INFLUENCE OF HUMAN RESOURCE INFORMATION SYSTEMS ON THE PERFORMANCE OF IN KENYAN PUBLIC UNIVERSITIES

JANET MIDIWO

DOCTOR OF PHILOSOPHY

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Influence of Human Resource Information Systems on The Performance of in Kenyan Public Universities

Janet Midiwo

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

Signature: _____   Date: _____

    Janet Midiwo

This thesis report has been submitted for examination with our approval as the university supervisors.

Signature: _____   Date: _____

    Prof. Elegwa Mukulu

    JKUAT, Kenya

Signature: _____   Date: _____

    Dr. Gichohi Waititu

    JKUAT, Kenya

DEDICATION

This thesis is dedicated to my sons Bruce and Gary, my late dad Noah Juma, late sisters Alice and Mary and late brother Tom.

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This thesis is made possible through the help and support of everyone, including: supervisors, family, friends and respondents.

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ABBREVIATIONS/ACRONYMS

ATS	Applicant Tracking System
CK	Capacity Kenya
HRIS	Human Resource Information Systems
HRM	Human Resource Management
ICT	Information Communication Technology
IS	Information Systems
ISO	International Standards Organization
KII	Key Informant Interviews
KPI	Key Performance Indicators
LMS	Learning Management Systems
MSPS	Ministry of State for Public Service
OSHA	Occupational Safety and Health Act
PSRS	Public Service Reform Strategy
SERVQUAL	Service Quality
SPSS	Social Package for Social Sciences
USAID	United States Agency for International Development

DEFINATION OF TERMS

Applicant Tracking - An applicant tracking system (ATS) is a computer software application that enables the electronic handling of recruitment needs. An applicant tracking system can be implemented or accessed online at an organizational level, depending on the needs of the institution (Obeidat, 2012).

Beta Coefficient - In statistics, beta coefficients are the estimates resulting from an analysis performed on variables that have been standardized so that they have variances of 1. This is usually done to answer the question of which of the independent variables has a greater effect on the dependent variable in a multiple regression analysis (Al – Dmour & Al – Zubi, 2014).

Content Validity - Validity indicates the degree to which an instrument measures what it is supposed to measure. Content validity, a subset of validity is the extent to which a measuring instrument provides adequate coverage of the topic under study (Kothari, 2009).

Cronbach's Alpha – In statistics, Cronbach's alpha is used as an estimate of the reliability of a psychometric test. It can be viewed as the expected

correlation of two tests that measure the same construct (Obeidat, 2012).

Human Resource Information Systems - Are configurations of different interacting systems that aim at generating and delivering HR functionality in order to automate and inform ate human resource management (Mueller et.al, 2010).

Human Resource Information Systems effectiveness - This is understood as the degree to which the person developing, implementing or permanently improving HRIS believes that the stakeholder (in whose interest the system is being made) is better off (Mueller, Stormier & Gasper, 2010).

Hypothesis Testing - Hypothesis testing is an inferential procedure that uses sample data to evaluate the credibility of a hypothesis about a population (Kothari, 2009).

Operationalization of HRIS – Operationalization of HRIS defines the system in terms of the operations that count as measuring it. Operationalization may be accomplished through the concepts of verification and validation, which is the process of checking that a product, service or system

meets specifications and that it, fulfills its intended purpose (Bridgeman, 2006)

Operational Performance Management - This is the alignment of all business units within an organization to ensure that they are working together to achieve core business goals (Averbook, 2012).

Outcomes of Operationalization of HRIS - Observable and noticeable indicators of change due to Operationalization, such as HRM competencies (Hendrickson, 2003; Strohemeir, 2007).

Organizational Performance - An operational definition describes exactly what the variables are and how they are measured within the context of the study being carried out. Organizational performance is probably the most widely used dependent variable on organizational research today. It is an analysis of a company's performance as compared to goals and objectives (Nankervis et.al, 2009).

Variable- A variable is any entity that can take on different values. Anything that can vary can be considered a variable. A variable is more specific and can be measured (Kothari, 2009).

ABSTRACT

With the advent of the twenty-first century came the ever increasing effect of globalization and technology. There is, therefore, a tremendous surge in the implementation of new technology and organizations have amplified the use of information systems in various functions and departments for organizational competitive advantage and success. Even though Human Resource Information Systems (HRIS) propels this technology rush, little information exists on HRIS in Kenyan public universities and hence forms the focus of this study. To get a clear understanding of the influence of human resource information systems on the performance of Kenyan public universities, this study sought to assess the levels of systems manipulation of human resource functions like recruitment and selection, training and development, payroll and performance management to determine the underlying assumption of this research study, which is to develop an awareness of the implications of influence of human resource information systems on the performance of Kenyan public universities. This study used a descriptive survey method, which employed both qualitative and quantitative approaches. The target population of the study was HRIS users and service providers who have served in the public universities for more than two years. Questionnaires and interview tools were used to collect both quantitative and qualitative data respectively. Stratified sampling was adopted to identify category of university staff for the study. Simple Random Sampling technique was then employed to identify individual staff for the interviews. Qualitative data was analyzed under the thematic method and quantitative data under statistical method. A total of 187 questionnaires with self-explanatory questions were administered to academic and non- academic employees of 3 public universities in Kenya. Separately 23 interviews were carried out and 20 of the

respondents were interviewed and recorded. Data collected was analyzed by use of statistical tools for data analysis namely, MS-Excel and Statistical Package for Social Sciences (SPSS). The results of the research give valuable insights about the success and effectiveness of human resource information systems in organizations. The findings of the study are discussed in the context of the theoretical and empirical background of HRIS applications on HRM functions. The findings indicate that HRIS application on recruitment and selection, training and development, payroll and performance management cumulatively provide quality, accurate and consistent data that enables effective and efficient decision making for organizational competitive advantage, while lack of financial support and poor computer competency impede the effective application of human resource information systems. The results further confirm that HRIS reduces operational cost compared to manual systems as it helps to maintain data with more accuracy and in less time. Based on the findings of this study, it is concluded that applying an effective HRIS can be an assurance for HR to stay competitive in its bid to deliver more effective and streamlined services that can influence the performance of public universities. It is further concluded that HRIS functions enhance HRM in terms of administrative and analytical purposes. It is, therefore, recommended that a continuous assessment on the influence of HRIS, especially e-performance management on overall performance is necessary if the public universities are to maintain the competitive advantage resulting from human resource information systems.

CHAPTER ONE

INTRODUCTION

1.1 Introduction of the background information

This chapter of the thesis report presents a detailed background of the study in terms of the definition of the title of the thesis; human resource information systems, highlighting benefits of using human resource information system in an organization. The chapter has also provided key statement of the problem for the study, general and specific objectives of the study besides the hypothesis of the study, justification and scope of the study among others.

1.1.1 Definition of Human Resource Information Systems

A Human Resources Information System (HRIS) is a soft-ware or online solution that is used for data entry, data tracking and the data information requirements of an organization's human resources (HR) management, payroll and bookkeeping operations. An efficient HRIS provides: administration of all staff data, reporting and evaluation of staff data, company-related records, including staff handbooks, disaster evacuation methods and security recommendations, rewards management, such as enrollment, status modifications and updating of personal data. It is an information system or managed service that provides a single, centralized view of the data that a human resource management (HRM) or human capital management (HCM) group requires for completing human resource (HR) processes such as recruitment, placement, payroll management and other human resource practices (Rouse, 2014). Human resource information systems may also be viewed as a way, through software, for businesses big and small to take care of a number of activities including solutions in recruiting, training and payroll. A human resource information system allows a company to plan its HR costs more effectively, as well as to manage them and control them without needing to

allocate too many resources toward them. In most situations, human resource information systems may also lead to increases in efficiency when it comes to making decisions in HR and as a result enabling the HR practitioner to obtain many hours of his or her day back instead of spending these hours dealing with non-strategic, mundane tasks required to run the administrative-side of HR. The decisions made should also increase in quality and as a result, the productivity of both employees and managers should increase and become more effective (Ball, 2011). To put it another way, a human resource information systems may be viewed as a way, through software, for businesses big and small to take care of a number of activities including solutions in training, payroll, and recruiting. A human resource information system can enable a company to plan its HR costs more effectively, as well as to manage them and control them without needing to allocate too many resources towards them.

1.1.2 Global perspective on Human Resource Information System

Human resource information systems (HRIS) has increasingly transformed since it was first introduced at the General Electric in the 1950s. It is believed that future economic and strategic competitive advantage will rest with the organizations that can most effectively attract, develop, and retain diverse group of the best and the brightest human talent in the market place (Kavanagh et al., 2012). HR Information Systems provide Human Resource Management with the opportunity to become a more efficient and strategic function by standardizing the majority of the organization's HR processes, improving the quality and speed of available information and improving services to employees (Ball, 2011). If designed correctly the system manages employee data in line with how the organization is managed; hence the need for a multinational organizations to implement a global HRIS (Troshaniet al., 2011).It is important to note that Human resource information systems (HRIS) has increasingly transformed since it was first introduced at the General Electric, USA, in the 1950s.It is further believed that future economic and strategic advantage will rest with the organizations that can most

effectively attract, develop, and retain diverse group of the best and the brightest human talent in the market place. Many human resource (HR) executives and managers are so busy taking care of their daily duties, which are generally administrative, that they neglect to consider important issues that are coming down the road. This is a trap that any department can fall into, but it can be especially devastating for HR, which must battle decades of preconceived notions about the department's ability to contribute to corporate planning. Thus, today with an increase in the number of public organizations, HR is now viewed as a source of competitive advantage (Kavanagh et al., 2012). It is necessary for firms to have highly skilled human capital to provide them with a competitive edge. This may now be effectively accomplished through the implementation of human resource information systems.

When a company invests in an affordable HRIS, it suddenly becomes capable of handling its workforce by looking at two of the primary components: that of payroll and that of HR. Beyond these software solutions, organizations also invest in HRIS modules that help them put the full productivity of their workforce to use, including the varied experiences, talents, and skills of all staff within the enterprise (Rietsema, 2015).According to (Richards-Carpenter, 2012), 40 percent of U.S. corporations had HRIS by the 1980s. HRIS supported decision-making processes

To achieve competitive advantage (Broderick & Boudreau, 2012). Swift technological

progression especially with reference to globalization has shifted the organizations to

knowledge oriented units.

1.1.3   Regional Perspective on Human Resource Information System

Africa has been experimenting with Technology since the 1980's; it is now time to fully embrace it with the rest of the world as a way of life and especially to manage Human

resources. Unfortunately, HR function in Africa has not been proactive in its use of technology to provide integrated services or to communicate more effectively (Troshanietal., 2011). This is because some organizations still rely on sending of parcels and other manual means of communication. The few initiatives made have by and large originated from IT experts. There is need for HR to proactively embrace Technology to elicit responses and fulfill changing expectations within organizations (Ball, 2011). In 2009 researchers from Georgia Technical Research Institute (GTRI) joined the effort to carry out an independent software evaluation of the new system and the overall usability of the system in Kenya and Zimbabwe health sectors and encouraged frequent monitoring and evaluation for human resource information systems to serve its intended purpose (Adams, Clarkson & Skeels, 2009).

1.1.4   Kenyan perspective on Human Resource Information System

The persistent pressure to reduce Human Resource costs has resulted in reduced HR staffing, benefits slashing, and decreased HR services. Human Capital Management (HCM) is now a story about how to reduce the ratio of HR staff to employees. When HRIS is integrated to the ERP solutions, organizations can enjoy the ultimate benefit of an all-in-one system that can decrease errors, lower cycle times, reduces turnaround time, and support management decisions (Teotia, 2012).

In Kenya, deliberate strides have been taken to get the country to some high technology levels. The Government sees ICT as a driver towards economic and social development (GOK – Ministry of Information 2008), hence National ICT Policy 2006. Human resource information systems has been put in place to introduce value driven competency based human resource management practices. The human resource information systems implementation team for Capacity Kenya (CK) has championed the use of human resource information systems in Kenya since 2009 and in 2010 their own Wakibi, collaborated with the ministry of public health and sanitation to ensure all HR

data for hiring, training, transferring and retiring health workers are electronically entered into human resource information systems by the complement section. However, continuous monitoring and evaluation is vital in determining whether results are being achieved and what needs to be improved. Once a human resource information systems investment has been implemented by an organization, management needs to assess how successful it has been in achieving its goals. Many companies find this hard and may take an informal approach to evaluation (Stair et al, 2010); few organizations systematically attempt to measure the effectiveness of their information systems or even know how to do so (Teotia 2012). The evaluation should determine whether or not human resource information systems is performing up to its expectations and if it is being used to its full advantage and return on investment.(Mohammed 2012), Though the demand for useful measures for assessing the overall opportunities of information systems investments has long been acknowledged, there is neither any one acceptable nor overall framework that organizes the important aspects of effective human resource information systems in a way that supports implementation of human resource information systems and influence. The single available option is by looking through the lens of well - known theories and model of IS effectiveness, by which the value of human resource information systems can be usefully assessed. It follows then that when assessing the impact and effectiveness of the human resource information systems at the Kenyan public universities, one should be guided by among others; whether or not there is reduced amounts and costs in human resources (HR) data storage; improvements in time and accuracy; improved service standards; performance management together with proper training and development initiatives and improved status of the HR function (Gupta, 2009).

Kitati (2010) in a survey of HRMIS and Financial MIS concluded that the best initiative for the University of Nairobi was to embrace the use of various MIS. Otieno (2011) a human resource information systems team leader at university of Nairobi argues in his

evaluation of human resource information systems functionality, that regular assessment of HRMIS is necessary to establish performance and return on investment (ROI). Kananu (2013) carried out a comparative survey between the private and public universities to assess the human resource information systems on service delivery. In many organizations, the focus of the HRIS is on administrative efficiency. However, as organizations seek to grow and compete in the rapidly evolving knowledge-based economy, the pressure continues to grow for HR to play a more strategic role in the organization, hence, the growing link between HR and business strategy has organizations looking to their HR professionals for innovative programs and practices to build a more competitive workforce (Muriithi, Gichinga & Mburugu, 2014). Consequently this study reviewed extant literature related to human resource information systems and influence on performance of public universities, and eventually verified and validated a multi measurement model, based on IS effectiveness theories such as technology acceptance model (TAM), Servqual and De Lone and McLean IS success model,

1.2   Statement of the Problem

Organizations in the twenty first century are under the pressure of reducing cost of operations and the pressure of being responsive to the emerging performance demands. Wandago, Odhuno and Kambona (2010) in their study of ICT in public organizations in Kenya, have confirmed that human resource information systems has been introduced to the Kenyan public universities, only recently. Further, Kananu (2013) ofMoi University argues that even though human resource information systems have gained popularity as a strategy for competitive advantage, little information exists on its influence on performance of public universities in Kenya. Even though a number of research has been done to address the benefits in the introduction of human resource information systems, little investigation, instead, is available to measure the effects of human resource information systems on performance of public institutions (Dottorato & Benfatto, 2010).

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In spite of the increasing functionality and affordability which allows for human resource information systems to be used extensively in the public service organizations of all sizes, limited research is available on assessment to establish whether disparities exist or the impact of human resource information systems in general performance (Shiri, 2012). Garg (2013) in his study of role of HRIS in HR Planning revealed the research gap that organizations who set overall IS policies in advance seem to acquire HRIS to fulfil their administrative functions He argues that though the existing HRIS system can optimally contribute to the performance of public organizations some organizations, Kenyan public universities included, do not fully utilize HRIS for recruiting, training, payroll and performance management due to the dependence on traditional methods or due to unawareness. On the other hand for others it is due to lack of investments to upgrade the system with required features. This study would also guide future HRIS users to make optimum use of HRIS functionalities such as e-recruitment, e-training, e-payroll and e-performance management to influence the performance of employees in the Kenyan public universities.

Further in the Kenyan context, various state corporations have been registering poor performance and the country's public universities are not exceptional. An evaluation of implementation of human resource information systems carried out by Capacity Kenya Project in 2009, expressed similar sentiments and contends that more evaluative research needs to be done to determine effects of human resource information systems in public universities.

Wandago, Odhuno and Kambona(2011) in a survey of information, communication and technology (ICT) research capacity challenges in Kenyan public universities reveals that most Kenyan public universities have not yet developed comprehensive ICT policies and strategies and that they allocate only about 1% of their revenue to ICT research .Muriithi (2013) in a study of human resource information systems in Kenyan public sector argues that there is need to investigate the entire information system to ascertain impact on

organizational performance. There is, therefore, the need for further research done to establish influence of human resource information systems on performance of public universities in Kenya.

1.3   Justification of the study

There has been general laxity in the implementation of human resource information systems especially in the public universities. This has reflected poorly on these institutions of higher learning in terms of economic growth and competitive advantage. This study is therefore timely and was intended to explore the influence of human resource information systems and to open up channels for updating and permanently improving the human resource information systems. From previous research context, HRIS is still in its initial stages since HRIS is a fairly new concept in Kenyan public organizations. There is knowledge gap within research studies as to how HRIS could contribute to the performance of employees in the Kenyan public universities. Therefore ascertaining the level of influence of HRIS on public universities would be very important and would contribute to the body of knowledge. This study is meant to disclose the extent of influence of HRIS on the performance of employees in the Kenyan public universities with special emphasis on e-recruitment, e-training, e-payroll and e-performance management since these HR processes have direct involvement with organizational performance and goals.

a) Dissemination of research results

Simulation of research findings was meant to improve the process of data collection, analysis, storage, retrieval and dissemination. Application of findings would improve institutional operations through the creation of effective human resource information systems.

b) **Human resource practices**

Public universities in Kenya were a key area for study on influence of human resource information systems because they experience a lot of challenges when it comes to adoption and assessment of HRIS. According to the study by CPS Research International (2013) on university's use of ICT infrastructure in e-learning, administration and collaboration with IT industry, Strathmore university led Kenyan private universities in beating their public State-funded counterparts in the inaugural East Africa rankings based on adoption of information technology. Multimedia University at position five in the region was the best public university in Kenya followed by University of Nairobi at position eight.

c) **Cost effective decision-making process**

costs that accompany design, development and implementation of any technology, HRIS included, puts pressure on organizations to justify the return on investment (ROI) in such systems. The nature and scope of HR functions served by HRIS can be a difficult item to measure and evaluate given the long term duration needed for ROI to be realized. Besides the study was to inculcate in public organizations a culture of regular assessment of the HRIS systems for optimum institutional performance. General there is knowledge gap as to how HRIS' recruitment, training, payroll and performance management contribute to the performance of employees in the Kenyan public universities.

d) **Policy Making**

The findings were able to establish the critical success factors that must be addressed if the envisaged positive results were to be realized while at the same time taking cognizance of how to change bureaucratic behavior that was currently prevalent in the educational sector, to enable the country become prosperous and attain Kenya Vision

2030 objectives. One of the ten foundations for this vision is anchored on efficient and effective public sector, within which the educational sector falls. This study was to offer valuable insights into the challenges of automation and electronic public service and issues involved with making the transition from paper-based to electronic records and information management; their ability to measure progress toward accountability was to be enhanced and there should be a higher success rate of e-HRM applications. The research findings were tooffer educational institutions with the resources and expertise they can use to increase their capacity to manage electronic records as accurate and reliable evidence in electronic environments.

e) Research Institutions

This study was to increase the body of knowledge in the area of human resource information systems in the public sector research institutions; re-evaluating the use of human resource information systems and making it cost effective and sustainable in the long run while considering the human resource issues.

1.4   Objectives of the Study

1.4.1   General Objective

This research study has been designed to generally establish the influence of human resource information systems on the performance of Kenyan public universities.

1.4.2   Specific Objectives

1. To assess the influence of e - recruitment and selection procedure on the performance of Kenyan public universities.

2 To determine the influence of e - training and development on the performance of Kenyan public universities.

3 To establish the influence of e - payroll management on the performance of Kenyan public universities.

4 To examine the influence of e - performance management on the performance of Kenyan public universities.

1.5   Hypotheses of the Study

The hypotheses for this study tested if there is significant relationship, that is, establishing the cause and effect between the dependent and independent variables. However, the researcher also considered the null and alternative hypotheses for purposes of data analysis and rejected whichever did not meet the statistical requirements. For purposes of this study, the null hypothesis (H_0) and alternative hypothesis (H_a) are as described below.

H_0   E - recruitment and selection procedure does not influence the performance of public universities.

H_a   E - recruitment and selection procedure influences the performance of public universities.

H_0   E - training and development does not influence the performance of public universities.

H_a   E - training and development influences the performance of public universities.

H_0   E - payroll management does not influence the performance of public universities.

H_a   E - payroll management influences the performance of public universities.

H$_0$ E - performance management does not influence the performance of public universities.

H$_a$ E - performance management influences the performance of public universities.

1.6   Scope of Study

This research study covered three public universities in Kenya. The specific institutions that were considered are University of Nairobi, Jomo Kenyatta University of Agriculture and Technology and Maseno University.   The study considered the three public universities due to the time of accreditation and geographical placements. The University of Nairobi was the pioneer university in the country, Jomo Kenyatta university of Agriculture and Technology was the pioneer university of agriculture and technology while Maseno University was represented the Nyanza and larger western region. The scope is elaborately discussed in the population sub section, 3.2 of methodology section in chapter three of this research thesis.

1.7 Limitations

While the data analysis and discussion in this study go some way in resolving the research problem outlined, it may not allow for generalization in the entire Kenyan Universities, given the specific nature of the scope. Secondly this research study merely employed three HRIS success models, namely, technology acceptance (TAM), Servqual and De Lone & McLean IS success models using their multidimensional items as the levels of analysis. Future research may employ HRIS success models but using other stakeholders and levels of analysis.

Biases – Some respondents showed cultural biasness to the researcher after discovering the cultural background of the researcher. Again the study may have been by

respondents not providing complete and honest feedback, partly due to the rules in their departments and the institution at large. However despite these limitations, this study provided valuable insights into the study of human resource information systems and influence on the performance of public universities.

CHAPTER TWO

THE LITERATURE REVIEW

2.1 The Introduction

This section provides a detailed understanding of issues related to the study. Specifically the section focuses on human resource information systems and how this initiative influences the performance of public universities. A theoretical framework which is a structure that can hold or support a theory of a research work, explains why the problem under study exists thus serves as a basis for conducting research. This is followed by a conceptual framework which provides clear link of the literature to the research goals and questions, describe the interconnections among variables; contributes to the formulation of the research design hence contributing to the trustworthiness of the study by providing means to link ideas and data so that deeper connections can be made (Robinson, 2006).

2.2 The Theoretical Review

The measurement of information systems (IS) success or effectiveness is critical to our understanding of the value of IS management actions and investments. Therefore to reach the objective of this research, the researcher will employ theoretical models that will allow measurement of the effectiveness of human resource information systems and apply this framework within the Kenyan public universities to measure its effect on performance. Theoretical framework is a collection of interrelated concepts or a theory on which to ground one's research .It informs the research hypothesis, methodology and frames the research conclusions. It helps justify the research problem, shows why the research is important). It is a broad theory based explanation (Schulz, 2010). Theoretical framework can also be defined as a broad theory based explanation and the concept of causality such as this variable caused this variable to change and why.

The effectiveness of the human resource functions namely recruitment and selection, training and development, payroll management and performance management is expected to be dependent on the application of human resource information systems and by presumption result in overall organizational effectiveness. For purposes of this study there was a review of the relevant literature to inform the discussions, conclusion and recommendations for the study. The literature review also formed a framework that helped in the analysis of the study findings. Theories as a base for the elicitation of human resource information systems model can generally be described as a general set of statements which aim at explaining what is, predict what will happen and provide a basis for intervention and action. Farlex (2009) defined it as a set of statements or principles devised to explain a group of facts or phenomena, especially one that has been repeatedly tested or widely accepted and can be used to make predictions about natural phenomena. Farlex further observed that theory is a belief or principle that guides action or assists comprehension or judgment. According to Houghton (2005), theory is a set of statements or principles devised to explain a group of facts or phenomena. He further observed that most theories that were accepted by scientists were repeatedly tested by experiments and could be used to make predictions about natural phenomena. This study has opted for multi dimensional models because a single theoretical model may not be sufficient to adequately capture the ultimate significance of human resource information systems and influence on university performance.

2.2.1 Technology Acceptance Model versus e-Recruitment and e - Training

Davis (1989) developed the technology acceptance model (TAM) in studying the determinants of information technology (IT) usage for instance, use of IT in recruitment and selection. The goal of TAM was to provide an explanation of the determination of computer acceptance that is generally capable of explaining user behavior across a broad range of end user computing technology user population while at the same time being both persuasive and theoretically justified (Davis, 1989). TAM can be seen as an

adaptation of the generic Fishbein and Ajzeris theory of reasoned action (TRA) and was developed to explain individual system used in the workplace to enhance service delivery such as in recruitment and selection of staff in organizations. TAM posts that perceived ease of use (PECU) and perceived usefulness (PU) are important factors that determine the user attitude toward his/her intention to use and actual usage of IS. According to technology acceptance model, usage behavior is a direct function of behavioral intention which in turn a function of attitude towards usage reflect feeling of favorableness or un-favorableness towards using the technology and PU which reflect the benefit that using the technology will enhance performance. Attitude is determined jointly by PU and PECU. Furthermore, a key purpose of TAM is to provide a basis for discovering the impact of external variables on internal beliefs, attitudes, intentions and usage.

As global business markets become increasingly competitive, firms look to information technology to manage and improve their performance. Timely and accurate information is a key to gaining performance efficiency. Yet, firms may invest in technology only to find that their users are not willing to accept and use the new technology. This chapter explores the technology acceptance model and other theories of user acceptance.

TAM is to predict information system acceptance and diagnose design problems before users have any significant experience with a system (Davis, 1989). Davis has developed scales to measure perceived usefulness, perceived ease of use, attitude toward using, and behavioral intentions to use. These scales have been validated in previous research and were adapted for use in this study. These tools allow researchers and practitioners the ability to apply scales which have already been developed and empirically validated in previous research, thereby avoiding the potentially time-consuming and costly effort required to develop a new measurement instrument. Thus, the variables presented in TAM (as measured by the aforementioned scales)offer practitioners a practical, cost-

effective method for evaluating new technology and predicting the degree to which end-users will actually use that technology before the system is actually implemented.

TAM has been found to be extremely robust and has been replicated using different tasks and tools (Adams, Nelson, & Todd, 1992; Mathieson, 1991). In a comparison of several models, Mathieson (1991) found that TAM predicted intention to use a spreadsheet package better than alternative models. The paths suggested by TAM each explained a high degree of variance. Similarly, in another comparison of theoretical models, Taylor and Todd (1995) found out in their study of information systems that TAM provided a good fit to data, explaining the variance in behavior, intention, and attitude. TAM's value lies in its parsimony, specifically; the model is strongly grounded in existing psychological theory, yet is easy and as a result, cost-effective to apply. Furthermore, it makes explicit links to the concept of usability by means of the ease-of-use construct.

The reason technology acceptance model was chosen by this researcher is because technology acceptance model has been tested empirically and supported through validations, applications and replications (Schaup et.al. 2010, Lee 2010). Technology acceptance model is one of the most powerful, robust and parsimonious model for predicting user acceptance especially in information systems (IS) which is the key subject of this study.. According to Venkatesh (2000), the parsimony of TAM combined with its predictive power makes it easy to apply to different situations. These perceptions influence the way HRIS is used and hence mediate its effect on organization performance. Perceived usefulness and perceived ease of use including attitude towards using the technology were used to analyze the research questions of e –recruitment and e- training and to explain how e-recruitment and e – training packages enhance the ease of use and usefulness of the HRIS sub systems of e-recruitment, e-training, e-payroll and e-performance management by the employees to enhance public universities performance.
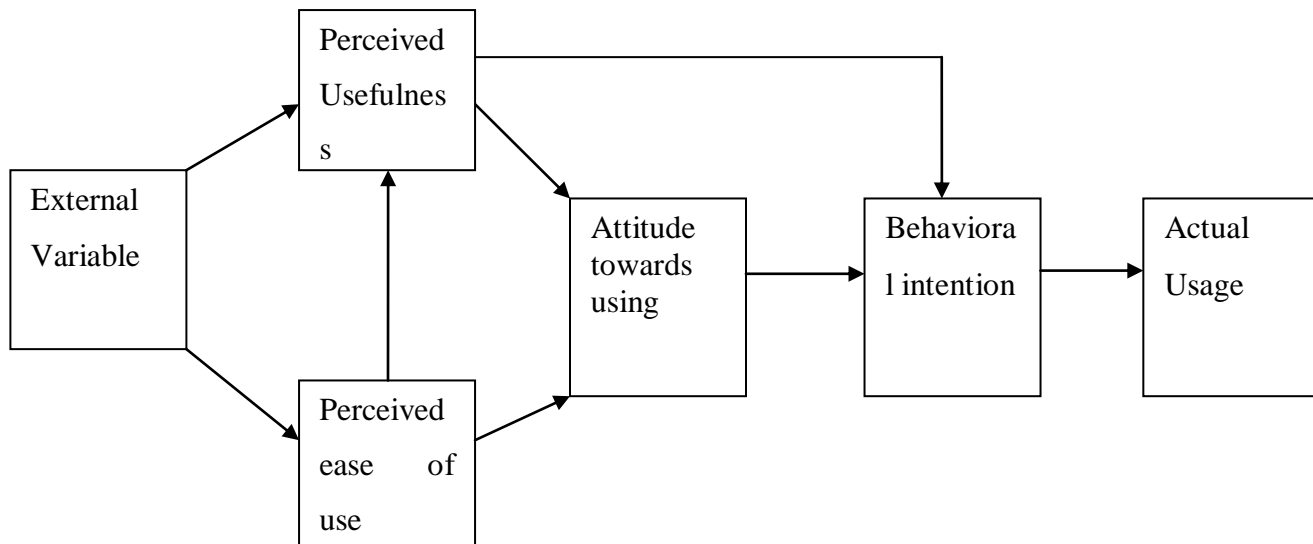
Figure 2.1:   **TAM Model**

Source: Davis et al (1989)

Empirical studies found that perceived usefulness significantly directly influenced perceived effective use (Or et al., 2010). Moreover, perceived usefulness had an indirect effect on perceived effective use through behavioral intention. The direct effect of perceived ease of use on behavioral intention was not significant, but perceived ease of use had an indirect influence on behavioral intention through perceived usefulness (Regoniel, 2010). Regoniel, (2010) showed that perceptions of usefulness, which strongly influenced their intention to use the technology, depended in part on the ease of use of the technology. This demonstrates ease of use is still an important variable for influencing acceptance of technology. Davis et al (1989) noted that, over time, as users learn to use a technology, ease of use of the technology becomes less salient. Thus, the effect of ease of use diminishes. Another finding was that profession's knowledge had no significant impact on behavioral intention, but it positively predicted perceived effective use (Regoniel, 2010). Behavioral intention will have a significant positive influence on usage of technology (Venkateshet al., 2003). Unless the employees of public universities

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are willing to use this new technology, HRIS, to transact their HRM functions such as e-recruitment and e – training packages, it may not improve performance of the Kenyan public universities. The researcher tried to explain through TAM that actual usage of was Jayawardhena and Foley (2000) in their studies on banks in West Europe found out that a positive correlation existed between user satisfaction and the multimedia content and hypertext connection of the website. TAM constructs of evaluating new technology and predicting the degree to which end-users will actually use that technology before the system is actually implemented.

2.2.2   Seroquel Theory versus e-payroll and e performance management

The study of services and innovation are becoming increasingly vital as the importance and size of the service sector of the global economy grows. In view of the fact that services such as e-payroll and e-performance management have become a larger portion of many organizations' revenue streams, functionalities aimed at enhancing performance require accurate and reliable methods of measurement, assessment and improvement (Spohrer& Maglio, 2008). Besides perception of organizational efficiency can be a complex process. Therefore multiple dimensions of service quality have been suggested (Brady & Cronin, 2005). One of the most popular models, Servqual, used in service determination was developed by Parasuraman and colleagues in the mid-eighties. Servqual is based on the perception gap between the received service quality and the expected service and has been widely adopted for explaining consumer perception of service quality in various areas of human resource functions in an organization such as e-training. That is to say Servqual is constructed on the proposition that service quality can be measured as the gap between the service that customers expect and the performance they perceive to have received (Landrum, Prybutok, Kapplemen and Zhang, 2008). It is important to note that although service quality can be evaluated and measured using servqual, which measures seven service quality dimensions, that is, service quality, system quality, information quality, user involvement, usefulness, user

self-sufficiency, user satisfaction, it also can be measured by its servperf subset, which employs a performance only approach with the first five dimensions of customers' perceptions of service provider performance. Majority of respondents to this research questions were positive that HRIS sub-systems of e-payroll and e-performance management when applied to the HRM functional platform brought about efficiency and service quality and therefore enhances the performance of employees in Kenyan public universities.

The servqual and servperf models and their constructs of reliability, responsiveness, system and service quality was used to measure the level of influence of HRIS' e-payroll and e-performance management through the analysis and deduction of the responses of employees of public universities since these research questions where developed using the servqual and servperf theories. Cronin and Taylor (1992) justify servperf as the performance only instrument in place of the gap measurement approach, Servperf is widely used and suggested by many scholars in various service industries (Gilbert, Keller and Zhao 2004). Jiang, Klein and Carr (2006) in their empirical study on IS users and IS professionals concluded that the servqual measure is a valuable analytical tool for IS managers to gauge the performance of HRIS and n. effect on user satisfaction.

Model is as indicated in Figure 2.2:
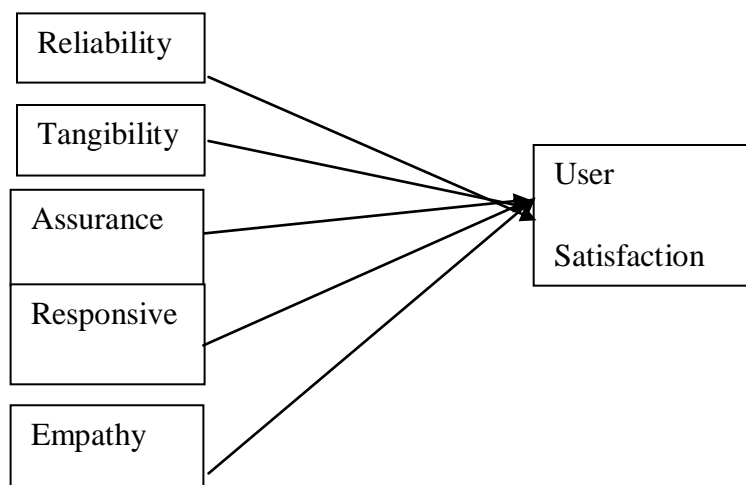
Figure 2.2:   Servqual Model   Source: Parasuraman et.al (2003)

By comparison the Social Systems theory which can reasonably be considered a specialization of systems thinking; alternatively as a goal output of systems science and systems engineering, with an emphasis on generality is useful across a broad range of systems. Social systems theory as developed by Ludwig (1956) is an option for the theoretical foundation of Human Resource Management (HRM). However the researcher found the SERVQUAL which measures seven service quality dimensions, that is, service quality, system quality, information quality, user involvement, usefulness, user self-sufficiency, user satisfaction to be more ideal in assessing the influence of HRIS on performance. It can also be measured by its servperf subset, which employs a performance only approach with the first five dimensions of perceptions of service provider performance. Cronin and Taylor (1992) justify servperf as the performance only instrument in place of the gap measurement approach. Kenyan public universities are predominantly a service industry with employees whose performance is key to their success. The constructs of servperf such as service quality, information quality was used to measure and make assumptions on the performance of employees in public universities in Kenya.

2.2.3 De Lone and McLean Information Systems Success Model versus the general objective - HRIS

De Lone and McLean (1992) conceptually developed but did not empirically test a model of IS success that included six aspects: System quality; Information quality; Use; User satisfaction; Individual impact and Organizational impact. In this model system quality refers to the characteristics of the information system as well as the processing of the system, the flexibility offered by the system, the amount of information or resources it accesses. De Lone and McLean (2003) suggest in their model that an IS is first

created, containing various features, which can be characterized as exhibiting various degrees of system and information quality. Next, users and managers experience these features by using the system and are either satisfied or dissatisfied with the system or its information products for instance products of HRIS' e-recruitment, e-training, e-payroll and e-performance management on the expected performance. The use of the system and its information products then impacts or influences the individual user in the conduct of his or her work, such as performance of HRIS may have collective impact result on the public universities performance. De Lone and McLean (2003) refined their model by merging all impacts (including organizational and individual) in one generalized component, net benefits to the organization. A causal or variance model studies the covariance of the success dimensions to determine if there exists a causal relationship among them. For example, higher systems such as HRIS, quality is expected to lead to higher user satisfaction and use, leading to positive impacts on individual productivity, resulting in organizational productivity improvements. The Purpose of combining the success taxonomy with the success model was to aid in the understanding of the possible causal interrelationships among the dimensions of success and to provide a more parsimonious exposition of the relationships, as indicated in model below:
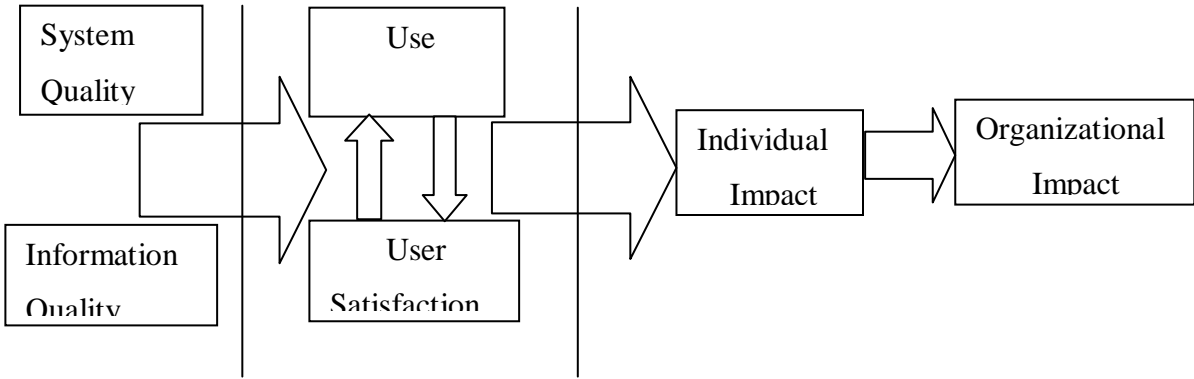
Figure 2.3 De Lone and McLean IS success Model

Source: De Lone and McLean (2001)

Subsequent empirical testing and validation of the De Lone and McLean IS success model was the primary purpose of researchers like Seddon and Kiew(1997) who surveyed 104 users of a recently implemented university accounting system and found significant relationships between "system quality" with "user satisfaction" and "individual impact" and between user satisfaction and individual impact (De Lone and McLean 2003). The model below indicates the dimensional association tests conducted by above researchers among others and depicts the causal relationships that exist between systems quality and system use and user satisfaction in the case of this study while examining the influence of HRIS on public universities, by implication individual impact of such systems have influence on the general organizational performance. The system and information quality enabled the researcher to make assumptions and deduce that when HRIS is implemented and actually used by the individual employee of the public universities, there is bound to be and individual impact which cumulatively translated into organizational impact as per the de lone et.al (2003) IS model in Figure 2.4.
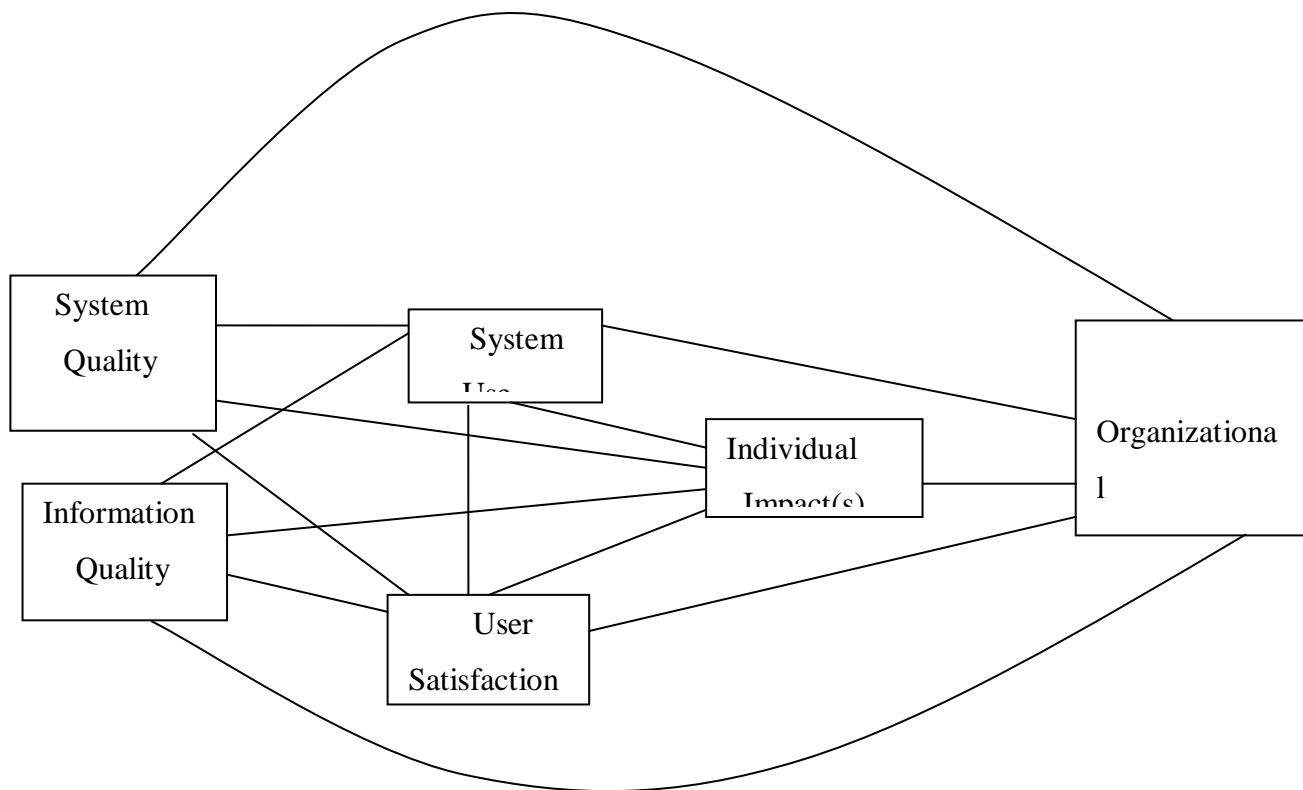
Figure 2.4:   Dimension Association Tests

Source: Seddon and Kiew (1997); Taylor and Todd (2002); Goodhue and Thompson (2003)

As a result of several empirical studies it has been seen necessary to add a 3rd dimension Service Quality to the two original characteristics System and Information quality and to combine individual and organizational impacts into a single variable net benefits. In De Lone and McLeanmodel the term impact was used; Seddon (1997) used the term consequences and net benefits in his characterization of the outcomes in refined De Lone and McLean IS success Model.
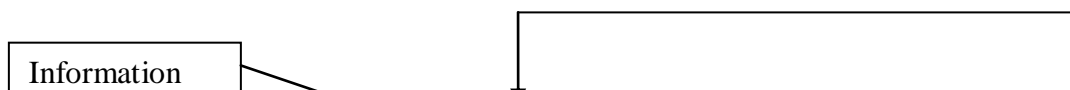
Figure 2.5:   Updated De Lone & McLean IS success model

Source :   De Lone & McLean (2002, 2003)

The De Lone et. al (2003) updated IS success model was applied to interpret the influence of HRIS in Kenyan public universities by using its updated constructs which indicates that information, system and service quality will lead to employee satisfaction

during use of the HRIS and this will eventually attract net benefits to these universities as indicated in Figure 2.5.

2.3 Conceptual Framework

A conceptual framework is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas. Strong conceptual frameworks capture something real and do this in a way that is easy to remember and apply. Again it is a theoretical structure of assumptions, principles, and rules that holds together the ideas comprising a broad concept. Conceptual framework should be able to show the relationships of the different constructs that the researcher wants to investigate; demonstrate an understanding of what variable influences what. According to William (2007) most research reports cast the problem statement within the context of a conceptual or theoretical framework. A description of this framework contributes to a research report in at least two ways; one, it identifies research variables and two, it clarifies relationships among the variables. Linked to the problem statement, the conceptual framework set the stage for presentation of the specific research question that derived the investigation being reported. On the other hand, Eisenhart and Borko (2007) a conceptual framework is a skeletal structure of justification, rather than a skeletal structure of explanation based on formal logic or accumulated experience. They continue to note that a conceptual framework should be an argument including different points of view and culminating in a series of reasons for adopting some points, ideas or concepts among others. The adopted ideas are then used as guides to collecting data in a particular study or the ways in which the data from a particular study would be analyzed and explained. They further noted that a conceptual framework is an argument that the concepts chosen for investigation or interpretation and any anticipated relationships among them will be appropriate and useful, given the research problem under investigation.

For purposes of this research the conceptual framework will depict how human resource information systems influences dependent variable, public university performance, as measured through independent variables, recruitment and selection; training and development; payroll management and performance management (see Figure 2.6). The variables which emanate from the specific objectives, research questions and hypotheses to be tested are clearly articulated in this conceptual framework.

HRIS

e-Recruitment & Selection

- e-recruitment
- Applicant tracking
- Timely access to information

e- Training & Development

- HR skills inventory
- Track & administer interventions
- Record of training expenses
- Manage HR capital – electronic resumes

e- Payroll Management

- -Salary Reports
- Generate Pay-slips
- Record of Hours absent-

e- Performance Management
- Performance Appraisals
- HR Balance Scorecard
- Employee Turnover

Performance of Kenyan Public Universities

- Key Performance Indicators
- Productivity
- Service Delivery

Independent Variables

Dependent Variable

Figure 2.6: Conceptual Framework

2.4 The Critiques of the existing literature relevant to the Study

This section reviews the empirical and theoretical literature relevant to the problem being investigated, indicating clearly the linkage of literature review to the research questions and indicating what has been done by other researchers including the methodologies used and identify gaps. The hypothesized variable should be sub-headings of the literature review to form a framework that would help in analysis.

2.4.1 Influence of Human Resource Information Systems on the performance of public universities

Shiri in his study on human resource management indicates that HRM is especially important in a knowledge-based institution, where ideas and expertise are greatly valued, and a creative and innovative workforce is necessary to meet the challenges of this new dispensation. Efficient and effective management of human capital is increasingly an imperative and complex process. As a result, there has been a considerable increase in the number of organizations; public universities inclusive are gathering, storing, and analyzing information regarding their human resources through the use of software which is human resource information system. Shiri observed that this increasing application of HRIS is meant to increase performance of individual organizations which use the systems. The growing importance of human resource information systems is due to the recognition of HR practitioners that IT (information technology) and IS (information system) should be a part of HR functions mainly to develop and use better HRM programmes. This adoption of human resource information systems by organizations combined with the increasing sophistication of this software, presents the HR function with new challenges which demands the HR professionals to participate and contribute fully to their companies, as true strategic business partners (Shiri 2012).

The study by Shibly on human resource information systems considered HRIS as a conceptualized an intersection of human resources and information technology through HR software. This arrangement allows HR activities and processes to occur electronically. To put it another way, a HRIS may be viewed as a way, through software, for businesses big and small to take care of a number of activities, including those related to human resources, accounting, management, and payroll. Shibly further observed that human resource information systems allow a company to plan its HR costs more effectively, as well as to manage them and control them without needing to allocate too many resources toward them. Ideally when an organization invests in an affordable human resource information systems, it suddenly becomes capable of handling its workforce by looking at two of the primary components: that of payroll and that of HR. Beyond these software solutions, organizations also invest in HRIS modules that help them put the full productivity of their workforce to use, including the varied experiences, talents, and skills of all staff within the enterprise (Shibly, 2012).

Gürol, Wolff and Ertemsir in their study of human resource information systems argue that the systems play a strategic architectural role as it is thought to contribute to overall business performance by fulfilling or at least supporting the tasks of data storage and retrieval, while at the same time serving as primary administrative support tools of reporting and statistics as well as of program monitoring (Gürol, Wolff and Ertemsir, 2010).

Similarly Dileep(2010) argued that HRIS is a combination of HRM and IS, as HRIS assists HR managers in performing HR functions more effectively and systematically through the use of technology. The use of HRIS would decrease costs by automating information and decreasing the number of HR employees, by helping employees to control their own personal information and by allowing managers to access relevant information and data, conduct analyses, make decisions and communicate with others without the help of an HR professional. Ultimately, organizations that have resorted to

such kind of practice will automatically increased output in their performance. Again, Bourini (2011) emphasized in his study of effects of application of HRIS on organization's performance that implementing HRIS can lead to HR professionals providing added value to the organization.

Evidently, many organizations have adopted HRIS to assist their daily human resources operations. HRIS must align and satisfy the needs of the organization and its users in order to be successful (Noor & Razali, 2011). On the other hand there canbe undesired and unexpected consequences of HRIS. Undesired consequences refer, for instance, to an increase of quantity but a decrease of quality of applicants in e-recruiting (Strohmeier, 2009). Another important aspect of using information systems is user satisfaction and enhancement of performance. It is often suggested as an indicator of IS success. Many IS empirical researchers have regarded user satisfaction as important proxy of IS success and it is the most employed measure of IS success due to its applicability and ease of use. Within this literature, system and information characteristics have been core elements on user satisfaction which is defined as the attitude that a user has toward an information system (Shibly, 2011).

According to Hagood and Friedman in their study for influence of HRIS on performance indicated that implementation of human resource information systems may be accomplished through the concepts of verification and validation, which is the process of checking that a product, service or system meets specifications and that it fulfills its intended purpose. One of the most significant challenges faced by public personnel executives today is measuring the performance of their human resource information systems. In order to justify the value – added contribution of the HRIS to accomplishing the organizational mission (Hagood and Friedman, 2009); implementing a human resource information systems program may seem a necessary step for a company, but unless it will be an effective tool for HR operations, it will not help increase efficiency and may hinder it instead.

Gasper et al., (2010) in their attempt to conceptualize a general research framework for evaluating HRIS influence on performance, argue that its effectiveness is understood as the degree to which the person developing , implementing or permanently improving human resource information systems believes that the stakeholder (in whose interest the development, implementation and permanent improvement is being made) is better off. In so doing, IS success measures could be classified using its application on HR major functionalities like recruitment and selection, training and development, payroll management and performance management. Further continuous monitoring of system performance, periodic evaluation studies can be conducted to assess the strengths and weaknesses of human resource information systems data supply and demand (HRIS implementation Toolkit 2007). The evaluation should determine whether or not the human resource information systems have performed up to its expectations and if the human resource information systems is being used to its full advantage (Byars and Rue, 2004). The role of electronic management in human resource is important for enhancing organizational performance. This was concluded by Rawash and Seydan in their study on impact of e-HRM on organizational market share (Rawash et.al, 2012). Similarly the researcher reviewed these empirical literature to be able to analyse, compare and make assumptions on the influence of e-recruitment, e-training, e-payroll and e-performance management on the performance of employees in the Kenyan public universities.

Kamau (2013) in his study on influence of HRIS on organizations performance observed that it is important to choose the right human resource information systems. An organization that takes the time to invest in a human resource information system that fits their goals, objectives, mission, and values, is a company that is investing in its future and in its success. It will be necessary to customize any human resource information systems to the unique needs of an organization so the system will remain flexible and relevant throughout the life of the company or enterprise. In the appraisal of

the status of human resource information systems this study will verify and validate its influence on organizational performance by among others determining its success through the system quality, information quality, user satisfaction and net benefits and service quality whose major components are tangibility, reliability, responsiveness, assurance and empathy. Again, Kananu argues that despite the investment of HRIS in the surveyed universities, there is tremendous amount of unrealized HRIS potential in services delivery. Therefore, there is need to diversify the use of HRIS in the universities. This will enable the Universities to efficiently and effectively run Human Resource Management matters. This study therefore intends to identify and give insights on how to improve HRIS for long term sustainability.

2.4.2 Influence of e - recruitment on the performance of public universities

a) E-recruitment

Dery, Grant and Wiben argue that many companies have seen a need to transform the way human resource operations are performed in order to keep up with new technology and reducing the number of employees. The internet has therefore become an increasingly popular way to recruit applicants. Delivering human resource services online supports more efficient collection, storage, distribution and exchange of data (Dery, Grant &Wiben, 2009). Again this is corroborated by Lengnick-Hall and Lengnick-Hall (2007), who attest that human resource information system provides a comprehensive database; which enables organizations to provide structural connectivity across units and activities and increase the speed of information transactions more particularly in recruitment processes. They observe that in so applying information system in recruitment makes the whole process easy and reducing of recruitment coats.

b) Timely Access to information

Kovach et al (2005), Ball (2004), Fletcher (2005), Ngai and Wat (2006), in their study on effects of e-recruitment on performance of public universities establish and are in agreement as to the timely access of information and saving administrative costs by recruiting online. Averbrook (2012) claims that recruitment procedure is one of the last activities most organizations consider important for integration with performance, but it really is one of the most important. As talent becomes harder to find, recruiters look within their own house for the next applicant for that all-important job. Averbrook further argues that recruiters want the ability to understand internal applicants in greater detail than the external candidates, including a performance history and learning details to assess their fit for open positions. The integration of performance into the HRIS, where recruiting data often is housed, would open a new door for continued focus on internal mobility. E-recruitment also would allow Kenyan public universities to profile candidate information on their qualifications and only be able to select the most qualified candidate and have access to this information in a timely span of time.

Aston Beadles II (2012) argues in his research on the impact of e-recruitment and organization performance that HRIS has been envisioned as having a substantial impact on the importance of human resource departments, leading to a more strategic/managerial role and contributing to the organization's competitiveness, as well as creating new paths for HR to add value to the organization. However, HR directors did not perceive that the HRIS had a positive impact on the role of the human resources department in the organization, with only 30% and 40%, respectively, agreeing that the HR department had become more important and had become more of a strategic partner in the institution. The focus of HRIS had begun to shift because of its usefulness in strategic decision making.

Besides, in the context of higher education institutions (Rawat, 2010) informs that the efficiency and effectiveness, the quality of e-recruitment will enable universities to format a profile of their staff, their strengths and weaknesses, so they will know what

they have in the personnel sense. Accordingly they will be able to structure appropriate development promotion, training and recruitment. Therefore then the right people will be in the right place at the right time hence quality HR and personnel management. Rawash further argues that nowadays higher education institutions face a significant task: improving learning environments at the same time reducing administrative operating costs through e-recruitment process. Similarly, Nankervis, Compton and Morrisey (2009) presume that HRIS enable their users to undertake complex analysis of recruitment patterns and trends evaluations of the effectiveness of such process and reports on the costs and benefits of different selection techniques. Other proponents of e-recruitment and selection such as El -kot and Leat (2011) in their survey on recruitment and selection practices in Egypt Education, Business and Society, realized that online recruitment can decrease cycle time and increase the efficiency of the process by allowing organizations to spend less time gathering and sorting data. Dineen andNoe (2010) in their study on applicant pool characteristics in a web-based recruitment, whereby results lead to more accurate assessment of applicant fit and this in effect reduces the number of poor fit applicants. They argue that when organizations properly utilize such a process in their recruitments, they stand to achieve their goals at reduced costs.

The realization that every organization faces the need to invest in its existing workforce - during the late 1990s and early 2000s, recruiting from the outside was the path organizations used to fill the need for talent. With the approach of the talent deficit of 2010, which will mean a shortage of more than 10 million knowledge workers in the United States alone, companies and institutions of all types realized that they must do a better job of re-skilling and retraining their existing labor. Cost reduction is amongst the major benefits of human resource information systems. According to Rangriz, Mehrabi and Azadegan (2011) in their study titled the impact of HRIS on strategic decisions in Iran, in which they concluded that it's time the public sector catches the wave of

technological changes. These researchers observed that on-line recruiting dramatically increases exposure of an organization to applicants at a fraction of the cost of traditional job advertising methods. This response can further be corroborated by early advocates of the use of human resource information systems in the recruitment process. Johan (2014) proposes that use of e-recruitment saves on time and reduces the cost of recruitment process. Labor turnover trends can indicate particular problem areas that need to be corrected before further recruitment takes place. Alternatively if the problems are unavoidable the recruitment campaign can be modified to make allowance for them. Information such as job descriptions and person specifications is readily accessible for recruiters who need such, for example when preparing advertisements and interviewing applicants. Accordingly, human resource information systems can provide both background info to assist attraction, recruitment and selection and analytical information to evaluate its effectiveness.

E - recruitment function as sub processes such as long and short-term candidate attraction, the generation, pre-screening, and processing of applications or the contracting and on boarding of new hires. Online job advertisements on corporate web sites and internet job boards, online CV databases, different forms of electronic applications, applicant management systems, corporate skill databases, and IS supported workflows for the contracting phase are only few examples of the various ways by which information systems today support recruitment processes (Gurol, Wolf andErtemsir 2010). In HR planning process it is easier to follow workforce gaps, the quantity and quality of the labour force and to plan future workforce requirements with the help of HR knowledge systems (Dessler, 2005). Human resource information systems can support long range planning with information for labor force planning and supply and demand forecast; staffing with information on equal employment, separations and applicant qualifications; and development with information on training

programs, salary forecasts, pay budgets and labor or employee relations with information on contract negotiations and employee assistance needs (Shibly, 2011).

c) Applicant Tracking

Applicant tracking is intended to identify the most qualified candidates, reduce paperwork, automate, manage workflows and tap into public to efficiently build your talent pool. It is also meant to monitor reports like time to fill a position and cost per hire with reporting capabilities that are tailored to organizational recruiting process. Besides it can enable candidates to search and apply for jobs online.

Applicant-tracking systems may also include many features and capabilities, such as CV scanning and grading capabilities, profiles of job candidates schedule of duty, letter-generation tools, interview-scheduling tools, cost-analysis reports, applicant demographic and equal employment opportunity information.

Generally human resource information systems makes provision for recording of details of recruitment activities such as cost, application tracking and evaluation, resume management, method of recruitment, interviewing and selection and time to fill the positions. In Kenya a handful of evaluation studies carried out reveal that the need for e-recruitment is vital to an organization efficiency and competitiveness in the growing global economy. Kananu (2013) in a comparative assessment survey on the utilization of human resource information systems in Kenyan universities premises her observations on similar grounds and acknowledges that human resource information systems is to be commonly used for payroll and record management. Besides, HRIS was also found to be used for recruitment, promotions and skills inventory. Kananu study as a result urged that the management of Kenyan universities should allocate adequate resources for the implementation and maintenance of the system. HR managers should play a proactive role to support HRIS implementation in their organizations. Again her study advocated that since the universities in Kenya have adopted different types of Human Resource

information systems, these systems needed to be integrated and exchange data in order to increase availability and readiness of information to support top management on decision making.

2.4.3 Influence of e - training on performance of public universities

The study by Lin on effects of e-training on performance indicates that the training software gives provisions for skills inventory. Lin further observes that the e-training software is used to store record of acquired skills and monitor the skill data base, at both employee and organizational levels. The system can equally be used by managers, employees and training staff to plan and administer all types of training interventions. Typically such systems will hold a range of data: a catalogue of learning options, course dates, HR skills inventory, record of training expenses incurred; competency or training requirements associated with positions/jobs, employee training data (learning plan, training history competencies, qualifications and so on).

a)   HR Skills Inventory

The HR skills inventory capability provides succession planning tools needed to implement and maintain comprehensive talent management, and identify high potential employees as part of an organization wide succession planning process. This capability allows for the establishment of core competency requirements against roles, at all levels within the organization. Appointee's capability is then measured against the roles competencies and supports employee progress towards acquisition of competencies, through training and professional development.

With regard to training and development work focus has been through human resource information systems. The system helps track training, skills and competencies. Human resource information systems can be used to manage human capital and maximize talent. The system stores electronic resumes for each current employee, which gives the

company an electronic inventory of its human capital. It can track where skills are in short supply and HR can develop appropriate training; training needs analysis, training cost benefit analysis, promotion analysis; this supports decision on career management, simulation, training evaluation and decisions (Lin, 2006). De vries et al, (2008) argues that accuracy in data provides for a qualified workforce hence organization performance.

Further studies by Shibly on effects of e-recruitment on organization performance shows that for better tracking and management of employee training, specific training often is required by regulators, and documenting successful course completion can be a major burden for organizations. Employees may be required by law to complete Occupational Safety and Health Act training, sexual harassment courses or patient care procedures. An HRIS can help employees track which courses have been successfully completed and what upcoming training opportunities may fit their needs. Managers can track the training as well as reducing redundancy and training costs. In one option, a Learning Management System (LMS) can be used to manage the administration, tracking and reporting of training in the organization. By allowing the organization and employees to develop talent and skill profiles, sign up form courses, and register course attendance, an LMS can cut costs, streamline training and empower employees to manage their own skill development more effectively-training capability provides employee engagement survey and succession planning tools, needed to implement and maintain comprehensive talent management, and identify high potential employees as part of an organization wide succession planning process. This capability allows for the establishment of core competency requirements against roles, at all levels within the organization (Shibly, 2011).

Generally HRIS is configured to evaluate programs, policies or practices, for instance to evaluate the effectiveness of a training program. The training and development sub system of HRIS includes data on an employee's skills and competencies, training courses taken, costs of courses, developmental activities and career planning in terms of

which positions might be most ;appropriate for an employee based on skills and competencies. Human resource information systems must now be judged on whether it enhances the firm's competitive advantage by adding real value, measurable economic value for instance shortened training circle time, not merely on its perceived value like training builds skills (Huselid, Becker and Beatty, 2008).

Averbrook continues to observe that in the realization that every organization faces the need to invest in its existing workforce. During the late 1990s and early 2000s, recruiting from the outside was the path organizations used to fill the need for talent. With the approach of the talent deficit of 2010—which will mean a shortage of more than 10 million knowledge workers in the United States alone, companies and institutions of all types realized that they must do a better job of re-skilling and retraining their existing labor (Averbrook, 2012). Rietsema (2015) argues that when a company invests in an affordable HRIS for e-training, it suddenly becomes capable of handling its workforce by looking at two of the primary components: that of training and development and that of HR. Beyond these software solutions, companies also invest in HRIS modules that help them put the full productivity of their workforce to use, including the varied experiences, talents, and skills of all staff within the enterprise.

b)   Track and Administer Interventions

In most situations, human resource information systems will also lead to increases in efficiency when it comes to making decisions in e-training. The decisions made should also increase in quality training as a result, the productivity of both employees and manages should increase and become more effective. These systems enable employees to manage much of their own HR administrative work. They can take care of many routine transactions whenever they wish. In addition to their former operational role, HR professionals can also act as a competency manager by arranging the right people to the right positions in the right time with their new skills.

According to El – kot and Leat in their study on e-training observe that career and succession plans - most existing HR solutions provide tools and technologies to store career and succession plans for the workforce. Integrating these plans with performance management processes is crucial to support employee growth and job satisfaction. Executives have requested this data for years, as retention is a top metric within most companies. Today, this data is not a request, but a requirement, and the need to automate a very manual process is crucial for success and keeping a competitive edge. They further observe that competency management: - understanding the skills and abilities of the workforce continues to baffle most executives. Many organizations know more about their IT investments and expenses than about their people. On average, companies spend 8 percent of their total expense line on IT and 70% on labor. The fact that a company would know more about how much memory is in a computer, who sends e-mail to whom and what Web sites get visited most frequently than what their "most important asset" knows illustrates the need for a renewed critical focus on assessing the true value of the workforce (El – kot & Leat, 2011).

When we consider the Kenyan scenario, there are very few studies on evaluations of human resource information systems but which concentrated mostly on record keeping and mainly the payroll; anything similar has been the routine employee satisfaction surveys and the annual ISO inspection which is more manual based and has minimally audit on human resource information systems. Whatever has come out of this is that there is an element of employee dissatisfaction with the training and development function of organizations, several public universities due to lack of effective functioning system for tracking and inaccurate competency analysis to determine who needs training, where and when; proper career pathing to streamline promotions based on competency analysis. This study could not have come at a more opportune time

2.4.4 Influence of e - payroll on performance of public universities

Hegel argues that salary administration, salary review procedure are important functions of HRM. The beginnings of human resource technology arose with the need to process large numbers of employee pay-slips which prior to 1960s was predominantly a manual or clerical exercise. The advent of use of technology to manage payroll signified the first major application of technology to an HR related problem. At the same time it was recognized that such payroll systems often held a useful repository of employee information, including data about jobs, pay, cost, absence levels and personal data. When integrated with payroll management, HRIS payroll interface can calculate salaries and provide a range of supporting functions such as preparing pay-slips and payroll reports. A HRIS may be closely linked to or even a component of an integrated financial management system (IFMIS). With a comprehensive payroll pay card, an organization can offer its employees 24/7 access to funds and on-time pay no matter what, for instance employees on vacation or sick leave and the like), elimination of time-consuming trips to the bank, and more (Hagel, 2012).

a) Salary Reports

A survey by Blair et al (2009) on addressing problems of Human Resource Information System in Swaziland, Uganda and Rwandan government departments revealed that due to poor payroll management, newly recruited staff were often not paid for three to four months and in a few extreme cases staff were not paid for an entire year. Some retired staff died without receiving a pension. Several respondents noted that the process for identifying ghost workers-workers who remained on the payroll but were no longer active in the workforce due to retirement, termination, death and the like and stopping their salaries often took an average of six months, with some cases taking nearly two years.

As concerns compensation, for years, the purpose of the performance review has been to allocate annual salary increases. While this process has generally been handled manually, it also has seen a great deal of controversy and change. Compensation is truly the biggest driver of certain types of behavior and works differently for various job groups. Incentive compensation is a great tool to drive sales and specific performance targets, whereas base compensation is a great tool for driving overall employee satisfaction and improving performance. What has been missing in all links from compensation to performance is measurement of year-over-year increases in performance and the impact that compensation has on performance. Organizations that take an interactive view of the performance management process and ensure that compensation is just one of many outcomes, which might also include promotion, new opportunities for learning and development, and other forms of recognition, understand the importance of integrating performance and HRIS to measure total compensation and rewards. Organizations that still rely on a manual, semi-automated process as a once-a-year, meet-the-requirement tool will soon realize that the war for talent and staffing

shortages will make it necessary to approach pay-for-performance as an integrated process (Avebrok 2012).

When a company invests in an affordable HRIS, it suddenly becomes capable of handling its workforce by looking at two of the primary components: that of payroll and that of HR. Beyond these software solutions, companies also invest in HRIS modules that help them put the full productivity of their workforce to use, including the varied experiences, talents, and skills of all staff within the enterprise observed Rietsema (2015).

In Kenya an evaluation survey at the Ministry of Health in 2009, sponsored by World Bank and USAID revealed that nurses posted to especially the rural areas delayed in reporting but still withdrew their salaries since there was no proper transfer and payroll posting procedures. This caused undue suffering to patients. Equally, it was realized that there were numerous ghost workers in the Ministry of Health payroll; those who had exited due to natural attrition – death, retirement or those whose services had been terminated or resigned were still in the payroll due to lack of effective automation and integration of HR activities.

2.4.5 Objective 4: Influence of e - performance on the performance of public universities Performance management (PM) is a process where the manager and employee create goals and plan to be achieved and the goals must be based on the operational plan of the organization together with the employee development path. The performance management system included with the performance appraisal and the employee development are said to be one of human resource management's risk or issues. The web-based performance system allows the managers to access extract and assess their employee faster and smoothly. It also helps a lot when the performance appraisals need to be calculated empirically. This is because, the system can help them to calculate and extract the percentage for them instead of the managers needed to

calculate it manually. Other than that, the performance management system also can be categorized either as preformatted appraisal systems (a systems that allow the developmental of customized appraisals) or as a systems that diagnose performance problems. Web-based system also provides a calibration tool for the employee performance ratings that allows for visual inspection of the distribution of ratings for a population (Teotia, 2012).

Averbrook in his study of performance management defines it as an integral part of HRIS and that it allows managers and employees to monitor, schedule and complete the review process on line. As a process it is a natural outshoot of all of the work that surrounds the human resource information systems. Whether the actual performance management solution exists within the same human resource information systems or in a separate application is not the issue. The issue is what the process means to the organization, what outcomes the organization desires, and that HR and human resource information systems professionals have an amazing opportunity to leverage their experience to make the performance management process a truly strategic tool to prove the value that HR brings to the organization (Averbook, 2012).

Averbrook further noted that performance management process requires that employees, managers and HR professionals are connected for real time collaboration and communication. Performance management enables HR departments to operate in a more proactive, timely and responsive manner throughout the performance management process. Additionally it helps HR professional's better service managers by putting performance information at their fingertips to identify professional growth opportunities and employee retention and satisfaction strategies. Employees can access current and historical review information as well as receive notification of upcoming reviews (Jiang et. al, 2007). Human resource information systems enhance performance appraisal

system by providing up to date technology that improve communication and collaboration between managers and HR professionals by providing step by step assistance with scheduling, conducting, rating and editing reviews. The world of performance management processes and performance reviews has changed drastically over the years, in both policy and principle. Best-of-breed companies are using the performance management process not only to manage compensation, but also to manage the performance of the workforce and drive it to new strategic levels (Averbook, 2012).

a) Performance Appraisal

Human resource information systems can be integrated to the ERP solutions, which can enable companies to enjoy the ultimate benefit of an all-in-one system that can decrease errors, lower cycle times, reduces turnaround time, and support management decisions. Performance management is an integral part of this capability and allows managers and employees to monitor, schedule and complete the review process on line.

Again advances in technology over the past decade make it possible to deploy performance management tools to the workforce—including employees, managers and executives—with little to no infrastructure or training. Technologies such as on-demand, XML integration and hosted solutions allow HRIS professionals the opportunity to roll out new productivity measurements faster, better and cheaper than ever. Also, reporting technology, including data marts, data warehouses and executive dashboards, brings the results of these tools directly to those who make decisions about how the workforce impacts the business like never before. The performance evaluation subset of HRIS includes information regarding performance ratings, the date these ratings are received, type of appraisals that were used, comments therein and performance objectives and

goals. Recent human Resource information system simulations have also been used to even predict future performances of employees (Harris et al, 2011). The strategic role that learning functions play within organizations today demands that performance management, learning management and other strategic components of human capital management (HCM) become integrated and work together as a seamless process, instead of the siloed approach that HR has taken for the past 60 years. Many organizations feel that they have an integrated process today, but what they actually have is an interface; a point at which independent systems interact. In the recently published IHRIM and Knowledge Infusion Workforce Performance survey, more than 95 percent of respondents said that their workforce performance processes are either somewhat or very limited. Organizations finally see the need to bring the two important processes of performance and learning together. The question is how to accomplish this initiative (Averbrook 2012).

b)   HR Score Card

In the Kenyan scenario, automation of HR score card, which some institutional organizations have adopted, seems to be aiding HRM in bringing the value home that is, making HRM a player in the firm's competitive advantage. However evaluation of the automation of HR score card is still elusive as this is only done by way of auditing the general performance of the HR department through performance contract or by the ISO standards, but not implementing human resource information systems and documenting the influence on organizational performance. Further HR should improve on its score keeping process; measuring HR's impact on organizational performance as well as alternate HR roles in the score keeping process. The HR score card is one of the strategies that come into focus when clarifying HR impact on organizational performance. Operational outcomes of the score card process may include customer satisfaction, service quality, speed of delivery and productivity; doing more with less (Hagood and Friedman, 2002).

c)   Employee Turn- over Record

Employee Turn over records refer to data generated by HRIS subset of e- performance management detailing employees who exit the public universities for some reason or the other.

Employee turnover, which is the total of the number of employees who resign for whatever reason, plus the number of employees terminated for performance reasons, and that total divided by the number of employees at the beginning of the year. This may be measured by analyzing the records that human resource information systems contain of each employee. The separation section lists reason and date of separation for each employee; monthly or when requested; the HRIS group will query the database and provide Departmental Heads with Turnover Reports by posting graphs of each report on the Intranet. It is only a handful of firms which have embraced this level of HRIS such as that the workforce analytics module in Human Resource Information Systems can be used to give crucial information about return on investment on employees. All this information allows for proper decision making in an organization. Furthermore recent human Resource information system simulations have also been used to even predict future performance of employees (Muriithi, Gachunga & Mburugu, 2014). All this information allows for proper decision making in an organization. As talent becomes harder to find, recruiters look within their own house for the next applicant for that all-important job. Recruiters want the ability to understand internal applicants in greater detail than the external candidates, including a performance history and learning details to assess their fit for open positions. The integration of performance into the HRIS, where recruiting data often is housed, would open a new door for continued focus on internal mobility. Also through competency management - understanding the skills and abilities of the workforce continues to baffle most executives. What has been missing in all links from compensation to performance is measurement of year-over-year increases in performance and the impact that compensation has on performance. Organizations

that take an interactive view of the performance management process and ensure that compensation is just one of many outcomes, which might also include promotion, new opportunities for learning and development, and other forms of recognition, understand the importance of integrating performance and human resource information systems to measure total compensation and rewards. Organizations that still rely on a manual, semi-automated process as a once-a-year, meet-the-requirement tool will soon realize that the war for talent and staffing shortages will make it necessary to approach pay-for-performance as an integrated process.

Core HR Information **-** to manage the performance management process in the most effective and efficient manner possible, organizations must leverage the data that exists within their HR systems. This includes basic data, such as name, department and supervisor, but organizations do not often take advantage of other data that could be instrumental to the process. This data includes other employees in the department to support the 360-degree review process, the employees' matrix reporting structure that many organizations adopt today and the comparative data available based on the job code of the employees. The ability to compare and contrast performance of employees with like jobs gives managers and executives visibility and decision-making tools that they have never had in the past. Reporting and Metrics **-** another missing link for the performance management process that HRIS technology can assist with is in the area of reporting and metrics. The two reports that managers traditionally focus on in this area are transactional: How many have been turned in, and how do we look compared to a typical performance bell curve? This information may be great to have, but does it drive business results? Executives want answers to strategic questions, such as: What revenue increases have resulted from a performance management process and allocation of compensation increases? How has customer satisfaction increased because of an increased investment in agents? And how has employee turnover decreased because of a renewed focus on people? The sooner that those involved in the performance

management process stop looking in the mirror at their performance throughout the process and put in place measures that explain how the process has impacted business results, the more value and attention performance management will receive from executives.

Bringing the Value Home - the performance management process is a natural outshoot of all of the work that surrounds the HRIS. Whether the actual performance management solution exists within the same HRIS or in a separate application is not the issue. The issue is what the process means to the organization, what outcomes the organization desires, and that HR and HRIS professionals have an amazing opportunity to leverage their experience to make the performance management process a truly strategic tool to prove the value that HR brings to the organization.

2.4.6 Dependent variable: Public universities performance

To implement HRIS and its influence on public universities performance, there are various aspects that come to play. Public universities needs will be determined by factors such as their sizes, complexities, role of HR functions, volume of information required, speed with which it is required and how the info is to be used (Nankervis et.al, 2009). Nankervis further observes that issues of cost saving retrieval methods, easier access and speedier and more comprehensive reporting will be assessed. HRIS performance measure requires that HRIS is aligned to university performance issues. For this reason HRIS utilization should go beyond e-payroll and tracking employee records. They should connect to the strategic objectives of the public universities, for instance, HRIS should be aligned to their performance issues, like use of technology to evaluate their performance.

i)   Key performance indicators (KPI)

Key performance indicators (KPI) must be key to the university success that is why when identifying the KPIs, it is critical to limit them to those factors that are essential to the university reaching its goals (Reh, 2012) such as the public universities productivity and profitability. Key university performance indicators can also be determined by examining the level of service delivery.

The Business change	**Requires firms**	**Requires HR to**
Environment	**to focus on:**	
-Global Growth -New Technology -Intellectual Capital	-Increasing Value -Organizational Capabilities	-Strategic Partner -Accountability -Manage Talent
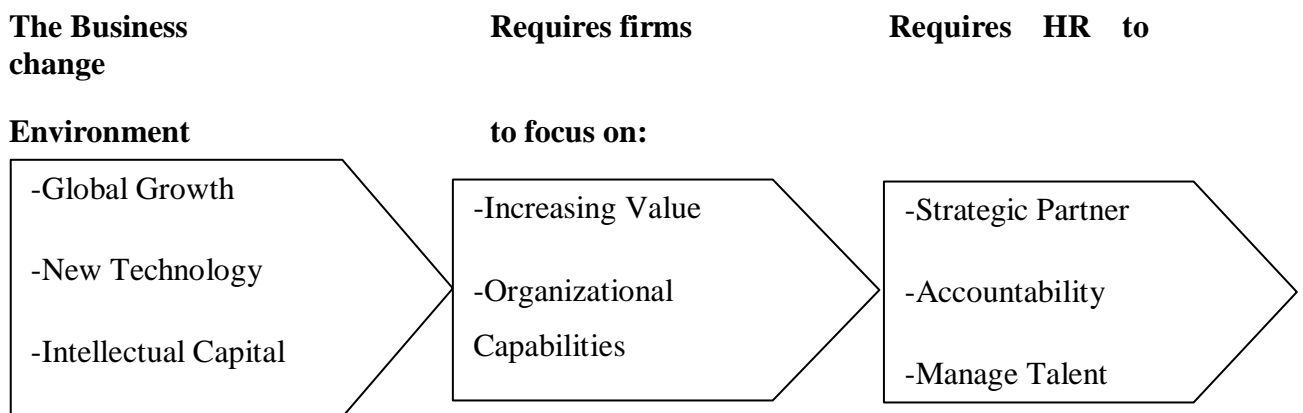
Figure 2.7:HRM/IS/Organizational link

Source: Dattner & Rothenberg (2003)

Moreover, Burbach and Dundon conducted a study in 2008 aimed to assess the strategic potential of HRIS to facilitate people management activities in 520 organizations in the Republic of Ireland. They found that foreign owned large organizations adopt HRIS largely than smaller Irish owned organizations. They also found that HRIS technologies are used for administrative rather than strategic decision-making purposes. Another recent study conducted by Delorme and Arcand in 2010 aimed to elaborate on the development of the roles and responsibilities of HR practitioners from a traditional perspective to a strategic perspective found that the introduction of new technologies in

the organization affect the way HR professionals accomplish their tasks within the HR department and the rest of the organization.

ii)   Service Delivery

Service delivery in the public universities in Kenya has not been much effective for a long time. Both internal and external customers may have to wait for a long time especially for customer care personnel to handle their complaints which lead to a lot of time wastage (Budhiraja, 2009). Most of the public organizations are marred with dismal performance in the facets of service quality including reliability, responsiveness, tangibles assurance and empathy. Budhiraja (2009) further claims that there is lack of transparency, efficiency and unsecured delivery of service. He observes that HRIS can increase the quality of service provided by the public organizations.

HRIS should accelerate HR role of executing the business strategy for HR to become more of a value-added player. HRIS therefore provides opportunity for HR to play a more strategic role, through their ability to generate metrics which can be used to support strategic decision making (Lengnick-Hall et al. 2009). Generally HRM should not be defined by what it does but by what it delivers-results that enrich the organization's value to customers, investors and employees.

Krishnan and Singh (2009) carried out a study aimed to explore the issues and barriers faced by nine Indian organizations in implementing and managing HRIS. The main HRIS problems were HR department lack of knowledge about HRIS and lack of importance given to HR department in the organizations. Another concern is that the level of cooperation required across various functions and divisions of the organization for proper implementation human resource information systems is lacking.

2.5   The Summary

The foregoing summary literature review reveals that the need for efficiency and effectiveness of HR operations and strategic involvement lies in sound HRIS. Organizations have gone out of their way to get this investment implemented. There are success stories, but also littered within are stories of failure. Most of the failure is caused by the people side of the enterprise, which lacks interest and commitment and sometimes feel human resource information system is a technological issue out of their realms of understanding.

Where the HRIS has been implemented, major challenges are also to be found in the measurement and evaluation of the success of the system. Because this is a hard and tall call to make, some organizations aim low (few and routine expectations of human resource information systems and always tend to score that low. This study is seeking to unravel the gains made by HRIS as implemented and evaluated in Kenya and establish challenges encountered and the way forward to managing these challenges.

The framework models aim to illustrate that human resource information systems are an essential factor in a competent organization. In reality, a human resource information system whose strategies are aligned to organizational strategic vision is an open system, where information technology facilitates communication freely between integrated HR features such as recruitment and selection, training and development, payroll and performance management. Such information sharing is crucial to organizations that view human capital as their main competitive advantage. Hopefully, the models reflect these attributes and help to clarify the design of human resource information systems that nurture organizational competence. At the same time, this prototype can initiate more steps to promote progress in both HRIS research and practice. First, these models are going to be tested. Consequently these future insights can be configured to develop improved HRIS evaluation tools. Ideally, these assessment techniques will identify

potential HRIS opportunities and problems with early warning messages that maximize financial and performance outcomes.

2.6 Research Gaps

1. Most of the previous related studies in human resource information systems were theoretical (Ngai and Wat, 2007). In addition, all the revealed studies were conducted in the context of developed countries' organizations and sites. Mueller et al (2010) posit that our current understanding of human resource information systems characteristics is quite limited at present and there is therefore a necessity to suggest general insights. This they suggest in their development of a general framework for human resource information systems. Muturi (2003) in a survey of implementation of HRIS in the Kenyan banking sector argued that further research is required in the use and improvement of HRIS. Ikhlas and Zaid (2010) in their survey of implementation and development of HRIS in Jordanian universities recommend further research in improvement of HRIS at universities in the developing countries.

2. De Vries et al. (2009) in an evaluative survey to strengthen human resource information systems in Swaziland, Uganda and Rwanda suggest that future studies should be geared towards monitoring and evaluation of HRIS to advance the strategic role of the human resource management while at the same time strengthening the use of HRIS in Africa. Al Shibly (2011) in a survey research of human resource information systems success assessment, using an integrative model expressed concern that there was overwhelming demands for useful measures for assessing the overall benefits of IS investment.

3. There is lack of empirical research regarding integration between information system and human resource management to improve organizational performance. There was therefore need for further research to address these voids.

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CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter intended to highlight the research methods that will be used to achieve the specific study objectives that are discussed in chapter one: assessing changes brought about by Human Resource Information System; determine influence on recruitment and selection; training and development; payroll management and employee self-service tool. It focused on research methodology and comprises the following: research design, population, sampling, instrumentation, data collection and operational measures of variables used in the study as well as the statistical tests used to evaluate the hypothesis during data analysis. This research methodology is designed in such a way that it would elicit the perceptions of the staff in particular educational institutions to test hypothesis in order to validate the research study. Robert (2011)argues that the chapter on research methodology should be considered as a studious inquiry or examination, especially a critical investigation with an aim of discovering new facts and their correct interpretation, the revision of accepted conclusions, recommendation,

3.2 Research Design

This study adopted descriptive research design in order to provide a framework to examine current conditions, trends and status of events. Descriptive research design is more investigative and focuses on a particular variable factor. It is analytical and often single out a variable factor or individual subject and goes into details and describing them. The study adopted descriptive research design in order to provide a framework to examine current conditions, trends and status of events. Descriptive research design is more investigative and focuses on a particular variable factor. It is analytical and often single out a variable factor or individual subject and goes into details and describing

them. Bal et. al (2012) in their research on the importance of using HRIS and on determining the success of HRIS used descriptive research design and applied reliability test, one-way ANOVA and attest that these design tools were successfully effective in analyzing the data collected.

A research design is an arrangement of conditions for collection and analysis of data in a way that combines their relationship with the purpose of the research to the economy of procedures (Chandran, 2008). Further it is a detailed outline on how an investigation will take place. Research design typically includes what the sample design will be and techniques of data collection, what instruments should be employed, how these instruments will be used and the intended means for analyzing the data collected. It is argued that researchers face the difficult task of finding a balance between their preparations resulting in a research plan and conducting the research in practice. The researcher adopted a descriptive research because it is conclusive in nature, as opposed to exploratory. Descriptive research was applied in this study of influence of HRIS sub – systems of e- recruitment, e-training, e-payroll and e-performance management to gather quantifiable information that was used for statistical inference on the researcher target audience through data analysis. As a consequence this type of research takes the form of closed-ended questions, which limits its ability to provide unique insights. However, used properly it can help an organization better define and measure the significance of something about a group of respondents and the population they represent.

When it comes to survey study, descriptive is by far the most commonly used form of research, most often, organizations will use it as a method to reveal and measure the strength of a target group's opinion, attitude, or behavior with regards to a given subject. But another common use of descriptive research would be the surveying of demographical traits in a certain group (age, income, marital status, gender, education). This information could then be studied at face value, measuring trends over time, or for

more advanced data analysis like drawing correlations, segmentation and other statistical techniques (Garg, 2013).

Generally the research plan contains the research questions, research purpose a plan for disseminating the findings and an outline of the overall research strategy as well as the specific methods, techniques and instruments to be used. Even though a plan provides structure it should not interfere with flexibility; provides certainty but it should not block other promising options. Researchers from university of Southern Carolina echoed this in their human resource information systems adoption study of 2012.

According to Kothari, a research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Kothari, 2009).This study further adopted a descriptive survey and correlation design to establish the relationship and influence between dependent variable, the performance of public universities and independent variables, the HRIS sub-systems; e - recruitment and selection, e - training and development, e - payroll and e - performance management as indicated in the conceptual framework at figure 2.6 in the literature review section. Descriptive research design is a scientific method which involves observing and describing the behavior of a subject and as Gary (2004) affirms descriptive studies are popular in business research because of its versatility across disciplines. Other similar studies that have used the descriptive research design are researchers like Garg (2013) who applied descriptive research design to his study on the role of HRIS in effective workforce planning and found out that enhancement of HR function is the main goal of HRIS which will indirectly improve business (Martinov et.al 2011). Descriptive research, also referred to as statistical research describes data and characteristics about the population or phenomenon being studied, while at the same time answering questions who, what, where, when and how. It is used for frequencies, averages and other statistical calculations (Saunders et.al 2009). Descriptive research design is preceded by a survey investigation to facilitate adequate

response to the research questions, which characterize the main purées of this study. Survey is considered the most common method of generating primary data and is a research technique in which information is gathered from a sample of people using a questionnaire (Zikmund, 2006). Questionnaires were used in this study to collect primary data. We developed semi-structured interview tools (questionnaires) with open – ended questions. Where possible, sent the questionnaire and consent form to respondents in advance for their review and preparation.The design included quantitative research method whichrefers to the systematic empirical investigation of social phenomena via statistical, mathematical or computational techniques, whose central concern is the process of measurement because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships, which can be generalized to some larger population and qualitative research method which has the aim of description, often followed up with examinations of why the observations exist and what the implications of findings are and further analysis may be complemented by documentary research. Data collection took two and half months. Respondents' feelings, attitudes and motivation in relation to human resource information systems, were examined.

3.2.1   Research Philosophy

The research philosophy that informed this study is positivist philosophywhich allows the researcher to make various assumptions. Such assumptions may include; operating within agreed norms and practices. Positivism belongs to epistemology which can be specified as the philosophy of knowing, whereas methodology is an approach of knowing. As a philosophy positivism adheres to the view that only factual knowledge gained through observation including measurement is trustworthy. In positivism studies the role of the researcher is limited to data collection and interpretation through objective approach and the research findings are usually observable and quantifiable. According to the principles of positivism, it depends on quantifiable observations that

lead themselves to statistical analysis. Besides it has been noted that as a philosophy positivism is in accordance with the empiricist view that knowledge stems from human experience (Collis & Hussey, 2010). This study identifies some of the positivism aspects which recognizes only facts and observable phenomena and follow a deductive theory. Under positivism, theories provide the basis of exploration, permit the anticipation of phenomena, predict their occurrence and therefore allow them to be controlled (Collis et.al., 2010). In positivism philosophy, the reality is object and singular, separate from the researcher. Similarly the researcher is independent from what was researched. The researcher observed the positivism principles and remained impartial only making assumptions and inferences from the statistical analysis of the influence of HRIS sub systems of e-recruitment, e-training, e-payroll and e-performance management on the performance of employees in the public universities of Kenya.

3.3 Target Population

The focus of this study was public universities in Kenya. The unit of analysis was the University of Nairobi, Jomo Kenyatta University of Agriculture and Technology (JKUAT), and Maseno University, which were a representative number of the public universities. Various factors came into play to determine the target population. The University of Nairobi was selected as a target population because of its period of existence as the first public university and its geographical distribution which also determines successful adoption of information technology, including human resource information systems.Jomo Kenyatta university of Agriculture and Technology (JKUAT) was the first university of technology and MasenoUniversity is amongst the.latestfully fledged public universities whose courses are integrated with information technology.The study decided on public universities in Kenya since they could improve on employee performance which Kipkebut (2010) links to inadequate financial resources and rapid expansion, but recommends that further exhaustive study is necessary to explore and create knowledge on these factors which have impacted negatively on the

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physical and human resources and the provision of quality services. Specifically the population consisted of Deputy Vice Chancellors, Principals of the various schools within the university structure, Deputy Principals, Deans, Registrars, Deputy Registrars (policy makers and resource allocators) and employees working in the Human Resource section (operatives).This classification was borrowed and modified from Ikhlas and Al-Shqairat in their 2010 survey of implementation of HRIS in Jordanian Universities. The sample population which formed the sampling frame was arrived at as a result of stratified random sampling.

Table 3.1:   Sampling Frame

POPULATION	UNIVERSITYOF NAIROBI	JKUAT	MASENO	GRAND TOTAL
DVC	3	3	3	9
Principal	6	6	1	13
Deputy Principal	12	12	2	26
Deans	37	8	13	58
Chairmen of Depts	95	33	61	189
Registrar	6	7	2	15
Deputy Registrar	12	14	4	30
HR staff	55	40	20	115
TOTAL	**226**	**123**	**106**	**455**

3.4 Sampling Frame

A sampling frame is a list or other device used to define a researcher's population of interest. The sampling frame defines a set of elements from which a researcher can select a sample of the target population. Because a researcher rarely has direct access to the entire population of interest in social science research, a researcher must rely upon a sampling frame to represent all of the elements of the population of interest(Currivan, 2009). Generally the purpose of sampling frames is to provide a means for choosing the particular members of the target population that are to be interviewed in the survey; a list sampling frame is quite simply a frame made up of a list of the target population units (Turner, 2007).

3.5 Sampling Technique and illustrations

Sampling involves any procedure that uses a small number of items or a portion of a population to make a conclusion regarding the whole population. In other words a sample is a subset from a larger population (Kizmund, 2003). Stratified sampling technique which meansbreaking down the population into subgroups, then take a random sample from each subset willbe used. This is because entire population from which a sample is to be drawn does not constitute a homogenous group given the diversity in external environment, operating and located in different geographical regions; exposure, duration of existence; demography; gender; funding. Stratified sampling can claim to be more representative of the population than the other sampling techniques. Consequently items selected from each stratum (homogenous group) will be based on simple randomized sampling. The entire technique is referred to as stratified random sampling (Kothari, 2008). Mueller et al. (2007) in their survey on whether current HRIS meet the requirements of HRM applied a similar sampling technique with acceptable outcomes. They contended it was cheaper to observe a part rather than the whole, but that we should prepare ourselves to cope with the dangers of using samples.

3.5.1 Sample Size

This refers to the number of items to be collected from the universe to constitute a sample (Kothari 2008). The determination of sample size is a common task for many organizational researchers. Larger sample sizes are more accurate representations of the whole. The sample size chosen should be a balance between obtaining a statistically valid representation, and the time, energy, money, labor, equipment and access available. Further stratified sampling was used. The method of stratification was by job scales/groups and this was done to ensure homogeneity during data collection and ease of administration of the data collection tools like questionnaires. In this study, there were two strata: (academic and non-academic levels). From each of these strata, sampling with probability proportional to size was adopted and this was to ensure that those who completed the questionnaires and interview schedules were of a representative percentage of the target population of study. The thirty percent (30%) plus rule was employed because the sample size derived from it was found to be representative for the target population for the study. It is important to note that the hundred percent (100%) rule may also be used where the population was small; (below 30), but for purposes of this study and due to unavailability of some of the target population, we applied the 30% plus rule by working with 46% of the target population as shown on the table 3.2 below, where the figures in bold and in brackets ( ) represented target sample size for the study. This percentage is supported by Langham (2006). For instance out of 455 potential respondents, 46% of them which was equivalent to 209 respondents should be interviewed because most statistical procedures hold the Law of Large Numbers and Central Limit Theory. Inappropriate, inadequate, or excessive sample sizes continue to influence the quality and accuracy of research as argued by Bartlett (2009). Using sample formula from Mugenda and Mugenda (2003), the sample size for this study will be determined as follows:

$$n = \frac{Z^2 pq}{d^2} \quad \text{when; n = the desired sample size}$$

Where:

z = the standard normal deviate at the required confidence level

P = the proportion in the target population estimated to have characteristics being measured

q = 1 - p

d = the level of statistical significance set

$$= \frac{(1.96)^2 (0.5)(0.5)}{(0.05)^2}$$
$$= 384$$

Since the population size is less than 10,000, the effective sample size will be:

$$n_f = \frac{n}{1 + \frac{n-1}{N}} = \frac{384}{1 + \frac{383}{455}}$$
$$= 209$$

The sample size in this study constituted 46% of the population. This is appropriate size because according to (Cohen, 2005) and (Mugenda & Mugenda, 2003), a sample size of 30% and more enables the researcher to gather sufficient details and enhance the reliability of the study and appropriate for generalization. The sampling frame of this study consisted of selected public universities in Kenya from which a sample size of 46% is obtained as indicated in Table 3.2.

Table 3.2: Sample Size

	Stratum 1 Senior Management	Stratum 2 Middle Management	Stratum 3 Lower Cadre Staff	Total
University of Nairobi	21×46%=10	150×46%=69	55×46%=25	104
JKUAT	21×46%=10	62×46% =28	40×46%=18	56
Maseno	6×46%= 3	80×46% =37	20×46%= 9	49
Total	**(23)**	**(135)**	**(52)**	**(209)**

A sample size of 209 which is 46% of 455 the target population, applied. This included respondents from the academic and non-academic staff, further categorized as the senior management at the universities, Middle level management and the lower cadre staff from human resource department who run the system. The above sample size was considered valid as previous researchers on HRIS have generated acceptable results using similar sample sizes; Ikhlas and Al –Shqairat (2010) in their survey of implementation of human resource information systems in Jordanian Universities generated a sample size of 200; Burbach and Dundon conducted a study in 2005 aimed to assess the strategic potential of human resource information systems to facilitate people management activities in the Republic of Ireland, used a sample size 210; Another recent study conducted by Delorme and Arcand in 2010 aimed to elaborate on

the development of the roles and responsibilities of HR practitioners from a traditional perspective to a strategic perspective employed a sample size 198 respondents.

3.6   Description of data

There were both quantitative and qualitative data. The quantitative data was accessed from the responses of the respondents to the close-ended, predetermined questions where they were expected to just tick (√) the appropriate box that suited or corresponded to their opinion. The questionnaires had structured questions which restricted the respondents to pick responses for questions that elicited such answers as: Yes or No, Strongly agree, Agree, Uncertain, disagree and Strongly disagree, where such questions were each assigned a binary /figure for instance Yes = 1 and No = 2 or Strongly agree = 1, Agree = 2, Uncertain = 3, Disagree = 4 and Strongly disagree = 5.

3.7   Data collection Instruments and methods

For primary data, structured questionnaires were used to collect quantitative data from administrative and HR staff who make use of and operate HRIS. Questionnaires method of data collection is preferred because it is easy to administer and generates faster response. Qualitative data was generated from the open ended questions using the interview guides for the Key Informant Interviews (KII). List of key informers included senior management that is Deputy Vice Chancellors, Principals and Deputy Principals from the University of Nairobi University Jomo Kenyatta University of Agriculture and Technology and Maseno University. Personal interviews are expensive but are most valuable because investigators can utilize visual aids and supplement the interview with observation (Kizmund, 2009). Again this can act as a backup alongside other data collection methods and also enable the researcher to get immediate feedback, by supplementing information not adequately captured in the questionnaires (Mugenda & Mugenda, 2003).

Key Informant Interviews were to gather complementary data on influence of human resource information systems on university performance because it is difficult to capture all the contents, for instance there exist many variations associated with the cost reduction, efficiency improvements. To capture all these variations within a questionnaire is hard and would result in a very large questionnaire. Key Informant Interview allows further uncovering of the actual influence of independent variables on organizational performance during data gathering & therefore create a more representative picture of overall organizational performance. Similar assessment design was used by Al-Ibraheem and Ruel in 2009 as quoted in their handbook of Research on e-transformation and HRM technologies; organizational outcomes and challenges. To collect secondary data, books, journals, internet, organizational publications and relevant written materials will be reviewed.

A survey questionnaire included a covering letter explaining the purposes of the study, assuring the confidentiality of responses, and directions on how to complete the questions (Sanders, Lewis & Thornhill, 2009). The present study was to follow this approach, since the covering letter of the questionnaire includes general instructions, a statement assuring confidentiality and demographical section. In addition the Five points Likert scale will be used with responses ranging from 5= strongly disagree to 1= strongly agree. Each item will ask participants to indicate their agreement about the measured HRIS opportunities and challenges from their point of views. This is adapted and modified from Ngai and Wat (2006).

3.8 Pilot testing of Instruments

Subsequent to surveying the literature for existing constructs, initial item pools were created for each of these. In order to ensure content validity of the item pool, the draft of instrument was pre-tested on 5% of the target population (10 respondents), that is, relevant personnel at selected Kenyan public universities, to find out if the questions

were likely to measure each dimension; identify or detect and eliminate any form of error(s) which could compromise validity and reliability of the instruments. Again whether the questions were vague, ambiguous, and difficult to understand or had contradictions; whether there was incompatibility between any item and the dimension it was supposed to measure and whether it did not fully capture the dimension to be measured. During this exercise, minor errors were detected on the instrument which was later corrected and refined to ensure accuracy of the data collected. Pilot testing at 5% is necessary to ensure reliability of the study tools (Kothari, 2008). Black (2010) argues that this percentage allows for effective interviewer debriefing opportunities preferably group face to face. Pilot testing might further give advance warning about where the main research project could fail, whether proposed methods or instruments are inappropriate or too complicated (Van Teijlingen & Hundley, 2006; Summer, 2013).

3.9   Data Management

The study used descriptive statistics and integrated both qualitative and quantitative techniques in the data analysis. The data was edited, coded and classified so as to present the results of the data analysis in a systematic and clear way. The quantitative data was accessed from the responses. The data was gathered from three public universities in Kenya. The sample represented geographical spread of then seven public universities throughout Kenya. There was a target population of 455. A sample size of 209 which constituted 46% of 455 the target population, was applied and this included respondents from senior management at the universities, middle level management and the lower cadre staff from human resource department who run the system. The above sample size is considered valid as previous researchers on HRIS have generated acceptable results using similar sample sizes; Ikhlas and Al –Shqairat (2010) in their survey of implementation of HRIS in Jordanian Universities generated a sample size of 200; Burbach and Dundon conducted a study in 2005 aimed to assess the strategic potential of HRIS to facilitate people management activities in the Republic of Ireland, used a

sample size 210; Another recent study conducted by Delorme and Arcand in 2010 aimed to elaborate on the development of the roles and responsibilities of HR practitioners from a traditional perspective to a strategic perspective employed a sample size 198 respondents. The researcher was able to pick a population and sample size that would allow the generalization of the research findings.

3.10Processing and Analysis

The guiding principle in data analysis for this study was based on whether the data was qualitative or quantitative. Data generated with a questionnaire for both end-users and operators, in this case senior, middle management and HR employees, the aim being to get insights into what the end-users and operators think and perceive this design was employed for, will be cleaned, edited and coded through a predetermined coding scheme. The collected raw data particularly the qualitative ones were first coded for ease of translation into quantitative data and thereafter analyzed and tabulated using SPSS and MS- Excel software. Variables were defined and frequencies run on the version 23-SPSS software and finally exported to Excel to facilitate generation of tables and figures for data analysis.

By comparing numbers from two different data sets together, correlations observed whether the movement in the value of numbers in one data set was related to movement in the value of numbers in the other data set. For instance, in this study, correlations were used to establish relationship between various independent variables and the dependent variable for example the relationship between e-recruitment and selection, e-training, e-payroll and e-performance management and the performance of public universities.. The relationship of a set of all independent variable in relation to the dependent variable is known as multiple correlations while partial correlation measures a relation between a dependent variable and a particular independent variable holding all other variables constant, Kothari (2009).

The responses were analyzed according to each research question to determine whether or not human resource information systems influences the performance of public universities. Chapman and Websters (2006) in their assessment of use of technology applied similar questionnaire format. Index scores using five point Likert scale ranging from 1 – 5 (with a 5 being strongly agree condition and a 1 being strongly disagree) will

be analyzed to establish Index averages by determining the mean response for all survey respondents in each of the indices. The index scores will be used as the measure for influence of the specific HRIS sub systems such as e – recruitment, e – training, e – payroll management and e – performance management. Ikhlas and Zaid (2010) applied similar analysis in their survey of human resource information systems in Jordanian universities. The general profile section was analyzed by generating frequencies and mean to determine the level and category of usage of human resource information systems. Qualitative data analysis will be used to categorize, tabulate and combine evidences to determine the consistency, adequacy, credibility and validity of the information since qualitative data generated from open – ended questions to the sample population including key informant interview questions are generally non – empirical and will therefore be analyzed using appropriate themes. The statistical analysis was applied to analyze quantitative data. Correlation analysis will determine relationship between the variables after which Chi-square test will be done to assess if there is any statistical significant relationship between the sample characteristics, human resource information systems and the dependent variable organizational performance. From this calculation if significant level is less than 0.05 percent, then the null hypothesis will be rejected. This means that the significant level will be more than 95 percent thus accepting the alternate hypothesis. The alternative hypothesis was confirmed as has been argued by the work of other researchers, namely Pfeffer and Doty (2005, who show a positive relationship between human resource information systems and the university performance.

Multiple regression analysis was the model applied to test the relationship between overall performance in public universities and the independent variables (x_1, x_2, x_3, x_4), since more than two variables are being tested (Kothari, 2008). It is a useful technique that can be used to analyze the relationship between a single dependent (criterion)

variable and several independent variables (predictor or explanatory) variables at one time. In this analysis, a set of independent variables was weighted to form the regression variate (regression equation or model) and that may be used to explain its relative contribution toward one dependent variable (Al Shibly 2011). The multiple regression model was articulated as below:

$$Y = \alpha + \beta_1 x_{1} + \beta_2 x_{2} + \beta_3 x_{3} + \beta_4 x_{4} + e$$

Whereby

–

Y=Dependent Variable (performance of public universities)

α = constant (HRIS)

x = Independent Variables

x_1= e-recruitment and selection

x_2= e - training and development

x_3= e - payroll management

x_4= e - performance management

β = regression coefficients of x_1, x_2, x_3, x_4

e = error term which is here assumed to be normally distributed with mean 0 and some constant variance.

This analysis wascarried out to better understand the relationship between human resource information systems application on recruitment and selection, training and development, payroll and performance management and the dependent variable, public universities performance. The variables as described by the conceptual framework, Figure 2.6, were earlier tested using the multidimensional indicators of measurement, based on theoretical underpinnings such as Technical Acceptance Model (TAM), the updated De Lone and McLean IS success model and the Servqual measurement model.

3.10.1 Test of content Validity and Reliability

Validity indicates the degree to which an instrument measures what it is supposed to measure. Content validity, a subset of validity is the extent to which a measuring instrument provides adequate coverage of the topic under study. Its determination is primarily judgmental and intuitive (Kothari, 2008). Reliability has to do with the accuracy and precision (consistency) of a measurement procedure. Reliability index of the instrument was established through Cronbach's Alpha statistical model as below:0 $\leq$ Z ≤ 1 where as if ≥ 0.7 then the instrument is reliable.

3.10.2 Hypothesis Testing

To test hypothesis, Beta and t – test was applied. This is the most widely used statistical test of all time (Lowry 2010). It is simple, straight forward, easy to use and adaptable to a broad range of situations. Its utility is occasioned by the fact that scientific research very often examines the phenomena of nature two variables at a time, with an eye toward answering the basic question of the level and significance of their relationship.

Table 3.3:   Hypothesis Testing

S/No	Hypothesis	Test
1.	ruitment and selection procedure has influenced the performance of public universities.	t – test
2.	E - training and development process has influenced the performance of public universities	t - test
3.	E - payroll management has influenced the performance of public universities	t – test
4.	E - performance management has influenced the performance of public universities	t – test

Details of t – test

To test the significance of each of the partial regression coefficient, the prediction would be that each independent variable had no influence on the performance of public universities that was $\beta_j = 0$ otherwise $\beta_j \neq 0$; $j = 1,2,3,4$.

H_0: $\beta_j = 0$; x_j HRIS does not influence performance of public universities.

Vs

H_a: $\beta_j \neq 0$; x_j HRIS influences performance of public universities.

Test Statistic   Tcalc = $\beta_j / S_{\beta j}$

Critical value   T crit = t n - 1 (1 - $\infty /_2$)

 Conclusion   - Rule based on Tcalc&Tcrit.

According to the Decision rule: If calculated value (t – calculate) is less than critical value(t – tabulated): t calc $\leq$ t crit then we reject the null hypothesis (H_0)and conclude that there is some level of significance, therefore HRIS influence the performance of public universities.

ANOVA test was carried out to determine the variations/level of significance/difference in the employee perceptions of influence of e – recruitment procedure, e-training and development, e-payroll and e-performance management on the performance of public universities.

3.11 Conclusions

This research study involved testing hypotheses about the relationship between distinct result, dependent variable which was the performance of public universities and four independent variables; human resource information systems application on recruitment and selection, training and development, payroll and performance management. The results of this research study was based on careful development of the research instruments for collection of data, analysis and making provisions for inferences while answering the research questions. Validity and reliability of the constructs has been confirmed to ensure efficacy of this research study. This chapter is the blueprint and backbone of the research as it affirms the correlation between the two preceding chapters and the last two chapters of this study.There were both quantitative and qualitative data. The quantitative data was accessed from the responses of the respondents to the closed ended questions where they were expected to just tick ($\sqrt{}$) the appropriate box that suited

or corresponded to their opinions. The quantitative data included such questions that elicit such answers as; yes or no, strongly agreed, agreed, undecided, disagree and strongly disagreed where such questions were each assigned a binary/figure for instance yes = 1 and no = 2 or strongly agree = 1, agree = 2, undecided = 3, disagree = 4 and strongly disagree = 5. On the other hand, responses given for the open ended questions by filling in the blank spaces elicited qualitative data.

CHAPTER FOUR

RESEARCH FINDING AND DISCUSSION

4.1 Introduction

The study sought to investigate influence of human resource information systems on performance in public universities in Kenya. Specifically it explored how the application of this system on recruitment and selection, training and development, payroll management and performance management influenced the performance in public universities. This chapter therefore, presents report on the findings, data presentation, data analysis and the discussion of the findings. The data was analyzed by use of descriptive and inferential statistics.

4.2 Response Rate

A total of 187 questionnaires with self-explanatory questions were administered to both Academic and Non- Academic employees of 3 public universities in Kenya. Separately 23 interview guides were administered among senior management officers of the three Public Universities and20 of them were interviewed and recorded. It therefore means that the total number of questionnaires, 86 and interview guides, 20, filled, recorded and returned were 106, out of the cumulative 210 administered which translated into 51%response rate. Similarly a study by Holbrook to establish the acceptable response rate in social sciences surveys revealed that response rate of50% is representative and is within the desirable response rate (Holbrook,2009).

4.4 Demographic data

This section of the report provides brief background information about the respondents in the study in terms of their gender, age,level of education, category of staff, length of service and length of time since HRIS was implemented at their university institutions.

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4.4.1   Gender of Respondents

The findings of the analysis of the gender bio-data specified that there were more female respondents (53.5%) against male respondents (45.3%) while a paltry 1.2 of the respondents declined in making their gender known (see Figure 4.1). The test was to determine whether the number of respondents meet the 1/3 gender thresh-hold/ balance as observed by Dalton, Barbara and Heyward 2010. However, although the female were more than male, the difference was not significant and therefore the study was not skewed towards any gender. Series 1 in Figure 4.1 indicates the frequency/number of respondents while series 2 depicts the percentage of response. Likewise the system as reflected in the same figure represents the percentage and actual number of respondents who abstained.
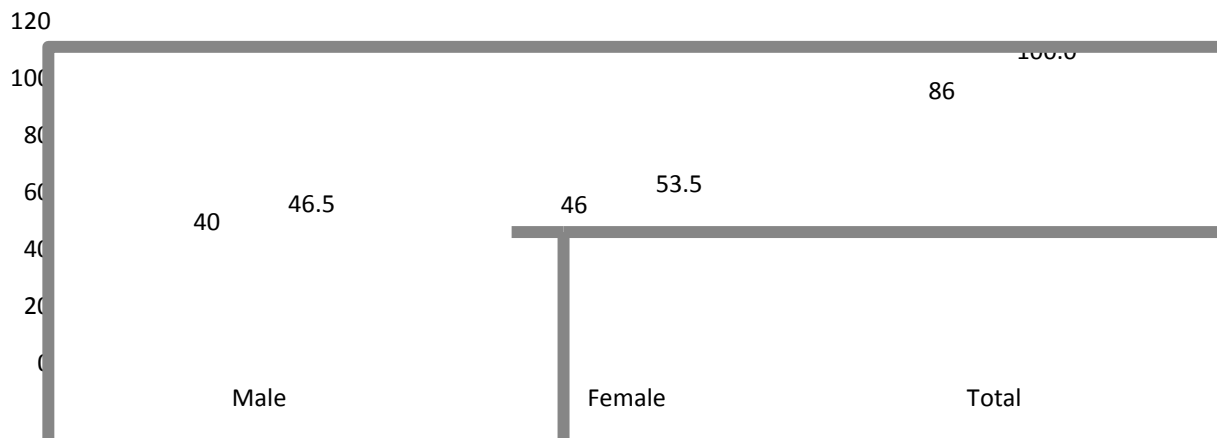
Figure 4.1   Gender of respondent

The research also established that most of the respondents were young and middle aged people. It is perceived that young and middle aged people accept change without difficulty; therefore, they will embrace the human resource information systems more easily.

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Figure 4.2 shows that out of 106 respondents 15.1% were between the ages of 18-30, 38.4% which was the majority were at 31 - 40, 32.6% were between 41 and 50 while 14% were over 50 years. The age of the respondents was considered in this research for purposes of rationalizing the level and speed of digitization. The practical implication based on findings at Figure 4.2 that most of the respondents, 38.4%, were between the ages 31 – 40 years is that usage of human resource information systems is significant within the middle ages of employees at the public universities. Age is an important factor to determine the level of involvement of people in the usage of information systems (IS).
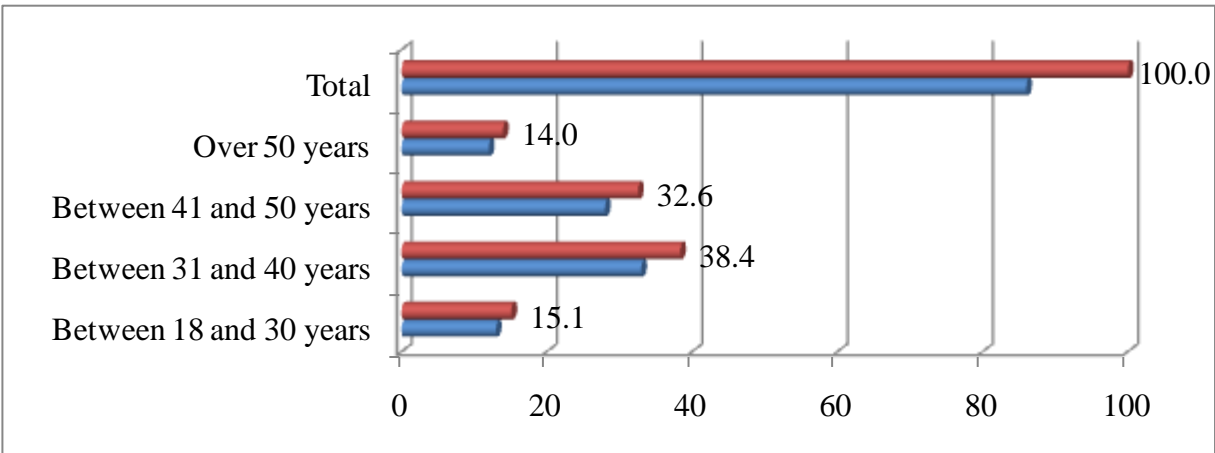
Figure 4.2   Age of respondents

Given the education levels of the respondents, majority possessed university degrees meaning they were competent and qualified employees. They had the requisite academic credentials to understand the area of HRIS. This also implies that the respondents had the capacity to give quality response for the purpose of this study. The majority of the respondents were at first degree at 36.1%,O'level was at 2.3%, A'level at 1.2%, diploma

at 24.4%, Master's degree at 18.6% with PhD at 17.4%. This reflects the fact that the ratio of degree holders to non - degree was substantial at 70.9% cumulative, and that the level of literacy and understanding of the information technology is high and again their frequent application of human resource information systems in the decision making of the organization may therefore influence the overall performance of their universities.

Table 4.1   Level of Education

	Frequency	Percent
O'Level	2	2.3
A 'Level	1	1.2
Diploma	21	24.4
First Degree	31	36.1
Master's Degree	16	18.6
PhD	15	17.4
Total	**86**	**100**

In the category of employment status of the respondents,51.2%were academic staff while 47.7% were non-academic. This reveals the level of competency and usage of the HRIS technology. Their status at the public universities with a greater percentage, 51.2% holding the academic portfolio implies their perceptive indulgence in the implementation of human resource information systems.This status is graphically indicated at Figure 4.3
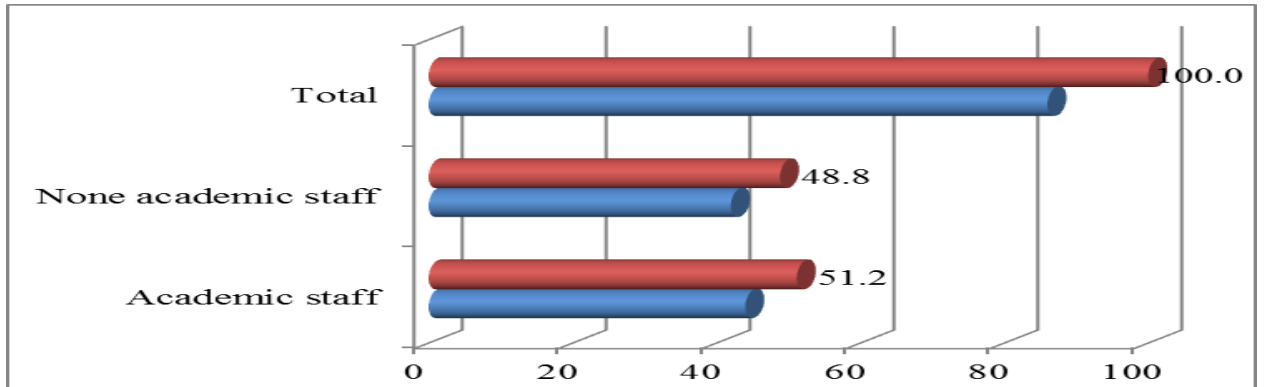
Figure 4.3   Category of staff

The respondents were further categorized according to their position in the organization reflecting cumulatively that 40.7% of the staff werebetween job scale 11 − 15. This as we came to find out constitutes the senior management category of the university fraternity. Their rank in seniority implies that they were in a position of decision making and thus perceived to have influence on the implementation of human resource information systems. Being part of the senior management, this group of supervisors employ the use of HRIS frequently, especially during organizational HR planning, short-listing, training, transferring and retiring and especially its decision making tool.
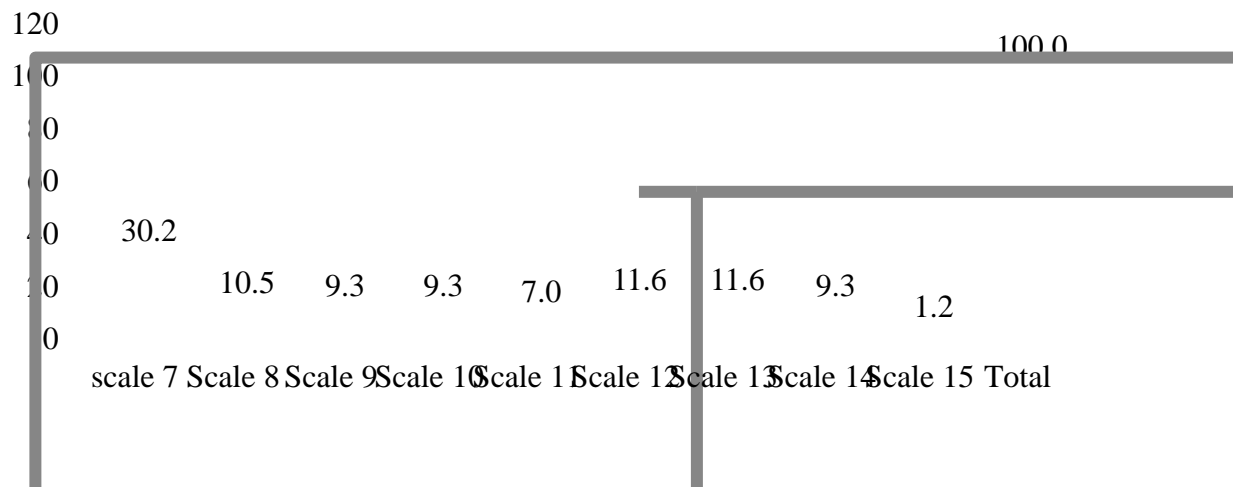
Figure 4.4   Job/Scale groups of staff

Age of human resource information systems can be considered as the length of time an institution has been committed to information technology (IT) and it has been found to have a strong effect on the success of IT in an organization. As can be seen from Table 4.2 the majority of public universities involved in the study, cumulatively 80.7% have been using Human Resource Information Systems for the past 5-10 years and above 10 years, while a recognizable percentage (23.3%) of the public universities have also been using it for the past 1 - 4 years. This shows that human resource information systems has been in use for quite a while and therefore means that majority of staff utilize and access this technology to resolve HR issues timely and effectively. The finding is consistent with previous studies Magii and Watt (2009) and is quite reliable.

Table 4.2 Age of Human Resource Information Systems

	Frequency	Percent
Between 1 and 4 years	20	23.3
Between 5 and 10 years	32	37.2
Above 10 years	34	39.5
Total	**86**	**100**

4.5 General Objective: Influence of Human Resource Information systems on the performance of Kenyan public universities.

The general objective for the study sought to assess how Human Resource Information Systems influence the performance of Kenyan public universities. The study specifically examined the extent to which human resource information systems on some key aspects of HR process and procedures such as recruitment and selection; training and development; payroll and performance management influence the performance of public universities. This section and subsequent sub - sections of similar study variables discuss the data analysis report and provide information about the extent of influence according to the opinion of the respondents. The primary study instrument was rated on the scale (1 = Strongly agree, 2 = Agree, 3 = Uncertain, 4 = Disagree, 5 = Strongly disagree) and "yes"/"No" for the interview guide.

4.5.1 HRIS serving intended purpose?

To determine the general influence of Human Resource Information Systems, the respondents were asked through the interview guide if HRIS at their campus was serving its intended purpose,58.8% of them observed "yes" while the rest 41.2% selected "no" response as indicated by the graph at Figure 4.5.

Furthermore the respondents who observed a "yes" answer had the following comments to make: a) Ease of use – It is faster, much quicker and easy to navigate and obtain and retrieve information from electronic records. To analyze this perception of respondents the researcher relied on the theoretical framework of the technology acceptance model (TAM) to interpret and describe the above perceived ease of use. TAM model articulates that ease of use depends on the perceived usefulness and attitude towards actual usage. TAM theoretical model was selected because of its practical and cost- effective method for evaluating new technology and predicting the degree to which the end-users will actually use that technology. This model is supported by Taylor and Todd (1995) in their comparison of theoretical models to apply on study of information systems. They found out that TAM provided a good fit to data, explaining the variance in behavior, intention, and attitude. TAM's value lies in its parsimony, specifically; the model is strongly grounded in existing psychological theory, yet is easy and as a result, cost-effective to apply. Furthermore, it makes explicit links to the concept of usability by means of the ease-of-use construct. This is further corroborated by Buerno and Salmeron (20008) in a study on TAM based success modeling in ERP in which they found that perceived ease of use (PEOU) has positive effects on enterprise resource planning. This confirms the respondents perception that Ease of Use facilitates ease of e-recruitment, e-training, e-payroll and e- performance management to influence the performance of public universities.

b) User friendly – this positive response means that majority of staff are able to interact with the human resource information systems interface and this can enable them to perform their e-tasks effectively to influence organizational performance. Servqual model and De Lone and McLean IS model were applied to interpret respondent perception of HRIS as user friendly. Both models articulate the phenomenon that user satisfaction and information system success can be measured by looking at the reliability, responsiveness, usefulness of the system, which leads to individual impact (users' satisfaction or dissatisfaction) and organizational impact (net benefit).The models maintain there is significant relationship between "system quality" with "user satisfaction" and "individual impact" and between user satisfaction and individual impact (De Lone & McLean 2003).The descriptive results of this study as evaluated by the two theoretical models reflect that HRIS has influence on the performance of public universities. This is supported by Teotia (2012) in an HRIS performance evaluation survey in which the findings revealed that user satisfaction or experience is critical to long-term organizational success.

c) Saves time and funds - this result may be inferred to mean that the users can now utilize the extra time and funds savings to concentrate on productivity and thereby influence overall organizational performance. The updated De Lone and McLean IS model stipulates that time and funds saved by use of information systems contributes to the net benefits to the organization.

Human resource information systems has transformed the operations of the human resource function and this has influenced overall performance of the Kenyan public universities, as is evident from the above responses received from direct interview of the senior officers at the various selected universities. However, there was considerable percentage who observed that the HRIS was not serving its intended purpose and that its influence was wanting. This may hinder human resource information systems contribution to the overall universities performance. Again they commented that in their

organization, this technology was at its initial stages of implementation. In one organization it was confirmed that only the payroll automation was serving its intended purpose. Further, others mentioned that insufficient financial support and lack of computer competency may impact on HRIS performance. Gauging the influence of human resource information systems on overall organizational performance can be complex and difficult to achieve, but this has been attempted by previous proponents of HRIS such as Adams, Clarkson and Skeels (2009), researchers from Georgia Technical Research Institute (GTRI)who joined the effort to carry out an independent software evaluation of the new system and the overall usability of the system in Kenya and Zimbabwe health sectors and encouraged frequent monitoring and evaluation for HRIS to serve its intended purpose. More important there was a statically a significant deference between the respondents who supported and agreed with the functioning of human resource information systems and its influence on public universities against those who disagreed, therefore it is accurate to state that HRIS was serving its intended purpose at the institutions covered by this study. On the other hand Teotia (2012) in her HRIS study concludes that the persistent pressure to reduce Human Resource costs has resulted in reduced HR staffing, benefits slashing, and decreased HR services.

Figure 4.5   HRIS serving intended purpose?

4.5.2 Does HRIS generate reliable data useful in decision making?

To the question whether human resource information systems generate reliable data useful in decision making, 77% of key informants were of the "yes" opinion while 23% said "no" as indicated in Figure 4.6. The respondent who observed "yes" argued that data generated enable senior management to easily internalize and make strategic decisions. This capability means that HRIS offer many administrative and strategic advantages for real-time HR planning and informed decision making. This gives the public universities competitive edge and also denotes that the human resource practitioners are quickly becoming strategic partners in their public universities as they can now play critical role in organizational decision making, whether it concerns the recruiting, training, compensation or performance management and contribute to the universities success. Perceived usefulness of HRIS is supported by the TAM model, while reliability and responsiveness of HRIS is articulated in the servqual model which stipulates that reliability and responsiveness leads to user satisfaction and this can influence universities performance. Kadian and Kundu (2012), in their study on application of HRIS on HRM in India supported the assertion that HRIS is useful I decision making by concluding that service companies in India find application for HRIS for decision making as important.

Does HRIS generate data useful in decision making?
- Yes
- No

Pie Slices show Percent

4
23.5%

13
76.5%
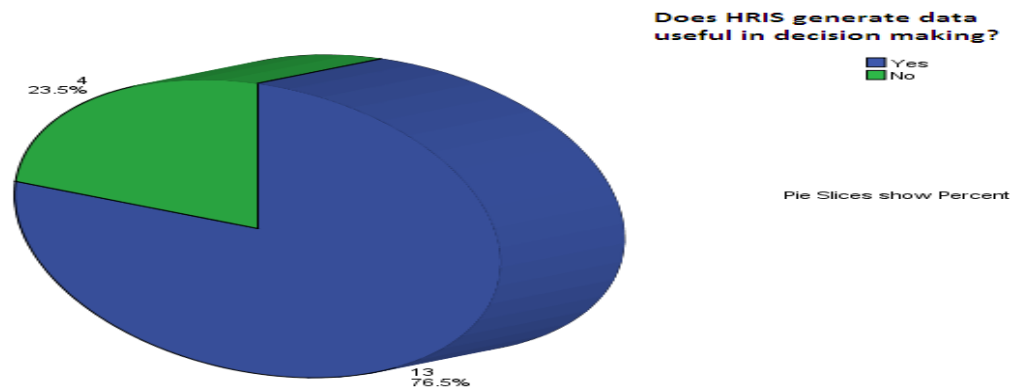
Figure 4.6   HRIS data and decision making

4.5.3   Barriers to HRIS for effective performance of public universities:

In Figure 4.7 when the respondents were questioned about the barriers to human resource information .systems for effective overall universities performance, 53% stated that the cost of installation was inhibitive; he cost of installation and may be even higher to maintain. However cost of installation may seem expensive at the initial stage but the long term benefits are enormous as can be seen from the positive responses in this study. 23% blamed poor skills/expertise - not every employ at the universities knows how to operate the system installed.   18% argued that it was bureaucracy while a paltry 6% believed that it was lack of seriousness among the institutional leadership. Proponents of HRIS research argue that computer literacy and competency is a great drawback to the advancement of HRIS technology; obtaining organizational 'buy-in' regarding the strategic contribution of the HRIS has, in some cases, been hindered by skepticism; a lack of understanding, insufficient management commitment, and fears that existing modes of work will be changed and result in, for example, job loss or altered leave entitlements and shift arrangements (Dery, Grant &Wiblen, 2009).
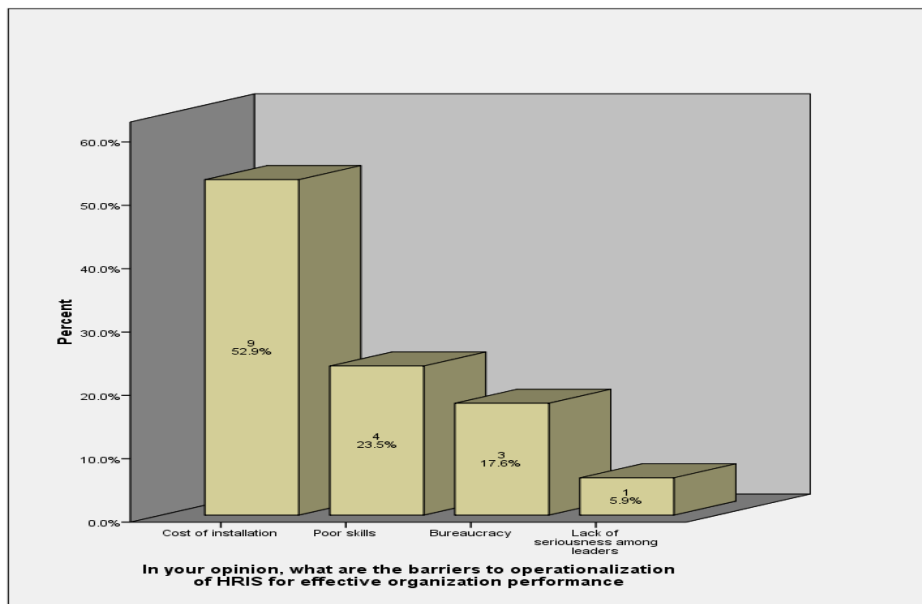
Figure 4.7   Barriers to HRIS

4.5.4   Does HRIS provide quality assurance of data provided by HR staff?

The interview schedule sort to obtain the opinions of the key informants on quality offered by the human resource information systems. The results, as portrayed in Figure 4.8, indicated that 71% of those interviewed were positive that human resource information systems offer quality assurance of data provided by the human resource staff, while 29% thought to the contrary. Servqual and IS success models by Parasuraman et.al (1989) and De Lone and McLean (2003), respectively, were applied to measure and interpret the quality assurance ofdata produced by HRIS. Servqual is constructed on the proposition that service quality can be measured as the gap between the service that customers expect and the performance they perceive to have received (Landrum, Prybutok, Kapplemen& Zhang, 2008).   De Lone and McLean IS model depicts that use of the system and its information products impacts or influences the individual user in the conduct of his or her work, and these individual impacts collectively result in organizational impacts. De Lone and McLean (2003) refined their

model by merging all impacts (including organizational and individual) in one generalized component, net benefits to the organization. This causal or variance model studies the covariance of the success dimensions to determine if there exists a causal relationship among them. For example, higher system quality is expected to lead to higher user satisfaction and use, leading to positive impacts on individual productivity, resulting in organizational productivity improvements. Quality assurance from automating the universities existing processes generates a better and more spontaneous user experience in the public campuses. Furthermore there was a statistically significant difference between the respondents who supported and agreed with the human resource information systems and its influence on public universities against those who disagreed.
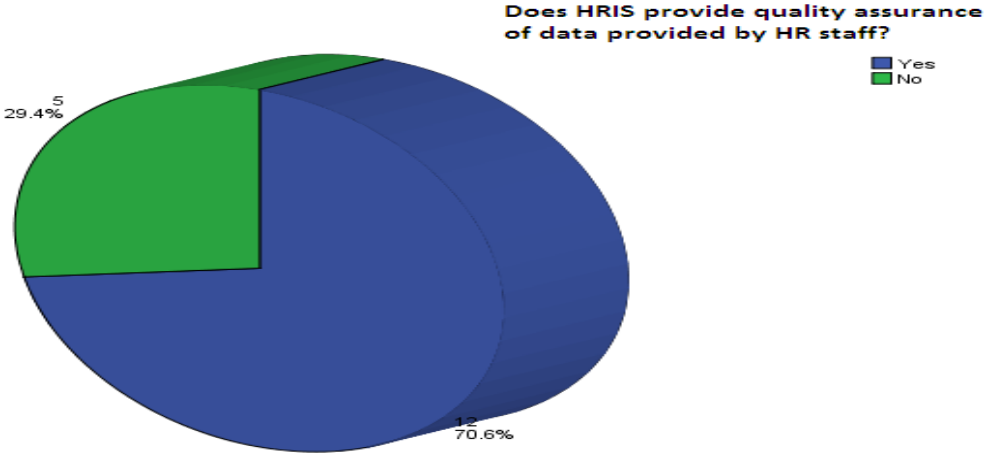
Figure 4.8   HRIS and quality assurance

4.5.5   Do you support human resource information systems in your organization?

When above questions was asked during the personal interviews, 77% observed that they support implementation of HRIS, while33% said "no". Key informants who supported the system said once the installation was completely in place, it would improve greatly the efficiency of organizational HRM. The respondents for this research question further argued that they supported HRIS because it sought to achieve alignment of HR strategies with overall organizational strategies. Noor & Razali(2011) support this line of thought by emphasizing that HRIS must align and satisfy the needs of the organization and its users in order to be successful. The key benefits of HRIS were revealed to be as follows; higher speed of retrieval and processing of data; reduction in duplication of efforts leading to reduced cost; ease of use and again better analysis leading to more effective decision making and also improved quality of reports and establishing of streamlined and systematic procedure. This was evaluated by the servqual and the updated IS success model by De Lone and McLean (2003). The two theoretical models suggest a construct that evaluates HRIS effectiveness and success through service quality, responsiveness and reliability of the system, information quality, which generates user satisfaction and individual impact and this leads to organizational impact and net benefits to the institutions. The respondents also argue that when HRIS is implemented in the institutions, it makes work easier hence reducing paperwork within the institution and enhance the institutional competitiveness.
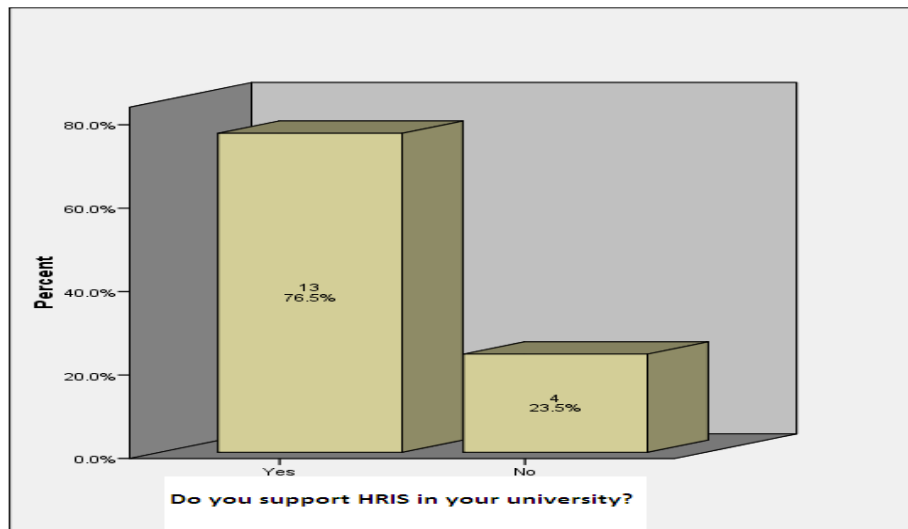
Figure 4.9 Staff support for HRIS

On the contrary, those who argued for "no" maintained that they were yet to realize the purpose and advantages of HRIS. They maintained that there was no evident management motivation, sensitization and encouragement for the employees to use HRIS.

4.5.6   What would you prefer to see done differently during introduction of HRIS

(5% argued for retention of staff, 29% was for increase of salary for operators, while 12% argued for management support. Other key informants whose categories were not included in the above thematic serialization thought that e- resources should be well used and that all human resource features to be online. Some respondents said that the HRIS system should be customized to the organizational needs and awareness created to the whole campus fraternity. It came out from the responses that computer literacy and competency is a great drawback to the advancement of application of human resource information systems technology and the respondents suggested that awareness should be created besides training of employees on computer competency programmes.. Further

another thing that a significant number of respondents wanted done differently is for their institutions to outsource the human resource function arguing that another way by which the human resource function can increase efficiency and effectiveness was by outsourcing work that is done effectively by outside vendors specialized in a given human resource process or set of human resource activities. Similar observations is acknowledged by .Kananu (2013) in a comparative assessment survey on the utilization of human resource information systems in Kenyan universities, that HRISis commonly used for payroll and record management, recruitment, promotions and skills inventory, but maintains that the management of Kenyan universities should allocate adequate resources for the implementation and maintenance of the system. HR managers should play a proactive role to support HRIS implementation in their organizations. Again her study advocated that since the universities in Kenya have adopted different types of Human Resource information systems, these systems needed to be integrated and exchange data in order to increase availability and readiness of information to support top management on decision making.
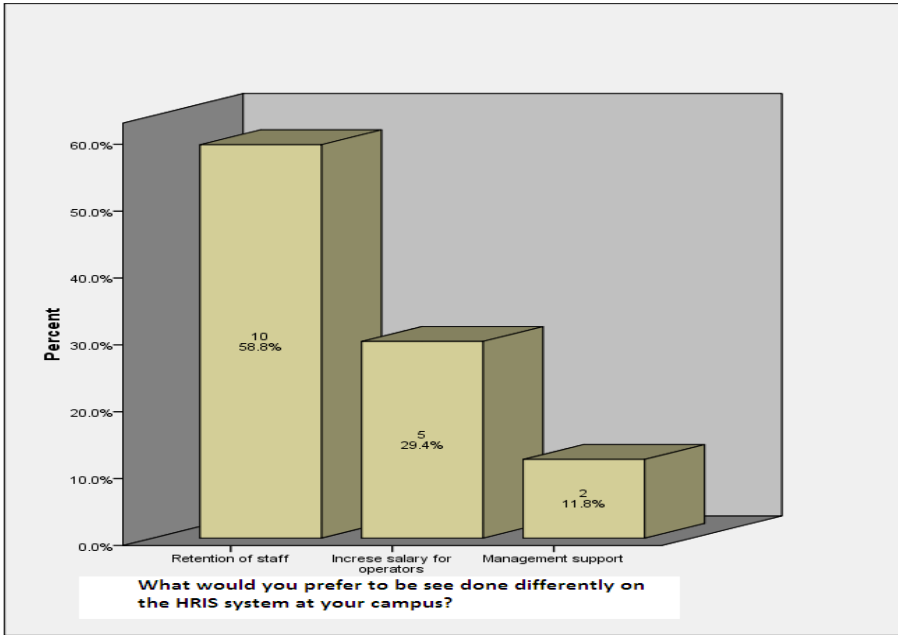
Figure 4.10   What should be done differently?

The researcher also used the HRMIS/organizational link model at Figure 2.7 to further validate the influence of HRIS on the performance of public universities. The model explains what the business environment should do to achieve global growth that is to introduce new technology, sustain intellectual capital, continuous change and competition; requires firm to focus on attracting and retaining talent, increasing value and HR to change to strategic partner and manage talent.

Normality Test for Public Universities performance

An assessment of the normality of data is a prerequisite for many statistical tests because normal data is an underlying assumption in parametric testing. There are two main methods of assessing normality: graphically and numerically.

Statistical tests have the advantage of making an objective judgment of normality, but are disadvantaged by sometimes not being sensitive enough at low sample sizes or overly sensitive to large sample sizes. As such, some statisticians prefer to use their experience to make a subjective judgment about the data from plots/graphs. Graphical interpretation has the advantage of allowing good judgment to assess normality in situations when numerical tests might be over or under sensitive, but graphical methods do lack objectivity. If you do not have a great deal of experience interpreting normality graphically, it is probably best to rely on the numerical methods.

Statistical errors are common in scientific literature and about 50% of the published articles have at least one error. The assumption of normality needs to be checked for many statistical procedures, namely parametric tests, because their validity depends on it.

Table 4.3:   Normality Test: One-Sample Kolmogorov-Smirnov Test

		UNIVERSITY PERFORMANCE
N		85
Normal Parameters[a]	Mean	31.1637
	Std. Deviation	9.27647
Most Extreme Differences	Absolute	.082
	Positive	.082
	Negative	-.048
Kolmogorov-Smirnov Z		.757
Asymp. Sig. (2-tailed)		.615

H_0 The data is normal in distribution

Vs

H_a The data is not normal in distribution

Since the P-value = 0.615, we fail to reject H_0 and conclude that the data is normally distributed.

4.6 Influence ofe – recruitment and selection on universities performance

Under this study variable, descriptive statistics about the findings on the extent to which aspects of application of HRIS on recruitment and selection function such as e-recruitment, applicant tracking, timeliness, effectiveness; cost reduction on the process influence university performance is illustrated in Table 4.19 (see appendix 6). These findings are discussed and interpreted using Technology Acceptance Model (TAM), Servqual and De Lone and McLean IS success models.

In response to the question as to whether their organization deploys HRIS in the recruitment and selection process, 59% of the respondents agreed that their organization

has introduced human resource information systems in the recruitment and selection process, while 18% disagreed and 23% of the respondents were uncertain. from this response it is clear that HRIS is positively implemented at the public universities and this influences to a certain level, the overall performance.

The respondents observed positively when asked the question of service quality assurance and HRIS. The results indicate that 52% agreed, 18% disagreed while 30% disagreed. The Servqual and the Updated De Lone and McLean IS models which are valuable analytical tools in the evaluation and measurement of service quality were applied in the analysis of the above question. Servqual model upholds that services and innovation are becoming increasingly vital if the service sector of the global economy, of which Kenyan public universities is part of, is to grow. De Lone and McLean IS model corroborates Servqual model and are in agreement that an IS is first created, containing various features, which can be characterized as exhibiting various degrees of system and information quality. The use of the system and its information products then impacts or influences the individual user in the conduct of his or her work, and these individual impacts collectively result in organizational impacts (De Lone & Mc Lean 2003). The majority of respondents confirm this when they agree that HRIS has brought about service quality assurance. The automation of HR functions in the Kenyan public universities assures service quality which impacts the performance of these institutions.

Additionally in response to the question whether introduction of HRIS provides a comprehensive database for applicant tracking, 63% of the respondents agreed that HRIS provide comprehensive database for applicant tracking10% disagreed, while 27% were uncertain. The findings signify a positive relationship between the independent and the dependent variable as confirmed by the positive response of the majority of respondents that HRIS provides comprehensive data. This is confirmed by Johnson and Gueutal (2011) in their study on the use of HRIS in organizations, that HRIS through the web –based technology helps organizations attract a stronger and more diverse applicant

pool. Similarly when the respondents were asked to state whether HRIS ensures timely access to recruitment information 60% agreed 12% disagreed while28% were uncertain. This highly positive affirmation by the respondents can lead this research to infer that there is a high likelihood that timely access to recruitment information contributes to the success of the organization. This is corroborated by proponents of e-recruitment and selection such as El –kot and Leat (2011) in a survey of recruitment and selection practices in Egypt Education, Business and Society, realized that online recruitment can decrease cycle time and increase the efficiency of the process by allowing organizations to spend less time gathering and sorting data.

In response to the question HRIS ensures effectiveness of the recruitment and selection procedure, 65% agreed, while 11% disagreed and 24% were uncertain. It can be argued that the implementation of HRIS reduces the workforce, saves time. It enables the organization to improve their data and enhance the competitiveness. Effectiveness of the system is also measured by considering the reliability, responsiveness and user satisfaction and organizational impact, using the Servqual and IS success constructs.

Fletcher (2005) and Ngai and Wat (2006) establish and are in agreement as to the timely access to information and saving administrative costs by recruiting online. Muturi (2003) in his survey of the development of HRIS in the banking industry inKenya premises his observations on similar grounds and acknowledges that HRIS can help HRM achieve its objectives and contribute toward better allocation of human resource, timely recruitment of personnel. Similarly Nankervis et.al (2009) presume that HRIS enable their users to undertake complex analysis of recruitment patterns and trends evaluations of the effectiveness of such process and reports on the costs and benefits of different selection techniques.

The generally positive response that information generated by HRIS helps the institution make better decisions in choosing better people that is, 53% agreed, 15% disagreed

while32% were uncertain. What these results is telling us is that at operational level, HRIS data can be used to identify potential internal applicants for job vacancies, saving on external vacancies costs and ensuring employees of career opportunities. This is corroborated by Dineen and Noe (2009) in their study on applicant pool characteristics in a web-based recruitment, whereby results lead to more accurate assessment of applicant fit and this in effect reduces the number of poor fit applicants.

To the question as to whether implementation of HRIS assures cost reduction in the recruitment process, 59% agreed, 16% disagreed, while 25% were uncertain. The descriptive research findings reflect that automation of recruitment process results in moderate savings for the organization. The financial saving for the organization will improve its fiscal status and cumulatively this can influence overall organizational performance. De Lone and McLean (2003) updated IS success model measures the cost reduction under the net benefits. Their construct indicate that information quality, system quality and service quality leads to user satisfaction and the outcome/consequence is net benefits. This outcome implies that the net benefits includes cost reductions and other effects.

Further in support of above findings. Cober, R. T., Brown, D. J., Blumental, A. J., Doverspike, D., and Levy, P. (2000) in their study titled the quest for the qualified job surfer ,they concluded that it's time the public sector catches the wave. These researchers observed that on-line recruiting dramatically increases exposure of an organization to applicants at a fraction of the cost of traditional job advertising methods. This response can further be corroborated by early advocates of the use of HRIS in the recruitment process. For instance Breaugh (2009) propose that use of e-recruitment saves on time and reduces the cost of recruitment process.

When respondents were requested to indicate whether HRIS allows Universities to format profile of their staff, strengths and weaknesses; 63%agreed, 13% disagreed while 24% were uncertain. This finding in overall indicated in the positive, which means that e

–recruitment provides accurate and timely information on staff profiles and this enables the university management to make decisions on recruiting staff with adequate skills and expertise. This influences the efficiency and effectiveness of service quality to contribute to university performance. In support of this findings and in the context of higher education institutions (Rawash et.al, 2012) informs that the efficiency and effectiveness – quality of an HRIS will enable universities to format a profile of their staff, their strengths and weaknesses, so they will know what they have in the personnel sense. Accordingly they will be able to structure appropriate development promotion, training and recruitment. The above results can also be linked the ensuing question that information generated from the organization HRIS helps the institution make better decisions in choosing better people in which 53% responded in the positive, 15% disagreed while 32% were uncertain. However Beadles (2008) maintains that HRIS is not considered a decision-making instrument. This would indicate that HRIS was viewed rather favorably as an administrative tool, but not a strategic one. However online job advertisements on corporate web sites and internet job boards, online CV databases, different forms of electronic applications, applicant management systems, corporate skill databases, and IS supported workflows for the contracting phase are only few examples of the various ways by which information systems today support recruitment processes (Michael & Mohan, 2010). In HR planning process it is easier to follow workforce gaps, the quantity and quality of the labor force and to plan future workforce requirements with the help of HR knowledge systems (Garg, 2013). HRIS can support long range planning with information for labor force planning and supply and demand forecast; staffing with information on equal employment, separations and applicant qualifications; and development with information on training programs, salary forecasts, pay budgets and labor/employee relations with information on contract negotiations and employee assistance needs (Shibly, 2011).

The De Lone and McLean model of IS success that included six aspects: System quality; Information quality; Use; User satisfaction; Individual impact and Organizational impact and later refined by merging all impacts (including organizational and individual) in one generalized component, net benefits to the organization, was among the theoretical models use to develop the research hypothesis and is hereby applied in the data analysis. De Lone and McLean (2003) suggest in their model and as applied in this research study that an IS is first created, containing various features, which can be characterized as exhibiting various degrees of system and information quality. Next, users and managers experience these features by using the system and are either satisfied or dissatisfied with the system or its information products. The use of the system and its information products then impacts or influences the individual user in the conduct of his or her work, and these individual impacts collectively result in organizational impacts. This therefore validates the hypothesis of the first study variable that human resource information systems collectively influences the overall organizational impact or performance.

Servqual, which measures seven service quality dimensions, that is, service quality, system quality, information quality, user involvement, usefulness, user self-sufficiency, user satisfaction, and Servperf subset model was applied to answer the research questions and test hypothesis as to whether human resource information systems has significant influence on user satisfaction in e-recruitment, whether this enhances efficiency and service quality of the selection process. The majority of respondent cumulatively were 89% positive which means that human resource information systems influences organizational performance. This model of measurement or assessment is supported by Stomeir and Kabst (2009) who argue that servperf is widely used and suggested by many scholars in various service industries.

To arrive at any deductions, the De Lone and McLean information systems success model and servqual model were applied to the research question on HRIS and user

satisfaction including user impact, which was found to influence organizational impact. The respondents observed in the positive of 65%

4.6.1   Applicant tracking provides for efficiency in the recruitment process
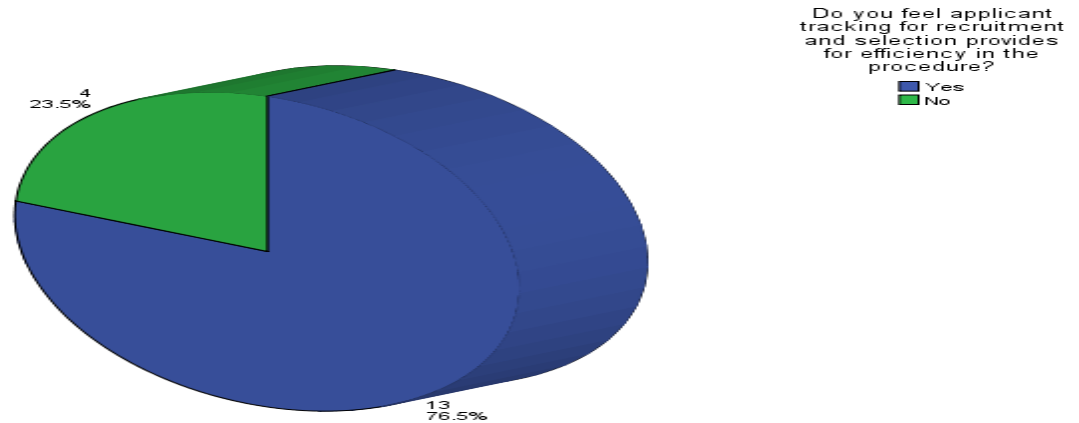
Figure 4.11   HRIS and applicant tracking

Applicant tracking is intended to identify the most qualified candidates, reduce paperwork, automate, manage workflows and tap into public to efficiently build your talent pool. It is also meant to monitor reports like time to fill a position and cost per hire with reporting capabilities that are tailored to organizational recruiting process. Besides it can enable candidates to search and apply for jobs online.

Applicant-tracking systems may also include many features and capabilities, such as CV scanning and grading capabilities, profiles of job candidates schedule of duty, letter-generation tools, interview-scheduling tools, cost-analysis reports, applicant demographic and equal employment opportunity information. The hypothesis being tested here waswhether applicant tracking provides for efficiency in the recruitment procedure. The respondents observed 77% in the positive "yes" whereas 23% were "no". The comments of the respondents who indicated "yes" were that as the implementation

of human resource information systems progressed, it was easier to export data to the excel package and enable quick analysis and reporting of the applicants' qualifications. .It can be inferred from this finding that with automation it is easier to store and access details thereby leading to organizational effectiveness. This is supported by Shiri (2012) in a study on the effectiveness of HRIS on the HRM functions. After performing a Pearson's chi-square on the study variables, the findings revealed that one possible reason is that the use of IT helps to increase productivity among adopters which results in less staff needed for HR-related work; hence this implied effectiveness, enables the organization to have a competitive edge.

4.6.2   Factor Analysis

To examine the error terms, the researchers can examine the potential problems caused by observations that do not meet the assumption of regression. Residuals represent the difference between the observed (sample) values of the independent variables and the predicted values of dependent variable. Basically, variables regarding various applications of HRIS in HRM, considered for this study namely e-recruitment, e -training, e- payroll and e-performance management were subjected to principal component factor analysis with varimax rotation to validate their underlying framework.

4.6.3   Factor Analysis on e - recruitment and selection procedure

Principal component factor analysis was applied to reduce the number of variables which have got high relationship/association with each other since they may not add any more value to the significance of the research questions and the resultant analysis.This technique uses correlations between data variables and assumes that some underlying factors exist that explains the correlations or inter-relationship among the observed variables (Chatfield and Collins 1992).

The factor of e-recruitment and selection procedure based on 18 items and their difference between influence and non-influence scores was examined using a principal component factor analysis with varimax rotation. Table 4.3 shows the output of SPSS on factor analysis with communalities of the 18 e-recruitment variables reduced to 12 variables.

Extraction communalities are estimates of the variance in each variable accounted for by the factors in the factor solution. The higher the value the more influential is the variable in determination of the factor. Small values indicate variables that do not fit well with the factor solution, and are possibly dropped from the analysis. All the variables that scored above 0.4, indicating that they contributed and influenced the resultant factor detection structure, were retained.

The most influential variable was E - recruitment allowing universities to format profile of their staff with a value of 0.792, followed by E - recruitment has helped with forecasting staffing needs with a value of 0.730.

Other variables contributing much to structures are Organization deploys e - recruitment procedure, 0.722, E - recruitment helps institution make better decisions in choosing better people, 0.719. Variables which contributed least were University performance is influenced by e-recruitment with a value of 0.419 followed by E-recruitment enables users to undertake complex analysis of recruitment with a value of 0.439.

The summary on the factor, e-recruitment is corroborated by Khera and Gulati (2012) of Delhi school of management, India, who in their study of HRIS and its impact on HR planning; and while performing the principal component analysis interpreted through the generally positive outcome that HRIS had a positive impact on this HR planning activity.

Further the output from principal component analysis was rotated using varimax method to make clear distinction between the factors identified. Out of the general 18 factors /questions from the variable of e-recruitment, 12 factors were identified to have an influence on the performance of Kenyan public universities. Table 4.3 shows the variables and the corresponding factor loading value for each corresponding factor above 0.4. Factor loading gives the relationship between the variable/item under measure and the extracted factors and it is measured in terms of correlation coefficient. On the criteria for selecting factor loading, generally factor loading above 0.6 is considered high while factor loading greater than or equal to 0.3 is considered moderate (Klien 2005).

Table 4.3   Factor Analysis: E - recruitment

	Extraction
Organization deploys e - recruitment procedure	.722
E-recruitment provides comprehensive database for applicant information	.639
E - recruitment ensures timely access to recruitment information	.517
E - recruitment assures cost reduction	.620
E - recruitment enhances efficiency of the selection process	.461
E - recruitment influences user satisfaction in recruitment	.584
E - recruitment enhances service quality of recruitment	.565
University performance is influenced by e - recruitment	.415
E-recruitment enables users to undertake complex analysis of recruitment	.439
E - recruitment allows universities to format profile of their staff	.792
E - recruitment has helped with forecasting staffing needs	.730
E - recruitment helps institution make better decisions in choosing better people	.719

Extraction Method - Principal Component Analysis

4.6.4 Reliability Test on e-recruitment

Reliability can be tested by using Cronbach's alpha, which is based on the average correlation of items within a test if the items are standardized. Cronbach's alpha which can be interpreted as a correlation coefficient, ranges in the value of 0 to 1. Normally, the variables are internally reliable if the Cronbach's Alpha is greater than 0.70 (Straub et al, 2004).

After primary data collection, scale reliability was assessed using Cronbach's alpha coefficient. Table 4.below presents the Cronbach's alpha coefficients for the different dimension and variables of the questionnaire. After applying Cronbach's coefficient Alpha test on influence of HRIS's recruitment and selection, an alpha coefficient of 0.937 was reached. This indicated satisfactory reliability as the values exceed the recommended threshold 0.70, indicating good internal consistency among the items within each dimension, each variable, and the entire scale.

Reliability test e-recruitment statistics

Cronbach's Alpha	No of Items
.937	12

4.6.5 Correlation analysis

Correlation analysis is carried out to determine the relationship between the independent variable and the dependent variable. It measures the closeness (link) of the relationship between two or many variables. This section of the report therefore provides information on the relationship between the main independent variables (e-recruitment, e-training and development, e-payroll and e-performance management) and the dependent variable

(the performance of public universities) for the study. Generally the relationship is also derived through regression and correlation of the variables on statistical program for social sciences (SPSS). Kothari (2009) further pointed out that partial coefficient of correlation measured separately the relationship between two variables in a way that effected other related variable were eliminated; the aim of the analysis was to measure the relationship between an independent variable on the dependent variable holding all other variables constant; thus each partial coefficient of correlation measured the effect of its independent variable on dependent variable. For this reason coefficient of correlation between each set of pairs of variables would be computed guided by research questions as at Figure 4.12.

4.6.6 Pearson Correlation Coefficient of e-recruitment and selection procedure and overall organizational performance

Figure 4.12 shows there is a positive linear relationship between recruitment and selection procedure and universities performance. This is reflected by the scatter plot which is skewed upward.
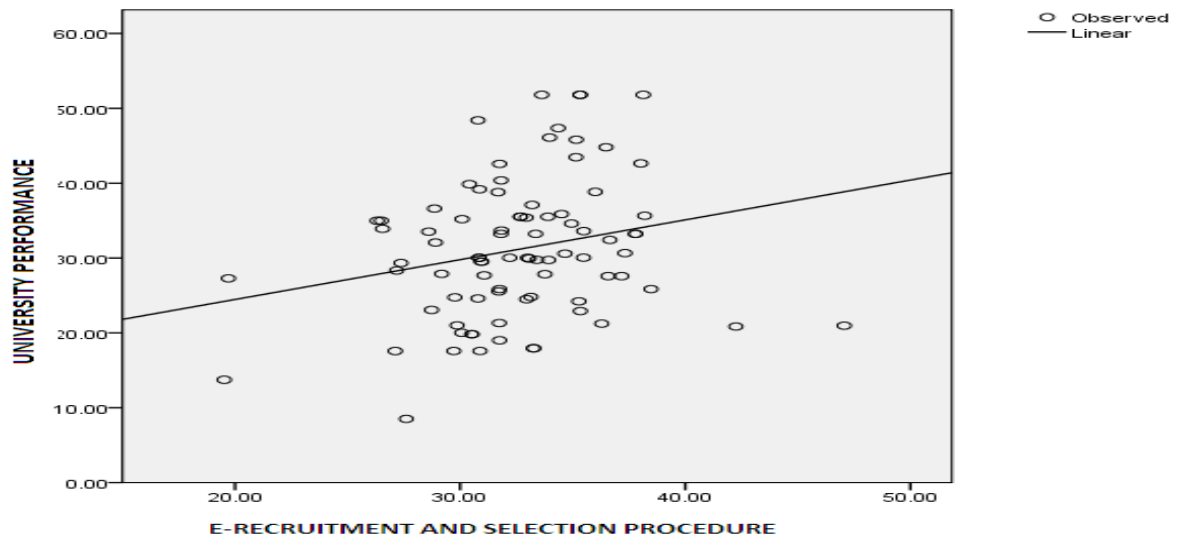
Figure 4.12   E-recruitment and universities performance scatter plot

Table 4.4 shows the Pearson correlation coefficient between the independent variable e-recruitment and selection procedure and the dependent variable university performance. It reflects a significant positive correlation between recruitment and selection procedure and the dependent variable university performance of 0.234.

Corroboration by Saleem (2012) in his study on impact of adopting HRIS on three tiers of HRM - his research findings on correlation analysis was similar to this study for instance it is proved that HRIS highly support HRM Processes at operational level (r= 0.592). HRIS support moderately (r=0.255) and at Functional HRM Processes. However, the relationship is found to be positive and week in-case of Strategic HRM Processes(r=0.150).

Table 4.4Correlation Coefficient between e-recruitment and universities performance

Variable		Organizational Performance	Recruitment and Selection Procedure
University performance	Pearson Correlation	1	.234[*]
	Sig. (2-tailed)		.031
	N	85	85
e-recruitment	Pearson Correlation	.234[*]	1
	Sig. (2-tailed)	.031	
	N	85	85

Correlation is significant at the 0.05 level (2-tailed).

4.6.7 Regression Analysis

To explore the predictive ability of an independent or a set of independent (predictors) variables on one dependent (criterion) variable, regression is used. In other words regression is the determination of a statistical relationship between two or more variables. In simple regression, there are only two variables, one is referred to as independent variable which is the cause of the behavior of another one referred to as dependent variable. Regression is a more sophisticated extension of correlation. It not only tells dependent variables and us about the relationship and the significance of the independent it also predicts the outcome from predictors. Regression uses least square method, which is a simple mathematical method of ensuring the straight line that runs through the points on the scatter diagram is positioned so as to be the best possible. The regression coefficient tells us how much of the variance in the dependent variable explained by the independent variable. Regression analysis is carried out in order to determine whether the independent variable can be relied upon in explaining the dependent variable.

To examine whether the hypotheses are accepted or rejected, coefficients is used. For a hypothesis to be accepted, the significant level must be less (<) than 0.05. On the other hand, the hypothesis that has the significant level greater (>) than 0.05, should be rejected.

This section, therefore, focuses on regression analysis in order to empirically test the hypotheses.

4.6.8 Regression analysis between e -recruitment and performance of public universities

The regression analysis was carried out in order to determine whether e-recruitment and selection procedure as an independent variable can be relied upon in explaining the dependent variable university performance.

a) **Model Fitness on e – recruitment vs performance of public universities:**

The standard value for R^2 is 1, which means that there is a perfect linear relationship between the dependent and independent variables. On the contrary if R^2 value is equal to 0; this indicates that there is no linear relationship between the dependent and independent variables. In the model fitness at Table 4.5, the regression analysis shows a relationship of R = 0.234 and R^2 = 0.055 which means that 5.5% of the corresponding change in the performance of public universities in Kenya can be explained by the application of HRIS on recruitment and selection procedure. In other words e-recruitment and selection has significance and influences overall university performance however minimal. It can further imply that an increase in application of HRIS's e-recruitment leads to an increase in the performance of public universities. This can be corroborated by Muriithi, Gachunga and Mburugu (2014), whose study on HRIS in Kenyan banks had these findings; their results of the linear regression indicate that R^2=0.593 and R= 0.771. This is an indication that there is a relationship between Human

Resource Information Systems and training and development in companies listed at the Nairobi Securities Exchange (NSE), however minimal.

Table 4.5 Model Fitness: e -recruitment v^s the performance of public universities

R	R Square	Adjusted R Square	Std. Error of the Estimate
.234^a	.055	.043	9.07311

a. Predictors: (Constant), Rate at which e-recruitment influence universities performance

b. Dependent Variable: Universities performance

b) **ANOVA Analysis on e - recruitment vs the performance of public universities**

ANOVA test was carried out to determine the variations/level of significance/difference in the employee perceptions of influence of e – recruitment procedure on the performance of public universities. The results of the ANOVA for the hypothesis $H_{01}/H_{a1}/$ objective 1 at Table 4.6indicates thatthere is a statistically meaningful difference between the two variables e – recruitment procedure and the performance of public universities. E - recruitment procedure has positive and significant influence on the performance of public universities at 0.031 significance level, because this value is <0.05 acceptable threshold. This is corroborated by Bal et.al (2012) in their study on the importance of using HRIS and a research on determining the success of HRIS. They performed a t-test and ANOVA analysis and statistically meaningful difference was found between the two study variables (p: 0.01< 0.05) and rejected their null hypothesis while accepting the alternative hypothesis.

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Table 4.6 ANOVA:e-Recruitment and selection procedure vs Universities performance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	395.774	1	395.774	4.808	.031[a]
Residual	6832.674	83	82.321		
Total	7228.448	84			

a. Predictors: (Constant), Rate at which e-recruitment and selection procedure influences the performance of public universities.

b. Dependent Variable: performance of public universities

c) **Regression Coefficient on e-recruitment and universities performance (beta and t-test)**

In Table 4.7 a further test on the beta coefficients of the resulting model to determine the measure of contribution of the factor e-recruitment procedure to influence the performance of public universities. The results show that for each unit increase in the independent variable, there is an expected increase of 0.234 in the dependent variable. The direction of this relationship is positive. In other words, since the coefficients $\beta_1 = 0.234$ is significantly different from zero (0) with p-value of 0.031, this implies that the independent variable, e-recruitment has a positive and significant effect on the performance of public universities. An examination of the t-value (t = 2.193, p = 0.031 <

0.05) indicates that e- recruitment contribute to increase the influence of HRIS on the performance of public universities. Further, as observed during hypothesis testing of this study variable in which the p-value was less than the significance level (0.05), the null hypothesis (H_{01}) which stipulates that e-recruitment does not influence the performance of public universities was rejected and the alternative hypothesis which states that e-recruitment influences the performance of public universities was therefore accepted.

Corroborators of this view are El – kot and Leaf (2011) in their survey on recruitment and selection practices in Egypt Education, Business and Society declared through their regression analysis that the recruitment practices in Egypt had a significant influence in the success of education, business and society in this developing country. Similarly, Saleem (2012) in his study on impact of adopting HRIS on three tiers of HRM in developing countries maintained the argument that the proposition that HRIS supports functional HRM processes is accepted as proved by his regression statistical analysis and justification. It is also identified that HRIS adoption (Beta/ β= 0.255) is significant (p=.009), which indicates that HRIS adoption is facilitating for functional HRM Processes, which in turn translates into the performance of these developing countries. Correspondingly, Al Zu'biet.al (2014) in their study of factors motivating and inhibiting the practice of HRIS in business organizations, had a beta of 0.435, a p-value of 0.000 and a t= 6.147 in one of their beta and t-test on their study variables. They therefore rejected their null hypothesis and accepted the alternative hypothesis.

Table 4.7 Regression Coefficient one recruitment v^s the performance of public universities

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	13.835	7.964		1.737	.086
Recruitment and Selection Procedure	.532	.243	.234	2.193	.031

a. Predictor: e- recruitment procedure

b. Dependent Variable: universities performance

4.7 Influence of e – training on the performance of public universities

The study presents descriptive statistics about the findings on the extent to which human resource information systems on training and development function such as assisting in tracking training skills and competencies; update staff skills inventory and effectiveness in the management of human capital, influence universities performance as depicted in Table 4.20 (see appendix 7).

The respondents were asked to confirm whether human resource information systems has made the training process more reliable, 40% agreed, 22% disagreed, while38% were uncertain. The servqual model was applied to test and deduce the research question on reliability of HRIS. This is corroborated by Beadles, Lowery and Johns (2009)in their

study on the impact of HRIS in the public sector argue that HRIS has improved the training process by decreased cost and time previously spent on bulky paper information. In spite of barriers in implementation, HRIS has more positive effect on the university performance. E-training has made it possible for the organizations to have employee development and therefore made the training process more reliable.

In response to the question as to whether e -training and development assists in tracking training skills and competencies, 58% of the respondents agreed that human resource information systems on training and development assists in tracking training skills and competencies while 14% disagreed. 28% of the respondents were uncertain. Similarly Mulat (2013) in a research on the practices and challenges of HRIS affirms that training subsystem provides data on employee's skills and competencies, training courses taken, developmental activities and career planning in terms of positions might be most appropriate for employee based on their skills and competencies. Additionally in response to the question whether e – training ensures update staff skills inventory,58% of the respondents agreed that HRIS ensures update staff skills inventory,14% disagreed, while28% were uncertain. While still on the findings of skills inventory data, researchers Kavanagh, Thite and Johnson, (2011) in their study on better management of employee training confirmed that an e - training, through skills inventory can enable employees track which courses have been successfully completed and what upcoming training opportunities may fit their needs. This empowers employees to manage their own skills development more effectively. Managers can also track the training as well, reducing redundancy and training costs.

In response to the question e – training generates effective data on employee training needs, 60% agreed, while 13% disagreed and 27% were uncertain. This is corroborated by Gueutal and Stone (2009) in their study on implementation of human resource management systems and effect in organizations in India in which they realized that

automation of trainings undertaken and actual trainings required enables the organizations to carry out effective training needs analysis.

In response to the research question that e – training ensures efficient management of human resource capital through improved electronic resumes, 58% agreed,8% disagreed while 34%were uncertain. This is confirmed by Lin (2006) in the study, application of HRIS in human resource management in India, that HRIS can be used to manage human capital and maximize talent. The system stores electronic resumes for each current employee, which gives the company an electronic inventory of its human capital. It can track where skills are in short supply and HR can develop appropriate training; training needs analysis, training cost benefit analysis, promotion analysis; this supports decision on career management, simulation, training evaluation and decisions (Lin, 2006). Devries et al, (2008) argues that accuracy in data provides for a qualified workforce. Skills inventory for instance may be well maintained through accurate data, indicating exact type and relevance of training undertaken and within which period. Chauhan, Sharma and Tyagi(2011) in their study on the role of HRIS in improving modern human resource operations affirms this and state that the training should also be directed at those persons interested and capable of benefiting from it, as identified by the skills inventory and human resource files.

When requested to state whether e – training provides for accuracy in training data, 64% agreed, 9% disagreed while 27% were uncertain. This generally positive response is corroborated by Saharan and Jafri (2012) in their research on implementation of HRIS and they argue that many companies had started using sophisticated HRIS like training and development.
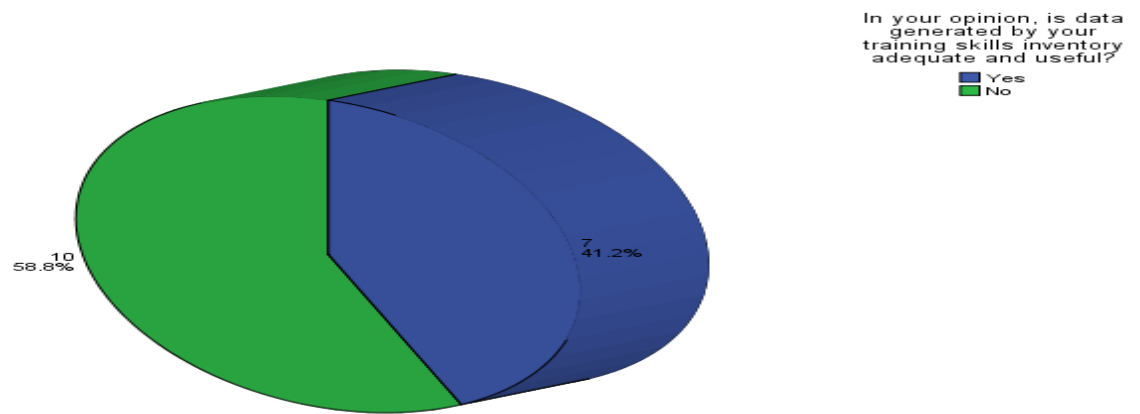
Figure 4.13   Skills inventory data adequate and useful

4.7.1   Skills inventory data adequate and useful

The e - training and development skills inventory capability provides succession planning tools needed to implement and maintain comprehensive talent management, and identify high potential employees as part of an organization wide succession planning process. This capability allows for the establishment of core competency requirements against roles, at all levels within the organization. Appointee's capability is then measured against the roles competencies and supports employee progress towards acquisition of competencies, through training and professional development.

Similarly in response to the question that training skills inventory generates adequate and useful data, 59% observed in the positive while 41% observed negative. Comments for "yes" were that data generated through the skills inventory module enabled the organization to identify skills gap, that is which other trainings an individual requires. This report is quite useful for strategic planning as the organization will be aware of what skills to improve to enable better university performance. Proponents of "no" said that the skills inventory was at the moment maintained at departmental and not

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institutional level and therefore not easy to ascertain usefulness. To corroborate this Rawat et.al (2008) in their study of implementation of HRIS in Jordanian universities, argued that HRIS facilitated staff profiles including their skill s thereby enabling accurate strategic planning. This is further supported by Gürol, Wolff and Ertemsir, (2010) who conclude that HR professionals can also act as competency managers by arranging the right people to the right positions in the right time with their new strategic architecture role.

Teotia (2013) in a study of role of HRIS in performance evaluation and decision making confirms that the Talent to HRIS Training and Development capability provides employee engagement survey and succession planning tools, needed to implement and maintain comprehensive Talent Management, and identify high potential employees as part of an organization wide succession planning process. This capability allows for the establishment of core competency requirements against roles, at all levels within the organization. Appointee's capability is measured against the roles competencies, and supports employee progress towards acquisition of competencies, through training and professional development.

4.7.2 Factor Analysis on e- training

The factor of e-training process based on 14 items and their difference between influence and non-influence scores was examined using a principal component factor analysis with varimax rotation. Table 4.8 shows the output of SPSS on factor analysis with communalities of the 14 e-training variables all retained.

Extraction communalities are estimates of the variance in each variable accounted for by the factors in the factor solution. The higher the value the more influential is the variable in determination of the factor. Small values indicate variables that do not fit well with the factor solution, and are possibly dropped from the analysis. All the variables that

scored above 0.4, indicating that they contributed and influenced the resultant factor detection structure, were retained.

The most influential variable was e-training ensures effective management of the Human Resources with a value of 0.847,followed by e-training improves use of data to plan with a value of 0.834.

Other variables contributing much to structures are ;e-training has improved training process 0.832, e-training ensures up-to-date skills inventory 0.818. Variables which contributed least were e-training enhances effectiveness of generation of data on employees' training needs with a value of 0.632 followed by e-training can support decisions with a value of 0.642.

The factor analysis is corroborated by Alzu'bi and Al Dmour (2014) in their study on factors motivating and inhibiting the practice of HRIS in business organizations: an empirical analysis in which their factor loadings on training and development were within the acceptable loading of 0.4 and above.

Table 4.8   Factor Analysis on e - training

	Initial	Extraction
E - training has improved training process		.832
E - training helps track skills and competences		.787
E - training can support decisions		.642
E - training ensures up-to-date skills inventory		.818
E - training ensures efficient management of HR		.847
E - training enhances effectiveness of generation of data on employee's training needs		.632
E - training increases efficiency		.648
E - training provides for accuracy in training data		.814
E - training enhances user-friendly in instructions		.808
E - training usefulness of the training function		.780
E - training improves generation of records		.818

E - training improves use of data to plan	.834
Information generated from e - training helps institution make decisions	.731
E - training has reduced training expenses	.721

Extraction Method: Principal Component Analysis.

Reliability Statistics on e-training

Cronbach's Alpha	No of Items
.886	14

4.7.3 Pearson correlation coefficient of e - training and performance of public universities

Correlation coefficient indicates the measure of linear relationship between two variables. Figure 4.14 shows that there is a positive linear relationship between e-training and development process and university performance. This is indicated in the scatter plotting which is skewed upwards.
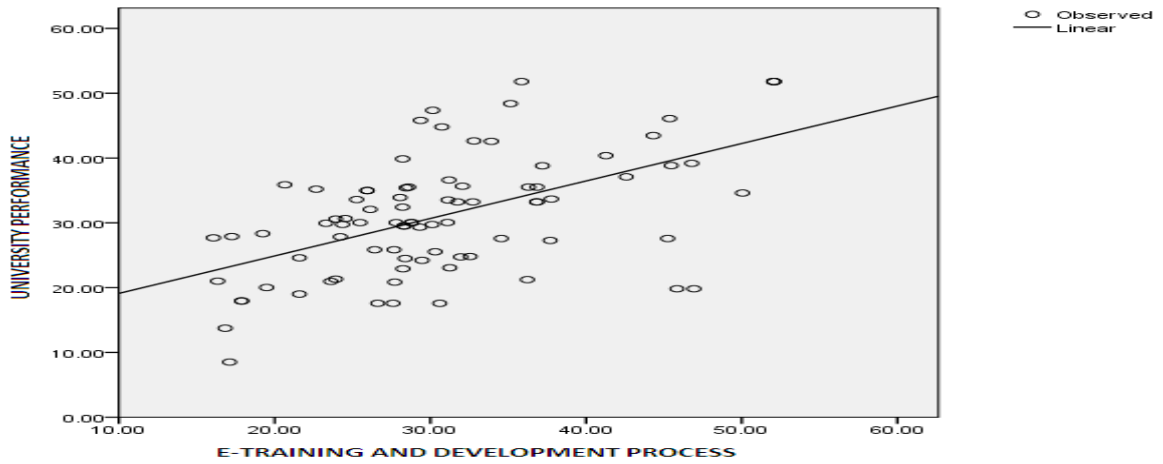
Figure 4.14   e – training and universities performance scatter plot

Table 4.9 shows the Pearson correlation coefficient between the independent variable training and development process and the dependent variable overall organizational performance. It shows a significant positive correlation between e - training and development process and the dependent variable university performance of 0.546.

These results are consistent with Gautel et al (2005) who in their research detailing how to use technology to enhance organizational performance confirm that application of HRIS enhances operations of organizational performance. In their correlation analysis the linear relationship between their independent variable HRM functions and dependent variable organizational success was positively skewed and had a significant relationship.

Table 4.9Correlation Coefficient between e-training and performance of public universities

		Organizational Performance	Training And Development Process
University performance	Pearson Correlation	1	.546[**]
	Sig. (2-tailed)		.000
	N	85	85
e-training	Pearson Correlation	.546[**]	1
	Sig. (2-tailed)	.000	
	N	85	85

Correlation is significant at the 0.01 level (2-tailed).

4.7.4 Regression analysis - Model Fitness of e - training vs university performance

The regression analysis was carried out in order to determine whether e - training and development process as an independent variable can be relied upon in explaining the dependent variable, the performance of public universities in Kenya.

The R-squared is the proportion of variance in the dependent variable which can be explained by the independent variables. Table 4.10 shows that the R-squared in this e-training variable was 0.290, which means that e-training and development can explain 29% of the changes in the dependent variable. This shows that the other variables in this study such as e-recruitment, e- training, e-payroll and e-performance management and other factors not in the study cumulatively contribute to the remaining 61% of the dependent variable (performance of employees in the public universities of Kenya).In other words,e-training and development process has significance and influences universities performance according to the percentage level described above (29%).

Kheri& Gulati (2013) in their study on HRIS and its impact on HR planning in Delhi, India and in their empirical testing of the relationship between the independent and the dependent variable found out that there was a positive relationship between the variables. Results of their analysis was R = 0.377 and R^2 = 0.310. Impact of HRIS on HR planning, beta/ b= 0.300 was significant; this implies that HRIS has a positive impact on HR planning.

Table 4.10   Model Fitness: e -training process vs universities performance

R	R Square	Adjusted R Square	Std. Error of the Estimate
.546[a]	.299	.290	7.81556

a. Predictor: e-training and development

b. Dependent Variable: universities performance

b) **ANOVA analysis on e – training process vs performance of public universities**

ANOVA test was carried out to determine the variations/level of significance/difference in the perceptions of influence of e – training and development process on the performance of public universities. The results of the ANOVA for the hypothesis $H_{02}/H_{a2}/$ objective 2 at Table 4.11 indicates that e – training and development process has a highly positive and significant influence on the performance of public universities at 0.002 significance level, because this value is ≤ 0.05 acceptable threshold.

This is corroborated by Bal et.al (2012) in their study on the importance of using human resource information systems and a research on determining the success of HRIS. They performed a t-test and ANOVA analysis and statistically meaningful difference was found between their two study variables (p: 0.000< 0.05) and as a result they rejected their null hypothesis while accepting the alternative hypothesis because the significance level was less than 0.05.

Table 4.11 ANOVA e – training vs. the performance of public universities

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	12.371	1	12.371	10.193	.002
	Residual	100.735	83	1.214		
	Total	113.106	84			

a. Dependent Variable: The performance of public universities

b. Predictors: (Constant), e – training and development process

c) **Regression coefficient – e training vs university performance (beta and t-test)**

In table 4.12 a further test on the beta coefficients of the resulting model to determine the measure of contribution of the variablee-training process to influence the performance of public universities. The results show that for each unit increase in the independent variable, there is an expected increase of 0.546 in the dependent variable. The direction of this relationship is positive. In other words, since the coefficients $\beta = 0.546$ is significantly different from zero (0) with p-value of 0.000, this implies that the independent variable, e-training process has a positive and significant effect on the performance of public universities. An examination of the t-value (t = 5.945, p = 0.000< 0.05) indicates that e-training process contributes to increase the influence of HRIS on the performance of public universities. Further, as observed during hypothesis testing of this study variable in which the p-value was less than the significance level (0.05), the null hypothesis (H_{02}) which stipulates that e-training process does not influence the

performance of public universities was rejected and the alternative hypothesis which states that e-training process influences the performance of public universities was therefore accepted.

The coefficients β = 0.546 is significantly different from zero (0) with p-value of 0.000. This implies that e - training and development process has a positive and significant effect on the performance of Kenyan public universities.This is corroborated by the study findings of Saleem (2012)on impact of adopting HRIS on three tries of HRM:evidence from developing economy.Focusing on the predictors, it is statistically proved that HRIS-adoption (Beta/ b= 0.886) is highly significant (p=.001), and coefficient is positive indicating thatHRIS-Adoption highly supports Operational HRM Processes. Similarly Al Zu'bi et.al (2014) in their study of factors motivating and inhibiting the practice of HRIS in business organizations, had a beta of 0.435,a p-value of 0.000 and a t= 6.147 in one of their beta and t-test on their study variables. They therefore rejected their null hypothesis and accepted the alternative hypothesis..

Table 4.12   Regression coefficient –e training vs university performance

R	R Square	Adjusted R Square	Std. Error of the Estimate
.546[a]	.299	.290	7.81556

a. Predictors: (Constant), e - training and development process

b. Dependent variable: The performance of public universities

4.8 Influence of e - payroll management on performance of public universities

The study presents descriptive statistics about the findings on the extent to which e - payroll management function ensures speedy analysis of payroll reports; improve generation of pay slips; accuracy of data in payroll and enhancing quality of information, influence university performance as indicated in Table 4.21 (see appendix 8).

In response to the question as to whether e - payroll management ensures speedy analysis and generation of payroll reports; 82%of the respondents agreed, 8% percent disagreed while 10% were uncertain.
To the question e - payroll assures accuracy of data in payroll management, 79% agreed, 6%t disagreed while 15% were uncertain.

The above findings are corroborated by proponents of implementation of HRIS on payroll management. A study by Hegel (2012) indicated that the beginnings of human resource technology arose with the need to process large numbers of employee pay-slips which prior to 1960s was predominantly a manual or clerical exercise. The advent of use of technology to manage payroll signified the first major application of technology to an HR related problem. At the same time it was recognized that such payroll systems often held a useful repository of employee information, including data about personnel payments, absence level and other personnel personal data. When integrated with payroll management, HRIS payroll interface can calculate salaries and provide a range of supporting functions such as preparing pay-slips and payroll reports.A survey by Blair et al (2009) on addressing problems of Human Resource Information System in Swaziland, Uganda and Rwandan government departments revealed that due to poor payroll management, newly recruited staff were often not paid for three to four months and in a few extreme cases staff were not paid for an entire year. Some retired staff died without receiving a pension. Several respondents noted that the process for identifying ghost

workers-workers who remained on the payroll but were no longer active in the workforce due to retirement, termination, death and the like and stopping their salaries often took an average of six months, with some cases taking nearly two years.

In Kenya an evaluation survey at the Ministry of Health in 2009, sponsored by World bank and USAID revealed that nurses posted to especially the rural areas delayed in reporting but still withdrew their salaries since there was no proper transfer and payroll posting procedures. This caused undue suffering to patients. Equally, it was realized that there were numerous ghost workers in the Ministry of Health payroll; those who had exited due to natural attrition – death, retirement or those whose services had been terminated or resigned were still in the payroll due to lack of effective automation and integration of HR activities.
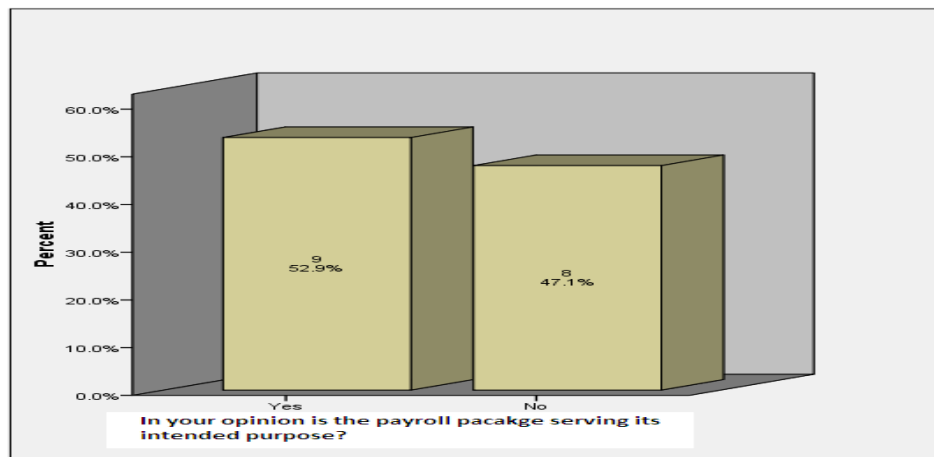
Figure 4.15   Payroll data serving intended purpose

During the interview, the key informants were asked whether the payroll package was serving its inter said "yes", while 47% maintained a "no". The "yes" informants argued that with e - payroll managem touch of a button you can get your salary information. The majority of organizations have automated th

and as a result it makes salary processing much quicker and using less staff thereby reducing the univers

When a company invests in an affordable HRIS, it suddenly becomes capable of handling its workforce
of the primary components: that of payroll and that of HR. Beyond these software solutions, compan
HRIS modules that help them put the full productivity of their workforce to use, including the varied ex
and skills of all staff within the enterprise (Rietsema, 2015).

4.8.1 Factor Analysis on e - Payroll Management

Principal component factor analysis was applied to reduce the number of variables which
relationship/association with each other since they may not add any more value to the significanc
questions and the resultant analysis. This technique uses correlations between data variables and as
underlying factors exist that explains the correlations or inter-relationship among the observed variab
Collins 1992).

The factor of e-payroll management based on 12 items and their difference between influence and no
was examined using a principal component factor analysis with varimax rotation. Table 4.13 shows th
on factor analysis with communalities of the 12 e-payroll management variables retained all the 12 varia

Extraction communalities are estimates of the variance in each variable accounted for by the factors in t
The higher the value the more influential is the variable in determination of the factor. Small values
that do not fit well with the factor solution, and are possibly dropped from the analysis. All the var
above 0.4, indicating that they contributed and influenced the resultant factor detection structure, were re

The most influential variable was e-payroll management influences overall organizational performanc
0.793, followed by e-payroll management provides for more flexibility in payroll management with a va

Other variables contributing much to structures are e – payroll management improves usefulness of p
information generated by e - payroll helps institutional decisions, 0.766. Variables which contribut
payroll management ensures ease of use of the payroll with a value of 0.614 followed by payroll mana
effective payroll management with a value of 0.657.

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The above summary on the factor, e-payroll management is corroborated by Khera and Gulati (2012) management, India, who in their study of HRIS and its impact on HR planning; and while perform component analysis interpreted through the generally positive outcome that HRIS had a positive impa management.

Further the output from principal component analysis was rotated using varimax method to make between the factors identified. Out of the general 12 factors /questions from the variable of e-payroll m 12 factors were identified and retained to have an influence on the performance of Kenyan public univ shows the variables and the corresponding factor loading value for each corresponding factor above 0 gives the relationship between the variable/item under measure and the extracted factors and it is mea correlation coefficient.

On the criteria for selecting factor loading, generally factor loading above 0.6 is considered high wh greater than or equal to 0.3 is considered moderate (Klien 2005).

Table 4.13 Factor Analysis on payroll management

	iti
E - payroll management ensures speedy analysis	
E - payroll management improves generation of pay-slips	
E - payroll management improves effective payroll management	
E - payroll management assures accuracy of data management	
E - payroll management improves payroll interface with accounts	
E - payroll management enhances quality of information generation	
E - payroll management ensures ease of use of the payroll	
E - payroll management improves usefulness of payroll	
E - payroll management provides for more flexibility in payroll management	

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E - payroll management increases speed at of payroll processing

E - payroll management influences overall organization performance

The information generated from e-payroll help in institution decisions

Extraction Method: Principal Component Analysis.

4.8.2   Pearson Correlation Coefficient of e - Payroll Management and universities performance

The most common measure of correlation in statistics is the Pearson Correlation coefficient. It indicates the measure of linear relationship between two variables. Figure 4.16 shows that there is a positive linear relationship between e - payroll management and universities performance. This is indicated by the scatter plotting which is skewed upward.
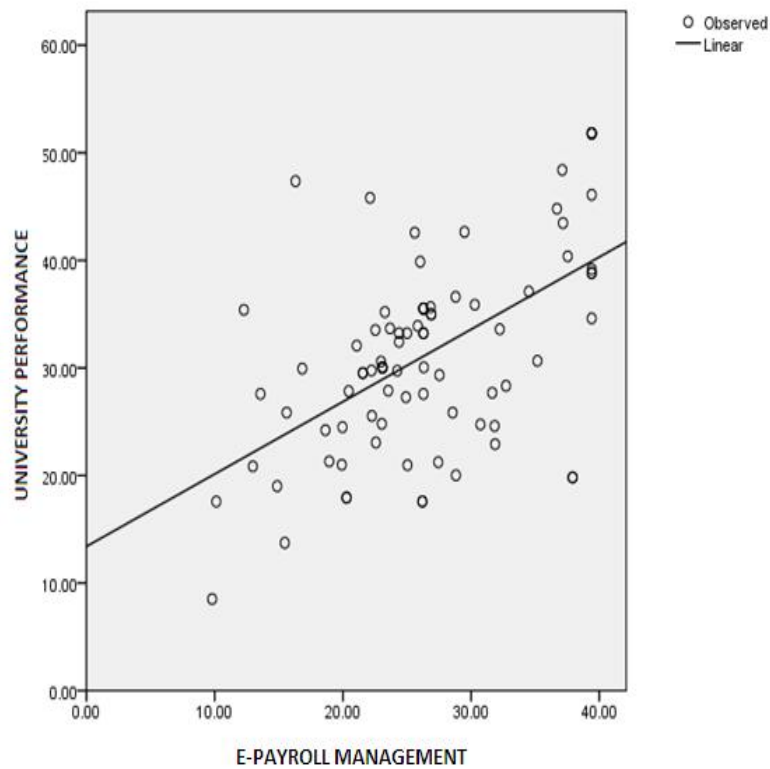
Figure   4.16   E-Payroll Management and universitiesperformance scatter plot

Table 4.14 shows the Pearson correlation coefficient between the independent variable e
- payroll management and the dependent variable university performance. It shows a
significant positive correlation between e - payroll management process and the
dependent variable university performance of 0.550.

Table 4.14Correlation coefficient between e-payroll management and universities performance

		Organizational Performance	Payroll Management
University performance	Pearson Correlation	1	.550**
	Sig. (2-tailed)		.000
	N	85	85
e-payroll management	Pearson Correlation	.550**	1
	Sig. (2-tailed)	.000	
	N	85	85

**. Correlation is significant at the 0.01 level (2-tailed).

4.8.3 Regression Analysis between e-payroll management and universities performance

Regression analysis was performed on the independent variable e-payroll management and the dependent variable universities performance.

a)   **Model Fitness on e-payroll management versus performance of public universities**

The standard value for R^2 is 1, which means that there is a perfect linear relationship between the dependent and independent variables. On the contrary if R^2 value is equal to 0; this indicates that there is no linear relationship between the dependent and independent variables. Table 4.15 shows coefficient of determination (R Square) of 0.303 which indicates that the model can explain 30.3% of the variations or changes in the dependent variable, university performance. This is supported by Al – Zubi and Rand (2014) in their research on factors motivating and inhibiting the practice of HRIS in business organizations. They argue that their model fitness of $R^2 = 0.618$ means, that their independent variable explain 62% of the variance in the extent of HRIS applications usage. The other 38% is due to other variables not covered in their study.

Table 4.15   Model Fitness: e-payroll management vs universities performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.550[a]	.303	.295	7.79126

a. Predictors: (constant), e -payroll management

b. Dependent variable – university performance

b) **ANOVA:e – payroll management vs the performance of public universities**

ANOVA test was carried out to determine the variations/level of significance/difference in the perceptions of influence of e – training and development process on the performance of public universities. The results of the ANOVA for the hypothesis H_{02}/H_{a2}/ objective 2 at Table 4.16 indicates that e – training and development process has a highly positive and significant influence on the performance of public universities at 0.002 significance level, because this value is $\geq$ 0.05 acceptable threshold.

Table 4.16 ANOVA: e – payroll management vs the performance of public universities

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	21.697	1	21.697	19.701	.000
Residual	91.409	83	1.101		
Total	113.106	84			

a. Dependent Variable: The performance of public universities

b. Predictors: (Constant): e - payroll management

c) **Regression Coefficient e-payroll vs universities performance (Beta and t-test)**

In table 4.17a further test on the beta coefficients of the resulting model, the constant α = 13.408 is significantly greater than zero. The coefficients β = 0.550 is significantly different from zero with p-value of 0.000.The results show that for each unit increase in the independent variable, there is an expected increase of 0.550 in the dependent variable. An examination of the t-value (t = 6.006, p = 0.000 < 0.05) indicates that e-payroll management contributes to increase the influence of HRIS on the performance of public universities. This implies that e-payrollmanagement has a positive and significant effect on the performance of Kenyan public universities. As a result the null hypothesis (H_{03}) which states that e-payroll management does not influence the performance of public universities is therefore rejected while the alternative hypothesis (H_{a3})stating that that e-payroll management influences the performance of public universities is accepted. This is corroborated by Saleem (2012) in his study on adopting HRIS on three tries of HRM. His beta coefficient was 0.592 against ours which was 0.550 which proved that application of HRIS is highly positive and significant and supports organizational outcome. Similarly Al Zu'bi et.al (2014) in their study of factors motivating and inhibiting the practice of HRIS in business organizations, had a beta of 0.435, a p-value of 0.000 and a t= 6.147 in one of their beta and t-test on their study variables. They therefore rejected their null hypothesis and accepted the alternative hypothesis.

Table 4.17 Regression Coefficient –e-payroll vs universitiesperformance (beta and t-test)

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(constant)	13.408	3.074		4.361	.000
payroll management	.673	.112	.550	6.006	.000

a. Predictor (constant): e – payroll management

b. Dependent variable: university performance

4.9 Influence of e - performance on universities performance

The study presents descriptive statistics about the findings on the extent to which human resource information systems on performance management function such as easy access to information; ensure effectiveness in communication; automation of scorecard for efficiency; accuracy of data in performance management, influence university performance as described in Table 4.22 (see appendix 9).

The performance management process is a natural outshoot of all of the work that surrounds the HRIS. Whether the actual performance management solution exists within the same human resource information systems or in a separate application is not the issue. The issue is what the process means to the organization, what outcomes the organization desires, and that HR and human resource information systems professionals have an amazing opportunity to leverage their experience to make the performance

management process a truly strategic tool to prove the value that HR brings to the organization. This assertion is echoed by Averbook, (2012).

When the respondents were requested to state their opinion on the statement that e – performance management enables real time communication between users, 53% agreed,11% disagreed while 36% were uncertain. The findings which are positive are similar to those in the research by Jiang et al. (2007) who confirms that performance management process requires that employees, managers and HR professionals be connected for real time collaboration and communication and that employees can access current and historical review information as well as receive notification of upcoming reviews. This is further corroborated by Johnson and Gueutal (2011) in their research on transforming HR through technology – the use of human resource information systems in organizations, particularly e - performance in which they found out that with the availability of real time data managers can provide more timely feedback and employees can see a clear link between their behavior and their performance appraisals.

In response to the question as to whether – performance management ensures easy access to information about61%of the respondents agreed that e – performance management ensure easy access to information while 12% disagreed. About 27% of the respondents were uncertain.

The majority (62%) of the respondents agreed to the question as to whether human resource information system generates consistent reports needed for performance management. About sixteen percent (16%) disagreed while the other twenty two percent (22%) were uncertain. There was a paltry one percent (1%) who abstained. A report on HRIS and generation of reports by Canada Strategic Plan (2008–2013) noted that the human resource information systems supports over 80 standard human resources reports as well as virtually unlimited custom reporting capabilities. Elections Canada relies heavily on custom reporting because of a wide range of requests for different human

resources information from managers within the organization. Procedures for identifying the standard human resources information that is required for management reporting and decision making purposes, and for regularly collecting the data from line managers, have yet to be completed; however, the new Human Resources Dashboard ("Health of Agency" report) is a positive first step, allowing for the tracking of key performance data over time. Once standard data are identified, appropriate data quality assurance procedures can be designed, and additional management reports can then be developed to track and report on progress toward objectives. The conclusion is that functionality in terms of generating management information is adequate, but the business processes needed to ensure the reliability and timeliness of the data in the HRIS continue to be a challenge in delivering adequate management information that meets the agency's human resources needs. Many HRIS products provide real-time reporting and even screen-based historical information about the employees and/ or the functional unit that can provide the manager with the information they need. There are also several third-party software products available that provide managers with almost continuous data about the status of their unit and the organization, much as a dash board on a car provides immediate information. The analysis of more complex situations is beyond the capabilities of many of these reporting and query tools. To facilitate decision making on complex issues, the manager usually relies on the analyst/ power user to complete some type of analysis before making a decision (Bedell, 2007). Human resource information systems increase competitive advantage of this organization. This can be corroborated by Kavanagh and Thite (2011) in their study on cost benefit analysis of human resource information systems confirm that HRIS can contribute to organizational functioning and success.

A study on e-recruitment, e-training and development techniques and e - performance management in the Ghanaian public universities confirmed that there is significant effect between the quality of the output of human resource information systems and overall

institutional performance, but suggested that further evaluation of the system is necessary (Manu 2006). Akansha Chauhan, Sanjeev Kr Sharma and TarunTyagi (2011) in their study on the role of HRIS in improving modern HR operations corroborates this study finding that HRIS improves planning and that a well-designed human resource information systems will serve as the main management tool for aligning human resources department goal with long term planning goals, thereby enhancing the overall performance.

Additionally in response to the question whether e – performance management ensures effectiveness of communication about 69%of the respondents agreed that e – performance management ensures effectiveness of communication while a paltry 8% disagreed. About twenty nine (29%) were uncertain.

In response to the question e – performance management ensures automation of the HR score card for efficiency about 56% agreed, while 12% disagreed and 32% were uncertain. Similarly, Gautel et al (2005) in their research detailing how to use technology to enhance organizational performance confirms that application of HRIS enhances operations of performance management.
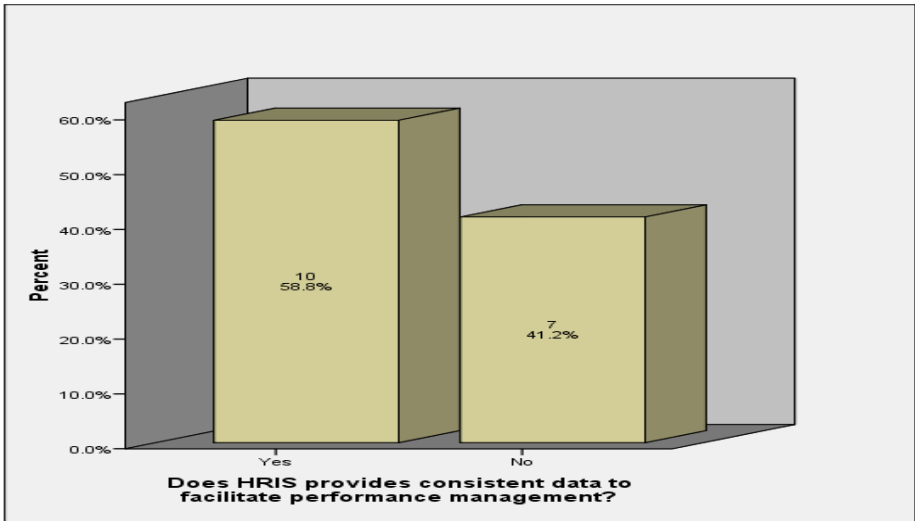
Figure 4.17   HRIS data consistent for performance management

The key informers were requested to share their opinion as to whether e – performance management produces consistent data to facilitate performance management, 59% were of the opinion e – performance management generates adequate and useful, while 41% did not agree. Those who maintained a "yes" explained that e - performance management reporting can be done online after downloading the relevant appraisal/assessment forms from the institutional website that has been provided.

4.9.1   Factor Analysis on e - performance management

Principal component factor analysis was applied to reduce the number of variables which have got high relationship/association with each other since they may not add any more value to the significance of the research questions and the resultant analysis. This technique uses correlations between data variables and assumes that some underlying factors exist that explains the correlations or inter-relationship among the observed variables (Chatfield and Collins 1992).

The factor of e-performance management based on 12 items and their difference between influence and non-influence scores was examined using a principal component factor analysis with varimax rotation. Table 4.18 shows the output of SPSS on factor analysis with communalities of the 12 e-performance management variables reduced to 10 items.

Extraction communalities are estimates of the variance in each variable accounted for by the factors in the factor solution. The higher the value the more influential is the variable in determination of the factor. Small values indicate variables that do not fit well with the factor solution, and are possibly dropped from the analysis. All the variables that scored above 0.4, indicating that they contributed and influenced the resultant factor detection structure, were retained.

The most influential variable was e - performance management enhances production of up-to-date information for performance management with a value of 0.834, followed by e - performance management ensures ease-of-use the first time with a value of 0.781.

Other variables contributing much to structures are e - performance management enables real time communication, 0.778, e - performance management generates consistent reports, 0.771. Variables which contributed least were integration of performance into e - performance management where recruitment data is housed would open a new door for focus on internal mobility with a value of 0.354 followed by e - performance management applications ensure effective communication with a value of 0.145.As a result of the 0.4 threshold, these research questions were isolated.

The above summary on the factor, e-performance management is corroborated by Al Zu'by and Al Demour (2012) whose study on HRIS had positive factor loadings on performance and the variables that were similar relationships were dropped as they would not add any value to the significance of the factors under study.

Further the output from principal component analysis was rotated using varimax method to make clear distinction between the factors identified. Out of the general 12 factors /questions from the variable of e - performance management, 10 factors were identified to have an influence on the performance of Kenyan public universities. Table 4.18shows the variables and the corresponding factor loading value for each corresponding factor above 0.4. Factor loading gives the relationship between the variable/item under measure and the extracted factors and it is measured in terms of correlation coefficient. On the criteria for selecting factor loading, generally factor loading above 0.6 is considered high while factor loading greater than or equal to 0.3 is considered moderate (Klien 2005).

Table 4.18 - Factor Analysis on e - Performance Management

	Initial	Extraction
E – performance management enables real time communication		.778
E – performance management enhances accessibility to information		.668
E – performance management ensures ease of use the first time		.781
E – performance management enhances performance appraisal system		.758
E – performance management enhances generation of labor turnover reports		.747
E – performance management of HRIS generates consistent reports		.771
E – performance management enhances production of up-to-date information for perform management		.834
Application of HRIS enhances performance management		.742
Application of HRIS enhances automation of the HR score card		.672
Application of HRIS enhances employee productivity		.646

Extraction Method: Principal Component Analysis.

4.9.2 Reliability Statistics

The items in HRIS and its application on performance management in enhancing the company or business flows. The performance is important in company management because from that we can look whether the HR employees understand their job scope in HR management and the performance using the HRIS. Form the reliability test, we can find that the Cronbach's Alpha is 0.927 which greater than 0.700. This is also shows that all respondents have the same or similar views towards the items in competencies of HR task.

Reliability testing on e – performance management

Cronbach's Alpha	N of Items
.931	10

4.9.3 Pearson Correlation Coefficient of e performance management and the performance of public universities

Correlation analysis was performed to determine the linear relationship between the independent variable e – performance management module and the independent variable the performance of public universities. Figure 4.18 shows there is a positive linear relationship between the two variables being measured. This is revealed by the scatter plotting which in this case is skewed upward.
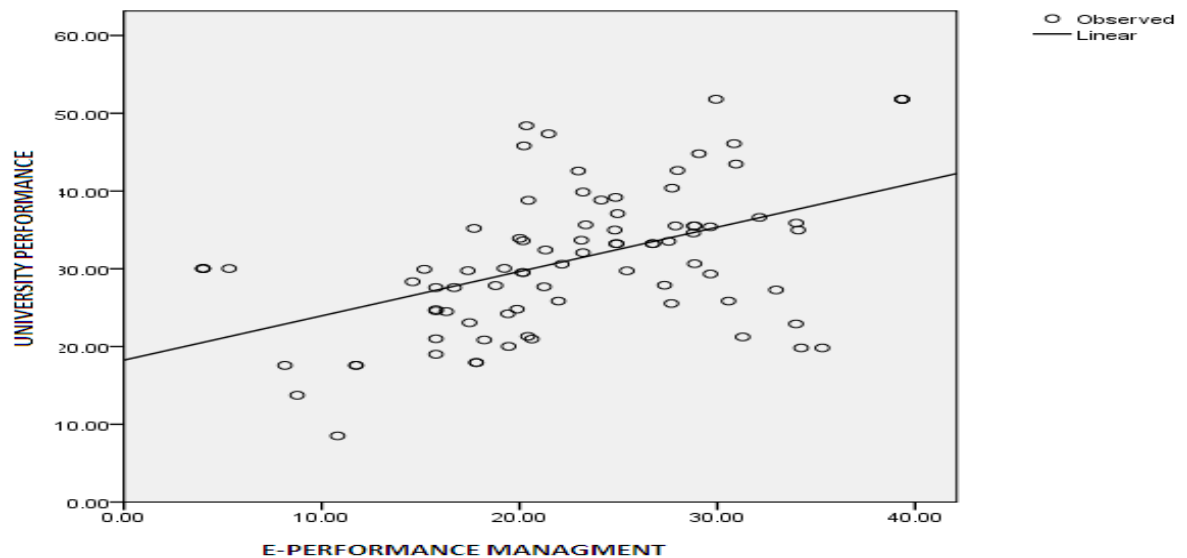
Figure 4.18 E–performance and universities performance scatter plot

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Table 4.19 shows the Pearson correlation coefficients between e- performance management and the performance of public universities. There is a positive correlation coefficient of 0.491. There is therefore a positive and significant relationship between e - performance management programme and university performance.

Corroboration by Saleem (2012) in his study on impact of adopting HRIS on three tiers of HRM - his research findings on correlation analysis was similar to this study. It is proved that HRIS highly support HRM Processes at operational level (r= 0.592). HRIS support moderately (r=0.255) at Functional HRM Processes. The relationship is therefore found t o be positive.

Table 4.19   Correlation Coefficient between e-performance university performance

		Organizational Performance	Performance Management
university performance	Pearson Correlation	1	.491[**]
	Sig. (2-tailed)		.000
	N	85	85
e – performance management	Pearson Correlation	.491[**]	1
	Sig. (2-Tailed)	.000	
	N	85	85

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	Sig. (2-Tailed)	.000	
	N	85	85

**. Correlation is significant at the 0.01 level (2-tailed).

4.9.4 Regression Analysis between e -Performance Management and university performance – Model Fitness;

The standard value for R^2 is 1, which means that there is a perfect linear relationship between the dependent and independent variables. On the contrary if R^2 value is equal to 0; this indicates that there is no linear relationship between the dependent and independent variables. The regression analysis was carried out in order to determine whether – performance management as an independent variable can be relied upon in explaining the dependent variable university performance. In Table 4.20 the regression analysis shows a relationship of R = 0.491 and R^2 = 0.241 which means that 24.1% of the corresponding change in application of HRIS on performance management can be explained by the performance of public universities in Kenya in all predictor variables jointly. Kheri & Gulati (2013) in their study on HRIS and its impact on HR planning in Delhi, India and in their empirical testing of the relationship between the independent and the dependent variable found out that there was a positive relationship between the variables. Results of their analysis was R = 0.377 and R^2 = 0.310. Impact of HRIS on HR planning, beta/ b= 0.300 was significant; this implies that HRIS has a positive impact on HR planning.

Table 4.20   Model   Fitness: -   performance   management   vs   university performance

	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.491[a]	.241	.232	8.12849

a. Predictor: (constant), e –performance management

b. Independent variable: university performance

b) **ANOVA: e- performance management vs the performance of public universities**
ANOVA test was carried out to determine the variations/level of significance/difference in the perceptions of influence of e - performance management on the performance of public universities. The results of the ANOVA for the hypothesis H_{04}/H_{a4}/ objective 4 at Table 4.21 indicates that e - performance management has a highly positive and significant influence on the performance of public universities at 0.000 significance level, because this value is ≤0.05 acceptable threshold.

Table 4.21 ANOVA: e-performance management vs universities performance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1744.441	1	1744.441	26.402	.000[a]
Residual	5484.007	83	66.072		
Total	7228.448	84			

a. Predictors: (Constant), e – performance management

b. Dependent Variable: the performance of public universities

c) **Regression coefficient: e performance vs universities performance (Beta and t-test)**

In table 4.22 a further test on the beta coefficients of the resulting model, the coefficients $\beta = 0.491$ is significantly different from zero with p-value of 0.000< 0.005.The results show that for each unit increase in the independent variable, there is an expected increase of 0.491 in the dependent variable. An examination of the t-value (t = 5.138, p = 0.000 < 0.05) indicates that e performance management contributes to increase the influence of HRIS on the performance of public universities. This implies that e performance management has a positive and significant effect the performance of public

universities. Saleem (2012) in his study on impact of adopting HRIS on three tiers of HRM in developing countries maintained the argument that the proposition that HRIS supports functional HRM processes is accepted as proved by his regression statistical analysis and justification. It is also identified that HRIS adoption (Beta/ β= 0.255) is significant (p=.009), which indicates that HRIS adoption is facilitating for functional HRM processes, which in turn translates into the performance of these developing countries. Similarly Al Zu'bi et.al (2014) in their study of factors motivating and inhibiting the practice of HRIS in business organizations, had a beta of 0.435, a p-value of 0.000 and a t= 6.147 in one of their beta and t-test on their study variables. They therefore rejected their null hypothesis and accepted the alternative hypothesis.

Table 4.22Regression Coefficient: e-performance management vs universities performance

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	18.256	2.662		6.858	.000
Performance Management	.570	.111	.491	5.138	.000

a. Predictor: e-performance management

b. Dependent Variable: universities performance

4.9.5 Model Summary - Regression Coefficients

Based on the overall model summary table, the data findings analyzed show that taking all other independent variables at zero, a unit increase in e-recruitment will lead to a 0.265 increase in the performance of employees in the Kenyan public universities. A unit increase in e-training will lead to a 0.263 increase in performance; and a unit

increase in e-payroll management will lead to a 0.356 increase in performance. Additionally, a unit increasein e-performance management will lead to a 0.220 increase in the performance of employees of

public universities in Kenya.

Table .4.23 Overall Model Summary - Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
Recruitment and Selection Procedure	.265	.097	.268	2.729	.008
Training and Development Process	.263	.121	.259	2.167	.033
Payroll Management	.356	.135	.301	2.634	.010
Performance Management	.220	.123	.162	1.785	.078

a. Dependent Variable: Universities performance

b. Predictors: e-recruitment, e-training, e-payroll and performance management

Ranking the predictor variables in terms of their individual influence on universities performance, the table shows the relative importance of each predictions i.e. e-payroll management had the highest effect (0.356), followed by e-recruitment (0.265), and then e-training(0.263) and e-performance management (0.220) respectively. All the variables except for e-performance management (0.078) were statistically significant at (p<0.05).

It is also evident from the overall model of regression coefficient at Table 4.23 that there is a strong impact of e - recruitment and selection procedure on the performance of Kenyan public universities with ($\beta = 0.268$) is therefore highly significant at (P = 0.008). Since the coefficient is positive, it implies that e-recruitment and selection procedure supports the outcome of the performance of public universities. On the other hand e – payroll management had the strongest coefficient ($\beta = 301$) as compared to the other study variables but had an overall significance of (P = 010) against e – recruitment significance of (P = 0.008). E-training and development with a beta ($\beta = 0.259$) and significant level(P = 0.033)had more positive impact as compared to the final study variable e – performance management which had the least but positive beta ($\beta = 0.162$) and also the least significance of (P = 0.078). The overall results indicate that all the variables in this study cumulatively influence the performance of public universities.

4.9.6 Overall Model Summary – Model Fitness

Further, regression analysis at Table 4.24 revealed a positive relationship ($R^2 = 0.952$). R^2 of 0.952 means that 95.2% of variations in the performance of public Universities are explained jointly by application of HRIS such as e-performance management, e-recruitment & selection procedures, e-payroll management and e-training & development. Since R^2 tends to exaggerate the scenario as it increases with the number of independent variables whether important or not, adjusted R^2 is therefore computed. From the data provided, adjusted R^2 of 0.950 means that 95.0% of variations in

performance in public Universities are explained jointly by application of HRIS under investigation.

Table 4.24 Model Fitness Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.976[a]	.952	.950	7.25918

a. Predictors: E-recruitment and selection procedure, e-training and development process, e-payroll management and e-performance management

b. Dependent variable: the performance of public universities

4.9.7 Overall Model Summary – ANOVA

Table 4.25 shows ANOVA table reports a significant F statistic, indicating that using the model is better than guessing the impact. It shows that variations in the performance in public universities in Kenya can be explained by the model to the extent of 85510.308 out of 89778.663 or 95.2% while other variables not captured by this model could be explained by the 4.8% (4268.355 out of 89778.663) of the variations in performance in the public universities.

F value of the model produces a p-value of 0.000 which is not significantly different from zero. A p-value of 0.000 is less than the set level of significance of 0.05 ($0.000 < 0.05$) for a normally distributed data. This means that the model is statistically significant in explaining impact of HRIS on the performance in the public universities. From the Tables, it can be concluded that the application of HRIS had significant effect on performance (p-values < 0.05).

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Table 4.25 ANOVA on Overall Model

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	85510.308	4	377.577	405.67)	.000[a]
	Residual	4268.355	81	52.696		
	Total	89778.663[b]	85			

a. Predictors: E-recruitment and selection procedure, e-training and development process, e-payroll management and e- performance management

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study sought to investigate the influence of Human Resource Information Systems (HRIS) on the performance of Kenyan Public Universities. With specific reference, the study looked at the extent to which application of human resource information systems on major human resource management functions like recruitment and selection, training and development, payroll management and performance management influence overall public university performance. Based on the summary of the findings, relevant conclusions were arrived at and recommendations suggested each of which was addressing individual specific objective/ research question. It was also based on these findings that further areas of study were suggested.

5.2 Summary of Major Findings

E-recruitment and Universities performance

The first objective of this study was to assess the effect of E-recruitment on performance of employees in the Kenyan public universities. The study established that E-recruitment was positive and significantly related to performance. This implies that online recruiting offers a variety of tools including pre-employment screening, personality assessments and testing to screen candidates to allow you to select qualified candidates who match an organization's values and culture with minimal human interaction. Automation of recruitment and selection procedure was therefore retained by ratings of the model. The results also indicated that this study variable plays one of the most fundamental roles of the HR department. Yet again this variable has the most significant overall coefficient which underpins the alternative hypothesis that e - recruitment and selection functions

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such as applicant tracking, timely recruitment, quality of data, user satisfaction interface influence universities performance. Many recruiting software packages offer a variety of these services that can be customized to meet the organization's specific needs for each job hence boosting business performance. Ease of access to information – It is faster, much quicker and easy to obtain and retrieve information from electronic records. User friendly – This positive response means that automation of the human resource functions provides for user friendly interface. The majority of employees are now able to interact with the HRIS system and this enables them to perform their e-tasks effectively to influence the performance of public universities.

E-training and Performance of Universities performance

The second objective was to establish the effect of E-training on the performance of employees in the Kenyan public universities. It was also found to be positive and significantly related to performance. ICT based training programs bring to light certain success factors which include flexibility in the management of learning times, trainers' active participation and the development of control mechanisms that ensure training effectiveness. Delivering training that engages people, motivates them to embrace change and encourages improvement is the key. Supporting employees in identifying their professional development options and targets is the purpose of training employees. As such, it contributes radically to retention management which in the long run enhances organization performance.

E-payroll management and Universities performance

The third objective of this study was to determine the effects of e-payroll management on the performance of public universities. The study found that e-payroll management significantly affects the performance of public universities. Through proper E-Payroll management, firms are able to perform calculations that have effects on the business as a whole including the overall performance. Payroll management is considered an

important function for human resource management, since; it is part of retention management and can be used to motivate employees. It involves the creation and management of employee benefits, as well as providing means for employees to be trained in understanding how the benefits work.

5.3   Conclusions

In this section the deductions are made from the findings of this research study and corroborated with empirical research study and related theories of similar studies.   The need for efficiency and effectiveness of human resource operations and strategic involvement lies in sound human resource information systems. Organizations are going out of their way to get this investment implemented. There are success stories, but also littered within are stories of failure. Generally this research study addresses the major components of HRIS while offering information on how these facets support the larger organizational outcomes.   The conceptual framework model illustrates that human resource information systems are an essential factor in a competent public university. In reality, human resource information systems integrate human resource features such as recruitment and selection, training and development, payroll and performance management. Such information sharing is crucial to organizations that view human capital as their main competitive advantage. The conclusions of findings of this study reflect these attributes and help to clarify the design of human resource information systems that nurture universities competence.

Based on the summary of findings, the study revealed that human resource information system enhances the performance of employees in Kenyan public universities.

E-recruitment was significant on performance - This infers that if the public universities recruits qualified and competent personnel then its business performance will be boosted. It can, therefore, be concluded that at the operational level, human resource information systems data can be used to identify potential internal applicants

for job vacancies, saving on external vacancies costs and ensuring existing employees of career opportunities. Again based on the results on e-recruitment which had the highest weighted value against the other study variables because of the efficiency, effectiveness and cost reduction, it can be concluded based on research findings that e-recruitment will improve institutional operations through the creation and frequent update of effective applicant tracking which is a HRIS sub system. It can also be concluded that there is moderate influence of e-recruitment which is one of the most fundamental roles of the HR department, and through its evaluation of ability and competency of potential employees in relation to what the university needs.

Based on the result that e – recruitments provides for accurate database, it can be concluded that this will enable the institution to fill a vacancy at short notice therefore positively influencing university performance.

E-training was significant to performance -This implies that the public universities have embraced e-training and thus helping employees in identifying their professional development options and targets for better performance. Further based on the results of this study which reveal that automation of training and development has a moderate influence on the university performance through the skills inventory, accurate efficiency and timeliness of skills information it can be concluded that the e-training capability allows for the establishment of core competency requirements against roles, at all levels within the organization and is measured against the roles competencies and supports employee progress towards acquisition of competencies, through training and professional development. However, based on the findings that other respondents did not have the computer knowledge, it can be concluded that computer literacy and competency is a great drawback to the advancement of application of human resource information systems technology.

E-payroll management was significant to performance - This implies that the public universities have embraced E-payroll management to reduce costs of peripheral HR functions hence a boost to universities performance. Further based on the findings that automation of payroll management has a moderate influence on the university performance through the de-ghost tool that instantly removes employees from payroll as soon as they exit the organization. It can, therefore, be concluded that this results in savings to the organization by instantly reducing the wage bill. This further underscores the alternative hypothesis and emphasize that e-payroll management influences organizational performance as this study variable contributes to the organizational cost reduction and efficiency when properly managed. Based on the results on timeliness, accuracy, quality of information provided by the payroll package it can be concluded that e – payroll presents critical analysis and reports on employee finances to enable university management to make quick decisions on the HR budgets and overall expenditure on institutional workforce.

In this regard, this research has provided valuable knowledge and information to the public universities about the importance of HRIS in saving time and cost in the HRM process such as E-recruitment, E- training, E-payroll and E-performance management. It can be concluded that the public universities which will install HRIS will be able to reduce the cost and time in HRM functionalities to a considerable amount.

Generally based on the results on usage of HRIS, it can be concluded that lack of computer skills and competency is a great drawback to the advancement of HRIS technology in public universities. The results further underpin the assumption that the robust reporting and analytical capabilities streamline the HR processes. As a result, it can be concluded that there is transformation of the human resource role in that HR capabilities enable the universities decision makers to manage their institutions effectively, for instance, ways to change the cost structure of the universities or identification of key types of talent that are critical for universities success.

Based on the positive results of this study that HRIS enhances quality assurance, consistency, accuracy and cost effectiveness of organizational data, it can be concluded that implementing effective HRIS makes it certain for HR to stay on the cutting edge in its bid to deliver more effective and streamlined services at the universities. It also confirms that HRIS functions improve HRM in terms of administrative purposes and analytical purposes.

Based on the results which revealed that HR practitioners concentrated more on transactional rather than strategic functions thereby affecting the influence that HRIS may have had on the performance of public universities, it can be concluded that HR practitioners should outsource work that is done effectively by outside vendors specialized in a given HR process or HR set of activities. This will enable the HR practitioners to effectively and efficiently participate in organizational decision making besides reducing transactional time and cost in man hours.

Based on the findings that there was moderate support for use of HRIS by top management of these learning institutions, it can be concluded that this is not sufficient to motivate the employees towards effective and efficient utilization of HRIS and that these software applications were not regularly updated.

The findings revealed that there were a number of benefits associated with application of HRIS which included easy access of staff information, improved data management, and improved data input process among others. It was also noted that application of HRIS was hampered by numerous challenges although with appropriate strategies these could be mitigated upon. It can, therefore, be concluded that despite the investment of HRIS in the surveyed universities, there is tremendous amount of unrealized HRIS potential in the usage to influence performance. Therefore, there is need to diversify the use of HRIS in the universities. This will enable the universities to efficiently and effectively run human resource matters.

The researcher made further conclusions based on specific study variables namely recruitment and selection procedure, training and development process, payroll and performance management and influence on overall university performance as discussed below:

E-performance management - The influence of automation of performance management on overall university performance was not statistically significant since the p-value of the regression less than set threshold. It can, however, be concluded that the weak linear link is due to the fact that the management are not making optimal use of the HRIS data supply to make decisions on performance matters, but cumulatively with other study variables in this study e-performance management influences university performance. Given some of the positive scores related to real time communication, quick access to performance information, the monitoring and evaluation tools and the role of HR in an organization, it can be concluded that human resources play a very critical role in an organization, Whether it concerns the hiring and firing of employees or whether it concerns employee motivation, the human resources department of any organization should occupy a very central role in not only formulating company policies, but also giving the institution a competitive advantage.

5.4   Recommendations

The recommendations of this study have been drawn and aligned to the preceding conclusions discussed in section 5.3 of this thesis. It was clearly evident from the study findings that e-recruitment, e-training and development, e-payroll and e-performance management influence overall organizational performance. Based on the above conclusions, the following recommendations are suggested:

The public universities need to embrace HRIS for better performance, based on the above conclusions. HRM is one of the most important strategic areas for the development of public universities since their front office employees are in continuous

interaction with clients and back office employees are responsible for the tasks oriented to constant service, product improvement and competition with other public universities. This is where adequate HRIS insignificant. It can be more than a tool for following the employees' basic demographic data and working hours. It can be a tool for identifying highly potential employees and directing them to areas of their working interest. It can give the management the information of not only what was done, but who had done it. It also enables it to give feedback and not just take disciplinary, but also rewarding actions towards employees.

E-recruitment and Selection

Research findings indicate that e-recruitment influence performance of public universities. Therefore, there is need for public Universities to continue investing towards improvement of the human resource information systems with a view to enhancing their service delivery.

Online recruiting offers a variety of tools including pre-employment screening, personality assessments and testing to screen candidates to allow selection of qualified candidates who match the organization's values and culture with minimal human interaction. Many recruiting software packages offer a variety of these services that can be customized to meet organization's specific needs for each job.

Online recruiting reaches a much larger or more targeted audience than other methods do.

E-training and Development

It was noted from the research findings that e-training and development process influence performance of public Universities. However, public Universities need to investigate other variables other than e-training and development process as aspects of human resource information systems that may have high influence and domicile them within the systems to enhance their performance-training will also equip the employees with knowledge and skills to effectively and efficiently carry out the tasks which will in the long run enhance performance.

E-payroll management

The study indicated that there is high level application of e-payroll in public universities; however, the study further noted that there are some aspects of e-payroll which may influence performance of public Universities which were not considered in this study. Therefore there is need to identify such aspects of e-payroll by public Universities and to affect them with their human resource information systems for effective management of their e-payrolls. Furthered-payroll management will help the organization perform calculations that have effects on the universities as a whole including reduction of costs in HR functions thereby enhancing the overall performance.

E-performance management

The study findings further indicated that some respondents disagreed that e-performance management enables real time communication between users while according Jiang (2010) e-performance management enhances real time communication. It is therefore recommended that public Universities establish reasons why their e-performance management fail to enhance real time communication.

Human resource Practitioners

The conclusions reveal that there is need to improve effectiveness and efficiency human resource information systems. It is, therefore, recommended that human resource practitioners review this study as it should help them acquire better understanding of the current human resource information systems status of influence. It is believed that with this new knowledge they would advise the university management on the strategic importance and contribution of HRIS to the overall performance of the public university.

Public universities

For those university institutions who have not fully digitized their systems, they should review their status and to update capacity of operation of their systems.

Diversification of use of HRIS

Based on the conclusion that a few respondents believed that HRIS was not serving intended purpose, the researcher recommends that here is need to diversify the use of HRIS in the universities. This will enable the universities to efficiently and effectively manage performance human resource performance matters. The underlying assumption based on the conclusions of this study is that it appears that most Kenyan public universities are putting in place human resource information systems without guidance from academic research on the effects of these systems and their impact on the human resource function. It is, therefore, recommended that in-depth consultations should be carried out together with review of previous feasibility surveys by other institutions of similar trade.

Lack of funds and required skills

Based on the conclusions of this study, it was recommended that the Kenyan public universities need to invest in modern information technology in such areas as computer

hardware and internet connectivity. Enough funds should be made available to the respective public university institutions in order for their workforce to acquire the necessary IT competency.

Generally the study recommends that public universities should adopt human resource information system as it was found to give updated quality information. The study also recommends that there is need for the commercial banks in Kenya to invest in technology and training as this will effectively enhance their performance.

5.5 Suggestions for further Research

1. The results for this study provide empirical evidence that human resource information systems (HRIS) influence the performance of Kenyan public universities. The bundle of HRIS on human resource management (HRM) functions adopted for this study included recruitment and selection procedure, training and development process, payroll and performance management. However, it should be appreciated thatcher practices are diverse and there's no standard bundle. Furtherstudy is,therefore, recommended on other unexplored HRM factors to further clarify the influence of HRIS on overall organizational performance that have not been addressed in this study. Such clarification would provide additional valuable guidance to HR professionals and the university institutions as a whole.

2. This study was carried out using the Kenyan public universities as a parameter to ascertain the extent of influence of HRIS on overall university performance. A comparative assessment should be carried out to include the private universities to decisively determine the extent of influence of HRIS on both public and private universities in Kenya.

3. Academically this study has important implications for further studies aimed at understanding the human resource information systems and its influence in other public

universities in developing countries. It is, therefore, recommended that further study should apply diverse models of measurement other than the models used in this study.

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APPENDICES

APPENDIX 1 - QUESTIONNAIRE

Dear Correspondent

The questionnaire is aimed at collecting information about the **influence of Human Resource Information Systems (HRIS) on the performance of public universities.** The information you give will be of benefit to the researcher in accomplishing academic goals. If you are unsure how to rate your university performance, tick the number under neutral. Kindly do not omit any feature and respond to items honestly. Your response will be held in total confidence and only used for the purpose of this study.

Instructions

Please do not write your name anywhere on the questionnaire.

PART A: DEMOGRAPHIC INFORMATION

Kindly tick (√) the appropriate response in the box provided.

1.   Gender:

Male   ☐   Female   ☐

2.   Age in years:

18 – 30   ☐

     31 – 40   ☐

41 – 50   ☐

50 and above   ☐

3.   Level of education:

O level   ☐

A level   ☐

Diploma   ☐

1st Degree   ☐

Masters   ☐

Ph. D   ☐

4.   Academic Staff   ☐
                                                    ☐
5.   Non – Academic Staff

6.   Scale/ Job Group: _____

7.   Length of service in your current organization:

1 – 4 years   ☐

5 – 10 years   ☐

    Above 10 years   ☐

8.   How long has it been since your universityintroduced HRIS?

1 – 4 years   ☐

5 – 10 years   ☐

 Above 10 years   ☐

PART B:

The perception of influence of HRIS on the performance of public universities is scored on a five – point summated scale, with 5 being "Strongly Agree" and 1 being "Strongly Disagree".

Section I: Influence of e - Recruitment and Selection Procedure on performance of public universities

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.Our organization deploys HRIS in their recruitment process					
2. E - recruitment providecomprehensive database for applicant tracking					
3. E - recruitment ensures timely access to recruitment information.					
4 E - recruitment assures cost reduction in the recruitment process					
5 E - recruitment enhances consistency of information of performance appraisal to facilitate suitable recruitment and selection.					
6 E - recruitment allows organization to assess accurately the effectiveness or otherwise of the universities staffing strategies.					
7 E - recruitment facilitates speedy recruitment process					

8 E - recruitment enhances efficiency of the selection process.					
9 E - recruitment has significant influence on user satisfaction in recruitment and selection procedures					
10 E - recruitment enhances service quality of recruitment.					
11. E-recruitment influences the performance of public universities					
12. E - recruitment enable users to undertake complex analysis of recruitment patterns and trends evaluations.					
13. E - recruitment allows Universities to format a profile of their staff strengths and weaknesses.					
14. E - recruitment reveals labor turnover trends for effective recruitment.					
15. Effectiveness of the HR function of recruitment is enhanced/improved by the HRIS.					
16. E - recruitment produces detailed records of recruitment and selection and selection activities					
17. E - recruitment has helped with forecasting staffing needs.					
18. The information generated from our HRIS helps our institution make better decisions in choosing better people.					

Section II: Influence of e - Training & Development Process on performance of public universities

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1. E - training has improved the training process.					
2 E - training helps track training, skills and competencies					
3. E - training can support decisionson career management and succession planning					
4 E - training ensures up-to-date skills inventory					
5. E - training ensures efficient management of HR capital through improvedelectronic resumes					
6 E - training enhances effectivenessof generation of data on employee's training needs					
7 E - training increases efficiencyin training and development process.					
8. E - training provides for accuracy in training data					
9. E - training enhances user – friendly instructions for training & development process					
10. E - training increases usefulness of the training function					

11. E - training improves generationof records on training expenses					
12. E - training improves use of data to plan and administer all types of training interventions					
13.The information generated from our e - training helps our institution decide when training and skills development is necessary.					
14. E - training has reduced training expenses.					

Section III: Influence of e - payroll managementperformance of public universities

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1. E - payrollensures speedyanalysis and generation of salary reports					
2 E - payroll improves generation of payslips					
3 E - payrollimproves record of hours absent for effective payroll management					
4. E - payrollassures accuracy of data in payroll management					
5E - payroll improves the payroll interface with Accounts for efficiency in payrollmanagement					
6E - payrollenhances quality of information generated for payroll					

management					
7.E - payrollensures ease of use of the payroll instructions					
8E - payrollimproves usefulness payroll management function					
9.E - payrollprovides for more flexibility in payroll management					
10. E - payroll increases speed of payroll processing					
11.E -payroll influences the performance of public universities					
12.The information generated from our e- payroll helps our institution decide on employee raises.					

Section IV: Influence of e - Performance Management performance of public universities

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.E –performance enables real time communication between users					
2 E –performance enhances accessibility to information for performance management					
3. E –performance ensures ease of use the first time you access the system.					
4. E –performance enhances performance appraisal system by providing step by step assistance with scheduling, conducting and appraisal ratings					
5. E –performance enhances generation oflabor turnover reports for performance management					
6.E - performance ensures effective communication					

between employee and supervisor					
7. E –performance generates consistent reports needed for performance management.					
8. E –performance enhances production of up-to-date information for performance management					
9 E –performance enhances performance management to influence overall organizational Performance.					
10. E –performance enhances automation of the HR score card for improved universities performance management					
11. E –performance increases employee productivity for effective university performance					
12.The integration of performance into HRIS where recruiting data is housed would open a new door for continued focus on internal mobility					

Section V: Dependent variable: universitiesperformance

	Strongly	Agree	Uncertain	Disagree	Strongly

	Agree				Disagree
1.HRIS increases competitive advantage of this universities					
HRIS improves databaseprovision of employee turnover reports					
3 Application of HRIS enhances use of HR score card					
4.HRIS seeks to achieve alignment of HR strategies with universities strategy.					
5.HRIS provides timely and quick access to information for decision making					
6. HRIS improves employee satisfaction					
7HRIS enhances HR planning					
8.HRIS enhances quality of information.					
9.HRIS enhances theaccuracy of HR information that managers need tomake decisions.					
10.HRIS maximizes costefficiency.					
11. HRIS enables managers to perform the HR functions effectively					

12.HRIS enhances service quality				
13.HRIS ensures monitoring and evaluation of HR performance				
14.HRIS readily facilitates key performance indicators for universities success				
15.HRIS has made the HR department more important to the institution.				

Appendix 2:   Interview Guide

1. In your opinion isHRIS serving its intended purpose?

2. Do you feel applicant tracking in e-recruitment and selection provides for efficiency in the procedure?

3. In your opinion is data generated by your e-training skills inventory adequate and useful?

4. Does HRIS provide consistent data to facilitate performance management?

5. In your opinion is the current e-payroll package serving its intended purpose?

6. Does Application of HRIS generate appropriate data useful in decision making?

7. In your opinion what are the barriers to Application of HRIS for effective organizational performance?

8. Does HRIS offer quality assurance of data provided by HR staff?

9. Do you support HRIS in your organization?

10. What would you prefer to see done differently during application of HRIS at your campus?

APPENDIX 3 Influence of e – recruitment on performance of public universities

Table 4.19 –Influence of e – recruitment on performance of public universities

	Strongly agree Row N %	Agree Row N %	Uncertain Row N %	Disagree Row N %	Strongly disagree Row N %
Respondents' organization deploys and HRIS in their recruitment process	10.6%	48.2%	23.5%	11.8%	5.9%
E – recruitment provides comprehensive database for applicant tracking	17.6%	44.7%	27.1%	7.1%	3.5%
E – recruitment ensures timely access to recruitment information	20.0%	40.0%	28.2%	8.2%	3.5%
E - recruitment and selection process assures cost reduction in recruitment process	11.8%	47.1%	24.7%	11.8%	4.7%
E – recruitment enhances consistency of information of performance appraisal to facilitate suitable recruitment	17.9%	36.9%	33.3%	8.3%	3.6%
E – recruitment allows organization to assess accurately the effectiveness or the universities staffing strategies	18.8%	38.8%	29.4%	10.6%	2.4%
E – recruitment facilitates speedy recruitment process	14.1%	38.8%	30.6%	12.9%	3.5%
E – recruitment enhances efficiency of the selection process	9.4%	40.0%	40.0%	5.9%	4.7%

E – recruitment has significant influence on user satisfaction in recruitment and selection procedures	14.3%	53.6%	20.2%	7.1%	4.8%
E – recruitment enhances service quality of recruitment	17.6%	34.1%	30.6%	12.9%	4.7%
Organizational performance is influenced by adoption of HRIS	11.8%	45.9%	27.1%	11.8%	3.5%
E – recruitment enables users to undertake complex analysis of recruitment patterns and trends evaluations	17.6%	42.4%	27.1%	8.2%	4.7%
E – recruitment allows Universities to format profile of their staff, strengths and weaknesses	15.3%	48.2%	23.5%	10.6%	2.4%
E – recruitment reveals labour turnover trends for effective recruitment	16.5%	49.4%	21.2%	10.6%	2.4%
Effectiveness of the HR function of recruitment is enhanced by the E – recruitment	14.1%	50.6%	23.5%	8.2%	3.5%
E – recruitment produces detailed records of recruitment and selection activities	21.2%	43.5%	25.9%	4.7%	4.7%
E – recruitment has helped with forecasting staffing needs	14.1%	48.2%	23.5%	12.9%	1.2%

The information generated from the universities HRIS helps the institution make better decisions in choosing better people	11.8%	41.2%	31.8%	8.2%	7.1%
Average		15.25	44.28	27.28	9.54
1.81					

APPENDIX 4 Influence of e – training on the performance of public universities

Table 4.20:Influence of e – training on the performance of public universities

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
	Row N %	Row %	Row N %	Row N %	Row N %
E - training has improved training process	11.8%	28.2%	37.6%	12.9%	9.4%
E - training helps track training skills and competences	20.0%	37.6%	28.2%	5.9%	8.2%
E - training on training and development function can support decisions	16.5%	48.2%	28.2%	5.9%	1.2%
E - training ensures up-to-date skills inventory	16.5%	47.1%	25.9%	10.6%	.0%
E - training ensures efficient management of HR capital through improved electronic resumes	16.5%	41.2%	34.1%	7.1%	1.2%
E - training enhances effectiveness of generation of data on employee's training needs	14.1%	45.9%	27.1%	8.2%	4.7%
E - training increases efficiency in training and development process	14.1%	38.8%	29.4%	9.4%	8.2%
E - training provides for accuracy in training data	14.1%	49.4%	27.1%	8.2%	1.2%

E - training enhances user-friendly infrastructure for training and development process	15.3%	48.2%	31.8%	3.5%	1.2%
E - training usefulness of the training function	12.9%	45.9%	27.1%	10.6%	3.5%
Application of HRIS improves generation of records on training expenses	22.4%	37.6%	30.6%	7.1%	2.4%
E - training improves use of data to plan and administer all types of training interventions	16.5%	41.2%	32.9%	5.9%	3.5%
The information generated from our HRIS helps our institution decide when training and skill development are necessary	10.6%	45.9%	29.4%	8.2%	5.9%
E - training has reduced training expenses	23.5%	40.0%	17.6%	7.1%	11.8%
Average		29.5%	39.4%	23.0 %	5.1%
3.0%					
Average	29%	44.6%	18.5%	4.6%	3.3%

APPENDIX 5 Performance management

Table 4.22e - Performance management

	Strongly agree Row N %	Agree Row N %	Uncertain Row N %	Disagree Row N %	Strongly disagree Row N %
E -performance enables real time communication between users	15.3%	37.6%	36.5%	5.9%	4.7%
E -performance enhances accessibility to information for performance management	20.0%	41.2%	27.1%	7.1%	4.7%
E -performance ensures ease of use the first time access the system	16.5%	47.1%	25.9%	5.9%	4.7%
E -performance enhances performance appraisal system by providing step by step assistance with scheduling	17.6%	37.6%	34.1%	5.9%	4.7%
E -performance enhances generation of labor turnover reports for performance management	17.6%	40.0%	28.2%	8.2%	5.9%
E -performance applications on performance management system ensures effective communication	16.5%	42.4%	29.4%	5.9%	5.9%

E -performance generates consistent reports needed for performance management	21.2%	40.0%	22.4%	14.1%	2.4%
E -performance enhances production of up-to-date information for performance management	12.9%	40.0%	25.9%	9.4%	11.8%
E -performance enhances performance management to influence overall organization performance	21.2%	36.5%	25.9%	8.2%	8.2%
E -performance enhances automation of the HR score card for improved university performance management	14.1%	42.4%	31.8%	2.4%	9.4%
E -performance enhances employee productivity for effective university performance	15.3%	40.0%	30.6%	5.9%	8.2%
The integration of performance into HRIS where recruiting data is housed would open a new door for continued focus on internal mobility	15.3%	41.2%	32.9%	7.1%	3.5%
Average	17.0	40.5	29.2	7.2	6.1

APPENDIX 6Dependent variable –Performance of public universities

Table 4.23: Dependent variable –Performance of public universities

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	Row N %	Row N %	Row N %	Row N %	Row N %
HRIS increases competitive advantage of this organization	27.1%	30.6%	27.1%	7.1%	8.2%
HRIS improves database provision of employee turnover reports	12.9%	61.2%	18.8%	2.4%	4.7%
Application of HRIS enhances use of HR score card	12.9%	44.7%	34.1%	4.7%	3.5%
HRIS seeks to achieve alignment of HR strategies with organization strategies	12.9%	50.6%	28.2%	7.1%	1.2%
HRIS provides timely and quick access to information for decision making	18.8%	51.8%	21.2%	8.2%	.0%
HRIS improves employee satisfaction	16.5%	38.8%	36.5%	5.9%	2.4%

HRIS enhances HR planning	22.4%	48.2%	22.4%	3.5%	3.5%
HRIS enhances quality of information	21.4%	47.6%	22.6%	7.1%	1.2%
HRIS enhances the accuracy of HR information that managers need to make decisions	19.3%	45.8%	21.7%	9.6%	3.6%
HRIS maximizes cost efficiency	17.6%	49.4%	20.0%	9.4%	3.5%
HRIS enables managers to perform the HR functions effectively	21.2%	44.7%	23.5%	5.9%	4.7%
HRIS enhances service quality	17.6%	54.1%	20.0%	3.5%	4.7%
HRIS ensures monitoring and evaluation of HR performance	15.3%	48.2%	27.1%	5.9%	3.5%
HRIS readily facilitates key performance indicators for university success	16.5%	48.2%	24.7%	8.2%	2.4%

HRIS has made the HR department more important to the institution	12.9%	50.6%	24.7%	5.9%	5.9%
Average	17.7%	47.6%	24.8%	6.3%	3.6%