

HUMAN RESOURCE INFORMATION SYSTEM - AN INNOVATION IN THE HUMAN RESOURCE DEPARTMENT

*Nahid Rashid**

Introduction

Man is endowed with enormous potential. The increasing complexity of human resource management as well as rapid scientific and technological advancement have necessitated the rapid development of Human Resource Information Systems (HRIS). The data preservation and information systems relating to employees in an organization in the past were crude, unscientific, slow and insufficient. Therefore, the significance of a Human Resource Information System (HRIS) has assumed huge proportions in the face of increasing global competition in respect of business, industry, commerce, trade at the international level, while at the national level it has improved economic viability and cost-effectiveness, as well as facilitated effective and efficient administration of both public and private organizations. The invention and sustained technical perfection of various elements of computers, including hardware and software as an integral part of information technology, have most appropriately aligned with the increasing volume of record keeping in human resources necessitated by laws and statutes. Furthermore with the sustained availability of low cost computer technology, including hardware

Deputy Director, Bangladesh Public Administration Training Centre.

Copy©1999 by the Bangladesh Public Administration Training Centre.
All rights of reproduction in any form reserved.

and software, the Human Resources Information System (HRIS) has become an essential element of HR management systems.

An inquiry conducted by the Australian Human Resources Institute (Stone 1995, p.38) reveals that 71% of the respondents said that at least a part of their tasks was computerized while 17% stated that they had a comprehensive system. Payroll and allied areas were highly computerized while the areas that were not highly computerized were job evaluation (16%), appraisal and counseling (14%) and Occupational Health and Safety (12%). The survey further found that 76%, 60% and 43% of the respondents respectively used their system for payroll processing, for monitoring, leave/absenteeism and maintaining superannuation/benefit administration.

A study of 1995 AHRT (Australian Human Resources Institute) Survey results indicates that the research was based on a broad spectrum encompassing a wide variety of issues such as the age groups of the respondents, status, size and location of HR function, duties of the HR function, relationship of HR with line managers, attitude of HR people to work and so on. However, the scope of this paper is limited mainly to the extent of benefit that the 10 organizations located in Melbourne derived from adoption of HRIS and how they are faring with their HRIS.

The 1995 AHRI Survey results provide a 'rosy picture' of HR in Australia in that 36% and 55% of the senior managers opine that HR functions enjoy high prestige and medium prestige respectively. The growth of HR function presents an encouraging picture because 38% of the respondents estimate that their HR departments had grown while 29% feel that the growth has

remained the same as before during the last five years. The 1995 study further reveals that there has been a growing awareness of the line managers in relation to HR. The present study, in broad outline, concerns what HRIS is, what it does and how successfully it is applied in day to day administration of HR.

Survey Outline

This study used both primary and secondary data. A questionnaire was prepared and sent to various organizations and face-to-face interview was also arranged on request with a view to yielding more detailed information. Face-to-face discussions on the basis of the self-administered questionnaire was also undertaken with the relevant HR professionals in the various organizations. All interviews were recorded and later word-processed for in-depth analysis and comprehension.

The participants/respondents comprised the senior HR managers in the organizations under inquiry. Three factors prompted selection of the purposive sampling method: (a) time constraints against undertaking research through the random sampling method; (b) the reduced dimension of purposive sampling; and (c) desire to include a wide variety of organizations within the small sample size, e.g. public, private, larger and smaller, local government, state government and Commonwealth government in Australia. The survey data were analyzed and interpreted by qualitative methods, using judgement guided in part by the interviewees themselves.

The research procedure/method consisted of several different stages. First, a preliminary survey of relevant literature was

undertaken to formulate some basic ideas before preparing the questionnaire. Secondly, an informal discussion on various issues relating to beneficial aspects of computer- based HRIS took place between the researcher and HRIS experts and academics in order to develop a broader view of the research area. Thirdly, data collected from the literature survey were interpreted and analyzed vis-a-vis the interview results in order to test and assess the outcomes.

This study mainly tried to identify the nature of benefit and assess the extent of benefit, in broad spectrum, that an organization gets out of adoption and implementation of a computer-based information system in dealing with its human resources.

The other aspect of benefit is cost as an important variable, and a significant evaluation of benefit need to be justified through a cost-benefit analysis. Most of the respondents were reluctant to state the initial cost of installation, total investment in the purchase of hardware and software, the recurrent annual expenditure on maintenance of the system as well as cost of modification as and when necessary. For this reason, there were constraints in explaining the degree of benefit of the HRIS in an organization in quantitative terms. Only 2 organizations out of 10 were willing to quote both the annual cost of their systems and the first year start-up cost only. Two organizations agreed to disclose only their annual costs and said that they were not sure about their first year start-up costs. Reference to the available quantitative data in the following tabular form may give some idea of the annual costs and first year start-up costs of some organizations.

Table 1 : Organizational Profile

Organization	Total number of employees	Annual Cost the system (\$ million)	First year up cost (\$ million)	Pre head annual cost annual Cost (\$)
A	2,800	0.1	0.5	357.14
B	38,000	0.8	4	21.05
C	44,000	5.6	Not known	127.27
D	15,000	0.4	Not known	66.66

Source : Survey Results.

The above table indicates that the annual average cost of the system of the organization 'A' with a total of 2,800 employees, was \$ 0.1 million while that of organization 'B' with a huge number of employees, at 38,000, is \$0.8 million only, while the average per capita annual costs of organizations 'A' and 'B' were \$ 357.14 and \$ 21.05 respectively. The annual average per capita cost of organization 'C' and 'D' were \$ 127.27 and \$ 66.66 respectively. 'A' and 'B' were public while 'C' and 'D' were private organizations. The data in the above table reveal two contrasting pictures: in the public sector, the bigger the organization, the smaller the per head annual cost of the system, while in the private organizations, the average per capita cost of the system in the bigger organization was more than that in the smaller organization. Based on the data of these few organizations it is too risky to make any generalization, yet so far as the annual cost of the system is concerned, it appears that the bigger public organization should reap more benefits from the human resources information system than the private organization.

The ten organizations under investigation consisted both public and private organizations having total employee numbers, (permanent, semi-permanent, casual, temporary) ranging from 1400 to 77,000 with a mean of 31,460 employees per organization.

As regards the question - does installation of HRIS always lead to cost saving by means of reduction of employees in the HR department? At least fifty per cent of respondents stated that there has been a decline in the number of employees during the post-installation period of HRIS but this reduction of employees was not necessarily the effect of HRIS; rather it was a combination of certain other factors, including mergers of departments, restructuring and transfer of personnel from HR department to other departments wherein these people could be utilized more efficiently and effectively. Thirty per cent of the respondents stated that the installation of HRIS had resulted in either a slight increase or no decrease in the personnel while twenty per cent of the respondents did not say anything on this issue. Thus it cannot be established clearly that installation of HRIS had led to cost-saving through reduction of employees in the HR department. This finding does not tally with the theoretical perspective which states that implementation of HRIS has caused in many cases significant cost reduction through manpower saving in different organizations.

Timing

The study revealed that the prevalence of computer based HRIS was comparatively recent in the Australian organizations compared to the situation in a number of developed countries in the northern hemisphere, the USA and UK in particular, where the system has existed in a more advanced form for more than a decade. Eight organizations under survey stated that they first installed their HRIS in the late '80s or early '90s. The time interval (number of years) since the initial installation of HRIS in eight of the organizations under investigation was 7 years. Only two organizations mentioned that their HRIS was first installed in 1979 and 1980 respectively. Of course, the automated payroll system was in existence much earlier (as early as the mid-70s) than the HRIS in most of these organizations. The payroll function involved the expenditure of millions of dollars in an organization. The task

needed to be most accurate, timely and efficient. So, when the question of automation arose, most organizations preferred to automate their payroll rather than human resources information because payroll is concerned with a wide range of calculations in verification of working hours, accuracy of tax and other deductions, need for quick payment of employees, and also because of the fact that the payroll function is by nature repetitive and yields comparative advantage in dealing with numerical figures and repeated updating of substantial quantities of relevant data easily, quickly and accurately.

In replying to a question as to whether an organization was implementing a new system or replacing the old system, most respondents stated that by implementing a new system and replacing the old system they meant modification and updating of the old system to cater for present as well as future requirements. One respondent mentioned that his organization was neither implementing a new system nor replacing the old system but 'upgrading' the present system in 1997, but the exact date was unknown to him. Another organization preferred the term 'redevelopment' to 'implementation of a new system'. Whatever the term the respondents used, it was evident from their statements that modification of the old system is a continuous process as and when necessary. At least 50% of the organizations under survey indicated that they had last modified their system in 1996. In one public organization, the process of modification was still going on, was to be completed in April 1998. By modification the respondents mean more sophistication in technical capacity to make the system flexible, user-friendly, integrated with payroll, greater in data storage capacity and so on.

Reasons for modification

Giving the reasons why the system needed modification, almost all respondents stated that all the following required enhancement of the system :

- ➔ the old or the existing system was not adequately supporting new management requirements;
- ➔ there was a need for new applications; there were changes in policy, procedures and legal requirements;
- ➔ greater functionality was required regarding providing for higher levels of automation in leave;
- ➔ calculation of allowance and integration with other business processes; processing efficiency was desired;
- ➔ cost savings;
- ➔ award restructuring;
- ➔ enterprise bargaining;
- ➔ legislative developments.

The new or modified system has been able to perform a number of functions that the old system could not do. Most respondents stated that the new system facilitated integration of all relevant data in a compact and efficient manner in dealing with different employee types such as part-time, permanent, contractual and casual by providing more up-to-date, comprehensive data and information about their location/position. The old systems placed severe limitations on the organizations' ability to achieve staff reductions. High cost, long development periods, old technology, data redundancies and complex interfaces were some of the major concerns about continuing with the old system. By and large, all respondents were of the opinion that some of the main reasons for modification/replacement of the old or existing systems were as follows :

- ➔ technological advancement;
- ➔ growing expansion of their organizations leading to greater complexity and increased volume of work;
- ➔ adherence to Commonwealth and State legislative requirements;
- ➔ changing provisions in industrial relations regarding awards;
- ➔ transition from interface to integration, increasing technical sophistication;
- ➔ efficient management of human resources; and
- ➔ cost reductions.

The system (specifically the software in the system) used by different organizations was varied and contained different technicalities and mechanisms but the purpose was more or less the same in that it aimed at inputting, collection, storage and retrieval of diverse data relating to payroll and personnel/human resources records. One of the significant findings of this study was that all the existing systems in the organizations studied were either modified some time during 1996 or were at a variety of stages in the process of modification with a view to keeping pace with organizational needs as well as technological advancement.

Users of HRIS

Information was sought under this study on the changes in the level of HRIS use and range of HRIS users in a given organization over the last seven years, as well as the future moving into year 2000. The users were identified as general HR staff, senior HR staff in the HR department and executive management, senior management and line management in the non-HR departments. The respondents provided a variety of opinions. The success of a system was not only the result of technical sophistication but also depends to a great extent on the level of users, their awareness of the

capability of a system, the extent of their use of it and their mode of use and, above all, their expectations of the system. Only 4 organizations out of the 10 revealed the percentages of various levels of users belonging to both HR and non-HR staff. Some of the others replied simply either in the affirmative or negative as to whether there were users in these categories. The average percentage of general HR staff who used the system was 73.75 in the above-mentioned 4 organizations and that of senior HR staff in those same 4 organizations was only 37.5. The respondents expect that percentages will increase in the future but could not make any clear prediction about this. The percentage of HRIS users in executive management, senior management and line management was less than 5% in those 4 organizations. Almost all the respondents stated that general HR staff and senior HR staff used the system in the past, were using it at present and will continue to use it in future in increasing numbers.

The respondents differed in their reporting of the use/non-use of HRIS (executive management, senior management and line management) in the non-HR departments in the past, present and future, as will be evident from the following table:

Table 2 : Use/non-use among non-HR staff (nos. of organizations)

Position	Year		
	1990 (Past)	1996 (Present)	2000 (Projected)
Executive Management	Yes: 2	No: 5	Yes: 9
	No: 7	Yes: 4	No: nil
Senior Management	Yes: 2	No: 5	Yes: 9
	No: 7	Yes: 4	No: nil
Line Management	Yes: 4	No: 7	Yes: 9
	No: 5	Yes: 2	No: nil

The above table indicates HRIS use/non-use among the non-HR staff in 9 of the organizations under investigation. The 10th respondent did not provide data on this point. The data received are indicative of the fact that in the past (1990), executive management and senior management used the system in only 2 organizations while line management used it in 4 organizations. Over a period of seven years up to 1996, the number of HRIS-utilizing organizations had increased from 2 to 5 (as regards both executive management and senior management using the system) and, for line management, the number had increased from 4 to 7. All the 9 respondents were quite optimistic that executive management, senior management and line management among the non-HR staff would be using the system at an increasing rate in the future (2000).

The number and level of users varied from organization to organization in relation to the organization's size, location, workforce quality, need, budget allocation and so on. Some of the users involved in strategic planning, policy formulation and decision-making had direct access to HR data, while there was an increasing trend to bring more senior and top management to direct system access.

Most respondents revealed that their organizations were actively contemplating extending the access of the system to individual employees. This was part of comprehensive planning for expansion of the usage of HRIS. Time and energy would be saved if general employees are given the opportunity to rectify some of their own biographical data, such as changes of addresses, telephone numbers, changes in conjugal status, while at the same time they can check their personal data to make it easy for them to update information in conformity with latest developments. This extended dimension of hands-on contact with the HRIS by general staff would be all the more advantageous for bigger organizations because advanced technological sophistication would enable each of the staff to use the system at ease with little training or no training at all.

HRIS and Corporate Goals

When asked as to how and to what extent the HRIS helped the organizations to achieve their corporate goals or objectives, most respondents recognized the fact that the role of HRIS should not merely be confined to administrative tasks through record keeping, storage and retrieval but that rather, in today's competitive world, HRIS definitely has an important role in accomplishing corporate missions in a cost-effective way for survival and business growth. Most of the respondents stated that, while there was no direct tangible link of HRIS to attaining corporate or organizational goals, HRIS had an important role in supplying relevant data and information regarding personnel efficiency, levels of training, skills, qualifications and employee-supervisor ratios at different levels to top management. Based on the facts and figures as represented by data and information provided by the HRIS, the management could take appropriate decisions affecting present competitive advantage and future scenarios. So, HRIS was more concerned with a supportive role vis-a-vis management rather than a direct role.

Performance Appraisal

Did HRIS help in performance appraisal of employees? Most respondents revealed that their HRIS was yet to develop a mechanism for this purpose. Nevertheless, one out of three respondents stated his organization's HRIS had a system called "salary increment" that indicated whether or not an employee should be entitled to an annual increment on the basis of recorded data confirming that he/she had fulfilled all his/her due obligations. One respondent described the performance appraisal process in his organization as a "salary banding" process on an annual basis. The appropriate rating was put into the system if significant improvement of performance is noted by his/her superior; the system recognized the degree of improvement and made

appropriate adjustments in the upward band within the salary range in accordance with the performance rating.

Another respondent stated that his organization maintained a system called "skills management system" that maintained and updated data regarding performance of a thousand senior officers because they were considered as a corporate asset. This skills management system (SMS) was linked with the main HR system and senior management consulted this data as and when necessary when considering any major decision relating to administrative or business strategy. Thus it become evident that HRIS played only a minor role in performance appraisal of employees in the organizations under investigation.

Legislative Requirements

The EEO, Occupational Health and Safety and Health Acts and other relevant legal and legislative requirements are found to be diligently observed by the larger and more labor-intensive organizations than by the smaller ones. Almost all the respondents have replied that they are highly committed to abiding by the legislative requirements prescribed by the Commonwealth and State governments. Some respondents reported that their HRIS had a structure within the system that automatically captures data on EEO matters regarding employee details, country of birth, ethnic origin, sex, race, religion, age etc. to help overcome employment discrimination. These data on employee particulars are put into the system to enable analysis of the extent of legal compliance and to supply reports on the basis of legal requirements as set by the State and Commonwealth governments, for submission to the appropriate authorities from time to time. Three respondents stated that HRIS help their organizations by supplying quick and accurate data on EEO matters and thus they can take appropriate, timely action to avoid litigation as well as payments of millions of dollars as compensation to aggrieved persons.

Security

When asked about how secure their HRIS is, the respondents differed in their replies because each organization maintained a security system that was different from others, although the basic purpose of security remains almost the same, i.e. protection of an organization's data and information from unauthorized persons within the organization and limited access by employees so that they view only their own personal data. Most respondents revealed that HRIS data can be secured against unauthorized access by use of special logging-on and logging-off procedures that incorporate the use of passwords. Unauthorized attempts to gain access to secret data can be detected. One respondent asserted that the HRIS facilitated his authority to control who can have access to what data and what can be done with this data. In order to ensure greater secrecy of data the prescribed passwords were timed for some particular period, thus compelling users to register a different password from time to time.

Conclusion

While answering the question as to how and to what extent HRIS benefits their organization, there has been virtually no difference of opinion among the respondents and all of them have used the terms "innumerable, tremendous, fantastic" etc. in explaining the array of benefits they got out of HRIS. The basic and most common function of an HRIS is record-keeping and reporting expressed in terms of data, numbers, language, figures and graphs in business or personnel administration. Data manipulated into appropriate information becomes an asset for any organization because it is not the raw data and information but rather their proper application and utilization in the appropriate context that is the crucial consideration. The respondents, in reflecting on the nature and extent of benefits of HRIS in their organizations, affirmed that HRIS increases:

- ➔ data efficiency
- ➔ data accuracy
- ➔ data expediency

The first, efficiency, is the product of the concomitant effects of the other two. Irrespective of scope, content and complexity, HRIS provides complete, timely and accurate information for HR administration and analysis in order to meet demand for a high degree of accuracy and completeness in crucial decision-making. There are numerous validation checks for more accuracy in the system. Therefore, the prime benefit of HRIS is the accurate, timely, comprehensive and instant access to diverse data by the management in a more efficient manner than was possible with manual maintenance of employee records. What is possible in a few seconds or minutes in a computer may, in big organizations with thousands of employees, take a few days or even weeks with manual manipulation by a number of personnel of a large number of records.

The HRTS of most organizations under investigation is mainframe-based and the process of integration of payroll and HR systems was continuing. Although during the study period these two systems were linked by interfaces in six organizations, four organizations have integrated systems. The ratio between organizations with integrated HR and payroll systems and those with a linkage through an interface is thus 4:6. Sixty per cent of the respondents, therefore, expected that the HR and payroll in their organizations will be integrated by the year 2000.

The respondents stated that data redundancy had been reduced by the use of 'interface' and would be more significantly reduced in the integrated system. A well-balanced integration would lead to staff reduction and more cost-saving in that only one software package need to be procured/developed/modified and maintained. Elimination of duplication of data results in space-saving, leading to more economy, easier maintenance and lower operating costs.

All the respondents unanimously stated that HRIS had substantially reduced pen and paperwork and thus saved thousands of dollars previously spent on buying these items. The respondents belonging to big organizations in particular state that another major benefit provided by HRTS is that it tracks time, attendance and absenteeism by employee, by day or date and by shift. Bulk absenteeism sometimes becomes a problem as it hampers the flow of productivity. The HR system makes it easier to tackle the problem within the shortest possible time by ascertaining the number of absentees very quickly and by allocating appropriate personnel so as to continue the flow of productivity or service. In a case where leave is not due to an absentee, relevant data are put into the system regarding his leave or absenteeism which is automatically transmitted to the payroll, and payment is made after necessary deduction as per rule. Therefore, the system is reliable, efficient, easy, user-friendly, time-saving and cost-saving.

Future Dimension

What will be the state, shape and direction of HRIS in the future, particularly at the beginning of the 21st century? In view of the accelerated rate of technological advancement and an increasingly competitive business environment, there may be dramatic changes as to the effectiveness of HRIS in relation to the business needs of the organization during the next couple of years. Due to time constraints and the limited canvas of a study such as this one, some areas of interest could not be fully explored in greater depth and with more precision. Therefore, intensive as well as extensive future research taking a bigger sample with a broader spectrum may reveal some interesting facts and figures regarding HRIS cost and benefit in the short run and in the long run. As such, more research may be/to be conducted in these areas.

Computers are not human beings. Yet, on the basis of the broad outcomes of this research, it appears that the people dimension and the power of computing will increasingly become inseparable elements in corporate human resources. Therefore, standardized research could well be conducted to evaluate employees' attitudes before, during and after implementation of HRIS in organizations. Users are important and are likely to be crucial in assessing the degree of efficacy and benefit of HRIS.

An important matter related to the above issue is training. Because imparting training to users—most of whom lack technical knowledge, is costly and time-consuming. The more advanced HRIS based on highly developed technology, embodies in-built mechanisms that are more user-friendly. Research should be conducted to ascertain whether it is worth investing more in an HRIS having an advanced technology that minimizes the cost of training because the system is so developed that most users can operate the system with very little or no training.

Research, survey analysis, case studies and cross-organizational (both in private and public sectors) empirical studies ought to be conducted to assess system use and effectiveness. Such investigations could, to a significant extent, lead to minimizing the learning period and diminishing user error.

Finally, we can agree with Kavanagh et al.(1990, p.330) that "HR professionals are first and foremost HR professionals and not computer operators. However, by better utilizing new technologies, HR professionals can become more effective and can contribute more effectively to organizational goals".

REFERENCES

- Ayyr, K., 1996, "Selection and Implementation Should Be a Single Project", *HR Monthly*, March, p16.
- Boudreau, J., 1995, 'HRIS Exploiting its Real Potential', *HR Monthly*, August, pp8-13.
- Bodi, A., 1988, *Information Technology in Australia: Challenges for Management*, Graduate School of Management, Management Papers, Monash University, Australia, pp1-24.
- Carrell, M. R., Elbert. N. F. and Hatfield, R. D., 1995, *Human Resource Management: Global Strategies For Managing a Diverse Work Force*, Prentice Hall Inc. New Jersey.
- Ceriello, V. R. and Freeman, C., 1991, *Human Resource Management Systems Strategies, Tactics and Techniques*, Maxwell Macmillan International, New York.
- Forrer, S. E. and Leibowitz, Z. B., 1991, *Using Computers in Human Resources - How to Select and Make the Best Use of Automated HR Systems*, Jossey - Bass Publishers, San Fransisco, pp1-211.
- Gallagher, M. L., 1991, *Computers and Human Resource Management, Personnel Today*, Butterworth-Heinenmann Ltd. Oxford, pp1-11.
- Howes, P., 1995, "Internal Systems Crucial to Data Interpretation and Use", *HR Monthly*, March, pp28-29.
- Howes, P., 1995, "Benchmarking Will Be Navigation Beacon For HR Information Explosion", *HR Monthly*, October, pp42-45.
- Kavanagh. M. J., Gueutal, H. G. and Tannenbaum, S. I. 1990. *Human Resources Information Systems Developzent and Application*, PWS-KENT Publishing Company, Boston.

Keen, P., 1991, *Shaping The Future: Business Design Through Information Technology*, Harvard Business School Press, Boston.

Stone, R. J., 1995, *Human Resource Management*, John Wiley & Sons, Brisbane, pp30-45.

Tannenbaum, S. I., 1990, *Human Resource Information Systems: User Group Implications*, *Journal of Systems Management*, January, pp27-32.