# ADOPTION OF HUMAN RESOURCE INFORMATION SYSTEMS INNOVATION IN PAKISTANI ORGANIZATIONS

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## ABSTRACT

*A growing body of research is emphasizing the significance of adoption of technological innovation of Human Resources Information Systems (HRIS) to help modern organizations in effective management of human resources. However, there is lack of research on adoption of HRIS innovation in Pakistani context, there is available concern on different aspects of HRIS outside Pakistan. The purpose of this study was to identify the multiple factors contributing to organizational decision-making for the adoption of innovation of HRIS. This study examined relationship of six factors with adoption of innovation of HRIS in organizations: innovation factors of Relative Advantage, Compatibility, Complexity; organizational characteristics of support of Top Management & HRIS expertise, and environmental characteristic of Competition. For data collection, structured questionnaires were distributed for survey research and cross-sectional research design was adopted. Relative Advantage and Compatibility had positive relationship with HRIS adoption. However, Top Management Support and HRIS Expertise were found to be the top contributors to the decision of HRIS adoption. It was stated that introduction of new innovations in information systems could meet with organizational reluctance. The main cause was the complexity of new technology.*

*Keywords:* *adoption, human resource, information systems, information technology, innovation.*

## INTRODUCTION

In the changing global environment, organizations have been bound to incorporate innovations to get competitive advantage. Much of the organizational success has been dependent upon the induction of new changes in all departments of the organization. Managers faced increasing difficulties of managing workforce. As the new technology was being

introduced at a rapid pace, information technology (IT) had started playing a major role in management of various functions of organization, especially human resource (HR). IT was essentially used to convert manual human resource operations to computerized Human Resource Information Systems (HRIS). HRIS referred to the systematic computerized processing of human resource functions in an organization. The major function of HRIS was to retrieve and disseminate appropriate information pertaining to human resources. However, similar to the adoption of any technology, the adoption of HRIS also met with debate and resistance. At individual level, there was defense of personal interest and values. There were further influences on incorporation of such innovation at the structural level. To enhance organizational effectiveness and productivity, innovations had to be adopted and incorporated; therefore, human resource managers adhered to adoption of HRIS. However, there was debate to the potential advantages of adopting such innovation, along with barriers to design and utilization.

This study tried to identify the multiple factors which contributed to decision of adoption of HRIS innovation in Pakistani organization. Basic framework of Rogers' Diffusion of Innovation theory was used. Six factors, namely, relative advantage, compatibility, complexity, organizational characteristics of support of top management and HRIS expertise, and environmental characteristic of competition, were analyzed.

The population for this study comprised of all organizations which had adopted HRIS innovation and were operating in Pakistan (SuperNova Solutions - List of our Customers, 2013; SAP Find Partner, 2013; Siemens Pakistan - Our Clients, 2013). Survey research was used. The questionnaires were sent to all organizations. This small sample size was appropriate as there were not many organizations operating in Pakistan which had adopted HRIS.

This study would help HR managers in comprehending the factors affecting adoption of HRIS. This study made a contribution to existing knowledge in innovation literature by studying adoption of HRIS in Pakistan. This study also aimed at providing explanations to why introduction of new innovations could be a problem area. The primary objective of this study was to identify multiple factors and examine their contribution to the decision of HRIS adoption keeping in view that this

was emerging field necessary to be adopted for market competitiveness. The further sub objectives were to examine the relationship of innovation factors of relative advantage, compatibility and complexity on adoption of innovation of HRIS in organizations and to study the relationship of organizational characteristics of support of top management and HRIS expertise on adoption of HRIS in organizations. It was also intended to analyze the relationship of environmental characteristic of competition on adoption of HRIS in organizations and to develop agreement on which factors were contributing more out of all factors involved in the decision of adoption of HRIS.

## LITERATURE REVIEW

The world of business has been stirred by advent of information technology, information systems and internet technology (Xu, Wang, Luo, & Shi, 2006). Researchers have highlighted the fact that Information technology provided opportunities to transform organizations and help them achieve competitive advantages (Culnan & Markus, 1987; Huber, 1990). In current knowledge economy, organizational success is dependent on efficiency of human resources (HR) (Lippert & Swiercz, 2005). It is opined that IT should play vital role in Human Resource Management (HRM) domain (Straus, S.G., Weisband, S.P, & Wilson, J.M, 1998). Similarly, it is shared that businesses gain competitive advantages not only with Information Technology (IT), but with usage IT to complement resources (Powell & Dent-Micallef, 1997). It is further stated that a successful way to run business in today's world is using appropriate application of Information Technology (IT) in HRM (Zhang & Wang, 2006).

HRM is an organizational function that focuses on planning, selection, orientation, training, development, retention, appraisal, remuneration, and utilization of labor resource for achieving both individual and organizational objectives. It is suggested that a Human Resource Information System (HRIS) is the blend of human resource management and information technology (DeSanctis, 1986). HRIS is combination of database, hardware and software that are used to store data in the database from all departments of the organization and produce the required information on demand to human resource personnel (Broderick & Boudreau, 1992).

Before the 1960s, HRM utilized computer systems to very little limit. During the 1970s, most organizations in USA having larger number of employees had adopted some forms of personnel systems (DeSanctis, 1986). Establishment of systems was supported by reduced costs. According to (Richards-Carpenter, 1982), 40 percent of U.S. corporations had HRIS by the 1980s. HRIS supported decision-making processes to achieve competitive advantage (Broderick & Boudreau, 1992). Swift technological progression especially with reference to globalization has shifted the organizations to knowledge oriented units. Trend setters are altering the organizations to signature modern organizations. It has improved the efficiency of HR departments in the organizations (Thompson, Lim, & Fedric, 2007). HRIS acquires stores, manipulates, analyzes, retrieves and distributes required information about the human resources of the organization. Human Resource Information Systems is built up on the foundation of human resources and information technology (Lin, 1997; Kavanagh, Gueuta, & Tannenbaum, 1990). It is the backbone of HRM (Hendrickson, 2004). Technology cannot work alone. People and policies must be given due importance in order to get the results as per spirit of HRIS. Effective utilization of technology in combination with policies and people would give competitive edge to the organization (Hendrickson, 2004). It is evident that conceptual advancement of Strategic Human Resource Management (SHRM) has initiated linkage of HRM functions with business strategy (Fombrun, Tichy, & Devanna, 1984). SHRM addresses activities related to HR planning and HR policies (Osterman, 1987; Sonnenfeld & Pepper, 1988; Storey, 1992). SHRM has recognized human capital as strategic resource, and competitive edge which contribute to the organizational success or cause its failure (Barney, 1991; Ulrich, 1997; Pfeffer, 1998; Becker, Huselid, & Ulrich, 2001).

Extant research has examined the adoption of HRIS in public sector in Australia (Troshani, Jerram, & Gerrard, 2010), benefits and barriers to HRIS implementation in Hong Kong (E.W.T. Ngai & F.K.T. Wat, 2006), adoption and diffusion of HRIS in Singapore (Thompson, Lim, & Fedric, 2007), usage of HRIS usage in Malaysia (Normalini Md. Kassim, T. Ramayah, & Sherah Kurnia, 2012), relationship between innovation diffusion and HRIS in Jordan (Dr. Soud Mohammad Almahamid, 2013). While this is encouraging, HRIS adoption is remains under investigated in Pakistan.

Consistent with the interest in international research on HRIS, very recently, research on HRIS has surfaced in Pakistani context i.e. the benefits and barriers to HRIS in the area of Azad and Jammu Kashmir (Dr. Syed Hassan Raza, Syeda Qudsia Batool, & Dr. M.A Sajid, 2012) and the adoption of HRIS has been posited in the context of Balochistan; Province of Pakistan (Dr. Jan Mohammad & Dr. Nadir Ali Kolachi, 2013).

The researcher faced paucity of research concerning HRIS adoption in Pakistan which emerged as unique challenge due to its idiosyncrasies. This has also been experienced by researchers investigating HRIS adoption in Australian context (Indrit Troshani, Cate Jerram, & Sally Rao Hill, 2011).

The emphasis on providing proper rationale in sampling strategies has been embraced (Paula McDonald, Pauline Burton, & Artemis Chang, 2007). The lack of an adequate sampling frame required participants to be sampled using multiple sampling techniques. In the context of Pakistan, other researchers have warned against the lack of a research culture in the banking sector (Amani Moazzam Baig Mirza & Nasira Jabeen, 2011) and that any research is considered a waste of time even by the management (Nailah Ayub & Karen Jehn, 2010). Therefore, in accordance with the overall culture of sifaarish[1] in Pakistan (Islam, 2004), the researcher relied on a strong network with those in power to identify the organizations that have adopted HRIS and then negotiated physical access to the organization.

## Components of HRIS

The major functional components of HRIS are presented by (Kovach, Hughes, Fagan, & Maggitti, 2002) as input, data maintenance and output. Personnel information is entered into HRIS through input function. In the past, data entry was one way; however, modern technologies used for scanning enabled scanning and storing actual image of original documents. After entry of information into the database of information system through input function, the data maintenance function updates the database. Output is the most visible function of HRIS. Generation of valuable output requires HRIS to process, make calculations, and then

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[1] nepotism

present output in a comprehendible way (Kovach & Cathcart, 1999). Moreover, HRIS is comprised of management and IT. Management includes employees, policies made to run organization effectively and data; while IT is having computer hardware and softwares (Hendrickson, 2004).

## Users and Uses of HRIS

HRIS can meet the needs of stakeholders of the organization. There are three groups of people who interact with HRIS in an organization; human resource professionals, functional managers and employees (Anderson, 1997). The HR professionals rely on HRIS to perform even elementary tasks. The functional managers rely on HRIS for provision of functionality to achieve the objectives of the unit. Managers are also dependent on the HRIS for superior data collection and analysis. Individual employees acquire more awareness of HRIS applications due to their need to control category selections as employee benefit options become complex. Modification process has become simple with web-based access and self-service options. Moreover, web has improved utility of numerous benefit options for most employees. HRIS uses IT developments and features for effective functioning of the HR processes. It requires huge investment decisions; independent of organizational size therefore, it is essential to convince the decision makers of benefits of adoption of HRIS.

In this modern and competitive business world, organizations are expanding the utilization of HRIS beyond Local Area Network (LAN) to jump in to the world of Internet and Intranet. Internet has brought drastic changes in the business. The world in now considered as global village and this new concept of doing business without having geographical boundaries has increased the importance of information systems.

The major objectives of HRIS are giving better service, information access, cost saving or efficiency. Some of the stated advantages of automating human resource functions are improved data accuracy, higher processing speed, creation of more useful and sophisticated results, enhanced productivity (Ceriello & Freeman, 1991). Further advantages are precision of information generated, availability of required information on time and ultimately saving the costs of the organizations (Tetz, 1973; Lederer, 1984; Wille & Hammond, 1981).

HRIS supports long term plans that might include the planning for work force, future demands to meet the upcoming challenges of human resource capital and for equilibrium in demand and supply of human resources of the organization. Information provided by HRIS also includes the compensation programs having information on salary forecasting, budgeting and last but not the least negotiations as per requirements of the organizations. The accuracy and timeliness of HRIS regarding the operations control, and planning of HR activities is found very important (Lederer, 1984).

It was discussed that contribution of HRIS was cost efficiencies, customer satisfaction and innovation (Broderick & Boudreau, 1992). It was emphasized that computerized HRIS function supported easier storage, updating, classification and analysis of data therefore, enabling better decision making on the management of human resource. It was also suggested that HRIS strengthens an organization's character (Sadri & Chatterjee, 2003).

Developments in IT have severely influenced traditional HR functions with reengineering of processes of HR functions. HR professionals are facing considerable challenges which has transformed traditional HR processes into online processes. Moreover, fast computer technology has readily provided record processing efficiencies to organizations of all sizes (Ulrich, From eBusiness to eHR, 2000). Further, computer technology has improved effectiveness regarding information accuracy or simplification of processes thru utilization of technology. Use of computer technology establishes accuracy in results and offers considerable simplification and efficiency compared to manual processing. Therefore, several HR functions are automated to some degree for improving both efficiency and effectiveness.

To enhance the effectiveness of personnel functional department, organizations are relying more on HRIS (Ball, 2001; Lippert & Swiercz, 2005; Troshani, Jerram, & Gerrard, 2010). Moreover, multifold advantages of HRIS are strategic and administrative both (Kovach, Hughes, Fagan, & Maggitti, 2002). At the strategic level, HRIS is recorded to effect performance positively (Pablos, 2004; Katou & Budhwar, 2006). HRIS tools are used to help in making a decision in HR functions (Farndale, Scullion, & Sparrow, 2010). There is widening reliance on HRIS (Hendrickson, 2004). While at the administrative level, system is able to

record complete information of potential or current employees (Harris & Desimone, 1995). It enhances the efficiency of employees and reduces the operational costs (Beadles, Lowery, & Johns, 2005; Dery, Grant, & Wiblen, 2009; Wiblen, Dery, & Grant, 2010). It is identified that enhanced productivity, lower costs, return on investment, and effective employee communications are the top four benefits of automated system (Wyatt, 2009). HRIS supported human resource management of 60 percent of Fortune 500 companies (Ball, 2001). It is suggested that HRIS is used for administrative, strategic and decision-making purposes (Kovach, Hughes, Fagan, & Maggitti, 2002).

## Obstacles to HRIS

Organizations are ready to adapt changes if they feel to have competitive advantage. Nevertheless, many organizations resist new technology implementation, including HRIS, unless benefits were professed. One reason for reluctance in adoption and implementation of HRIS was the heavy funds required for HRIS adoption and implementation. Proposed by (Beckers & Bsat, 2002) that huge cost of instituting, and maintenance of, a HRIS was the major barrier in HRIS implementation (SAP, SAP Business One Review, 2013). The expense of software packages and the cost of infrastructure to be installed for the implementation of HRIS could also be high. Additionally, to capitalize on all HR possibilities, provision of personal computers to workers and Internet connection are required. It was identified that the transitional costs from traditional HR to an HRIS is high (Brown, 2002). Additionally, costs of hardware and software for application programs, along with cost of maintenance and updating, are noteworthy.

Major obstacles in acquiring maximum potential were insufficient finances and lack of support from the top management (Kovach & Cathcart, 1999). Further, they opined that major barriers were that system designers were having insufficient knowledge of HR processes and that caused finding it difficult to provide proper solutions of the problems. A survey conducted by the Institute of Management and Administration in 2002, the major obstacles in management of HRIS included deficient staff, insufficient budget, shortage of IT support, poor time management, and need for collaborating with other departments (E.W.T. Ngai & F.K.T. Wat, 2006).

## Models of Adoption of Technological Innovations

Innovation adoption, particularly technology adoption, had drawn much attention of researchers. Several researchers had suggested functional parallels between adoption of information systems and adoption of technological innovation. This research study was theoretically founded on literature of innovation adoption. Numerous studied had focused on innovation adoption in not only the developed but also developing countries. Different models to address innovation adoption had most been derived from four theories: Roger's innovation diffusion theory, Feishbein's theory reasoned action, Theory of planned behavior, and technology acceptance models. These theories had focused on individual as well as organizational levels.

It was proposed in classical innovation diffusion theory that the decision process initiated with knowledge of innovation's existence, and matured observing persuasion, decision and implementation stage (Rogers, 2003). In knowledge stage, the consumer was exposed to existence of innovation, and acquires understanding of its functions. In persuasion stage, the consumer formed attitude towards the innovation, either favorable or unfavorable. Moreover, the early adopters, who might be innovators or change agents, tried to persuade general user population in favor of innovation. The persuasion stage in the model of innovation diffusion was critical in formation of positive attitude towards adoption of innovation. Roger's theory included the benefits, barriers, and other factors, that affect adoption. He linked decision of adoption to following innovation-related attributes; relative advantage, complexity, compatibility, trialability, observability. It was stated by (Kwon & Zmud, 1987) that another framework which attributed adoption of IT as part of process of implementation of information systems, according to which innovation adoption was influenced by six major contextual factors; innovation characteristics, organizational characteristics, environmental characteristics, task characteristics, individual characteristics. It was suggested that all work done on innovation could be analyzed from two distinct perspectives: adoption and diffusion (Attewell, 1992). The studies with perspective of adoption evaluate organizational characteristics that make the organization open to change. On the other hand, studies with diffusion perspective focused on understanding of innovation spread, and innovation characteristics that did lead to its acceptance.

# THEORETICAL FRAMEWORK

Theoretical framework consisting of variables consisting of three categories: innovation characteristics, organizational characteristics and environmental characteristics which were hypothesized to be affecting adoption of HRIS in organizations. This model is an adapted version of the model developed by Thompson, Lim, & Fedric, 2007.
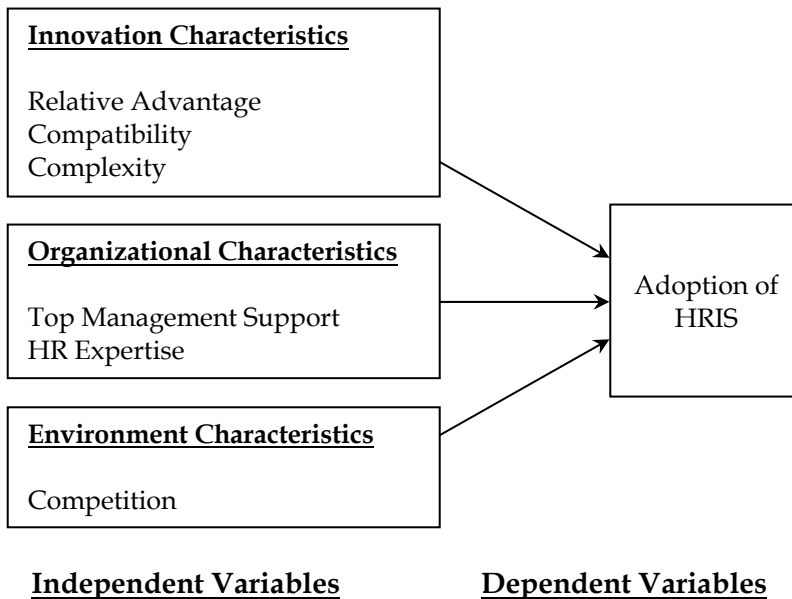


**Innovation Characteristics**

Relative Advantage
Compatibility
Complexity

**Organizational Characteristics**

Top Management Support
HR Expertise

**Environment Characteristics**

Competition

Adoption of
HRIS

**Independent Variables**     **Dependent Variables**

*Diagram 1: Theoretical Framework*

*Ref: Thompson, Lim, & Fedric, 2007*

## Hypothesis

Based on literature review, hypotheses were divided into three categories; innovation characteristics, organizational characteristics, environmental characteristics.

## Innovation Characteristics

Roger's classical innovation diffusion theory was used to provide a linkage between adoption decisions to five different attributes specific to innovation. These attributes were relative advantage, complexity,

compatibility, trialability and observability. *Relative advantage* was the internal requirement for the technology, as perceived by the user. Research had established its importance in influencing the decision of adoption (Jeon, Han, & Lee, 2006; Premkumar & Roberts, 1999). In this study, relative advantage was theorized as it will be having a positive relationship with adoption of innovation. *Complexity* of an innovation was the extent of relative difficulty in understanding and using an innovation, as perceived by the user (Rogers, 2003). Usually, Complexity had negative relationship with adoption (Thong, 1999; Grover, 1993) so this study posited a negative relationship between innovation adoption and complexity. An innovation's *compatibility* was the extent of consistency with current values, previous experiences and requirements of the potential adopter organization, as perceived by (Rogers, 2003). Therefore, relationship of compatibility and adoption of innovation was positively considered for study. Based upon this discussion following hypotheses were proposed between innovation characteristics and HRIS innovation.

### *Relative Advantage*

Relative advantage was one of the best predictors of rate of innovation adoption. Relative Advantage was defined as the degree to which an innovation was perceived as being better than the idea it supersedes. It could also be stated as what would be costs and what would be the benefits of adoption of innovation. Further classified, relative advantage included low initial cost, increased comfort, efficient in terms of time and efforts, and immediacy of reward.

A HRIS could automate managerial tasks, reduce paperwork, simplify processes, and distribute to the point required information to top management, hence improving effectiveness of HR department. It aided organizations in saving time in gathering information, and dedicating time to decision making and strategic planning. Other benefits like better, less expensive recruitment might also be gained.

**Hypothesis 1: Perceived relative advantage is positively related to HRIS adoption.**

*Compatibility*

Compatibility was defined as the degree to which it was perceived as being consistent with the existing values, past experiences and needs of potential adopters. Compatibility of innovation with cultural & social beliefs, existing ideas, and client requirements or vice versa could be measured. An innovation's incompatibility with cultural values could block its adoption. Also, an innovation's incompatibility with a preceding idea could affect its rate of adoption. If innovative product met the needs of required system it was stated as sign of compatibility. Research suggested that compatibility might be somewhat less important in predicting the date of adoption than its relative advantage.

A HRIS could automate day to day managerial tasks. If users resisted the changes in day to day practices and procedures, or had computer phobia, then HRIS adoption would face impediments. If the organization's culture readily accepts change and promotes learning to employees, it was more probable to adopt HRIS. Consistency in HR applications, user-friendly interface, compliance with existing IS architecture, integration of HR activities with other business functions, and fit of HRIS with other corporate systems were necessary to ensure compatibility.

**Hypothesis 2: Perceived compatibility is positively related to HRIS adoption.**

*Complexity*

Complexity was the difficulty perceived by adopters in adopting the innovation. Complexity was stated as the degree to which an innovation was perceived as relatively difficult to understand and use. High complexity of innovation restricted the organization from integration of innovation with organizational activities, increased uncertainty upon its implementation, and heightened the risk of adoption process. It was suggested that potential users were willing to accept and use the systems that were less complex. Major hurdle to adoption was complexity. However, for many innovations, importance of complexity was less than that of relative advantage.

A HRIS required computer expertise to modify, and was generally maintained by IS department. Generally, non-technical professionals faced difficulty in understanding and using HRIS.

### Hypothesis 3: Perceived complexity is negatively related to HRIS adoption.

## Organizational Characteristics

For an organization to adopt and effectively implement innovation, top management support was mandatory in creation of a supportive environment and provision of required resources (Premkumar & Roberts, 1999) so it was theorized to be positively related to HRIS adoption. Expertise was a significant factor in deciding for bringing new technologies in the organization (Kwon & Zmud, 1987). Therefore, if existing employees had high expertise in HRIS, it was theorized to be adopted more easily.

### Top Management Support

Top management support was recognized as an important element in adopting and implementing information technology. The understanding of innovation, attitudes toward innovation, extent of involvement in adoption process could influence top management support. It played a critical role in creation of a supportive climate and provision of adequate resource to adopt and implement new technology. Suggested by (Yap, 1989) that top management could identify future business opportunities by exploiting information technology. Moreover, with active involvement and support, the top management could foster right direction for adoption of innovation. Additionally, visible top management support could signal the importance of innovation, lead to positive attitudes from users towards the innovation, and smoothen the conversion from existing work procedures to the Information System. With their leadership role, top management could ensure allocation of required capital and human resource for adoption of innovation. Top management support was crucial in overcoming user resistance and resolving probable conflicts. Top management support was required for continued success of HRIS.

### Hypothesis 4: Top management support is positively related to HRIS adoption.

*HRIS Expertise*

Expertise was a crucial factor in innovation adoption. HR expertise could be explained as knowledge of employees in HRIS. HRIS staff should be knowledge of more than one functional area; at least IS and HR functions. Availability of skilled HRIS professionals was essential in ensuring success. HR expertise could be achieved through user training (Chau & Hui, 2001). Training enhanced technology competency which could affect the speed and coverage of adoption of innovation (Warren, 2004).

Organizations could delay adoption of innovation until the staff acquired sufficient technical skills and knowledge of operating HRIS. Research suggested that organizations with technology competency were more likely to adopt innovations. If the staff lacked HRIS knowledge and skills, the rate of application of IT to HR departments could be slow.

**Hypothesis 5: HRIS expertise is positively related to HRIS adoption.**

## Environmental Characteristics

As organizations transcended to become knowledge based, there was pressure on human resource to reach cost-efficiencies and play an added strategic character in the organization (McCormick, 1999). So if the organization was faced with a highly competitive environment, it would be pushed more to adopt HRIS to reap its benefits and competitive advantage.

*Competition*

Competition had forced organizations to realize the importance of effective management of human resource. As organizations move towards knowledge-based economy, organizations were under pressure to better manage their human resource in order to be competitive. Therefore, organizations relied on HRIS for better decision making, better management of human resource and better allocation of HR resources.

**Hypothesis 6: Competition is positively related to HRIS adoption.**

# RESEARCH METHODOLOGY

Survey research method was used to collect data. Questionnaires were used to get data from respondents; respondents were allowed to hide their organization names to get the fair response. The population comprised all organizations which had adopted HRIS innovation operating in Pakistan. Variables were measured using a five point Likert Scale ranging from 1 to 5; strongly disagree to strongly agree.

The population for this study comprised all those organizations which had adopted HRIS innovation operating in Pakistan and were in the process of innovation implementation or had implemented. Questionnaire was sent by post to organizations. Response was required from manager of human resource department. Responses were received from 32 organizations. This small sample size was appropriate in case of Pakistan as there were not many organizations operating in Pakistan which had adopted HRIS (Siemens Pakistan - Our Clients, 2013; SuperNova Solutions - List of our Customers, 2013).

Multi-item indicators were used to measure the independent variables identified in the research model. The survey questions were gaining responses pertaining to perceptions of the organization about adoption of HRIS innovation. In order to get data survey package was mailed to HR manager of the organizations. This study was conducted in a single country due to limited time period thus the scope of this research was limited.

# DATA ANALYSIS

In the study multi methods of data analysis were employed and all hypotheses were analyzed by making use of descriptive statistics including means, standard deviations and correlations.

### Response Rate

*Table 1: Response Rate*

| Total Population | Sample | Responses Received | Reponses Rate % |
|---|---|---|---|
| 60 | 60 | 32 | 53.33 |

Total Population was 60 organizations. Questionnaires were sent to all 60 organizations and responses from 32 organizations were received.

## Reliability Statistics

Reliability statistics concept was used to check the reliability of data.

## Cronbach's Alpha

*Table 2: Cronbach's Alpha*

| Number of Items | Cronbach's Alpha |
|:---:|:---:|
| 25 | .850 |

Cronbach's Alpha was 0.850 that was significant and it showed that data was reliable.

## Descriptive Statistics

*Table 3: Categories Descriptive Statistics*

|  | N | Mean | Standard Deviation |
|---|:---:|:---:|:---:|
| Relative Advantage | 32 | 4.02 | .48 |
| Complexity | 32 | 2.69 | .76 |
| Compatibility | 32 | 3.89 | .34 |
| Top Management Support | 32 | 4.19 | .30 |
| HRIS Expertise | 32 | 4.12 | .27 |
| Competition | 32 | 3.51 | .46 |
| Valid N | 32 |  |  |

Relative Advantage, Top Management Support and HRIS Expertise are high on mean values showing the strong response of majority respondents. Other three categories are also showing mean above 2.50; minimum is 2.69 in Complexity. Standard deviation is not very high in all the cases; maximum found in Complexity, 0.76 and lowest is 0.27 in HRIS Expertise.

## Correlations

*Table 4: Correlations*

| Variable | N | Mean | S.D | RA | Compat. | Compl. | TMS | HR Ex. | Compet. | DtaHRIS |
|---|---|---|---|---|---|---|---|---|---|---|
| Relative Advantage (RA) | 32 | 4.02 | .48 | 1.000 | | | | | | |
| Compatibility (Compat.) | 32 | 3.89 | .34 | .448* | 1.000 | | | | | |
| Complexity (Compl.) | 32 | 2.69 | .76 | .346 | .364* | 1.000 | | | | |
| Top Management Support (TMS) | 32 | 4.19 | .30 | .278 | .347 | .293 | 1.000 | | | |
| HRIS Expertise (HR Ex.) | 32 | 4.12 | .27 | .219 | .365* | .286 | .771** | 1.000 | | |
| Competition (Compet.) | 32 | 3.51 | .46 | .311 | .202 | .437* | .070 | -0.94 | 1.000 | |
| Decision to Adopt HRIS (DtaHRIS) | 32 | 3.97 | .595 | .388* | .421* | .332 | .385* | .350* | .333 | 1.000 |

$*p < 0.05$ ** $p < 0.01$

Correlation analysis is used to explain the intensity and significance of relationship between all hypothesized variables in this study.

Hypothesis 1 suggested, "Perceived Relative Advantage would be contributing positively to Decision to Adopt HRIS". Correlation results show that Relative Advantage (0.388*, p 0.028) is a very strong and significant contributor towards Decision to Adopt HRIS; thus Hypothesis 1 is strongly supported.

Hypothesis 2 predicted, "Perceived Compatibility of any HRIS innovation would be positively related to Decision to Adopt HRIS". The correlation coefficient showed that Compatibility (0.421*, p 0.016) is also positively related to Decision to Adopt HRIS. Therefore Hypothesis 2 is supported. This finding highlighted the perception that if the incoming HRIS adoption is perceived to be compatible to the existing organization system and does not entail system disruption, then such HRIS has better chances to be adopted by that organization.

Hypothesis 3 predicted, "Perceived complexity of an HRIS innovation would be negatively related to HRIS adoption". The correlation coefficient shows that Complexity is not negatively related to Decision of HRIS Adoption and result is not significant. Therefore Hypothesis 3 is not supported by the correlation analysis since it was hypothesized that if the incoming HRIS is perceived to be complex by organization members,

then this complexity becomes a hindrance in the way of successful adoption of HRIS by that organization.

Hypothesis 4 predicted, "Top Management Support would be positively related to Decision to Adopt HRIS". Table shows that Top Management Support (0.385*, p 0.030) is having strong relationship with Decision to Adopt HRIS and it is significantly and positively related to Decision to Adopt HRIS. This correlation result has showed that out of the all contributors considered in this research, top management support comes out to the biggest contributor towards adoption of HRIS innovations in any organization and this finding highlights the importance of gathering top management or leadership support to give any real chance to HRIS adoption in any organization. Conversely, if the top management is not convinced about the need and applicability of HRIS in any organization, then they can become the biggest resistance standing in the way of HRIS adoption.

Similarly Hypothesis 5 suggested, "HRIS Expertise would be positively related to Decision to Adopt HRIS". The correlation values shows that HRIS Expertise (0.350*, p 0.050) is having moderately strong and significant relationship with Decision to Adopt HRIS. Therefore Hypothesis 5 is also supported. The correlation analysis highlighted the finding that presence of existing HRIS expertise in any organization can indeed serve as a big support towards adoption of HRIS in that organization as the incoming HRIS innovation is not perceived to be threat to the existing expertise levels of concerned employees in the organization.

Hypothesis 6 predicted, "Perceived level of Competition would also be positively related to HRIS adoption in an organization". The correlation values show perceived level of competition in the industry (0.333, p 0.063) was only weakly, though positively, related to Decision to Adopt HRIS. Therefore Hypothesis 6 is also lent support by the correlation analysis, although this correlation is not very strong. This finding from the correlation analysis originated as a surprise since it is thought that competition in any industry does become a big factor in pushing organizations to adopt HRIS innovations to gain competitive relative advantage against the rival organizations and this finding has to be further explored by future research.

## DISCUSSION AND FINDINGS

Organizations which had adopted HRIS utilized its benefits and acknowledged the efficiency of HRIS. The perception of HRIS as not improving quality of work was rare, and majority was convinced of HRIS bringing improvement in quality of work of human resource personnel. Majority employees perceived that HRIS made completion of HR tasks easier. The technology-based HRIS automated the tasks, saved time, and managed information efficiently.

The increase in job effectiveness due to HRIS adoption was commonly perceived, while the increase in job enhancement was even more common. HRIS provided required information for decision making as and when required, targeting the person in need which favored HRIS adoption. A significant utilization of HRIS is support in decision making regarding human resource personnel. Interestingly, contrary to the traditional perception that HRIS was expensive investment, the findings indicated that respondents were well aware of HRIS causing a reduction in operational costs.

Certain difficulties in HRIS adoption were also revealed in the findings. Due to lack of awareness and limited knowledge, and natural resistance to innovation adoption in Pakistani culture, there was wide concern for complexity in using HRIS. Moreover, employees were reluctant to learn the innovation. This could again be attributed to the natural resistance to change in Pakistani culture where new technology is regarded as difficult and complex, unless the top management provides incentives to employees to learn and adopt it. Another interesting finding from this study was that almost half of the respondents were convinced at the ease of integrating HRIS into current operations. All human resource personnel were computer literate and HRIS experts were present in all organizations. Moreover, every organization considered their employees as having the best competent employees in field of computers. The study showed that the changes that HRIS adoption brought into the existing system were compatible with existing operations; therefore, adoption of HRIS should be considered positively.

The consistency of organizational values and beliefs between existing system and HRIS were confirmed by majority. Moreover, IT structure of organization was considered fully compatible with HRIS. The

computerized data resources were also considered compatible with HRIS. Furthermore, the role of top management was acknowledged and understood, which showed that top management played major role in adopting HRIS, not only in terms of allocation of adequate human, financial and physical resources, but also time and commitment. The training of employees was also dependent on encouragement of top management. HRIS was perceived strategically important for the organization. However, organizations were adopting HRIS due to internal as well as external competitive pressure, while few even admitted on inquiring about competitor's technological innovations.

## Conclusion

HRIS should not be considered as an expense rather organizations should take it as the amount spent was invested. HRIS packages with less functionality could be costly. The cost of infrastructure to be installed for the implementation of HRIS was also significant in monetary terms. It was concluded that Relative Advantage and Compatibility were positively related to adoption of HRIS. Top Management Support and HRIS Expertise were found to contributors to the decision of HRIS adoption.

## Recommendations

It is recommended that organizations should opt for new technologies. It would cut the cost of operating human resource department. It would also increase the efficiency of the human resource section. Quality work would be done in lesser time and high cost incurred on implementation of HRIS would be justified. It is highly recommended that the organizations not having human resource information systems must adopt the latest systems after having HRIS expertise in pocket. Usefulness of HRIS is supported by results of this study. It will help organizations in understanding the advantages of implementing such systems.

## Future Research

Empirical research on HRIS adoption is not only scarce within Pakistani, but also outside Pakistan (Hisham Al-Mobaideen, Sattam Allahawiah, & Eman Basio, 2013). This study has made original contribution to the existing knowledge base that can be used as foundation for other

researchers, particularly for cross-cultural research on adoption, or similar Information Systems. This research has significant implications for multinational organizations that have adopted HRIS in some countries, but not yet in Pakistan.  This study is quantitative in nature but further mixed-methods studies is suggested as that is required for adequate development of adoption of innovation research in Pakistan.  Further, if having data of large number of respondents, regression analysis and few more advanced statistical tests may be applied to have opportunity of better analysis.

## REFERENCES

Amani Moazzam Baig Mirza, & Nasira Jabeen. (2011). Gender Stereotypes and Women in Management, The Case of Banking Sector of Pakistan. *A Research Journal of South Asian Studies, 26*(2), 259-284.

Anderson, R. W. (1997). The future of human resources: Forging ahead or falling behind? *Human Resource Management, 36*, 17-22.

Attewell, P. (1992). Technology diffusion and organizational learning: The case of business computing. *Organization Science, 3*, 1-19.

Ball, K. S. (2001). The use of human resource information systems: A survey. *Personnel Review , 30*(6), 677-693.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*, 99-120.

Beadles, N., Lowery, C., & Johns, K. (2005). The impact of human resource information systems: an exploratory study in the public sector. *Communications of the IIMA, 5*(4), 39-46.

Becker, B., Huselid, M., & Ulrich, D. (2001). *The HR Scorecard: Linking People, Strategy and Performance.* Boston, MA: Harvard Business School Press.

Beckers, A. M., & Bsat, M. Z. (2002). A DSS classification model for research in human resource information systems. *Information Systems Management, 19*(3), 41-50.

Broderick, R., & Boudreau, J. (1992). Human resource management information technology and the competitive edge. *Academy of Management Executive, 6*(2), 7-17.

Brown, D. (2002). E-HR: victim of unrealistic expectations. *Canadian HR Reporter, 15*, 1-6.

Ceriello, V. R., & Freeman, C. (1991). *Human Resource Management Systems – Strategies, Tactics and Techniques.* Lexington, MA: Lexington Books.

Chau, P., & Hui, K. (2001). Determinants of small business EDI adoption: an empirical investigation. *Journal of Organizational Computing and Electronic Commerce, 11*(4), 229-252.

Culnan, M., & Markus, M. (1987). Information Technologies in History of Organizational Communication. *Sage*, 420-443.

Dery, K., Grant, D., & Wiblen, S. (2009). Human Resource Information Systems:Replacing or Enhancing HRM. *Proceedings of the 15th World Congress of the International Industrial Relations Association IIRA.* Sydney.

DeSanctis, G. (1986). Human resource information systems: A current assessment. *MIS Quarterly, March*, 15-27.

Dr. Jan Mohammad, & Dr. Nadir Ali Kolachi. (2013). Accountability of HR through Proper Supervision: A Case of Public Sector in Balochistan Province (Pakistan). *International Journal of Business and Social Science, 4*(3), 102-108.

Dr. Soud Mohammad Almahamid. (2013). E-government system acceptance and organizational agility: theoretical framework and research agendas. *International Journal of Information, Business and Management, 5*(1).

Dr. Syed Hassan Raza, Syeda Qudsia Batool, & Dr. M.A Sajid. (2012, February). Benefits and Barriers of Human Resource Information System In Accounts Office & Azad Jammu & Kashmir Community Development Program. *International Journal of Humanities and Social Science, 2*(3).

E.W.T. Ngai, & F.K.T. Wat. (2006). Human resource information systems: a review and empirical analysis. *Personnel Review, 35*(3), 297-314.

Farndale, E., Scullion, H., & Sparrow, P. (2010). The role of the corporate HR function in global talent management. *Journal of World Business , 45*(2), 161-168.

Fombrun, C., Tichy, N., & Devanna, M. (1984). *Strategic Human Resource Management.* New York: Wiley.

Grover, V. (1993). An empirically derived model for the adoption of customer-based inter organizational systems. *Decision Sciences , 24*(3), 603-640.

Harris, D., & Desimone, R. (1995). *Human Resource Development.* Forth Worth: Dryden Press.

Hendrickson, A. (2004). Human resource information systems: backbone technology of contemporary human resources. *Journal of Labour Research , 24*(3), 381-394.

Hisham Al-Mobaideen, Sattam Allahawiah, & Eman Basio. (2013, January). Factors Influencing the Successful Adoption of Human Resource Information System: The Content of Aqaba Special Economic Zone Authority. *Intelligent Information Management, 5*, 1-9.

Huber, G. (1990). A theory of the effects of advanced information technologies on organizational design, intelligence and decision-making. *Academy of Management Review, 15*, 47-71.

Indrit Troshani, Cate Jerram, & Sally Rao Hill. (2011). Exploring the public sector adoption of HRIS. *Industrial Management & Data Systems, 111*(3), 470-488.

Islam, N. (2004). Sifarish, Sycophants, Power and Collectivism: Administrative Culture in Pakistan. *International Review of Administrative Sciences, 70*, 311-330.

Jeon, B., Han, K., & Lee, M. (2006). Determining factors for the adoption of e-business: The case of SMEs in Korea. *Applied Economics, 38*(16), 1905-1916.

Katou, A., & Budhwar, P. (2006). Human resource management systems and organisational performance: a test of a mediating model in the Greek manufacturing context. *International Journal of Human Resource Management 17(7), 17*(7), 1223-1253.

Kavanagh, M. J., Gueuta, H. G., & Tannenbaum, S. (1990). *Human Resource Information Systems: Development and Application.* Boston, MA: PWS-KENT.

Kovach, K. A., & Cathcart, C. (1999). Human resource information systems (HRIS): Providing business with rapid data access, information exchange, and strategic advantage. *Public Personnel Management, 28*(2), 275-282.

Kovach, K., Hughes, A., Fagan, P., & Maggitti, P. (2002). Administrative and strategic advantages of HRIS. *Employment Relations today, 29*(2), 43-48.

Kwon, T., & Zmud, R. (1987). Unifying the Fragmented Models of Information Systems Implementation. *Critical Issues in Information Systems Research*, 227-252.

Lederer, A. L. (1984). Planning and developing a human resource information system. *The Personnel Administrator, 29*(8), 27-39.

Lin, C. Y. (1997). Human Resource Information Systems: Implementation in Taiwan. *Research and Practice in Human Resource Management, 5*(1), 57-72.

Lippert, S., & Swiercz, P. (2005). Human resource information systems (HRIS) and technology trust. *Journal of Information Science, 31*(5), 340-353.

McCormick, S. (1999). Reinventing employee service delivery: on the road to virtual human resources. *Benefits Quarterly, 15*(3), 7-10.

Nailah Ayub, & Karen Jehn. (2010). The diversity scenario in Pakistani organizations . In *Managing Cultural Diversity in Asia* (pp. 110-129). UK: MPG Books Group.

Normalini Md. Kassim, T. Ramayah, & Sherah Kurnia. (2012). Antecedents and outcomes of human resource information system (HRIS) use. *International Journal of Productivity and Performance Management, 61*(6), 603-623.

Osterman, P. (1987). Choice of employment systems in internal labor markets. *Industrial Relations, 26*, 46-67.

Pablos, P. D. (2004). Human resource management systems and their role in the development of strategic resources: emprical evidence. *Journal of European Industrial Training , 28*(6), 474-489.

Paula McDonald, Pauline Burton, & Artemis Chang. (2007). Sampling Choices in Work-Life Balance Research 1987to 2006: A Critical Review. *21st ANZAM 2007 Conference*, (pp. 1-17). Sydney.

Pfeffer, J. (1998). *Human Equation: Building Profits by Putting People First.* Boston, MA: Harvard Business School Press.

Powell, T. C., & Dent-Micallef, A. (1997). Information Technology as Competitive Advantage: The Role of Human, Business and Technology Resources. *Strategic Management Journal, 18*(5), 375-405.

Premkumar, G., & Roberts, M. (1999). Adoption of new information technologies in rural small businesses. *Omega, 27*(4), 467-484.

Richards-Carpenter, C. (1982). New needs, new methods, new opportunities. *Personnel Management, 14*(5), 27-30.

Rogers, E. (2003). *Diffusion of Innovations.* New York: The Free Press.

Sadri, J., & Chatterjee, V. (2003). Building organizational character through HRIS. *International Journal of Human Resources Development and Management, 3*(1), 84-98.

SAP. (2013, 7 22). *SAP Business One Review*. Retrieved from 180Systems: http://www.180systems.com/articles-and-research/erp/reviews/SapBusinessOne/

SAP. (2013, 7 20). *SAP Find Partner*. Retrieved from SAP: http://www54.sap.com/partners/overview/find.html

Siemens. (2013, 6 15). *Siemens Pakistan - Our Clients*. Retrieved from Siemens Pakistan: http://www.siemens.com.pk/Pdf/sap/Siemens%20Chart.pdf

Solutions, S. (2013, 6 15). *SuperNova Solutions - List of our Customers*. Retrieved from SuperNova Solutions: http://www.supernova.com.pk/customers.html

Sonnenfeld, J., & Pepper, M. (1988). Staffing policy as a strategic response: a typology of career system. *Academy of Management Review, 13*, 588-600.

Storey, J. (1992). *Developments in the Management of Human Resources.* London: Blackwell.

Straus, S.G., Weisband, S.P, & Wilson, J.M. (1998). Human resource management practices in the networked organization: impacts of electronic communication systems. *Trends in Organizational Behavior*, 127-154.

Tetz, F. (1973). Computer-based Human Resource Information Systems; Costs vs. Benefits. *Personnel Journal, 52*, 451-455.

Thompson, S. T., Lim, G. S., & Fedric, S. A. (2007). The Adoption and Diffusion of Human Resource Information Systems in Singapore. *Asia Pacific Journal of Human Resource 45(1), 45*(1).

Thong, J. (1999). An integrated model of information systems adoption in small business. *Journal of Management Information Systems, 15*(4), 187-214.

Troshani, I., Jerram, C., & Gerrard, M. (2010). Exploring the organizational adoption of Human Resources Information Systems(HRIS) in the Australian public sector. *Proceedings of the 21st Australasian Conference on Information Systems (ACIS2010).* Brisbane, Queensland.

Ulrich, D. (1997). HR of the future: conclusions and observations. *Human Resource Management, 36*(1), 175-179.

Ulrich, D. (2000). From eBusiness to eHR. *Human Resource Planning, 23*(2), 12-21.

Warren, M. (2004). Farmers online: drivers and impediments in adoption of Internet in UK agricultural businesses. *Journal of Small Business and Enterprise Development, 11*(3), 371-381.

Wiblen, S., Dery, K., & Grant, D. (2010). Transitioning from a Proprietary to Vanilla HRIS: The Resulting Implications for Talent. *Proceedings of the 3rd European Academic Workshop on Electronic Human Resource Management.* Bamberg, Germany.

Wille, E., & Hammond, V. (1981). *The Computer in Personnel Work.* London: Institute of Personnel Management.

Wyatt, W. (2009, 11). *E-HR: getting results along the journey*. Retrieved 11 2009, from Watson Wyatt: http://www.watsonwyatt.com/research/resrender.asp?id=W-524&page=1

Xu, L., Wang, C., Luo, X., & Shi, Z. (2006). Integrating knowledge management and ERP in enterprise information systems. *Systems Research and Behavioral Science, 23*, 147-156.

Yap, C. (1989). Issues in managing information technology. *Journal of Operation Resource Society, 40*(7), 649-658.

Zhang, L., & Wang, H. (2006). Intelligent information processing in human resource management: an implementation case in China. *Expert Systems , 23*, 356-369.