

# The Impact of Information Systems on the Performance of Human Resources Department

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## ABSTRACT

Owing to the revolution in information technology, the face of the contemporary workplace has changed and systems have been made more effective by introducing new techniques. Majority of the organizations have now understood the importance of information storage and retrieval. In this paper, we focus on how modern technology is helping in ensuring effectiveness of HR functions. Human Resource Information System (HRIS) is an opportunity for organizations to make the HR department administratively and strategically participative in operating the organization. The main objective is to understand the extent to which HRIS is being used in increasing the administrative and strategic functions of the HR department. For this purpose, we have conducted a survey of 18 HR Managers from various private corporations operating in Punjab. The results show that HRIS is positively used as a tool to achieve greater administrative efficiency by adding value in the department. However, all of its benefits are difficult to quantify. HRIS utility as a strategic tool is still not been fully recognized, and this is preventing the system to be used to its fullest potential. Suggestions and recommendations are provided.

**Keywords :** Human Resource Information System, THRM, SHRM, HRIS

## I. INTRODUCTION

The addition of information technology to the human resource industry has revolutionized the contemporary workplace. HR professionals now have an increased capacity not only to gather information, but also to store and retrieve it in a timely and effective manner. This has not only increased the efficiency of the organization but also the effectiveness of management functions. New technology has also created opportunities for higher levels of stress for younger and older workers alike (Mujtaba, Afza, and Habib, N. (2011), unethical temptations and behaviors (Mujtaba, 2011), and opportunities for better leadership practices (Mujtaba and Afza, 2011). The twenty-first century is characterized as the knowledge century (Chin-Loy and Mujtaba, 2007). Most of the organizations are

now dependent upon knowledge workers and thus on effective knowledge management practices. Today, knowledge management offers a unique concept considered by many in the industry as progressive and “soft” in application, primarily because of the intangible elements of knowledge (Mujtaba, 2007, p. 201). The ability to not only attract and hire but also to retain and properly utilize these individuals is crucial knowledge for the survival and success of the organization. In this globalized world, a department that is increasingly becoming central to the implementation of organization policy is the HR department. So the HRIS is now considered an integral part of every organization (Waytt, 2002). More and more organizations are now developing information technology which can help the organization achieve its goals in a timely manner.

These information systems can then help the organization make more strategic decisions.

HRIS is an effective tool that can be used for streamlining the administrative functions of the HR department. This can be achieved by creating an elaborate and relevant database. The data that an effective HRIS would have on individual employees can include training completed, awards received, projects participated in and finished successfully, level of education attained number of years of service, skills, competencies, etc. By using this data the HR department can make a contribution towards strategy formation within an organization. With an efficient HRIS in place, the development of HR systems becomes easier (Dessler, Griffiths, and Walker, 2004).

## II. HUMAN RESOURCE MANAGEMENT (HRM)

The history of HRM is said to have started in England in early 1800s during the craftsmen and apprenticeship era, and then further developed with the arrival of the Industrial Revolution in the late 1800s. In the 19th century, Frederick W. Taylor suggested that a combination of scientific management and industrial psychology of workers should be introduced. In this case, it was proposed that workers should be managed not only for the job and its efficiencies but also for the psychology and maximum well-being of the workers. Moreover, with the drastic changes in technology, the growth of organizations, the rise of unions and government's concern and interventions resulted in the development of personnel departments in the 1920s. At this point, personnel administrators were called 'welfare secretaries' (Ivancevich, 2007).

HRM is said to have started from the term 'Personnel Management' (PM). The term 'PM' emerges after the Second World War in 1945 as an approach by personnel practitioners to separate and distinguish

themselves from other managerial functions and make the personnel function into a professional managerial positions. Traditionally, the function of PM is claimed to 'hire and fire' employees in organizations other than salary payments and training. But there were many criticisms and concerns of ambiguity expressed about the purpose and role of PM to HRM (Tyson, 1985) Therefore, the term HRM gradually tended to replace the term PM (Lloyd and Rawlinson, 1992). However, writers argue that the term HRM has no appreciable difference from PM as they are both concerned with the functions of obtaining, organizing, and motivating human resources required by organizations. At the same time, writers are defining the terms HRM and PM in many different ways (Beer and Spector, 1985). The rebranding of the term from PM to HRM was done due to the evolvment and changes in the world of management and therefore, a contemporary term would seem appropriate that can encompass new ideas, concepts and philosophies of human resources (Noon, 1992, Armstrong, 2000). Indeed, some writers comment that there are 'little differences' between PM and HRM and it has been criticized as pouring 'old wine into new bottle' with a different label (Legge, 2005). Whether HRM is considered to be different than personnel management is a continued debate on both its meaning and practices (Marchington & Wilkinson, 2002; Legge, 2005).

Strategic Human Resource Management (SHRM) has grown considerably in the last years. Schuler, Dolan and Jackson (2001) described the evolution of SHRM from personnel management in terms of a two-phased transformation: first from personnel management to traditional human resource management (THRM), and then from THRM to SHRM. To improve performance and create a competitive advantage, a firm's HR must focus on a new set of priorities. These new priorities are more strategic oriented and less geared towards traditional HR functions such as staffing, training, appraisal, and

compensation. Strategic priorities include team-based job designs, flexible workforces, quality improvement practices, employee empowerment, and incentive-based compensation. SHRM is designed to diagnose strategic needs and plan talent development, which are required to implement a competitive strategy and achieve operational goals (Huselid, Jackson and Schuler, 1997).

### **III. HUMAN RESOURCE INFORMATION SYSTEM (HRIS)**

HRIS has a very humble historical origin. Although there were some exceptions, prior to World War II HR professionals (then referred to as "personnel" staff) performed basic employee record keeping as a service function with limited interaction on core business mission. Initial efforts to manage information about personnel were frequently limited to employee names and addresses, and perhaps some employment history often scribbled on 3x5 note cards (Kavanaugh, Gueutal and Tannenbaum, 1990). Between 1945 and 1960, organizations became more aware of human capital issues and began to develop formal processes for selection and development of employees. At the same time, organizations began to recognize the importance of employees' morale on the firm's overall effectiveness. While this period of change in the profession did not result in significant changes in HRIS (although employee files did become somewhat more complex), some believe that it set the stage for an explosion of changes that began in the 1960s and 1970s (Kavanaugh, Gueutal and Tannenbaum, 1990).

During the next twenty years (1960 to 1980) HR was integrated into the core business mission and, at the same time period, governmental and regulatory reporting requirements for employees also increased significantly. The advent and widespread use of mainframe computers in corporate America corresponded with this regulatory increase and

provided a technological solution to the increased analytical and record-keeping requirements imposed by growing regulation of employment and a host of new reporting requirements (e.g., affirmative action, EEO, OSHA, etc.). The Human Resource Department became one of the most important users of the costly computing systems of the day, often edging other functional areas for computer access. Although HRIS systems were computerized and grew extensively in size and scope during this period, they remained (for the most part) simple record-keeping systems (Kavanaugh et al., 1990). According to Kovach and colleagues, HRIS is considered as a systematic procedure for collecting, storing, maintaining, and recovering data required by an organization about their human resources, personnel activities and organizational characteristics (Kovach, Hughes, Fagan and Maggitti, 2002).

### **IV. BENEFITS OF HUMAN RESOURCE INFORMATION SYSTEM**

The rationale for the implementation of HRIS varies between organizations. Some use it to reduce costs, others to facilitate better communication, and some use it to re-orient HR operations to increase the department's strategic contribution (Parry, Tyson, Selbie, & Leighton 2007). HRIS provides management with strategic data not only in recruitment and retention strategies, but also in merging HRIS data into large-scale corporate strategy. The data collected from HRIS provides management with decision-making tool. An HRIS can have a wide range of usage from simple spread sheets to complex calculations performed easily (Parry 2010). Through proper HR management, firms are able to perform calculations that have effects on the business as a whole. Such calculations include health-care costs per employee, pay benefits as a percentage of operating expense, cost per hire, return on training, turnover rates and costs, time required to fill certain jobs, return on

human capital invested, and human value added. It must be noted that none of these calculations results in cost reduction in the HR function (DeSanctis, 1986: 15). The aforementioned areas, however, may realize significant savings using more complete and current data that can be made available to the appropriate decision makers. Consequently, HRIS is seen to facilitate the provision of quality information to management for informed decision-making. Most notably, it supports the provision of executive reports and summaries for senior management and is crucial for learning organizations that see their human resources as providing a major competitive advantage. HRIS is therefore, a medium that helps HR professionals perform their job roles more effectively (Grallagher, 1986; Broderick and Boudreau, 1992). HRIS can be implemented at three different levels, i.e. the publishing of information, the automation of transaction, and finally transforming the entire working of the HR department so it plays a more strategic role and adds more value to the organization (Lengnick-Hall and Moritz 2003). It is, however, very difficult to ascertain the value addition made by HRIS on the revenues and profits of an organization since strategic HRIS is beneficial in facilitating the decision-making process. These decisions can result in greater employee motivation and satisfaction and both are extremely difficult to quantify (Kovach, Hughes, Fagan, Maggitti, 2002). Mayfield and Lunce (2003) came to a similar conclusion that while administrative activities can be quantified and measured such as reduction in turnover and efficiency of HR department, it is very difficult to attribute certain gains such as motivation and morale directly to the implementation of HRIS. As opposed to administrative HRIS, it is complex to establish a definitive link between organization benefits and HRIS deployment

The literature shows many previous related studies in HRIS, however, most of them were theoretical (Ngai and Wat, 2006). In addition, most studies were

conducted in the context of developed countries' organizations. Ngai and Wat (2006) conducted a survey of the implementation of HRIS in Hong Kong organizations. They found that the greatest benefits of the implementation of HRIS were the quick response and access to information that it brought, while the greatest barrier was the insufficient financial support. In addition, Ngai and Wat (2006) reported many other previous related studies conducted in HRIS implementation. For example, a study of Martinson's (1994) aimed to compare the degree and sophistication in the use of IT between Canada and Hong Kong. Martinson found that the use of HRIS was less widespread in Hong Kong than in Canada, while IT for HRM was applied more in Hong Kong than in Canada. Ball (2001) conducted a survey in order to explore the uses of HRIS in smaller UK organizations and found that smaller organizations were less likely to use HRIS.

Moreover, Burbach and Dundon (2005) conducted a study to assess the strategic potential of HRIS to facilitate people management activities in 520 organizations in the Republic of Ireland. They found that foreign owned large organizations adopted HRIS more often than smaller Irish owned organizations. They also found that HRIS technologies were used for administrative rather than strategic decision-making purposes. Another recent study conducted by Delorme and Arcand (2010), aimed to elaborate on the development of the roles and responsibilities of HR practitioners from a traditional perspective to a strategic perspective, found that the introduction of new technologies in the organization affected the way HR professionals accomplished their tasks within the HR department and the rest of the organization. The study of Krishnan and Singh (2006) explored the issues and barriers faced by nine Indian organizations in implementing and managing HRIS. The main HRIS problems were lack of knowledge of HR department about HRIS and lack of importance given to HR department in these organizations.

Cooperation is required across various functions and divisions of the organization for proper implementation of HRIS.

## V. METHODOLOGY AND RESULTS

The data used in this research is qualitative and specifically gathered by the authors for this study. A survey was developed and given to the Human Resource Directors of private banks working in Punjab. The objective was to assess the administrative and strategic impact of HRIS in Punjab. Punjab is a State going through developments, opportunities and challenges like any other State in today's twenty-first century competitive global workplace (Yasmeen, Begum, and Mujtaba, 2011). As such, this study of human resources professionals and the implementation of new technology can be a good initiative towards efficiency and productivity. A

Likert-type items on a five point scale and open-ended questions were employed on the survey to measure the perceptions of the HR directors in regard to the impact of the HRIS on HR processes, the time spent on various HR activities, the expense of HR activities, levels and use of information within the organization, the role of the HR department, and strategic decision making.

From the 20 surveys given to HR professionals, eighteen completed and usable surveys were used for drawing conclusions in this study. The questionnaire used in this survey was adopted from a study completed by Beadles, Jones and Lowery (2005). There is a considerable gap in previous researches when it comes to analyzing the impact of HRIS on Pakistan's banking sector. This study aims to bridge some of that gap.

**Table 1.** Satisfaction with HRIS

Items	% Agreed
Overall I am satisfied with our HRIS.	37.5
The employees of HR department appear to be satisfied with our HRIS.	50.0
Our HRIS has met our expectations.	50.0
Our HRIS could be better utilized.	100.0

This research was exploratory and primarily descriptive in nature. The intent was to discover whether HR directors perceived that human resource information systems were proving beneficial in regard to its strategic impact on the organization. The survey items are contained in Figures. The results of the survey are contained in Tables (1-7). The survey items were divided into categories concerning satisfaction with the HRIS (Table 1); the impact of the HRIS on HR processes (Table 2); time savings due to the HRIS (Table 3); the effect of the HRIS on expenses (Table 4), information effects (Table 5), decision-making (Table 6); and the strategic impact of the HRIS and the impact of the HRIS on the role of the HR function in the organization (Table 7). We had a relatively small sample size as mentioned above.

Therefore, we used frequency tables to measure the percentage of favorable responses to a series of questions assessing HR directors' perceptions of HRIS. The expressed results are the percentage of respondents for each item who either agreed or strongly agreed with the statement.

Table 1 displays the satisfaction of management with the HRIS system. The results show that, only about half were satisfied with the HRIS, and a similar number of respondents concurred that the system was up to their expectation. The percentage of people actually being satisfied was just above one-third, and all employees agreed that their HRIS could be put to better use. These studies indicated that the satisfaction with regards to HRIS was mixed. And

almost all of the respondents felt that it could be better utilized. These results do not take into consideration whether the staff had been trained

properly in the use of HRIS, nor were they properly briefed about the systems utility.

**Table 2.** HR Process

Items	% Agreed
Our HRIS has improved the recruitment process.	75.0
Our HRIS has improved the training process.	50.0
Our HRIS has improved the data input process.	75.0
Our HRIS has improved the data maintenance process.	87.5
Our HRIS has helped with forecasting staffing needs.	87.5
Our HRIS has decreased paper work.	87.5

With regard to HRIS contribution in streamlining various HR processes, nearly 88% respondents agreed that administrative processes such as decrease in paperwork, forecasting staffing need and data maintenance had indeed improved. Furthermore,

75% of the employees surveyed agreed that data input and recruitment process had been made more efficient. On the question of HRIS having a considerable impact on the training process, the response in favor of it was 50%.

**Table 3.** Time Savings

Items	% Agreed
Our HRIS has decreased the time spent on recruiting.	75.0
Our HRIS has decreased the time spent on training.	37.5
Our HRIS has decreased the time spent on making staff decisions.	75.0
Our HRIS has decreased the time spent on inputting data.	62.5
Our HRIS has decreased the time spent on communicating information within our institution.	50.0
Our HRIS has decreased the time spent on processing paper work.	75.0
Our HRIS has decreased the time spent on correcting errors.	62.5

Time saving is one of the barometers against which the efficiency of any IS system can be gauged. This study showed that 75% of the respondents believed that the system had a positive impact on some administrative functions such as time spent on recruiting, routine staff decisions, processing of paper

work, and error correction. However, only half believed that it had actually helped in improving the communication of information within the organization. Only a third of the surveyed employees believed that HRIS decreased the time spent on training.

**Table 4:** Cost Savings

Items	% Agreed
Our HRIS has decreased cost per hire.	37.5
Our HRIS has decreased training expenses.	12.5
Our HRIS has decreased recruiting expenses.	37.5
Our HRIS has decreased data input expense.	62.5
Our HRIS has decreased the overall HR staff's salary expense.	37.5

When it came to the actual cost saving from the HRIS in the organization, the results were pretty similar to previous researches, such as the one carried out by Beadles (2005). Only 37.5% of the respondents believed that the HRIS had actually decreased the cost of hiring, the recruitment expenses or the salary

of HR staff. Even a lower percentage (12.5%) of respondents thought that training expenses were reduced; however, 62.5% of the respondents believed that administrative tasks such as data input expenses did come down.

**Table 5. Information Effects**

Items	% Agreed
Our HRIS has improved our ability to disseminate information.	37.5
Our HRIS has provided increased levels of useful information.	75.0
The information generated from our HRIS is shared with top administrators.	87.5
The information generated from our HRIS is underutilized by top administrators.	50.0
The information generated from our HRIS has increased coordination between HR department and top administrators.	62.5
The information generated from our HRIS has added value to the institution.	87.5

The adequate storage and timely retrieval of information is a hallmark of an effective IS system. 75% of the respondents believed that HRIS indeed provided useful information, while a greater number (87.5%) of the respondents believed that the information received through HRIS added value. Whereas an identical percentage (87.5%) felt that

generated information was being shared with the top management and only half (50%) believed that this information was actually being utilized by the administrator. These results indicate a lack of willingness to use the information as a strategic tool.

**Table 6. Decision-Making**

Items	% Agreed
Our HRIS has made our HR decision-making more effective.	37.5
The information generated from our HRIS helps our institution decide on employee raises.	37.5
The information generated from our HRIS helps our institution to make more effective promotion decisions.	25.0
The information generated from our HRIS helps our institution decide when to hire.	25.0
The information generated from our HRIS helps our institution make better decisions in choosing better people.	37.5
The information generated from our HRIS helps our institution decide when training and skill development are necessary.	37.5

With regard to HRIS helping management in making better decisions, the findings support the results of Beadles (2005) that HRIS is not considered a decision-making instrument. Only a third of the total respondents believed that HRIS contributed to making decisions more effective, and an equal number believed that HRIS played a significant

role in the selection of better candidates or improving training and development of the staff. Even a lower percentage (25%) said that hiring decisions were made using information available through HRIS. This would indicate that HRIS was viewed rather favorably as an administrative tool, but not a strategic one.

**Table 7. Strategic Impact and Role of HR**

Items	% Agreed
Our HRIS has made the HR department more important to the institution.	87.5
Overall our administration thinks that HRIS is effective in meeting strategic goals.	37.5
The information generated from our HRIS has improved the strategic decision making of top administrators.	62.5
The information generated from our HRIS has made HR a more strategic partner in the institution.	87.5
Our HRIS has promoted our institution's competitive advantage.	37.5

In terms of whether HRIS has enhanced the strategic role of the HR department, 87.5% respondents

believed that HRIS increased the importance of HR department and made it a strategic partner, whereas only 37.5% believed that HRIS gave a competitive

edge to the institution or was effective in helping the organization meet its strategic goals. However, 62.5% did believe that HRIS improved the strategic decision-making of the top administrators.

**Recommendations :** In terms of limitations, it should be noted that local banks were included in the survey. The research was limited to Punjab's banking sector only. The data was only collected from managers. Professional staff members in lower ranks could also be included in future studies as they might have a different view on the use and benefits of HRIS. The number of foreign banks operating in Punjab is not very high and therefore their input was not included in this study. Other sectors such as textile, manufacturing and private academic institutions also use HRIS to a varying degree, and they can be part of future research studies.

**Impact of HRIS on Hiring :** Hiring is usually the last and final step of the recruitment process. Recruitment is one of the most important and fundamental functions of the HR department. An effective recruitment strategy can lead to the hiring of the best candidate. This in turn can contribute not only in keeping cost down, but also in facilitating the processes of succession planning, employee retention, greater employee motivation, and reduced turnover. This is, however, contingent on the HR department having complete information about the nature, demands and construction of the job on one hand but also the knowledge about the personal competencies that are required to fulfill those jobs on the other. The survey showed that only 37.5% of the respondents believed that HRIS played a role in finding suitable candidates, while an equal number believed that HIRS actually brought down the cost of recruitment and the cost per hire. Even a lower number (25%) believed that HRIS was instrumental in deciding when to hire.

The reason for these low statistics, when it comes to hiring the right people, can be structural (the size of the organizations), as well as cultural (accepted behaviors within an organization) or simply representative of ground realities (the external environment within which the organization operates). With inadequate background checks and lack of proper references, employers tend to hire people through informal networks of personal contacts. In this scenario, the HRIS system is of little importance and any real relevance. On the administrative side regarding choosing the best people, the problem might be a lack of user preference in the context of using the HRIS, but greater emphasis would be on how the organization is operated. It can be that, top management simply regards the HR department as merely an administrative tool rather than a serious participant in setting the strategic priorities of the organization. On the HRIS side, if profiles are not properly made and maintained then the selection of the best candidate is difficult. A proper employee's profile should consist of number of years with the company, projects participated in, training attended, certifications completed, awards won, and targets achieved. Future employee aspirations, goals and milestones need to be put in the system. The system must also support a proper succession plan, which would indicate the positions to be vacated, and the basic criteria against which a potential successor would be evaluated. When the profiles of employees can be linked to the succession planning tree, then this can facilitate at least internal hiring, at the right place with minimal cost.

**Role of HRIS in Improving Training:** One of the lowest percentages in the survey was the attitude of respondents when it came to their perception about the utility of HRIS with respect to the training function of the HR department. Whereas 50% believed that HRIS improved the training process, only 37.5% believed that the information generated

form HRIS was helpful in identifying the proper time to implement a training program. Only 12.5% of the participants believed that HRIS had played a role in decreasing the cost of the training program. The conclusion which can be drawn from this feedback can indicate structural problems as there might not be a proper training needs assessment form made available. However, other important reasons can be as follows:

- ✓ The HIRS is not mature enough to have the capacity of properly incorporating the training needs of employees.
- ✓ The HRIS workers are not fully trained about the usage of HRIS as a tool to increase the efficiency of the training process.
- ✓ Since training has more strategic function as compared to administrative one, it is being ignored.
- ✓ The training needs assessment forms have not been properly developed. In order to rectify this situation, HR managers need to envision HRIS as an important component of the training process. This can be achieved by carefully assessing what the training needs of employees are and then updating those needs in the profile of each employee.
- ✓ Once the majority of the training needs have been ascertained, then a training schedule can be designed accordingly.
- ✓ This schedule would then be keyed into the employee's profile, so that HR is aware of exactly what type of training is required, the time it would take to complete it, as well as its frequency and the overall cost. This would in return also allow the HR department to monitor which employee has completed various training programs and whether that particular training helps employees in better performing their jobs. If all these appear in the employees' profiles, then not only each employee's progression, but also the

streamlining of the training process which can include duration, objectives, outcomes, relevance, and effectiveness can be ascertained.

## VI. INCREASING THE STRATEGIC ROLE OF HRIS

One of the major roles of HRIS system is to improve communication between HR and other departments, facilitate effective decision making make effective decisions and gain a competitive advantage for the organization. Only 37.5% of the respondents surveyed believed that HRIS was fulfilling this goal. Whereas 87.5% believed that information was being shared between top administrators, only 50% of these administrators were actually using this information. Only half of the people that were surveyed thought that HRIS lived up to their expectations, whereas all 100% agreed that HRIS can and should be better utilized. Regarding strategic consideration, it is safe to assume from the results that HRIS will continue to play a more administrative rather than a strategic role within most organizations. This trend can be reversed if the available information is disseminated to other employees within the organization. However, management has to make sure that the right information reaches the right people. In addition it costs the organization both time and money when employees have to look through stacks of information to identify which is most relevant to them. This in turn impairs the employee's ability to think strategically. This problem can be overcome by providing relevant information access to each department.

The extent to which HRIS can provide a competitive advantage to any organization is contingent on the role of the HR department within that organization. In institutions where HR is mostly confined to a personnel or employee advocate role, it is difficult to see how even the most effective HRIS can contribute towards increasing the competitive advantage of the

organization. The reports that are generated might not be user-friendly and that might be the reason why the information generated by the system is not being properly utilized to its fullest potential. The reason can be that people are not encouraged to read the reports and then make tactical decisions, based on the information provided. Overall, more needs to be done and further research needs to be conducted to discover how HRIS can be better utilized to strategically benefit the entire organization.

## VII. CONCLUSION

The result supports the finding that HRIS is mostly being employed as an administrative tool more than a strategic one. The holistic view of the role that HRIS can play in improving the efficiency and integration of HR department into a more strategic role was missing. The respondents could not establish a direct link between HRIS and its impact on their routine work. There was a lack of clarity as to the exact value the HIRS system would add to the organization. This relates back to the earlier literature, that the benefits of HRIS are difficult to quantify, and cannot be displayed in monetary terms. Neither cost saving, strong communication nor effective recruitment decisions were linked directly to HRIS. So even though HRIS appears to have tremendous promise it has not been fully utilized according to its potential. However, more research should be done in other sectors to see whether these finding are similar in different industries.

## VIII. REFERENCES

- [1]. Armstrong, Michael (2009). *A Handbook of Human Resource Management Practice* (11th ed). London: Kogan Page.
- [2]. Beer, M. and Spector, B. (1985). Corporate wide transformation in HRM. In Walton R. E. and Lawrence P. R. (Eds) *HRM: Trends and Challenges*. Boston, MA: Harvard University Business School Press. pp. 219-253.
- [3]. Broderick R., Boudreau J.W. (1992). Human resource management, information technology and the competitive advantage, *Academy of Management Executive* 6 (2), 1992, 7–17.
- [4]. Ball, K.S. (2001). The use of human resource information systems: a survey. *Personnel Review*, 30, 677-93.
- [5]. Beadles, Nicholas C. M. (2005). The Impact of Human Resource Information System: an Exploratory Study in Public Sector. *Communications of IIMA*, 39-46.
- [6]. Burbach, R. and Dundon, T. (2005). The strategic potential of human resource information systems: evidence from the republic of Ireland. *Intentional Employment Relations Review*, 11(1/2), 97-117.
- [7]. Chin-Loy, C. and Mujtaba, B. G. (2007). The Influence of Organizational Culture on the Success of Knowledge Management Practices with North American Companies. *International Business and Economics Research Journal*, 6(3), 15-29.
- [8]. Dessler, G., Griffiths, J. and B. Lloyd-Walker (2004), *Human Resources Management*, 2nd ed. Frenchs Forest, New South Wales: Pearson Education Australia, 2004, pp. 97–99.
- [9]. Delorme, M. and Arcand, M. (2010). HRIS implementation and deployment: a conceptual framework of the new roles, responsibilities and competences for HR professionals. *International Journal of Business Information Systems*, 5, 148-161.
- [10]. DeSanctis, Gerardine (1986). Human Resource Information Systems- A Current Assessment. *MIS Quarterly*, 10(1), 15-27.
- [11]. Gallagher, M. (1986), *Computers in Personnel Management*, Heinemann, UK.
- [12]. Huselid, M.A., Jackson, S.E. and Schuler, R. S. (1997). Technical and Strategic Human Resource Management Effectiveness as Determinants of Firm Performance. *Academy of Management Journal*, 40, 171–188.

- [13]. Hendrickson R. Anthony (2003). Human Resources Information Systems: Backbone Technology of Contemporary Human Resources. *Journal of Labor Research*, 24(3), 382-394.
- [14]. Ivancevich, J. M. (2007). *Human Resource Management*. New York: New York: McGraw-Hill/Irwin.
- [15]. Kavanagh, M. J., Gueutal, H. G., and Tannenbaum, S. I. (1990). *Human resource information systems: development and application*. Boston, Mass: PWS-Kent Publications Co.
- [16]. Kovach, K.A., Hughes, A.A., Fagan, P., & Maggitti, P.G. (2002). Administrative and strategic advantages of HRIS. *Employment Relations Today*, 29, 43-8.
- [17]. Krishnan, S., & Singh, M. (2006). Issues and concerns in the implementation and maintenance of HRIS. Issues and concerns in the implementation and. Indian institute of management ahmedabad-380015. Research and Publication Department in its series IIMA working papers with number WP2006-07-01.
- [18]. Lloyd, C. And Rawlinson, M. (1992). New technology and human resource management in Blyton, P. and Turnbull, P. (eds) *Reassessing Human Resource Management*. London: Sage Publications. pp. 185-199.
- [19]. Legge, K. (2005). *Human Resource Management: Rhetorics and Realities* (Anniversary Ed). Basingstoke: Palgrave MacMillan.
- [20]. Marchington, M. and Wilkinson, A. (2002). *People Management and Development*. (2nd Ed) London, CIPD.
- [21]. Martinsons, M. G. (1994). Benchmarking human resource information systems in Canada and Hong Kong. *Information & Management*, 26, 305-16.
- [22]. Mujtaba, B. G. (2011). A Cross-Cultural Comparison of Business Ethics Study with Respondents from Afghanistan, Pakistan, Iran, and the United States. *International Leadership Journal*, 3(1), 40-60.
- [23]. Mujtaba, B. G. (2007). *Workplace Diversity Management: Challenges, Competencies and Strategies*. Llumina Press: Florida.
- [24]. Mujtaba, Bahaudin G. and Afza, Talat (2011). Business Ethics Perceptions of Public and Private Sector Respondents in Pakistan. *Far East Journal for Psychology and Business*, 3(1), 01-11.
- [25]. Mujtaba, B. G., Afza, T., and Habib, N. (2011). Leadership Tendencies of Pakistanis: Exploring Similarities and Differences based on Age and Gender. *Journal of Economics and Behavioral Studies*, 2(5), 199-212.
- [26]. Noon, M. (1992) HRM: A map, model or theory? in Blyton, P. And Turnbull, P. (Eds) *Reassessing Human Resource Management*. London: Sage Publications.
- [27]. Ngai, E.W. and Wat, F.K. (2006). Human resource information systems: a review and empirical analysis. *Human Resource Information Systems*, 35, 298-314.
- [28]. Parry, E., Tyson, S., Selbie, D., & Leighton, R. (2007). *HR and Technology: Impact and Advantages*. London: Chartered Institute of Personnel and Development.
- [29]. Perry. E. (2010). *The benefits of using technology in human resource management*. IGI global. Cranfield School of Management.
- [30]. Schuler, R.S., Dolan, S.L. and Jackson, S. (2001). Trends and emerging issues in human resource management: global and Trans cultural perspectives – introduction. *International Journal of Manpower*, 22(3), 195-197.
- [31]. Schuler R. S., Jackson S.E., and Storey J. J. (2001). HRM and its link with strategic management, in: J. Storey (Ed.), *Human Resource Management: A Critical Text*, second ed., Thomson Learning, London. 2001.

- [32]. Tyson, S. (1995). Human Resource Strategy: Towards a general theory of human resource management. London, Pitman.