

## Human Resource in Digital Age: Significance of Human Resource Information System for Higher Education Institutions of Pakistan

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### Abstract:

In today's digital age, HR departments have assumed the role of business partners, necessitating the need for integration of technology with HR functions. Consequently, use of manual systems to perform HR functions of recruitment, compensation, performance appraisal, etc. can adversely affect the productivity of organizations. A large number of organizations have adopted Human Resource Information System (HRIS) to enhance the efficiency of HR departments. Recognizing the expanding role of HRIS and exponential growth in education sector of Pakistan, this research focuses on exploring motivators behind implementation of HRIS in higher education institutions, role of HRIS in improving productivity of higher education institutions, and the challenges attached to HRIS. This qualitative research examines user experiences of HR professionals from seven Pakistani higher education institutions, out of which three are completely automated, one is partially automated, and three are operating on manual HR systems. The research concludes that HRIS is perceived as an invaluable technology for improving the efficiency of higher education institutions in general and their HR departments in particular. Higher education institutions that are currently using HRIS consider it a vital technology, while institutions that are not using HRIS maintain a positive attitude towards it and want to implement it.

**Keywords:** Human Resource Information System (HRIS), Human Resource Management (HRM), Electronic Human Resource Management (e-HRM), HR Professionals, Higher Education Institutions (HEIs)

### 1. Introduction

#### 1.1: Background

Human Resource Management (HRM) is an essential component for managing any organization. The role of Human Resource (HR) is not only critical in industries that provide services, such as banking, healthcare, retail and transportation, but is also crucial for the education sector, particularly Higher Education Institutions (HEIs).

Over the last decade, the exponential growth of higher education in Pakistan has transformed the operations of most universities. In 2017-18, there were a total of 186 public and private sector universities with 56.9 thousand faculty members, while the total number of students enrolled in HEIs was 1.6 million.

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This number has increased by 7.7% from the previous year. The number of students and human capital in universities is expected to continue increasing at a rapid rate in the future, thereby, necessitating the use of technology to manage daily operations (Ministry of Federal Education & Professional Training, 2019).

With the growth of universities in Pakistan and the expanding role of HR, HRM can no longer be performed manually in an effective manner and the use of Human Resource Information Systems (HRIS) has become imperative. The increasing popularity of HRIS can be credited to the growing use of technology around the world. In other words, interactions between employees and new technologies have a direct impact on the productivity of organizations (Dixit, 2017). HRIS, defined as a computer-based application for processing information pertaining to employees, is a combination of hardware and software that assists the HR department of an organization (Chauhan et al, 2011). HRIS is an interdisciplinary subject that consists of two key components: Human Resource Management and Information Technology. It increases the overall productivity of employees and offers a number of benefits to organizations (Kavanagh, Thite, & Johnson, 2012). In a research conducted to analyze the role of computer-based information systems in improving quality of work at higher education institutions, the researchers concluded that individuals and data will become the future direction of development in strategic management systems, both in industrial and education sectors (Naik & Reddy, 2017).

The significance of HRIS can be attributed to streamlining processes and procedures of storing and retrieving employee information in an organization. The effective implementation of this software will improve HR planning through faster information processing and feedback. The firms will be able to make accurate decisions related to Human resource of an organization thus reducing the overall administrative cost. (Mostari, 2018). The use of HRIS for the basic and advanced HR functions can assist organizations to gain competitive advantage over their rivals. (Eleyana, 2020).

## **1.2: Research Problem and Research Gap**

In this digital era, the education sector of developing countries of the world such as Pakistan is still confined to manual HR practices that act as a roadblock in their successful operation. Despite the paradigm shift in HR practices across the world, research on significance and adoption of HRIS has remained limited, particularly in the context of Pakistan (Ahmer, 2013). Literature shows that Higher education institutions around the globe are now increasingly investing in implementation of HRIS to automate functions related to HR such as recruitment, training and development, performance appraisal, compensation etc. However, despite the benefits of HRIS, the extent to which this system has been put into practice in higher education institutions of Pakistan has hardly been explored.

Recognizing this gap and the potential for research in this area, this paper attempts to discover the significance of HRIS by extracting the current scenario of its usage in higher education institutions of

Pakistan. The primary focus of this research is to explore the experiences of HR professionals, determine how HRIS facilitates them, and identify if HRIS enhances or reduces the overall operations and efficiency of higher education institutions. In addition, this research will dig out the reasons behind limitations attached to incorporating and using HRIS in higher education institutions.

### 1.3: Research Objectives

The following are the objectives of this research:

- To discover the motivators that lead to the implementation of HRIS in universities
- To explore the overall HRIS usage experience of HR professionals in universities
- To identify the change in performance of HR professionals after the implementation of HRIS
- To investigate the reasons behind the mismatch between expected use and actual use of HRIS in universities
- To determine the significance of HRIS in universities

## 2. Literature Review

The dominance of information technology across the world has resulted in substantial economic and cultural transformations. Due to these advancements in digital era, the internal operations of organizations, mainly the practices of HRM, have revolutionized significantly. Most organizations are moving from conventional HR management to modern approaches of HR since they have been exposed to an immediate need of aligning their policies and strategies with the digitalized labor market. (Battista & Parry, 2019). A research by Hussain, Wallace, & Cornelius (2007) indicates that HRIS adds value to small and medium-sized organizations as well. Therefore, HRIS enhances the productivity of all types of organizations, regardless of their size or scale of operations. Recognizing the gravity of this need, organizations are moving their practices of recruitment, training, appraisal and compensation etc. to electronic mediums (Strohmeier & Stefan, 2014).

In order to achieve a competitive edge over other organizations, the use of information technology and software for managing human resource has become inevitable (Erdoğmuş & Esen, 2011). The revolutionizing HR practices worldwide have indicated an urgent need for the collaboration of HR with IT. Many organizations have shifted from traditional HR practices to electronic HRM; however, this shift in HR practices does not necessarily mean replacement of traditional ways of recruitment, compensation, appraisal and other functions of HR. A number of companies have converted to performing human resource functions online with the help of implementing intranet within their organizations, while some of them have changed their work practices using other technological aspects such as virtual teams (Sharma & Shukla, 2013). On the other hand, Patel (2015) states that integration of technology and human resource is essential to carry out HR functions proficiently.

In a research conducted to examine the perception of stakeholders' in Spanish public sector universities regarding the significance, advantages and disadvantages of transferring human resource data to HRIS, it was discovered that university stakeholders' believed transferring of human resource data to an automated system was relevant and much-needed. Findings revealed that prompt response, clear communication and hassle-free access to data were the major advantages of employing a human resource information system at a university. On the other hand, inadequate finances and lack of continuous support from the management of the university were perceived as the main disadvantages of implementing human resource information systems in Spanish public universities. However, the findings confirmed that a well-managed human resource information system helps in increasing the productivity of employees in universities. (Ramirez & Tejada, 2020). HRIS improves HR planning by facilitating the strategic, tactical and functional decisions of HR in an organization. A research conducted to study the role of HRIS on operational efficacy of corporations in Bangladesh investigated five functions of the system, namely: recruitment and selection, compensation, performance evaluation, communication and job analysis. The research indicated that all the five selected functions of HRIS had a positive impact on the operational efficacy and the impact of HRIS is highest for the HR functions of recruitment and selection. (Selvaraj & Rengamani, 2018)

In 2008, a study conducted on the role of HRIS in higher education institutions found that the use of HRIS will allow universities to store an overall profile of their employees along with their positive and negative qualities. As a result, HR departments can design personalized training and development programs for employees. This will not only lead to universities placing right individuals on the right jobs, but will also improve the culture of learning, reduce wastage of time and operational costs associated with having wrong people at the wrong place. The study concluded that the rapid growth of higher education institutions necessitated a powerful business solution for smooth operations in the future (Rawat, 2008).

The significance of HRIS in a service sector cannot be denied, however, the actual usage of HRIS in universities is limited to data maintenance and data processing only. In the tertiary education sector, traditional HR functions are performed manually and no significant change has been identified in the recent times. Recruitment and training, being the most significant functions of HR, portrayed no major change even after implementation of HRIS, revealing the downside of HRIS implementation. Although HRIS seems to be a promising technological advancement, but its use in the education sector has been found to be limited, thereby, demonstrating that the system is not being fully utilized by the education sector (Jaafar, Rezaeian, Tabarsa, Otarkhani, & Nezafati, 2017).

In the context of Pakistan, a research carried out in 2016 discovered that gender played no part in forming people's perception of HRIS; however, designations and positions played a significant role in individuals accepting or resisting the adoption of HRIS in their organizations. The research discovered

that most HR professionals in Pakistan resist the implementation of HRIS, whereas, the HR professionals working in the education sector recognize that HRIS can facilitate their work. Therefore, the education sector is more likely to accept the adoption of HRIS as compared to other sectors in Pakistan. The research concluded that lack of acceptance due to fear of change in the junior staff was the most significant challenge faced by organizations across all sectors in Pakistan (Khan et al., 2016). On the other hand, another study conducted to determine the barriers of HRIS ranked the various challenges of HRIS and discovered that lack of acceptance by senior management was perceived to be the most significant challenge faced by universities (Bamel, et al., 2014).

A research investigating the benefits of HRIS for universities discovered that the most important issue that universities were facing before the implementation of HRIS was retrieving and analyzing staff data. Through the help of a comprehensive information system, a range of HR functions that HR departments of universities had historically found challenging to perform were now being performed with ease on routine basis. The research found that after the implementation of HRIS, employee relations improved with top management because HRIS assisted universities in producing accurate and simple annual appraisal forms, tracking voluntary and involuntary turnover, tracking employee birthdays and past experiences etc. The research also found that universities were utilizing HRIS for training and development of faculty members by maintaining a record of faculty trainings and identifying which faculty members needed to attend trainings. In addition, universities were benefitting from the ease of performing mathematical functions related to salary and compensation of employees (Hooten, 2013).

Investigating the impact of HRIS on job satisfaction and turnover of employees, a research revealed that a sudden implementation of HRIS can be considered a threat by employees, thereby reducing their job satisfaction and increasing their turnover rate. However, findings revealed that employees believed they would welcome HRIS if it was adopted gradually and they were provided adequate training on how to use it, which would in turn increase their job satisfaction and decrease their turnover intention. Thus, if applied properly, HRIS can positively increase the overall performance of employees. (Shahreki, 2019)

A Kenyan research collected data from employees working in Human Resource, Finance and Information Technology departments of two universities in Kenya. The study revealed that the major challenge in implementation of HRIS for universities is the resistance of employees to switch to a computerized system. Other challenges included high costs of implementing and maintaining an HRIS system and shortage of skilled employees using an HRIS system for their daily tasks related to HR. The study concluded that while the benefits of HRIS may outweigh its challenges, the resulting productivity from use of HRIS depends on the acceptance level of employees in universities. The most notable elements that resulted in ineffective and inaccurate implementation of HRIS in higher education institutions are mostly associated with humans and not the system itself. These challenges include

shortage of funds to adopt the complete system, high costs of deploying and maintaining the system, inadequate knowledge of application developers and lack of support from senior managers. The study also revealed that inadequate planning from the institution as a whole and departments in particular resulted in mismatch between overall employee coordination in the higher education institutions (Kananu & Nyakego, 2016).

## **2.1: Theoretical Framework**

Although no particular model has been found to determine the significance of HRIS, inspiration can be taken from historical models established by researchers in literature. The theory of Technology Acceptance Model (TAM), coined by David (1989), and the theory of Diffusion of Innovation, developed by Rogers (1995), form the basis of this research.

The theory of TAM can be used to understand the adoption of HRIS. According to this theory, there is a strong association between behavior and usefulness of technology. This means that individuals working at organizations will adopt HRIS if they perceive it to be simpler compared to manual practices of HR (David, 1989).

The theory of Diffusion of Innovation by (Rogers, 1995) explains how innovation spreads. It further determines the reasons and the rate at which new technology and ideas expand overtime. This theory encompasses five characteristics that affect the adoption of new technology. These characteristics are: relative advantage (HRIS will be adopted by individuals if they perceive it to be relatively advantageous in terms of its usefulness, economic value and efficiency), compatibility (the system is consistent with the existing needs of users), degree of complexity (the extent to which the system is easy to use compared to manual practices), triability (universities can have a pilot or testing phase before complete implementation of HRIS) and observability (the degree to which people can observe the results of HRIS before adopting it for their HR practices).

## **3. Materials and Methods**

### **3.1: Research Design**

In this research, interpretivism philosophy has been used with an inductive approach followed by an exploratory research strategy. This combination has been used to explore the phenomenon of HRIS and how HR professionals of higher education institutions interpret their experiences. The inductive approach has been applied to extract the meaning associated with HRIS from the perspective of HR professionals.

### **3.2: Participants and Sampling**

The participants of this research included HR professionals possessing at least three years of relevant experience at a higher education institution of Pakistan. Non-probability purposive sampling technique

has been used to select the respondents. HR professionals of universities in Karachi were requested to take part in the interviews and data was collected from those who agreed to respond.

### **3.3: Data Collection Procedure**

Data was collected with the help of semi-structured interviews. The questions asked from each respondent and the order of questions asked varied depending upon the answers of respondents. Additional questions were asked from respondents of some universities to probe further information about HRIS and modules used in their universities. The time duration of interviews was kept flexible in order to extract additional information from respondents. The average duration of interviews was 30 minutes; however, the longest interview lasted for 1.5 hours. The interview protocol consisted of approximately thirteen to fifteen questions which were based on previous researches (Bamel et. al, 2014; Alshibly, 2011) and were developed according to the objectives and research questions of this research. The initial questions of the interview protocol were based on the demographical characteristics of participants, while the remaining questions explored the motivators that lead to implementation of HRIS in universities, the overall HRIS user interaction experience and change in performance after using HRIS. Since HRIS has a wide variety of functions and applications, the interview protocol also included questions that investigated the actual and expected use of HRIS in universities, the extent to which HRIS was used for functions related to HR, and the challenges associated with HRIS.

### **3.4: Validity and Reliability**

The face validity of interview protocol was determined by getting an approval of the instrument by a research expert and a domain expert. Since the sample of this research was HR professionals working at universities, all the respondents fit the criteria and were identified as the most reliable source of gathering information regarding HRIS.

### **3.5: Plan of Analysis**

After the collection of primary data from semi-structured interviews conducted at universities, the responses were transcribed and a thematic analysis was applied to extract relevant insights that would assist in achieving research objectives and answering research questions. During the process of analysis, codes were first assigned to transcribed interviews. After this, the coded data was sorted and sifted to explore similar themes and identify patterns in the collected data. Through this process, relevant information was sorted out into categories (Miles, Huberman, & Saldana, 2014). Memoing was also used to amalgamate the significance of HRIS as perceived by HR professionals.

## **4. Results and Discussion**

Table 1 summarizes the codes and themes derived from interviews of HR professionals working at higher education institutions. The thematic analysis matrix of HR professionals working at higher education

institutions has been tabulated in Table 2, which was developed from the responses after completing the processes of coding, sorting and sifting.

**Table 1: Codes and Themes Derived from Interviews of HR Professionals**

Codes	Sources	Themes
Year 2006	2	HRIS adoption
Year 2008	1	
Year 2018	1	
Time and attendance	7	Current status of HR automation
Leave and short leave record	4	
Payroll	3	
Employee data	4	
Student portal	6	
Almost all functions except training	3	
Daily rosters	2	
Recruitment	2	
Yes, continuous upgrades required	1	Need for automation
Yes, need to automate recruitment and training	1	
Yes, need to integrate stand-alone applications	1	
Yes	2	
No, most functions have already been automated	1	
No, we don't need automation	1	
Requirements of the regulatory bodies	1	Reasons for automation
Lack of coordination between campuses and departments	3	
Costs of labor and keeping data are high	1	
Manual data can be manipulated	1	
Manual HR practices waste time and energy	3	
Shortage of HR staff	1	
Minimizes manual paperwork	4	Motivators behind implementation of HRIS
Saves time and energy	5	
Reduces workload	3	
Improves integration and communication across the institution	2	
Facilitates easy approvals	1	
Saves cost and space	2	
Reduces errors	5	
Allows easy access to data	2	
Increases accuracy and transparency of records	1	
Increases productivity and efficiency	3	
Reduces job burnout	1	
Highly satisfied	2	User satisfaction
Satisfied	1	
Moderate	1	
Not satisfied	1	
Satisfied with manual system	1	
Yes	4	Streamlining of processes
Yes, it will once implemented	2	
No, it will not even if implemented	1	
Time and attendance	7	Utility of HRIS for HR functions
Payroll and compensation	3	
Recruitment	2	
Appraisals	1	

Employee data	4	
Leave record	4	
Student portals	6	
Scheduling	2	
Marvelous	1	Information quality
Very Good	1	
Good	2	
Room for improvement	1	
Will improve once implemented	1	
If implemented, for faculty it will improve but for management it won't improve	1	
Shows salary trends	1	Benefits derived
Facilitates recruitment process	2	
Maintains employee data	6	
Improves satisfaction, productivity and efficiency of employees	6	
Saves time and costs	6	
Reduces paperwork and workload	6	
Reduces errors	6	
Improves reliability and accuracy of data	4	
Provides real-time and quick dissemination of information	2	
Allows quick retrieval of data	1	
Facilitates easy appraisals	1	
Yes	4	Improved efficiency
If modules are integrated, it will	1	
It definitely will once implemented	1	
No, will not be perfect even if implemented	1	
Equal	3	Actual vs expected use
Not equal	1	
Not equal, HR department does not use the module developed for them	1	
Yes, in the beginning by management	1	Employee resistance
Yes, a little	1	
No	1	
Yes, expected in the beginning	2	
Yes, expected	1	
Yes	3	Employee familiarity with modules
Mostly	1	
No	1	
Department coordinators are trained	1	Training support
Trainers are trained	1	
Regular trainings provided	1	
Orientation session given	1	
Time-consuming implementation	2	Challenges associated with HRIS
Employee resistance and acceptance	2	
Costs of modules and maintenance	3	
Risk of disclosure (confidential information)	1	
None, all challenges are opportunities to improve	1	
Time-consuming training	1	
Top management is not willing to implement	1	
Regular upgrades required	1	Room for improvement in HRIS
No, it is okay	1	
Yes	2	
Should go for complete automation	1	

Should implement	1	System quality
Should not implement	1	
Highly Satisfactory	1	
Satisfactory	1	
Average	2	
Should be free from errors when implemented	1	

**Table 2: Thematic Analysis Matrix of HR Professionals**

S#	Themes	University A	University B	University C	University D	University E	University F	University G
1	Technology Adoption	2008	2006	2006	2018	-	-	-
2	Software used	Education ERP and CMS	CMS	ERP	Oracle	FPSEV, LimeSurvey, ReadyCore, CB A, E-Tests, TMS, LMS	Excel	Oracle CMS (Examination, accounts and academics)
3	Current status of HR automation	All HR functions except training	Employee data, scheduling, attendance, leave applications, student portal	Almost all functions	Attendance, time management, scheduling, payroll (to some extent), student portal	Attendance, employee data, student records, Time in and Time out, employee surveys, student portal	Biometric attendance	Biometric attendance, student portal
4	Need for Automation	Standards remain same, upgrades required	Yes	No, all updated.	Yes, Recruitment and training	Standalone apps are there, integration required	Yes	No
5	Reasons for Automation	Updates as per requirement of regulatory bodies	Lack of coordination, high costs of labor and keeping data	Manual data can be manipulated	Time saving	Paper work, Time and effort	Shortage of HR staff	-
6	Motivators behind implementation of HRIS	Mistakes, paper work, no integration, no accessibility	Lack of efficiency & productivity, cost, job burnout	Paper work, errors in payroll, no transparency, long processes	Time, effort, space, errors	Paper work, approvals take time	Incorrect data entered manually	Inadequate data, errors
7	Satisfaction with use of HRIS	Highly satisfied	Moderate	Highly satisfied	Satisfied, should move to full automation	Not Satisfied, HR should use the system developed for them	-	Satisfied with manual system
8	Streamlining processes through HRIS	Definitely	Yes	Yes	Yes	Yes it will	It will if implemented	It won't even if implemented
9	Utility of HRIS for various HR functions	Attendance, Recruitment, Compensation, employee data, Appraisals	Attendance, leave records, employee records, student portal	Attendance Recruitment, HR data, Appraisals, compensation	Leave records, HR data, attendance, payroll	None, stand-alone modules are there	-	-
10	Information Quality	Very good	Marvelous	Good	Good	Room for improvement	Will improve	For faculty it will improve, for management it won't (if implemented)
11	Benefits derived from HRIS	Salary trends, easy recruitment, tracking employees data, employee	Efficiency, productivity, reliability of data, employee satisfaction, cost effective	Quick information dissemination, quick approvals, cost effective	Transparency, efficiency, talent management	If used, Transparency, quick data retrieval, Accurate records, time	If used, decreased HR workload, tracking employees, easy	Accurate data, time saving but HR personnel will still be required

		satisfaction, cost				saving	appraisals	
12	Improved efficiency	Yes	Yes	Yes	Yes	It will if integrated	-	Will not be perfect even if implemented
13	Actual versus expected use of HRIS	Equal	Equal	Equal	Not Equal	Not Equal, HR dept. does not use the module developed	-	-
14	Employee resistance	Yes in beginning management did. Faculty was fine	Little bit	No	No	They might in beginning	They will if software is implemented	They will
15	Familiarity with modules	Yes	Yes	Mostly	Yes	-	-	-
16	Training support provided	Coordinators are trained	Trainers are trained	Yes regularly	Yes, orientation session is given	-	-	-
17	Challenges associated with HRIS	Time consuming implementation, cost, employee resistance	People acceptance	Privacy issues, maintenance cost	None	Training will take time	Costly implementation and maintenance	Top management is not willing to implement
18	Room for improvement in HRIS	Upgrades required	No, it is okay	Yes	Yes	Should go for complete automation	Should implement it	Should not implement
19	System quality	Satisfactory	Average	Highly Satisfactory	Average	-	When implemented, should be free from errors	-

#### 4.1: Higher Education Institutions Using HRIS

This research examined user experiences of HR professionals from seven Pakistani higher education institutions, out of which three were completely automated, one was partially automated, and three were operating on manual HR systems.

##### 4.1.1: Motivators

For all the institutions that were using HRIS, the functions of attendance, leave records and employee data were regularly updated on the system. Most of these institutions had integrated a payroll module of HRIS with their attendance and leave records. However, University B revealed that payroll and compensation had not been integrated with the system. A major finding from the universities that were using HRIS was the absence of integration between training and development and HRIS. Although some universities claimed that they had integrated all HR functions with HRIS, but probing them further revealed that the function of training and development had not been added to their HRIS. Therefore, training needs based on the qualifications, experience and job descriptions of the employees, were not being identified by the HRIS they were using. In addition, it was discovered that half of them desired further automation in their HR department. Except for the respondent of University C, most HR professionals were of the opinion that more modules needed to be integrated with HRIS. A professional from University A expressed this need in the following words:

*“The standard modules of all the systems remain the same and cannot be changed. However, policies keep changing, and based on new requirements, the system is updated on a regular basis. For example, PEC has recently introduced a regulation for universities to implement Outcome Based Education (OBE) system. This system entails giving complete information regarding the performance of students and their evaluations etc. Now, this is a new requirement and we need to mold the system to fulfill this requirement. The basic system will not change but some upgrades will be made as per requirements of the regulatory authorities.”*

Hence, although University A was of the opinion that their system was fully automated and completely integrated, they recognized the need for upgradation and customization as per changes in policies and requirements of the regulatory bodies.

When probed about the motivators behind implementation of HRIS in their institutions, majority of the respondents indicated that errors in entering data on excel sheets were very common in manual operations of HR. Moreover, respondents highlighted that manual HR practices consumed a lot of time, space and energy of the HR department in particular and employees in general. When HR was operating manually, departments were functioning independently and there was no integration between them. As a result, a serious communication gap existed between various departments and the top management felt the need to bridge this gap by getting an integrated system developed to connect all departments and employees of the institution. A professional from University A emphasized:

*“If the data of human resource is maintained on excel sheets, then that data can only be accessed by the HR department and other departments of the institution cannot access it. If the faculty or staff members are unable to view the current status of their data such as attendance, then they feel frustrated because of gap in communication.”*

Integration of data and smooth flow of communication between all departments are essential factors when it comes to improving the overall performance and efficiency of an institution. The HR professional of University B revealed another problem associated with manual operations of HR:

*“The most important aspect of manual HR operations is job burnout. HR employees maintain records of the entire institution and have a heavy workload due to which they get stressed out and feel pressurized.”*

Therefore, the interviews discovered that piles of paperwork, gap in communication, lack of efficiency, job burnout of HR employees and errors in manual practices were the major motivators behind implementation of HRIS in higher education institutions of Pakistan.

#### 4.1.2: User experience

When HR professionals were asked about their experience of using HRIS, majority of them stated that they were either moderately or highly satisfied with the system. However, no one expressed their dissatisfaction with the use of HRIS. An HR professional from University D said:

*“I am relatively satisfied with the current HR applications because they have simplified our work. Complete automation is what we should now aim for.”*

This statement indicated that the university was utilizing HRIS for administrative or limited functions of HR and the users wanted complete automation of HR in addition to full integration of various modules with HRIS.

In addition, the respondents stated that HRIS had streamlined the processes of HR to a great extent. When queried about the specific functions of HR that had been integrated with the system, the common functions that all respondents mentioned were attendance and leave records. University A and University C utilized HRIS to assist the process of recruitment as well. Apart from University B, all universities that were using HRIS had integrated the payroll module with their systems. To facilitate interaction between faculty members and students, all universities were found to be using a student portal as well.

#### 4.1.3: Change in performance

Discussing the change in performance after implementation of HRIS, all respondents agreed on the positive role of HRIS in improving the general productivity and efficiency of employees. They also believed that implementation of HRIS had triggered a significant improvement in the flow of information across the institution. Owing to HRIS enabling transparency of data, respondents were of the opinion that employees were now aware and mindful of their attendance, leaves, evaluations, appraisals and other information pertaining to HR. When probed about the benefits derived by higher education institutions from the use of HRIS, a respondent from University C stated:

*“One benefit of HRIS is that this system is cost-effective because it saves labor cost. In the absence of HRIS, I would have to hire many people to maintain employee data and manage files. However, now we manage data with one click of a button, so this is a major benefit of HRIS. Other than that, it is beneficial for not only the HR department but the entire institution, particularly the faculty members because they no longer have to run here and there for approvals.”*

The HR professionals of other universities that were using HRIS also considered cost-effectiveness, reduction in wastage of time, reliability of data, efficiency of employees and satisfaction of users to be the major benefits of HRIS.

#### **4.1.4: Mismatch of use**

Most HR professionals indicated that faculty members and officers used HRIS for all the functions it had been originally implemented for. An HR professional of University B revealed:

*“The faculty members and officers use it for all the functions. The non-teaching staff, however, does not use it and we don’t expect them to use it either because they are not proficient at using computers.”*

Two universities that were using HRIS claimed that they faced no resistance from employees when it came to using HRIS, while the other two stated that some employees hesitated in the beginning. A professional from University A revealed that the transition of faculty members from manual practices to HRIS was smooth; however, some senior employees expressed their reluctance in using technology. He added:

*“When we implemented the biometric attendance system, some senior employees had problems. They did not want to put thumb impressions to register their daily attendance. However, later on, they were convinced by the Vice Chancellor regarding the benefits of using technology. The system helps in checking the time-in and time-out status of employees and other relevant information. Although we started moving towards adopting technology in 2008, the time and attendance system was introduced in 2013.”*

The HR professionals of the universities believed that faculty members and employees were familiar with all the modules of HRIS that they were using. Discussing the significance of providing trainings to users, they highlighted that trainings were either provided to all employees through orientation sessions or to trainers/coordinators of each department who could further train other colleagues and faculty members.

When inquired about the challenges associated with HRIS, the HR professional of University D stated that the university faced no major challenge and considered all challenges to be opportunities for growth. In contrast, the other three universities that were using HRIS considered cost of implementation, cost of maintenance and employee resistance as significant barriers associated with HRIS. A professional from University C emphasized that breach of privacy due to disclosure of confidential information stored on the system was a major challenge associated with HRIS by saying:

*“After the implementation of HRIS, everyone is aware of everything which is good because it ensures transparency, but then again, it is also an issue because there is no privacy now.”*

#### **4.1.5: Significance**

While determining the overall significance of HRIS for higher education institutions that were already using it, it was discovered that HR professionals were completely or moderately satisfied with the current HRIS of their universities. In addition, they considered the system quality to be either high or average. University B and University D expressed their satisfaction with the current HRIS they were using, but stressed that there was a lot of room for improvement as well as addition and integration of more HR modules.

#### **4.2: Higher Education Institutions Not Using HRIS**

Although three out of the seven universities under study were not using a proper HRIS, all of them revealed that they were endeavoring to develop an automated system to facilitate their HR processes in the near future.

##### **4.2.1: Motivators**

The three universities that were not using HRIS maintained a positive attitude towards it and wanted to adopt it. However, all of them were already using a biometric attendance system to register the daily attendance of employees. University E, a partially automated university, had automated a number of stand-alone modules to assist the operations of various departments, but was found to have absence of integration between modules. A professional from University E stated:

*“We are currently using several customized applications to facilitate various functions of the university. To evaluate the performance of faculty members, we are using a survey application called LimeSurvey. The reports of the mid-semester and end-semester feedback provided by students on the survey application are then generated through another framework called ReadyCore. This framework includes information pertaining to students as well such as the status of defaulters and graduates. The major academic application that we are using is called CBA. It has modules for students, classes, courses etc. and is integrated with other applications such as Time Management System (TMS) to track the time and attendance of employees and to allow them to keep a track of their monthly attendance and hours logged on campus.”*

The interviews revealed that University E was using several automated applications for various departments and had developed a customized module for the HR department as well; however, the HR

Manager of the university revealed that the staff of his department was not using it because they were comfortable with the manual practices of HR.

When inquired about the need for automation of HR functions, all universities were of the opinion that there was a need to automate more functions because manual practices consumed a lot of time and effort. However, University G claimed that there was no need for automation of any function. A professional from University G expressed this in the following words:

*“Total automation in HR is possible but it comes with a lot of drawbacks. If we automated everything in HR, what will be the role of HR managers and HR staff? They will lose their jobs. The IT department of our university is capable of developing an automated system, but our top management is not interested in implementing the system right now.”*

It was discovered that the IT department of University G had developed a basic system for faculty members and employees, but the system was not being used because the top management of the university was not in favor of automation.

#### **4.2.2: User experience**

Most universities that were not using HRIS recognized that the implementation of HRIS will help to streamline processes of their HR. The major problems being faced by the HR professionals who were not using HRIS included huge quantities of paperwork, communication problems, difficult retrieval of data, lower efficiency, job exhaustion of HR staff and mistakes in manual practices of HR.

#### **4.2.3: Change in performance**

When the respondents were asked about the potential benefits of HRIS for their institutions, they stated that it can assist their institutions in maintaining accurate data of employees due to fewer chances of human errors in entering data. Moreover, the respondents highlighted that HRIS can reduce the workload of HR professionals to a great extent and facilitate easy retrieval of data and history of employees. On the other hand, a professional from University G marginalized the benefits of HRIS by stating that use of HRIS cannot change the performance of HR staff because they will then have the added workload of looking after the system and bearing its costs.

#### **4.2.4: Mismatch of use**

All the professionals of universities that were not using HRIS revealed that implementation of HRIS will lead to resistance from employees because they are comfortable with manual practices since years. They also believed that costs associated with the implementation of HRIS and training of employees on

how to use the system will be major challenges if the system is implemented in their institutions. A professional from University G identified the university's major challenge in the following words:

*“Top management will not support technology. The system is ready and our IT department is willing to implement it but the management is resisting the deployment of this system for faculty members.”*

The interviews revealed that, except for University G, the top management of all universities that were not using HRIS supported the use of technology and recognized the need for automation.

**4.2.5 Significance:** Professionals from two out of three universities that were not using HRIS wanted HRIS to be implemented as soon as possible and were endeavoring to develop it; however, University G was of the opinion that HRIS was not needed and should not be implemented because it cannot work in isolation and the need for HR professionals will exist even after implementing a technology-based HR system.

## **5. Conclusion, Recommendations and Areas for Future Research**

### **5.1: Conclusion**

With the growth of technology and immense competition in the education sector, it is tough for higher education institutions of Pakistan to survive without the use of information systems in their daily operations. This paper aimed to explore the extent of HRIS usage and the benefits and challenges it brings to the higher education institutions of Pakistan. The results of this research indicated that out of the seven universities under study, three were using HRIS for basic functions of HR, while others were either partially using HRIS, using customized modules for each department, or using manual HR methods for maintaining employee data, recruitment, appraisals, trainings and payroll.

After conducting a qualitative analysis of responses, it can be established that higher education institutions of Pakistan are endeavoring to move from traditional practices to contemporary methods of HR by using technology for their routine HR operations. However, in agreement with the research of Sharma & Shukla (2013), some universities indicated that the shift in methods does not mean that manual practices will become obsolete and combining technology-based HR with traditional practices can yield fruitful results for higher education institutions.

In agreement with Hussain, Wallace & Cornelius (2007), this research revealed that HRIS enhances the productivity of all types of institutions, regardless of their size or scale of operations, as three out of the four universities that were using HRIS were small or medium-sized institutions with a limited number of faculty members and students. Moreover, this research reinforces the findings of Jaafar, Rezaeian,

Tabarsa, Otarkhani & Nezafati (2017) that revealed the education sector mainly utilizes HRIS for administrative purposes. The analysis of the universities studied in this research revealed that universities were utilizing HRIS for basic functions of HR such as recruitment, payroll, time and attendance management, while training and development and appraisals were major functions of HR that universities were performing manually.

Another interesting finding of this research was that a professional of one university acknowledged that the university had a bureaucratic culture due to which the top management was not supportive of HRIS. However, interviews were conducted at two other universities with a similar bureaucratic culture and HR professionals of both these universities were of the opinion that the top management supports implementation of technology and is willing to switch to a technology-based HR system in the near future. Hence, the research discovered that the culture of an institution does not have an impact on the willingness of top management to implement technology in the institution.

This research also found that most universities, including the universities that regularly used HRIS, have not integrated the training and development function with HRIS. In addition, although HRIS can be used for succession planning, the HR departments of universities do not recognize this function of HR. If HRIS is used to facilitate succession planning, institutions can benefit from placing right people at the right jobs and have the most appropriate replacements for individuals leaving the institutions. Since HRIS encompasses storage of employee data, it can be used to identify individuals who can fill up important positions. Identified individuals can then be prepared and trained by the institutions before the need arises. As a result, the institutions in general and employees in particular can both benefit.

Finally, this research also concluded that from the perspective of HR professionals, easy access to employee data, reduced workload, enhanced communication and improved productivity were the major benefits of HRIS. The most significant challenges identified by HR professionals included employee resistance in accepting computer-based systems, the need for regular upgrades, and maintenance costs of the system.

## **5.2: Recommendations**

Based on the findings of this research, the following recommendations are proposed:

1. None of the universities that were using HRIS mentioned training as an integrated application of HRIS. Training and development is an essential function of HR that should be incorporated into HRIS of higher education institutions. Similarly, succession planning and talent management should be integrated with HRIS. If used for succession planning and talent management, the system, based on ages, qualifications and experiences of individuals, can identify and select the most suitable individuals for vacant positions in an institution.

2. According to the findings of this research, in addition to large-scale institutions, a number of small-scale institutions are also using HRIS for routine functions of HR. Hence, small universities should try to implement HRIS in order to facilitate their work and enhance the general efficiency of their employees and HR departments. They can start by using limited functions of this system and then make a gradual move towards implementation of full-scale HRIS.
3. Universities that are using HRIS for administrative functions only, such as registering daily attendance or maintaining leave records, should start utilizing the system to its full potential. Since the cost of implementation has already been incurred, the HR departments should utilize HRIS for strategic functions and decision-making in order to get returns from this investment.

### **5.3: Areas for Future Research**

1. Similar research can be conducted from the point of view of faculty members working at higher education institutions in order to determine their preferences of HR practices and the problems they face while using manual or automated HR systems.
2. This study involved collecting data about HRIS through interviews of respondents working at various universities in the first phase and exploring the collected data to determine the significance of HRIS for higher education institutions in the second phase. However, a subsequent quantitative research can be carried out on the basis of responses of this qualitative research.
3. This research focuses on private sector higher education institutions of Pakistan. A future research can be conducted with the perspective of drawing conclusions on the differences in significance of HRIS for private and public sector higher education institutions.
4. Although, in this research, major differences in perceptions were not found among people of different ages, qualifications and cultural backgrounds, however, some respondents indicated that people with no knowledge of IT might resist the use of HRIS. Hence, a detailed research on the significance of HRIS based on the demographics of users can be carried out in the future.
5. Since one limitation of this research was lack of access to universities outside of Pakistan, a future research with an intention to approach universities in other countries can be carried out.

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