Research Article

Impact of Human Resource Management Information System(HRMIS) Implementations on Organisational Performance (OP): A Case Study of Punjab Revenue Authority
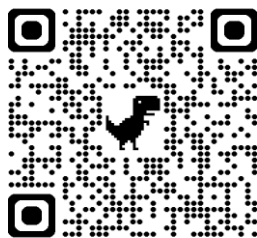
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ABSTRACT

Purpose – Information Technology has been advancing at an ever-increasing rate since the computer revolution of the previous century. Organisations have also benefited from these advancements. The modern world has witnessed an irrevocable improvement in the way organisations manage their affairs. Human Resource Management (HRM) is one of these affairs and a primary requisite for the efficient working of an organisation. The integration of human resource management and information technology, or the advent of Human Resource Management Information System(HRMIS), has revolutionised the way organisations manage their HRM tasks. This study aims at a detailed analysis of the implementation of HRMIS in the Punjab Revenue Authority (PRA) Head Office, Lahore, Pakistan. It inquires whether the influence of HRMIS has been positive or not, so that a roadmap can be delineated for large-scale implementation of HRMIS in Pakistan. Design/methodology/approach – The nature and method of the study are that of a descriptive survey through a questionnaire given to a random, inclusive, and diverse sample from the Punjab Revenue Authority (PRA), Pakistan. Participants were employees of PRA. Validated scales from previous studies were utilised. A five-point Likert scale was used. The data were analysed using SPSS. Findings – The results show that there has been a positive impact of the implementation of HRMIS at the PRA. The inferences from these results are promising and hint that widespread application of improved HRMIS in organisations all over Pakistan would lead to a progressive and technologically advanced state. The results of the SPSS analysis supported all the research hypotheses. Research limitations/implications – This study was conducted utilising data acquired in Pakistan. Similar studies may lead to different results in other nations on the connections between various applications of HRMIS and organisational performance. The study's findings have implications for PRA in particular and other firms in general. To strengthen their clean production capabilities, manufacturing industries in both emerging and developed countries can embrace this approach. Originality/value – This novel research contributes to the literature and provides a working model to PRA by employing HRMIS and incorporating regular innovations.

1. Introduction

Information Technology has been growing at an ever-increasing rate since the computer revolution of the previous century. Faster communication and data management have fueled the vehicle of globalisation. Although the world has become a global village, a halt to innovation in the field of information technology cannot be expected for an indefinite period. The modern world has witnessed significant improvements in the way organisations manage their affairs. The tools that they use for this purpose are called information systems. Human Resource Management (HRM) is among the primary requisites for the efficient working of an organisation. The integration of human resource management and information technology has revolutionised the way organisations manage their tasks. This has been accomplished due to the advent of information systems specific to human resource management called Human Resource Information Systems (HRMIS). As a result, standards for Organisational Performance (OP) – a measure of effectiveness, efficiency and other such parameters in the case of an organisation – have been set to an unprecedented level.

HRMIS technology has become ubiquitous in organisations the world over, including Pakistan. The Punjab Revenue Authority (PRA), which will be taken as a case study in this work, has also benefited from this technology. This study aims at a detailed analysis of the implementation of HRMIS in the PRA Head Office, Lahore. It will include appraising the impact of HRMIS, identifying its limitations, and pinpointing the resulting gaps that must be filled to enhance the effectiveness and efficiency of human resource management in the office. For this purpose, the development of a new software will be included in this study, which could improve HRM even more, not just in the PRA but also in almost every other organisation. The understanding of the nature and function of HRMIS is essential to the development of such software. However, before we move to the background of our case study, let us define the essential terms that are related to our inquiry.

1.1 Background of Case Study

The taxation system in Pakistan is based on a colonial legacy. The advent of the 21st century has seen a manifest change in the governance patterns in national and provincial tax regimes. The Government of Pakistan has initiated reforms in tax regimes as an important part of fiscal-economic reforms. Fiscal Federalism has been updated accordingly. Taxation responsibilities of the Provincial governments have been expanded as a consequence, and, at the same time, several opportunities have been afforded to the provinces for the mobility of their resources.

Punjab is the most populous province of Pakistan. Its contribution to the national GDP is 57.5 per cent. Its agricultural and industrial sectors are two of the main foundations of Pakistan's economy. The province is undergoing a huge societal change, in that the rural and urban communities are slowly fusing. Consequently, the literacy rate is on the rise. People have become more politically conscious and socially motivated. The province is being driven towards rapid development. The Government of Punjab is entirely focused towards fulfilling the desires and ambitions of the people of Punjab. In this regard, it is making sincere efforts that are both progressive and dedicated. Several studies by taxation experts vociferously emphasised the quick modernisation of the Punjab's taxation system. A uni-hand tax management was recommended instead of a multi-institutional tax administration. The Government of Punjab acted upon the recommendations. The Punjab Revenue Authority (PRA) was established in response to specialist recommendations and the Punjab Revenue Authority Act, 2012, enacted by the Provincial Assembly of Punjab.

The "PRA model" is based on the pattern of a globally recognised doctrine of Semi-Autonomous Revenue Administration (SARA). The implementation of SARA in the developing world has, in general, produced good results. While fiscal policy is the purview of the legislature and aided by the executive government, its implementation lies in the exclusive jurisdiction of the tax-collecting agency. In Punjab's case, the concerned agency is the PRA. Economic considerations of the province hinge on the formulation of a robust tax policy. That policy ascribes

to the collecting agency the role of an apolitical entity. Therefore, the PRA works as a neutral tax law enforcement agency, which makes sure that the government's due tax share in economic activities is collected to an optimal level. It endeavours to produce and keep a wise balance between tax enforcement and tax facilitation. The latter is important because tax collection cannot be optimised unless taxpayers are facilitated in their economic affairs. The PRA believes that disturbances in market fairness and competitiveness hinder revenue generation. PRA wants to engage all the stakeholders to ensure good tax governance in the province. For this purpose, the PRA wants to expand the scope of taxation through proper Research and Development (R&D) and will take over the management of other provincial taxes and levies shortly.

Punjab Government contracted Pakistan Revenue Automation Limited (PRAL) to deliver IT support to PRA during its developmental phase. At present, PRA has gained complete autonomy in developing its IT capacity to serve its taxpayers. The basis of its IT capacity, which now includes Restaurants Invoice Monitoring System (RIMS), online taxation system, e-courts, e-filing, and, of course, HRMIS, is automation that was the purpose of taxation and organisational reforms in the first place. Among the projects being implemented under this program is the human resource revitalisation project on which the implementation of an HRMIS rests. The HRMIS in the authority was meant to carry out all the human resource and disciplinary functions. For this purpose, they are currently using their own HRMIS. As expected, HRMIS has significantly improved human resource management as compared to traditional methods. However, the PRA is still ambitious for further improvement.

2. Literature Review
2.1 Evolution of HR Systems

Automating payroll and human resource management processes began during the 1970s. At that time, companies depended on manual entry to conduct employee appraisals and to digitise reporting due to limited technology and the availability of mainframe computers. The first system that combined HR functions was introduced in 1979. It enabled the users to integrate corporate data in real time and oversee processes from a single mainframe environment. The first completely HR-centred, client-server system was PeopleSoft. It was released in 1987, and Oracle bought it later. After this, the mainframe environment concept was substituted by an HR-centred client-server system. PeopleSoft gained immense popularity and survived for many years to come.

McKay and Torrington studied the evolution of HRMIS and reported that since the 1970s, there have been ups and downs in the use of computers for HRM, partly because of the strategic focus in HR and advances in IT. The shift to a strategic focus in HRM away from personnel issues generated an increased demand for expedient information about human resources. As a result, concerned scholars in the UK and the US called for HR experts to innovate their IT usage. They argued that this would result in a new role for the HR department.

Torrington, in a study made in collaboration with Hall in 1986, found that most organisations surveyed used IT to support the personnel function and thus eased the administrative load of record-keeping and wages. They did not use it for forecasting, analysing and strategising. However, HRMIS could be used widely in various HR management functions such as planning, recruitment, training, development, compensation and occupational health.

Again in 1989, Torrington and Hall predicted in a pioneering work that the use of IT would transform HR into an information centre, internal consultant and agent of change. In 1992, Wiley also argued that the use of IT would change the role of HR to that of being a service provider, facilitator, cost manager, employee advocate, business partner, and consultant. The prospects for HRMIS looked bright at that time.

The subsequent development was integration with information technology. This is precisely what Richards Carpenter pointed out. In his 1991 report on human resources information systems, he noted that if the personnel function were to be developed further, it

would have to be integrated with information technology.

Martinsons (1994) tracked the use of computers in HRM. According to him, personnel management functions, including benefits administration, payroll, and other transaction applications, such as employee record-keeping, were automated in the beginning. At that time, the information was kept on a mainframe in a flat file format, and databases were interrogated through a simple search using keywords. Personnel Information Systems evolved from the automated employee record-keeping into contemporary reporting and decision-making systems (Gerardine, 1986: 15).

Jenkins and Lloyd, in their 1995 study, stated that HR and IR were the two elements which firms learned to use as a strategic tool to compete. According to Porter (1998), organisations were confronted with a need for modification and adaptation according to the current environment, with dynamic entries in the industry. As the market environment changed, organisations had to adapt if they were to be successful. Under this pressure, companies downsized and restructured. They went global by expanding and developing cutting-edge technologies. A significant challenge that the organisations faced was to develop a management style and culture that would enable them to meet their targets.

The introduction of Windows programming languages resulted in the advent of user-friendly interfaces. This accelerated the emergence of many small software houses, which created affordable and easily customizable HRMIS modules. These products produced better reports than those of their mainframe-based predecessors and could hold vast amounts of information regarding every human resource function.

The last decade saw a significant rise in the number of organisations collecting, storing, and scrutinising human resources data using Human Resource Information Systems (HRMIS) (Hussain et al., 2007).

Today, the need for information technology-based HR systems is increasing. Managers are assuming activities that were once considered the purview of human resource professionals and administrative staff. This represents a momentous break from the past, which produced an improvement in overall organisational performance. With HR staff finding a vast array of options in HR information technology systems, it is important to analyse and weigh all the options. In a nutshell, HRMIS is progressing to become an information technology field on its own.

Choosing an HR information technology system should be looked at as an investment that grows with the department and the company's needs. Equally important is to pinpoint all the possible applications of HRMIS, as they have become important tools for business administration. For these purposes, succeeding words will survey the literature which defines the implementation and implications of HRMIS.

2.2 Human Resource Management Information System(HRMIS)

The past three decades have witnessed several studies that focused on the types of applications that prevail in HRMIS implementation. Broderick and Boudreau (1992) identified three primary objectives of applying HRMIS at the organisational level, i.e. cost reduction (efficiency gains), facilitating management, and improving the strategic orientation of HRM (innovation). Martinsons (1994), in his landmark study, clarified the usage of HRMIS according to sophistication. He described the use of HRMIS for administrative purposes, i.e. in employee record-keeping, payroll, payroll benefits, etc., in HR as "unsophisticated". These were taken as the elementary reasons for the adoption of HRMIS in an organisation. He termed the strategic use of HRMIS in recruitment, training, planning and appraisal "sophisticated". Kossek and her colleagues also argued that a corporate HRMIS could transform human resources into a strategic business partner (Kossek et al., 1994). Ruël et al. (2004) added a fourth dimension to HRMIS, i.e. allowing integration of HR functions.

Studies on the type of HRMIS implementation concluded that HRMIS has mainly been used for those HR activities which Martinsons termed as unsophisticated. These studies include Ball, 2001;

Ruël et al., 2004; Ngai and Wat, 2006; Hussain et al., 2007 and Altarawneh and Al-Shqairat, 2010. Automation, streamlining of administrative tasks, removal of repetitive activities, and the effects of these applications help HRMIS to achieve increased efficiency. These tasks and the goals they achieve are the basic ones that an HRMIS performs.

The Introduction of a web-based HRMIS gave HR activities to line managers and employees through self-service technology. The time that was wasted on basic administrative tasks could be spent on strategic issues and implementing progressive plans. It allowed HR professionals to help employees design their career plans, including training and development. Integration of HRMIS with other information systems, along with applications of HRMIS in implementing HR policies that support the business strategy of an organisation, uses HRMIS as a strategic tool (Marler, 2009). Web-based HRMIS made strategic use of HRM possible, which Martinsons (1994) anticipated as sophisticated and Ruël et al. (2004) hinted at when they stated that an organisation with a global presence or multiple structures required integration.

Surveys conducted in the past decade by Kinnie and Arthurs (1996), Lin (1997), Teo et al. (2001) and Ngai and Wat (2006) showed that HRMIS was most frequently used in the basic areas of HRM such as employee record-keeping, payroll and benefits management. In other words, until the end of the last decade, HRMIS was still in its nascent state. Strategic and sophisticated use of HRMIS was limited. With the emergence of the internet and web-based HRMIS, the trend is a shift towards sophisticated use of HRMIS in business strategy, recruitment, and training. The studies done by Cedar Crestone (2006), De Alwis (2010), and Saharan and Jafri (2012) are evidence for this shift.

2.3 Organisational Performance (OP)

As mentioned earlier, the assessment of HRMIS's impact at the organisational level is made by observing the organisational performance. Therefore, at this point, reviewing literature related to organisational performance and its measurement is necessary. The following paragraphs serve this purpose.

Andrews (1996) defined the two aspects of measuring organisational performance. He stated that the two aspects are financial and non-financial. The financial aspects include total earnings and returns on investment. They are related to the application of short-term fixes for achieving long-term strategic goals. The non-financial aspects, on the other hand, concern product quality, working process, and customer satisfaction. This aspect is, in usual, subjective and hence difficult to control.

Organisational Performance and its measurement are two of those business terms that are often overlooked and seldom defined. However, the U.S. Department of Energy (2005) defined the measurement of performance comprehensively. According to them, it is the assessment of the progress towards meeting predetermined targets. It includes information about the efficiency with which resources are converted into products and services (outputs), the quality of those services or how well they are delivered to clients and the extent the client's satisfaction, outcomes or the results of a program's performance with regards to its intended purpose, and the effectiveness of an organization's operations in terms of their specific contributions to the objectives of the program.

Haworth (2007) stated that organisational performance depended on several business factors, including work processes, team/group communication and interaction, leadership, and climate that promotes innovation, creativity, corporate culture and image, policies, and loyalty.

Steve Bonadio (2010) described the importance of automation in improving organisational performance. He stated that automation aligns an employee's development and goals with the corporate targets. Performance Management enables organisations to plan employee efforts in the context of organisational goals and strategies and to evaluate outcomes, performance, and competencies.

2.4 Effectiveness

Let us now review the literature related to the first parameter to measure OP, namely, effectiveness, with

which we shall quantify the organisational performance of the case study in this work.

To begin with, effectiveness is not an agreed concept when it comes to definition. Despite pointing out that "organisational effectiveness is the proficiency of the organisation at having access to the essential resources" (Cameron, 1978), Cameron admitted that, despite some consensus on the matter, there was still a lack of agreement on the definition of the concept (Cameron, 1986). In literature, there is no single model for effectiveness that fits all organisations. Chakravarthy (1986) also identified different conceptions of effectiveness. Some conceptions included finance and profitability, while others were related to stakeholder satisfaction and the quality of firms' transformations.

Over 35 years, a survey of four leading journals of management done by Shenhav et al showed that the two concepts (effectiveness and organisational performance) were not independent. Till 1978, they were used in literature interchangeably. Since then, performance has become the preferred concept (Shenhav, Shrum and Alon 1994). March and Sutton also stated that the two terms were used interchangeably because the problems related to their definition and measurement were identical (March & Sutton, 1997). In the 1980s, organisational effectiveness came to prominence and became a separate concept rather than a mere construct (Henry, 2011).

Vinitwatanakhun's (1998) study defined the target of organisational effectiveness to some extent. It illustrated that an organisation's effectiveness should be defined with a focus on human resources. That definition must be helpful for individuals to achieve the required skills in order to control the new environment.

Kanji and Sá (2002) found that effective management depended on the reliable measurement of performance and results, which in turn gave an idea of how effective an organisation was. McCann (2004) signified effectiveness as "the criterion of the organisation's successful fulfilment of their purposes through core strategies."

Balduck and Buelens (2008) clarified the issue of defining effectiveness. They argued that effectiveness in organisations revolved around four main approaches, namely: the internal process approach, the system resource approach, the strategic constituency approach, and the goal approach. These approaches are specified according to the situation at hand.

In the context of this study, effectiveness seems to be affected by using ICT. While many of the HRMIS gains are through increased effectiveness over manual processing, some are only possible using contemporary technologies. Computer-based or web-based training, in particular, is a developing realm of HR management which was not available before the advent of computer software. Even computer-based training is so commonplace today. It was geographically spread until it was improved from computer-based to web-based training.

2.5 HRMIS and Effectiveness

Research has shown that the implementation of HRMIS influences an organisation's effectiveness. The following citations argue in favour of this point.

Strategic value can be derived using HRMIS tools, which are very helpful in decision-making related to crucial HR functions. The strategic value directly or indirectly refers to the effectiveness of an organisation. (Farndale et al.,2010; Troshani et al., 2011).

Rosemond & Ernesticia (2011) argue that if an appropriate range of HR policies and processes is taken into consideration, HRMIS makes a significant impact on a firm's performance. Human resource management also becomes more effective if it fits the business strategy of a firm.

Research conducted by Mina et al. revealed that human resources management in organisations improves the total output of the organisation. Therefore, applying human resources functions has a positive relationship with the performance in financial

and operational areas in such organisations (Mina et al, 2012).

Sadiq et al (2012) reported that HR professionals could gather information and store and retrieve it promptly and effectively by using HRMIS. Not only did this increase the organisation's efficiency, but it also increased the effectiveness of management functions.

HRMIS helps improve the performance of HR related tasks by providing managers with information that is essential to supporting resolutions on HRM. It increases the efficiency and effectiveness of the organisation, thereby improving the exploitation of most available resources for more output and adequate quality, particularly through controlling and reducing costs. (Hayajneh et al, 2013).

2.5 Efficiency

In simple words, Efficiency is the successful transformation of inputs into outputs. In addition to effectiveness, efficiency is also an important indicator of organisational performance. Therefore, a review of the term in the context of organisational performance is necessary.

Low stated, "efficiency measures the relationship between inputs and outputs or how successfully the inputs have been transformed into outputs" (Low J, 2000).

To optimise output, Porter's study of Total Productive Maintenance suggested the elimination of the following six losses as completely as possible. These losses are reduced yield – from start-up to stable production, process defects, reduced speed, idling and minor stoppages, set-up and adjustment, and equipment failure. According to Kumar and Gulati, "efficiency is all about resource allocation across alternative uses." (Kumar & Gulati, 2010). This helps reduce the abovementioned losses.

According to Pinprayong and Siengthai (2012), "efficiency reflects the improvement of the internal processes of the organisation, such as organisational structure, culture and community." Greater efficiency translates into improved organisation's performance

when it comes to management, productivity, quality and profitability.

Efficiency depends on ICT in the same manner as effectiveness. Effectiveness and efficiency are two exclusive yet mutually influential terms.

2.7 HRMIS and Efficiency

The second parameter, organisational efficiency, is also influenced by the implementation of HRMIS according to previous research. The following citations are provided to argue for it.

Gerardine noted that these information systems enhanced administrative efficiency and produced reports which improved the decision-making process (Gerardine, 1986: 15).

With HRMIS, administrations maintain quicker information processing, improve employee communication, and achieve greater accuracy in information, which increases the overall efficiency (Overman, 1992; Beadless, et al., 2005). Other research showed that the use of HRMIS also lowers HR costs and increases the overall HR productivity (Beadles et al., 2005; Dery et al., 2009; Wiblen et al., 2010; Troshani et al., 2011). According to Hayajneh et al., when HRMIS is used, higher output and adequate quality are achieved even when the resources are limited. This happens particularly when the goal is controlling and reducing costs (Hayajneh et al., 2013).

Chugh (2014) noted that HRMIS reduced workload and minimised administrative tasks. This was one of the advantages of HRMIS when it was used as a tool to achieve greater organisational efficiency.

3. Methodology

The nature of the survey is descriptive. It is adopted in such a way as to emphasise the enquiry of facts so that theory can be adjusted to suit facts and not the other way around. The relationships between the variables are reported without any extrinsic control over them. The analysis used in the study is descriptive in that it describes the characteristics of the respondents. These characteristics include demography, gender, department, designation, age

group and terms of employment with the authority. The research hypotheses are tested through descriptive statistics. Simple regressions are used to produce percentage, frequency distribution, Cronbach's alpha reliability (α), arithmetic mean and standard deviation. Multiple regressions represent the results produced after testing the hypotheses. In short, the researcher has used appropriate statistical tools, which include:

- Percentage and Frequency Distribution gives the percentage and frequencies of responses of each particular class of respondents.
- The construct was subjected to the scale reliability process of SPSS, using Cronbach's Alpha (1951) as a criterion to evaluate the internal consistency of the studied construct.
- The Cronbach's Alpha Reliability (α) gives a measure of the strength of the correlation between questionnaire items.
- Arithmetic Mean identifies the response level of the respondents in the sample of the study.
- Standard Deviation gives a measure of the variation of the responses from the Arithmetic Mean of the sample.
- Simple Regression Analyses generate the results of each test performed on the hypotheses. Together, the Simple Regression Analyses constitute the said Multiple Regression Analysis.

3.1 Population and Sampling

The population consists of the employees of the Punjab Revenue Authority (PRA) headquarters based in Lahore. The study focuses on the Impact of the implementation of HRMIS on organisational performance. The size of the population is kept neither too large nor too small, considering the time limitation and other constraints.

A stratified random method is used, according to which a random sample of the employees is drawn from Lahore. The sample of respondents is randomly selected from three different levels of the staff at the Punjab Revenue Authority, namely: the senior management, the middle-level management, and the junior-level staff. There are two reasons for the choice of random sampling. First, the questionnaire is designed to be related to the HRMIS application,

which concerns all employees regardless of their demographic characteristics. Secondly, the results of random sampling for comparatively large populations are closer to the facts and are less subject to the observer's subjectivity, and also enhance diversity.

The questionnaire was distributed to 100 employees of different departments in PRA's headquarters. 85 of the 100 employees responded. All the collected questionnaires for the statistical analysis were accepted.

3.2 Research Instrument / Questionnaire

The primary research tool is a composite questionnaire consisting of both closed and open-ended questions. Primary data obtained from the questionnaire is used for this study. The questionnaire addresses the Impact of the implementation of HRMIS on organisational performance (A case study of Punjab Revenue Authority). To evaluate the theoretical model depicted in Figure 1, a survey was conducted, which is an excellent technique (Dannels, 2018). Surveys are available in many different formats and can be transmitted through a variety of media, including written surveys, spoken surveys, and electronic surveys (Bloomfield & Fisher, 2019). Our survey method of choice for this study was an electronic questionnaire delivered via the internet because it is both convenient and cost-effective. It is divided into two parts: first, questions related to the demographic information of respondents, and second, questions related to variables that affect the implementation of HRMIS on Organisational Performance.

3.3 Theoretical Framework

To examine the impact of the implementation of HRMIS on the organisational performance of the PRA, a conceptual model will be built from two variables, including:

HRMIS implementations as an independent variable and Efficiency and Effectiveness (which signify organisational performance) as dependent variables. These variables are derived from the review of the available academic literature, which is based on the theoretical background and understanding of the

causal relationship between them. As organisational performance is generally measured in terms of efficiency and effectiveness, the latter parameters will be taken as dependent variables. This is summarised in Figure 1.

Figure 1. Conceptual Framework
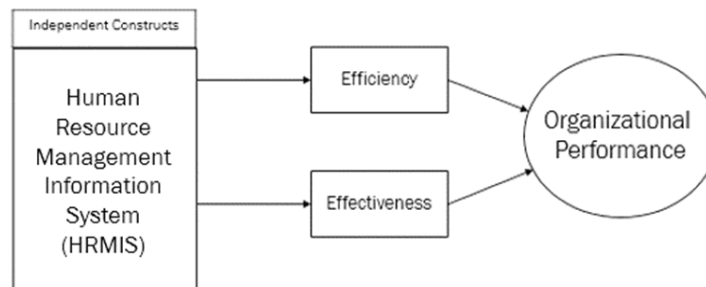
The hypotheses address the associations between HRMIS Implementation, Efficiency and Effectiveness. The hypotheses which will guide this line of inquiry are as follows:

H1: There is no statistically significant impact of HRMIS implementation on efficiency at the level ($\alpha \leq$ 0.05).

H2: There is no statistically significant impact of HRMIS implementation on effectiveness at the level ($\alpha \leq 0.05$).

4. Results

To analyse the research questions and items and test the hypotheses, the researcher used Statistical Package for Social Sciences (SPSS). The descriptive statistics, i.e. frequencies, means, and standard deviations, were used. The Cronbach's Alpha test was also used to test the consistency and reliability of the data collection tool (i.e. questionnaire). Simple regression analysis was used to test the research hypotheses.

Table 1: Frequency Percentage for Responses

	Frequency	Percent
Responded	85	85%
Not responded	15	15%
Total	**100**	**100 %**

The study targeted 100 respondents as a sample drawn from the top, middle, and lower-level management staff working in the headquarters of PRA in Lahore. 85 out of the 100 respondents completed the questionnaire, resulting in a response rate of 85%, which was better than expected. The completed questionnaires were collected through personal visits, emails and telephonic communication. Such a response adds to the credence of the study.

4.1 Demographic Information

Demographic information was calculated using SPSS. Information showed that 71.8% of the respondents were male and 28.2% were female. Employees between the ages of 18-30 were 44.7%, 31-40 were 40.0%, 41-50 were 11.8%, and 51-60 were 3.5%. Respondents who fall at the first level of employment were 29.4%, those who fall at the middle level of employment were 54.1%, and those who fall at the top level of employment were 16.5%.

Table 2: Demographic Information of Respondents

	Frequency	Percentage
Gender		
Male	61	71.8
Female	24	28.2
Total	**85**	**100.0**
Age		
18-30	38	44.7
31-40	34	40.0
41-50	10	11.8
51-60	3	3.5
Total	**85**	**100.0**
Employment Level		
First	25	29.4
Middle	46	54.1
Top	14	16.5
Total	**85**	**100.0**

4.2 Descriptive Analysis of HRMIS Implementation and Organisational Performance

This section reports the impact of HRMIS on the organisational performance of the Punjab Revenue Authority. On a 5-point scale, a questionnaire consisting of eighteen items was distributed to find the impact of HRMIS implementation on organisational performance at PRA. The respondents were asked to indicate their level of agreement or disagreement with specific Items or questions. A Likert scale of 1-5 was used, where 1 indicates strong disagreement, 2 indicates disagreement, 3 indicates neutrality, 4 indicates agreement, and 5 indicates strong agreement. The following Likert-type scale was used to measure the items.

The means and the standard deviations for the study constructs, along with other items, were measured from the data collected from the responses. The responses were collected from the study's sample, which constitutes a group of people who are the actual users of HRMIS at the PRA. The developed scales have been adopted and then adapted for the current research for all constructs.

4.3 Analysis of HRMIS Implementation's Constructs

The HRMIS implementation and organisational performance construct is measured by 18 items in the research tool (the questionnaire). The respondents were asked whether the implementation of HRMIS was aligned with the strategic goals of the Authority, whether they felt the decision-making process by management had been improved by the use of HRMIS, whether management provided planning and coordination to employees through HRMIS, and whether management committed resources. A sizeable budget was allocated to HRMIS implementation and maintenance.

Table 3: Arithmetic Mean and Standard Deviation Level in HRMIS

Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
5	4	3	2	1

Table 3 shows the statistical analyses for all respondents based on their responses to the Items related to HRMIS. This table reveals their positive attitude towards all the Items related to the implementation of HRMIS because the Means and Total Mean are greater than the Standard Mean, which was set at 3.0. Total Mean is the average value of the Means for each Item. The Mean value of Likert scale responses ranges from 3.49 to 4.48.

4.4 Analysis of Items of Organisational Performance

The Organisational Performance (OP) construct is measured by the following items in the research tool (the questionnaire).

Table 4: Arithmetic Means and Standard Deviation Level in Organisational Performance (Efficiency and Effectiveness)

Sr. No	Item	Mean	Standard Deviation
1.	HRMIS identifies unfilled positions accurately.	4.04	0.961
2.	HRMIS helps to reduce recruiting costs.	4.01	1.16
3.	HRMIS evaluates the recruiting processes effectively.	4.47	0.75
4.	HRMIS evaluates the performance appraisal effectively.	4.08	0.9518
5.	Reporting and tracking of applicants is performed by HRMIS efficiently.	4.18	0.9372
6.	The analysis of job positions and their job titles is conducted through HRMIS.	3.49	0.656
7.	HRMIS removes unsuitable applicants early on and emphasises promising candidates.	4.09	0.961
8.	HRMIS creates an ideal job description and job specification.	4.10	0.9518
9.	HRMIS predicts the supply of human resources.	4.06	0.9372
10.	Internal information within the Authority is managed through HRMIS.	4.38	0.656
11.	External information outside the Authority is managed through HRMIS.	4.47	0.9372
12.	HRMIS have improved the HR processes.	4.08	0.656
13.	HRMIS perceives the effectiveness and integrity of the current communication culture.	4.48	0.9518
14.	Employees submit feedback and suggested improvements to the HRMIS.	4.08	0.9518
15.	Users accept change during HRMIS implementation.	4.18	0.9372
16.	Since the system is self-service, there has been very little interaction between HR and the Employee.	4.08	0.656
	Total	**4.141**	

Table 4 shows the results of the answers to the Items related to organisational performance. The arithmetic means for the parameters, efficiency and effectiveness, and the Total Mean are higher than 4.50, which are significantly greater than 3.00, i.e. our standard mean. This also shows that the general attitude towards all Items related to Efficiency and Effectiveness is positive because the means and total mean are greater than the standard mean, as the observation level was set at 0.00.

- The Mean value of Likert scale response in the case of Items regarding Efficiency equals 4.5264.
- The Mean value of Likert scale response in the case of Items regarding Effectiveness equals 4.5062.
- The Total Mean value of Likert scale responses in the case of Items regarding both efficiency and effectiveness equals 4.5164.

Table 5: Results of Multiple Linear Regression Analysis to Test the Impact of HRMIS on Efficiency

Sr. No.	Items	Mean	Standard Deviation
1.	Efficiency of the Authority is improved by implementation of HRMIS.	4.5264	0.59698
2.	Effectiveness of the Authority is improved by implementation of HRMIS.	4.5062	0.57673
	Total	4.5164	

The result of the F-test related to the hypothesis H1 is shown in Table 5. It is found that the calculated F value equals 25.068, and the significance of the "F" value is .000, which is less than α = 0.05. The calculated value is much higher than the tabulated F value, which equals 2.21. This provides evidence to reject hypothesis H1 that states:

H1: There is no statistically significant impact of HRMIS implementation on efficiency at the level ($\alpha \leq 0.05$).

The adjusted R^2 value for the model is 0.416. It means that HRMIS implementation has increased the level of efficiency of PRA by about 41.6%.

Table 6: Results of Multiple Linear Regression Analysis to Test the Impact of HRMIS on Effectiveness

R^2	Adjusted R Square	F	Sig.
0.436	0.419	25.395	0.000a

The result of the F-test related to the hypothesis H2 is shown in Table 4.8. It is found that the calculated F value equals 25.395, and the significance of the "F" value is .000, which is less than α = 0.05. The calculated value is much higher than the tabulated F value, which equals 2.21. This provides evidence to reject hypothesis H2 that states:

H2: There is no statistically significant impact of HRMIS implementation on effectiveness at the level ($\alpha \leq 0.05$).

The adjusted R^2 value for the model is 0.419. It means that HRMIS implementation has increased the level of effectiveness of PRA by about 41.9%.

In light of the aforementioned results, it can be stated that as both the parameters, efficiency and effectiveness, have increased by more than 40%, organisational performance, which these two parameters signify, has also increased. This increase lies in the range 38% to 43%.

5. Findings

The following significant results were obtained after this study.

- The arithmetic means of Likert scale responses in the case of Items regarding the studied implementation of HRMIS, their total

mean and standard deviations are: Total Mean = 4.141

The arithmetic means of Likert scale responses in the case of Items regarding efficiency and effectiveness, their total mean and standard deviations are:

- Efficiency: Mean = 4.5264 , Standard Deviation = 0.59698
- Effectiveness: Mean = 4.5062 , Standard Deviation = 0.57673
- Total Mean = 4.5164

The results of the multiple linear regression analysis to test the impact of the implementation of HRMIS on efficiency are:

- $R^2 = 0.433$
- Adjusted $R^2 = 0.416$
- F-value = 25.068
- Increase = 41.6%

The results of the multiple linear regression analysis to test the impact of the implementation of HRMIS on effectiveness are:

- $R^2 = 0.436$
- Adjusted $R^2 = 0.419$
- F-value = 25.395
- Increase = 41.9%

The approximate range of increase in overall organisational performance (OP) is calculated to be 38% to 43%.

6. Discussion

The result of this study shows that HRMIS implementation has a direct and positive impact on the performance of the authority. Also, the result indicates that employees working in the human resources sections in the PRA have a positive attitude towards HRMIS implementation, as shown by the high mean value of the questionnaire items. Moreover, the positive answers against the Items related to efficiency and effectiveness shown by the responses of the sample regarding the HRMIS implementations can be helpful not only in the case of PRA but also for other organisations. In a nutshell, the results of this study conform to the general observation that technological development in the field of human resource management has led to increasing organisational performance.

7. Implications of the Study

The implication of the study has two obvious aspects, namely theoretical and practical. It is important from a theoretical standpoint because it could stimulate much-needed research in HRMIS, which is a field where Pakistan still lags far behind. This study will add to the existing knowledge in the field of large-scale implementation of HRMIS. Academia and students could serve the nation as a result of the ensuing discourse, which this study could start.

From a practical perspective, the prospects are even brighter. The most direct implication of the study could be the improvement of the PRA's human resource management. They could improve their efficiency and effectiveness by applying the findings of this study in the management of their human resources. The possibilities do not end here. It could make a positive impact on the human resource management of other public and private sector organisations as well. Thus, on paper, the study is manifestly significant.

8. Future Research and Limitations

This data was collected in Pakistan to conduct this research. Other studies on these same topics may yield different conclusions in other countries, because of differences in their country-specific contexts. There are different kinds of automation systems with their mediation responsibilities. The limitations of the study and the challenges that are faced during this sort of research were also evident here. Some of the obvious ones are as follows:

- The results of this study are restricted to the employees of the Punjab Revenue Authority, particularly to those who are employed in their Headquarters based in Lahore.
- The amount of data depends on the response of the employees towards the questionnaire.
- The study is targeted towards a limited and random sample of PRA's employees.

- Time limitations were also a challenge because the interpretation of findings during a short period was a difficult task.
- Despite the objective nature of the questionnaire, the lack of knowledge in the field of HRMIS on the part of the respondents produced subjective results. Conversion of such raw data into objective information posed a difficulty, too.

9. Conclusion

The contemporary world is globalised and technologically advanced to a very high degree compared to the past decades. It is evolving by the hour. In this technologically driven world, full of innovative individuals and enterprises, organisations are striving for continuous improvement in their performances. HRMIS have played the role of primary agents to achieve that feat. The Punjab Revenue Authority has also applied HRMIS for human resource management. This study obtained positive results insofar as the organisational performance of the authority is concerned. The implementation of HRMIS has improved the overall efficiency and effectiveness of the organisation. This study provides information that could help improve decision-making in the authority, contributes to the existing literature related to the matter, and builds understanding of its fundamental aspects. It is hoped that the conclusions drawn from the obtained results will be helpful for policy-makers at the PRA and will also serve the long-term academic purposes relevant to this technology in Pakistan and abroad.

References

Altarawneh, I., and Al-Shqairat, Z. (2010). Human Resource Information Systems in Jordanian Universities. International Journal of Business and Management, 5(10), 113-127.

Andrews, K. Z. (1996). Two kinds of performance measures. Harvard Business Review, 74(1), 8-9.

Balduck, A. L., & Buelens, M. (2008). A two-level competing values approach to measure nonprofit organizational effectiveness. Working Papers of Faculty of Economics and Business Administration, Ghent University, Belgium.

Broderick, R., and Boudreau, J. W. (1992). Human Resource Management, Information Technology and the Competitive Edge. Academy of Management Executive, 6(2), 7-17.

Cameron, K. S. (1986). "Effectiveness as paradox: consensus and conflict in conceptions of organizational effectiveness." Management Science 32(5): 539-553.

CedarCrestone, (2006). CedarCrestone 2006 Workforce Technologies and Service DeliveryApproaches Survey. 9th annual ed. CedarCrestone.

Chakravarthy, B. S. (1986). "Measuring strategic performance." Strategic Management Journal= 7: 437-458.

Chugh, R. (2014). Role of Human Resource Information Systems in an Educational Organization. Journal of Advanced Management Science, 2(2), 149-153.

De Alwis, A. C. (2010). The Impact of Electronic Human Resource Management on the Role of Human Resource Managers. E + M Ekonomie A Management, 4, 47-60.

Hayajneh O., Al-Omari B., Al-Mobaideen H., & Allahawiah, S. (2013). The Impact of Human Resources Information Systems and Training Needs in Industrial Firms: Aqaba Case Research, European Scientific Journal, 8(25).

Haworth. (2007). Organizational performance. Retrieved from: http://www.haworth.com/Brix?pageID=242.

Henry, E. A. (2011). Is the influence of organizational culture on organizational effectiveness universal? An examination of the relationship in the electronic media (radio) service sector in the English speaking Caribbean.

Hussain, Z., Wallace, J., & Cornelius, N. E. (2007). The use and impact of human resource information systems on human resource management professionals. Information & Management, 44(1), 74-89.

Hussain, Z., Wallace, J., and Cornelius, N. E. (2007). The Use and Impact of Human Resource Information Systems on Human Resource

Management Professionals. Information and Organization, 44(1), 74–89.

Human Resource Software and its effects on your hr department – what to expect. unicornhro.com. Retrieved 27 January 2017. "Oracle PeopleSoft Applications". oracle.com. Retrieved 27 January 2017

Kinnie, N. J., and Arthurs, A. J. (1996). Personnel Specialists' Advanced Use of Information Technology. Personnel Review, 25(3), 3-19.

Kossek, E. E., Young, W., Gash, D. C., and Nichol, V. (1994). Waiting for Innovation in the Human Resources Department: Godot Implements a Human Resource Information System. Human Resource Management, 33(1), 135-159.

Kumar S., Gulati R., (2010). Measuring efficiency, effectiveness and performance of Indian public sector banks. International Journal of Productivity and Performance Management. Vol. 59 Iss: 1 pp. 51 – 74 http://dx.doi.org/10.1108/174104010110061 12

Lengnick-Hall, M. L., & Moritz, S. (2003). The Impact of e-HR on the human resource management function. Journal of Labor Research, 24(3), 365-379.

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

Low J., The value creation index// Journal of Intellectual Capital, 2000; vol. 1, Iss: 3, p. 252 – 262, DOI 10.1108/14691930010377919

Mina B., Mehdi K., & Yaser G. (2012). Researching the impact of human resources functions on organizational performance using structural equations method (case research: Iran Behnoush Company), Interdisciplinary journal of contemporary research in business, 3(9).

Mackay, L. and Torrington, D. (1986). The Changing Nature of Personnel Management. London: IPM. Merton, R. (1967). 'The role set'. In Coser, L. and Rosenberg, B. (Eds),

Sociological Theory. London: Collier Macmillan.

March, J. G. and R. I. Sutton (1997). "Organizational performance as a dependent variable." Organization Science 8(6): 688-706.

Marler, J. H. (2009). Making Human Resources Strategic by Going to the Net: Reality or Myth. The International Journal of Human Resource Management, 20(3), 515-527.

Martinsons, M. G. (1994). Benchmarking Human Resource Information Systems in Canada and Hong Kong. Information & Management, 26(6), 305-316.

McCann, J. (2004). Organizational effectiveness: Changing concepts for changing environments. Human Resource Planning, 27(1).

Martinsons, M. G. (1994). Benchmarking Human Resource Information Systems in Canada and Hong Kong. Information & Management, 26(6), 305-316

Martinsons, M. G. (1994). Benchmarking Human Resource Information Systems in Canada and Hong Kong. Information & Management, 26(6), 305-316.

Ngai, E. W. T., and Wat, F. K. T. (2006). Human Resource Information Systems: A Review and Emperical Analysis. Personnel Review, 35(3), 297-314.

Porter, M.E. (1998). Competitive advantage of Nations: Creating and sustaining superior performance. New York: The Free Press.

Porter E. Michael. (1996). What is strategy? Harward Business School Publishing Cooperation. Strategy for business. (10-31)

Pinprayong B. and Siengtai S. (2012). Restructuring for organisational efficiency in the banking sector in Thailand: a case study of Siam Commercial Bank. Far East Journal of Psychology and Business. Vol. 8 No. 2. P.p 29-42. http://www.fareastjournals.com/files/FEJPB V8N2P2.pdf

Ruël, H., Bodarouk, T., & Looise, J. (2004). E-HRM: Innovation or irritation. An explorative empirical study in five large companies on

web-based HRM. Management Revue, 15, 364-380.

Ruel, H.J., Bondarouk, T.V. & Van der Velde, M. (2007). The Contribution of EHRM to HRM Effectiveness: Results from a Quantitative Study in a Dutch Ministry. Employee Relations, 29, 280-291.

Rosemond B., & Ernesticia L. (2011). The Effect of Human Resource Management Practices on Corporate Performance: A Research of Graphic Communications Group Limited. International Business Research, 4(1).

Ruël, H. J. M., Bondarouk, T., and Looise, J. C. (2004). E-HRM: Innovation or Irritation: An Exploration of Web-based Human Resource Management in Large Companies. Lemma Publishers, Utrecht, Netherlands.

Saharan, T., and Jafri, S. (2012). Valuation of HRMIS Status an Insight of Indian Companies' Perspectives. in Kundu, S.C., Punia, B.K., Narwal, K.P. and Singh, D. (Eds), Business Management: Key Research Issues, Excel Books, New Delhi, pp. 113-27.

Sadiq, U., Ahmad, F., Khurram I., & Bahaudin, G. (2012). The Impact of Information Systems on the Performance of Human Resources Department. Journal of Business Studies Quarterly, 3(4), 77-91.

Shenhav, Y., W. Shrum and S. Alon (1994). "'Goodness' concepts in the study of organizations: a longitudinal survey of four leading journals." Organization Studies 15(5): 753-776.

Steve Bonadio (2010). Top Five HR Process Integrations That Drive Business Value (white paper). Softscope People Management.

Teo, T. S. H., Soon, L. G.., and Fedric, S. A. (2001). Adoption and Impact of Human Resource Information Systems (HRMIS). Research and Practice in Human Resource Management, 9(1), 101-117.

Troshani, I., Jerram, C., &Rao, S. (2011). Exploring the public sector adoption of HRMIS. Industrial Management and Data Systems, 111(3), 470-488.

http://dx.doi.org/10.1108/02635571111118314

Vinitwatanakhun, M. W. (1998). Factors affecting organizational effectiveness of nursing institutes in Thailand. 1-5. [Online] Available at: http://www.journal.au.edu/au_techno/2002/apr2002/article8.pdf

U.S. Department of Energy. (2005). Balanced scorecard: Performance measurement and performance management program. Retrieved from: http://management.energy.gov/documents/BSCProgramDescriptionDocumentJan2005.pdf