. Processes are validated with representatives from HR. Feedback from the validation sessions is captured and fed into the ongoing process development. Quality and compliance assurance is performed on processes before they are released.

Technology Adaptation: Now-a-days, the nature of HR has become more strategic which has created a demand for more multi-functional products. Integration facilitates HR the flexibilities to choose the best fit for the organization. HRIS products provide scope for configurable workflows, employee and manager self service, payroll integration and compliance reporting. Performance Management, recruitment, succession planning, learning management and analytics are now demand functions which assist HR in becoming more strategic. Technology platform must be capable of handling these processes in an effective and efficient manner. Post implementation issues are more important as it manages continuous support, ongoing maintenance and quality of service. Vendors are now offering modules which are integrated and configurable.

4. HRIS MODULES: STRATEGIC, TACTICAL and OPERATIONAL PERSPECTIVES

HRIS is a key management tool which collects, maintains, analyses and reports information on employee and jobs. It is a system because it integrates all the relevant data and provides a suite of modules that range from hiring to separation and all other HR functions. Every HR function is developed into a module - it could cover a range from Employee Master, Reporting Relationships, Appraisals, Increments, Promotions, Transfers, Training, Confirmations, and Disciplinary Records etc. The purpose of HRIS is to provide service, in the form of accurate and timely information to the end user. This section will review the most common modules of HRIS like Recruitment and Selection (M1), Workforce planning (M2), Compensation and Benefits (M3), Performance Management (M4), Learning and Development (M5). As there are a variety of potential users of HR information, it may be used for strategic, tactical and operational decision making, to evaluate programs, policies or practices and to support daily operations (Refer to table 1).

Table 1: HRIS Modules: Strategic, Tactical and Operational Perspective

Modules		Strategic Applications	Tactical Applications	Operational Applications
M1	Recruitment and Selection	Labour forecasting Resource Allocation Selection	Creation of new requisitions Interviewing Offer Generation	Candidate Sourcing CV Screening Application Tracking Appointment
M2	Workforce Planning	Productivity Planning	Resource allocation Employee assignment to role	Time and attendance reporting Types of Leaves and leave records Shift planning and roster Labour tracking
M3	Compensation and Benefits	Compensation Planning Variable Pay Plans and Incentive Plans	Compensation Structuring and restructuring Variable Pay, Commissions, Incentives and Rewards	Salary administration Payroll Processing Compliances Benefit enrollment Salary Tax (TDS)

M4	Performance Management	Performance Appraisal	Performance Measurement Self Assessment Goal Alignment Career Planning Succession Planning Competency Management	Tracking at various stages of submission
M5	Learning and Development	Design and Development	Training Need Analysis Training Programmes	Scheduling of Training Programmes Nominations Evaluation of Training Programmes

4.1 Strategic Applications

The strategic perspective would involve review of various HR business process. One would also need to report on strategic outcomes which the system would aid in. It also helps in providing feedback and reporting to key stake holders and decision makers, including the effectiveness of initiatives that have been undertaken and provides a measurable data demonstrating the improvement and efficiencies that have been obtained. It also helps in the interrelationship between its activities and provides a full picture of how different parts are affecting the sum. Most of the forecasting and planning analysis areas would be a part of the strategic applications. It creates a comprehensive ‘learning organizations’ and enhances the knowledge capital of all the employees.

4.2 Tactical Applications

Tactical information systems provide managers with support for decisions that emphasize the allocation of resources. Within the human resource management area, these decisions include recruitment decisions; job analysis and design decisions, training and development decisions, and employee compensation plan decisions. Most of the analysis part would also feature in the tactical applications like competency mapping, career and succession planning, self assessment, performance measurement and evaluations. On the recruitment front, creation of new positions, interviews and offer would form a part of the tactical applications.

4.3 Operational Applications

Organizations use external parties for advice and services pertaining to different HR functions which are operational in nature. For example payroll processing, employee record management, leave and absence management, tax and compliance services etc. This provides operational ‘day to day’ support and also ensures seamless integration with the organizations overall HR strategy. It could guarantee that these services across the various HR operational areas do not occur in isolation.

5. PROCESS MODELING for HRIS

This goal of this section is to provide a deeper understanding of the process through which an HRIS is designed and acquired. For any HRIS the organization must look at the total HR systems from two different perspectives: *the data perspective* and *the process perspective*. The ‘data perspective’ focuses on an analysis what data the organization captures and uses, the definition and relationships of the data, while ignoring how or where the data is used by the organization. The ‘process perspective’, conversely, focuses on the business processes and activities in which the organization engages and on how the data flows through HRIS. Process modeling uses tools to describe the processes that are carried out by the system. This section refers to the main HR Modules which commences right from the process, the various inputs that are required, the output and the key performance indicators (KPI) or reports that could be produced (Refer to

Table 2).

Table 2: Main HR Modules: Process to KPI’s

	Modules	Process	Input Required	Output	KPI’s / Reports
M1	Recruitment and Selection	Labour forecasting	Employees needed for specific skill set	Employees mapped to skill set	List of skills per employee
		Workforce Planning	Manpower numbers to be hired and staffing costs	Hired numbers and costs per hire	Cost per hire, Time to fill vacant positions
		Creation of requisitions	Manpower numbers to be hired per position	Hired manpower per requisition	List of manpower number to be hired
		Candidate Sourcing	Various sources and channels of recruitment	No. of hires per source and channel	List of channels and sources to hire

		Application Tracking	CV's	CV tracking at every stage	List of candidates and the status at every stage
		CV Screening	CV's and job codes	No. of CV's per job code	List of job codes and CV's per job code
		Interviewing	Interview Scheduling, Feedback at various stages	Interview Schedule, Interview feedback per level	List of interview schedule, Feedback at various levels
		Selection	Interview feedback	Interview Status	Final status of interviews
		Offer	List of candidates to be offered, Offer template	Candidates to be offered and Offer template	List of candidates offered
		Appointment	Offered candidates and Status of Offer, Appointment template	Candidates to join, Appointment template	List of candidates selected
M2	Workforce Planning	Time and attendance reporting	In and Out Time of employees and reporting managers	No. of work hour spent by each employee	Consolidated data of in and out time and reporting authorities
		Types of Leaves and leave records	Leave Policies - Leave Balances as per various leave types	Employee wise leave record	Leave type per employee availment
		Productivity Analysis	Labour cost	Labour cost per position	List of labour cost per position
		Resource allocation	List of requirement, skills and date of deployment	Requirement wise allocation	Position wise requirement, skills and effective date of deployment
		Shift planning and roster	Shift list from managers	Employee wise shifts	Shifts schedule per employee
		Employee assignment to role	Skills set and vacancy	Employee wise skill set and role mapping	List of skill set and vacancy mapping
		Labour tracking	Schedule of labour	Actual labour schedule tracking per shift	Detailed inputs of labour whereabouts
M3	Compensation and Benefits	Compensation Planning and Analysis	Compensation Details, Budgeting	Compensation details per employee wise and budget sanction per department	List of various compensation heads and employee wise compensation Budgeting List
		Salary administration	Compensation Details - Deductions/ adjustments, allowances, reimbursements special payments, arrears	Summary data on compensation - Deductions/ adjustments, allowances, reimbursements, special payments, arrears	List of arrears deductions/ adjustments, allowances, reimbursements per employee wise .
		Benefit enrollment	Benefits and employees that have enrolled	Benefits per employee wise	List of Benefits per employee wise

		Payroll Processing	Gross and net pay calculations, income tax and professional tax calculations, Provident fund and gratuity calculations allowances etc	Pay slip and summary data on deduction pay inputs, allowances etc	List of Benefits, Tax, Gross and Net pay, Provident Fund and Gratuity amount per employee wise .
		Variable Pay, Commissions, Incentives and Rewards	Percentage of variable pay vis a vis CTC, Amount of commissions and incentives/Employees to receive rewards and type of rewards	Exact amounts per employee wise -variable pay, commissions, incentives and rewards	Employee wise variable pay, commissions, incentives and rewards
		Taxes	Tax slabs for various salary levels	Tax deduction per employee wise	List of Tax deduction per employee wise
		Compliances	Rules on various compliances	Proper deductions as per compliances	Report on deductions employee wise
M4	Performance Management	Performance Appraisal	Details of the Performance Appraisals	Employee ratings	Performance Management data
		Performance Measurement	Employee ratings	Overall rating by management	List of overall rating by management
		Self Assessment	Individual ratings of each employee	Ratings as per employees	List ratings by employees
		Goal Alignment	Company and Department goals	Mapping of employee goals to the organization goals	List of company / department goals vis employee
		Career Planning	Mapping of employees to new role for the next few years	Employees mapped as per new roles	Employee list vis a vis new roles
		Succession Planning	Mapping of employees to new role	Employees mapped as per new roles	Employee list vis a vis new roles
		Competency Management	Competencies and skills for new role	Final Competencies and skills for new role	List of Competencies and skills for new role
M5	Learning and Development	Training Need Analysis	Performance Appraisal Data	List of Training Programmes	List of Training Need Analysis
		Training Programmes	Laundry list of training programmes	Training Programmes	Final list of training programmes
		Scheduling of Training Programmes	Duration of Training Programmes	Dates of the training Programmes	Duration and Time frame of programmes
		Nominations	Self nominations and approved nominations by managers	Employees attending programmes	Final List of employees to attend
		Evaluation of the Training Programmes	Feedback by participants	Feedback and Ratings	Per employee wise feedback

6. EXTENDED and VALUE ADDED SERVICES of HRIS

As discussed earlier, technology enables the reduction of the administrative burden, resulting in lowering basic transaction costs. HR has undergone a major overhaul and changed drastically with the help of HRIS. A proactive HR professional needs to think how best to leverage technology to improve the design and delivery of basic HR services in an effective manner and ensure continuous improvement. Some of the most important global technology services which could enhance HRIS are as follows:

- i. *Rise of Social Networking:* One of the main challenges for HR executives is to integrate information available from various social networking sites. Privacy issues and data accuracy could pose problems.
- ii. *Less buying of services and more renting:* Its boom time for software vendors that rent and host services. Cloud computing and software-as-a-service (SaaS) have now enabled organizations to provide benefits, for mid and small organizations that who would like to access the capabilities of complex HRIS, but, are unable to afford a expensive system. They are likely to grow in market share and will provide added flexibility to organizations' HR strategies.
- iii. *Usability of Business Intelligence (BI) and Dashboards:* Organization's profitability would be measured by way of HR's contribution, so, it would be interesting to see how HR professionals turn data into reports as desired by the managers. BI applications would be used to analyze large amount of data available through HRIS. Real time graphically formatted data by way of dashboards will become an integral part of the function too. Organizations will adopt sophisticated web-based workforce analytical tools to push data to managers. Hence, this could help in improving employee employer relationships.
- iv. *Data transparency and privacy concerns:* HR applications do tend to link to systems outside the organization (for example - online job portals, recruitment consultants, distance learning providers, etc.), hence, managing this integration becomes more complex in today's world. Therefore, there is a strong need to have transparent policies and procedures for authorization and authentication to access the data. Issues of privacy would then be a major concern which would need to be tackled.
- v. *Single sign on and the convergence of content and applications from multiple sources:* Organizations should consolidate the information which is coming from heterogeneous sources, so that it looks

like a 'single system' to the end user to deliver services more effectively to their employees. Some integration points to consider include security (single sign-on using tools such as LDAP), real-time data exchange (using standards such as XML), cross-application workflow and search engine capabilities.

- vi. *Knowledge Support System:* Knowledge could broadly include: core HR information (such as benefits and policies, groupings of employees, reporting relationships and policies that affect the organization) and knowledge about employees (such as skills, benefits, job and employment, family). Knowledge systems take a central role in an organization in the new era of HR. It would undergo a transformation from a cost center to strategic center. A knowledge system has three components: a knowledgebase database where knowledge is stored set of editing tools for entering the knowledge and keeping it updated and an algorithm for using the right knowledge in the right way at the right time.
- vii. *Specialized Applications – Game Theory:* Derived from the branch of mathematics, it involves the use of information system and technology to develop competitive strategies for employees and organizations. Competing businesses in the same market can use game theory to determine the best strategy to achieve their goals; it would be interesting to see this theory being used in an HRIS product.

Trends in businesses, for example, changing corporate structures resulting from spin-offs, mergers, acquisitions and joint ventures do tend to affect HR processes. Since the last couple of years, due to recession, there has been a strong demand for high administrative efficiency and cost cutting measures. In the good old days HR has played a relatively traditional role, but, now with changing corporate culture and values, HR folks also need to change their mind set. Another trend is that the Management's demand for measurable added value from the HR function has gained great impetus since the last couple of years.

We understand the importance of HRIS with these extended functionalities as mentioned above. But, before actually moving towards the implementation phase, it is important to understand the risks associated with it. So, the next section discusses the risk factors.

7. RISKS

Employers currently using or considering moving to HRIS should ensure that any notices, policies, training, evaluations, code of conduct, disclosures and contracts are as enforceable as those signed on paper. Highlighted below are some of the risks associated with this kind of an adoption.

- i. *Intangible Financial Risks:* Most of these projects are undertaken with a view to getting high return on investment. It could happen that

the efforts may not yield the desired results as the return on investments is not quantifiable.

- ii. *Technology Risks:* It may so happen that technological solutions needed for process re-engineering are either not available or are not up to the mark. In order to determine the current and anticipated needs IT infrastructure planning will not support the business objectives unless it meets with end users.
- iii. *Political Risks:* Very often, this initiative loses support and commitment of the top management either due to change in guard i.e. the leader or due to change in view points of the management. At such times these projects lose the budgetary or manpower support and finally find a place in the cold storage.
- iv. *Compliance Risk:* This is defined as the risk that HRIS fails to comply with legal and regulatory requirements. This might result in employees being able to void electronically signed agreements. Employers must be aware that HRIS needs to be configured to meet certain necessary legal and regulatory requirements.
- v. *Adoption Risk:* This is the risk associated with the adoption of HRIS as it is too burdensome, complicated or otherwise nonemployee friendly. Companies should be able to reduce the adoption risk by beta testing their HRIS with a select group of employees to work out any adoption issues.

8. CONCLUSION

Today's HR professionals must be technically savvy and be able to speak the language of business. They must understand the dynamic business environment and the major drivers relating to workforce productivity. The importance of HRIS presented in this paper, illustrates that structured planning is a primary key to success. However, during the feasibility study and requirement analysis one must take into account the technological and functional aspect with a focus on improving the HR processes which leads to organizational change. HR and IT must go hand in hand and collaborate during the implementation phase. An assurance and consideration by top management are crucial to success of such a high skilled venture. We recommend a detailed requirement analysis and process mapping of the current HR business environment to determine the opportunities for improvement, cost savings practices and developing of a high-level strategy.

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