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**FACTORS INFLUENCING ADOPTION OF CLOUD BASED HUMAN RESOURCE
MANAGEMENT SYSTEM IN KENYAN COUNTIES; (A CASE STUDY OF NYERI
COUNTY)**

BY

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**A Research Project submitted in Partial Fulfilment of the Requirements for the Award of
Master of Science Degree in Information Technology Management, School of Computing,
University of Nairobi.**

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DECLARATION

This project report is my original work and has not been presented for a degree in another University.

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ABSTRACT

Cloud-based human resource management system (HRMS) presents numerous benefits to an organization including cost reduction, improved efficient, elimination of errors, and optimal utilization of human resource data. The aim of this study was to assess factors that affect the adoption of cloud-based HRMS in county governments resulting in the development of adoption framework. The specific objectives of the study was to establish the effect of organizational, technological, and external environment factors on adoption of cloud-based HRMS at the Nyeri County Government offices. The study adopted a descriptive case study design with a sample of 160 staff selected from a population of 400 staff working at the Nyeri County Government headquarter offices using the clustered random sampling method. The sample size was arrived by computing 40% of the population size in line with recommendation by Mugenda and Mugenda that the sample size for population of less than 1000 individuals be at least 30% of the population. Quantitative data was collected from operational staffs using questionnaires while qualitative data was collected from senior managers using interviews. Cumullatively,110 questionnaires were resubmitted to the researcher while 7 interviews were completed. Quantitative data was analysed using descriptive statistics and the multiple regression technique while qualitative data analysis was done using the thematic technique. Findings revealed that Nyeri County Government has made notable progress in terms of adoption of cloud-based HRMS with adoption score of 74.1%. Organizational factors ($\beta= 0.238, p=0.011$), Technological factors ($\beta= 0.284, p=0.005$), and external environment factors ($\beta=0.388, p=0.00$) had a positive and statistically significant effect on adoption of cloud-based HRMS in Nyeri County. External environment factors had the strongest effect followed by technological factors. Results also showed that age, gender, and education level of workers did not have a significant moderating effect on the influence of the organizational, technological, and external environment factors on cloud-based HRMS adoption. The study recommended that to improve the adoption of cloud-based HRMS, the county government should ensure adequate allocation of resource, improve internet connectivity, and find strategies for coping with a less vibrant economic environment.

Keyword: Cloud computing, human resource management system, organizational factors, technological factors, external environment factors.

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ABBREVIATIONS AND ACRONYMS

CAPAM:	Commonwealth Association for Public Administration and Management
DOI:	Diffusion of Innovation
ERP:	Enterprise Resource Planning
ESS:	Employee Self-Service
HR:	Human Resource
HRIS:	Human Resource Information Systems
HRM:	Human Resource Management
HRMS:	Human Resource Management System
IaaS:	Infrastructure as a Service
ICT:	Information and Communication Technology
IT:	Information Technology
PaaS:	Provision as a Service
PSC:	Public Service Commission
SaaS:	Software as a Service
TAM:	Technology Acceptance Model
TOE:	Technology Organization Environment
UTAUT:	Unified Theory of Acceptance and Use of Technology

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Cloud computing is gaining a lot of popularity as a new information technology (IT) arrangement in organizations, offering many advantages such as cost reduction and high flexibility that help in coping with high elasticity of demand. Cloud computing enables access to computing resources such as applications, networks, storage, and services over the network. Systems software in datacentres computing resources are provisioned and released on-demand with minimal user and service provider interaction (Mell and Grance 2009a). Thus, (SaaS) known as Software as a Service.

A cloud is known as datacentre hardware and software. If made available to the public in a pay-as-you-go manner, it is called a public cloud whereas the service sold is utility computing. Private cloud refers to internal storage centers of an entity which are not publicised. Therefore, aggregate of SaaS and utility computing exclusive of private clouds is known as cloud computing. People can act as end users or providers of SaaS and utility computing (Armbrust et al., 2009). Organisations are reassured of Cloud computing to save on IT expenditure by moving from capital expenses in connection with operational expenses (Armbrust et al 2009). It also reduces risks associated upon owning and maintaining hardware infrastructure.

Cloud computing has earned lots of sifting from media, as well as analysts because of opportunities offered. Its cost estimate is three to five times for business applications and five times exceeding in consumer applications (Lynch, 2008). According to Gartner (2008), cloud computing is dominant as well as e-business. Firms admit to seek out all computing costs thus

reinforcing their IT operations and subsequently applying virtualization technologies. Cloud computing act as a modern technology to help them achieve this goal. Cloud computing affirms retake of enterprises to a new level and allows them into further cost reduction through improved utilization, reduced administration and infrastructure cost, and faster deployment cycles (Boss et al., 2007).

Cloud computing is a term used to describe both a platform and type of application. As a platform it supplies, configures and reconfigures servers, while the servers can be physical machines or virtual machines. Alternatively, cloud computing describes extended applications accessible through the internet hence large data centres, powerful servers are used to host web applications and web services (Boss et al., 2007). Cloud acts as an emblem abstraction to internet considering complex infrastructure it conceals. It varies from traditional computing standards as it is flexible, can be encapsulated to an entity that provides different level of services to clients, driven by economies of scale and are dynamically configurable (Foster et al., 2008).

Human Resource Management System (HRMS) is a form of software that incorporates a number of systems and processes to ensure ease management of resources, business procedures, and data. HRMS is widely used by businesses to link a number of necessary human resource management (HRM) roles such as administering payrolls, storing employee data, recruitment exercises, and keeping track of records. It sets the seal on everyday HRM process management and easy accessibility. It offers support by acquiring, storing, analysing and disseminating information to stakeholders. The HRMS has resulted to improved traditional paradigms leading to better strategic decision-making. The technological wave advancement has transformed each space of life today, and HRM as a whole was not different. Early systems were definite in scope

and solely focused on single tasks, such as enhanced payroll process and tracking of employees' working hours. Today's systems cover a wide range of tasks related to HR units, including tracking and improving process efficiency, maintaining organizational groupings, and simplifying financial transactions of all types. Summarily, the role of HR department continues to expand in complexity, HR technology systems evolves to fit these needs (Chugh, 2014).

Researchers attribute to numerous benefits of cloud computing, which makes this concept attractive to firms. Cloud computing framework acknowledges establishments attain dynamic profitability of their IT hardware and software venture. It is affirmed by deteriorating concrete hurdle built-in confined systems, automating management of the group systems as an individual item. Countless companies have invested in cloud computing technology by building their public clouds, which include Amazon, Google and Microsoft. These companies are often releasing new features and updates of their services. For instance, Amazon Web Services released a Security 2 and Economics centre on their website to have academic and community advice regarding these issues (Khajeh-Hosseini et al., 2010). This move still shows a lot of uncertainties on costs and security in enterprises to adopt cloud computing. Issues revolving on economics and security in cloud computing enterprises, therefore, need further research.

Nyeri County has continuously invested in information and communication technology (ICT); to recognize the role it plays by nurturing development. The origin of mobile technology and internet hubs in cities has led to significant development in the county. Cell phone coverage stands at 91 per cent and there are 384 cyber cafes. This new technology has transfigured the way people communicate and also improved productivity in service delivery. The county admitts ICT as a growing sector with huge potential of unlocking many opportunities in business,

education, agriculture, industry, and security. ICT has proven to be a subsector of choice for employment and young professionals. Limited access to ICT services, inadequate funding mechanisms, lack of reading culture, high costs of communication equipment and operations are a challenge in development of this area.

It is important for cloud computing to deliver value than being a platform for simple tasks including application testing or running product demos since large organizations are complex. Consequently, problems surrounding migration of application systems to the cloud need to be explored as well as its associates. The participants include technical, project, operations and financial managers together with engineers developing and supporting entities. Besides profitable ventures or outlay factor, organizations should also pay attention to other considerations such as flexibility, customer relationships, compliance public image and business continuity (Khajeh-Hosseini et al., 2010).

It is fundamental for the county government to stop relying on paper-based HRMS. There is increased use of computers and introduction of information systems in many public organizations. However, the interaction of cloud-based data with HRMS is limited. Information systems are mainly at operation level rather than management support systems. But despite the aforesaid, studies have mainly focused on adoption and implementation of cloud-based HRMS and not usage. Mohamed (2006) conducted a study at the Kenya Revenue Authority on factors influencing its adoption. The presence of computers or an ICT department in an organization is assumed to translate into improved service delivery by the HR department. Moreover, no research has been carried out in retrospect of cloud-based HRMS at the county government level. cloud-based HRMS application in county governments remains an under researched

phenomenon. This analysis, therefore, desired to capture elements that impact cloud-based HRMS operations in Nyeri county government.

1.2 Problem Statement

Cloud computing technology is somewhat new in the field of IT. The cloud computing technology is currently being used by small and medium-sized firms because it allows them to easy access of IT-related resources and also quite affordable. However, innumerable organizations with large IT infrastructures and systems are yet to take advantage of this technology because of certain technological, cultural, and organizational difficulties. Adoption of cloud computing is still limited in the management of HR functions as observed in the Kenyan Public sector.

Cloud-based HRMS is majorly used by companies in decision making. Convincing stakeholders of the benefits of adopting cloud-based HRMS is key. Ngai and Wat (2014) observed that organizations need to be convinced of the benefits of Cloud-based HRMS for their company before they implement such a system. Therefore, an analysis of the potential benefits of technology in HRM has been one of the main issues both for HR practitioners and academics in this area. An examination of the literature suggests that the impact of technology in HRM falls into two main areas: (1) impact on the efficiency of the delivery of HR processes, and (2) impact on the role of the HR function itself.

HRMS results to a dramatic decrease in manual, from 5.9% to 0.1%, access to online leave transactions and online infoSlips that gives the employees an interactive compensation that is more information-rich than a traditional paper payslip. Employees, managers, and users have

access to real time information from multiple locations simultaneously. Yet, despite the fact that the HRMS would solve a myriad of HR departments problems at county governments, resulting in less expenditure of money and other resource and consequently improved business performance, cloud-based HRMS are yet to be adopted by the county governments (Kiai 2013).

Moreover, there is a deficit of presentation on challenges affecting implementation of cloud computing by county governments in African developing countries and in particular Kenya.

1.3 Objectives

1.3.1 General Objective

The purpose of this scrutiny was to examine factors influencing adoption of cloud-based human resource management systems in Kenyan county government.

1.3.2 Specific Objectives

The study desired to obtain;

1. To show outcome of organizational factors in adoption of cloud-based human resource management systems at Nyeri County.
2. To investigate effect of technological elements on cloud-based human resource management systems enactment at Nyeri County.
3. To evaluate external environment impact on adoption of cloud-based human resource management systems at Nyeri County.

1.4 Significance of the Study

To develop a structure for adoption of a cloud- based HRMS at Nyeri County Government. The County Governments through the Ministry of ICT, the Regulators, Private sectors and the Management will have an insight on how to implement and adopt to cloud-based HRMS. This technology withstands the capability of changing old HRM roles and functions such as payroll and manual administrative processes to one where cost efficiencies can be gained, enabling more time and energy to be devoted to strategic business issues. This capability will focus on the ease of use of cloud-based HRMS and enhance decision making at all levels. This branch of knowledge will also add value to scholars and researchers in the fields of IT, HRM, and public management to existing theories and empirical literature on adoption of cloud-based HRMS. The study has also supported research on this subjected by recommending areas for further research.

1.5 Research Questions

1. What effect do organizational factors have on adoption of a cloud- based human resource management system at Nyeri County?
2. How does technology affect cloud- based HRMS asdoption at Nyeri County?
3. What is the impact of external environment in adoption of cloud- based human resource management system at Nyeri County?

1.6 Limitations of the study

The analysis was detailed on Nyeri County Government. Despite the size of the county and other topographical factors the results may not be generalized for all county governments

due to seen differences all over the country. Other factors like human resources uptake, resources and infrastructural differences are to be put into account.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This part exhibits evaluation of existing exposition in reference to cloud-based HRMS implementation. It examines the definition of cloud computing; reviews implementation of cloud-based HRMS, and strands affecting adoption of cloud-based HRMS. It also discusses the IS adoption Models.

2.2 Theoretical Literature Review

This examines relevant premises pertaining to ICT adoption. A theory is a system of interconnected abstractions or ideas that condenses and organizes knowledge about the world (Cooper & Schindler, 2013). The most common theories for explaining adoption of ICT include technology acceptance model, diffusion of innovation theory, unified theory of acceptance and use of technology, and technology organization environment model. These theories are discussed in subsequent sections.

2.2.1 Technology Acceptance Model

TAM is mainly utilized to give an understanding of the general acceptance forecast for new technologies. The emerging scientific know-how include operating systems, desktop applications, and the online services. (Yousafzai et al., 2007; Legris et al., 2003). (TAM) is in accordance with the Theory of Reasoned Action stated by Fishbein and Ajzen (1975). It is also tailored to project and describe information technology acceptance. Over and above that it proposes ease of use, application effectiveness which increases the behavioural intention to

employ the perceived technology. Basically, behavioural intentions determine the real usage behaviour.

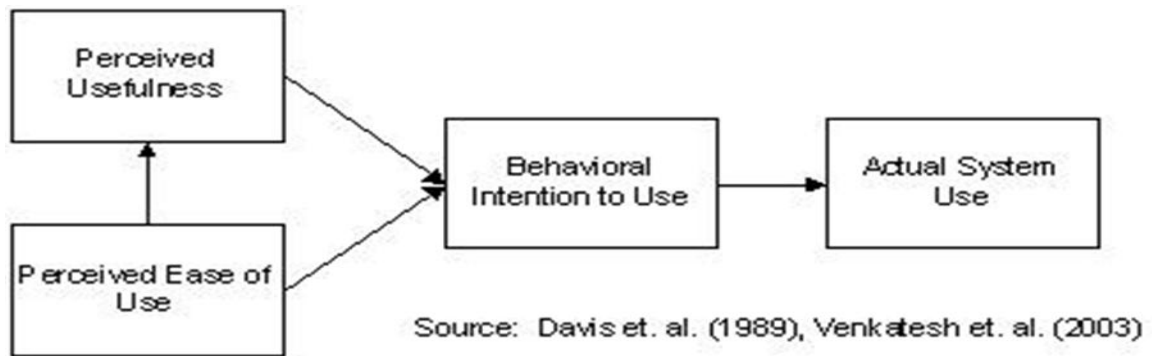


Figure 2.1: Technology Acceptance Model (TAM): Source Venkatesh et. al (2003)

2.2.2 Diffusion of Innovations Theory (DOI)

DOI is another prototype developed to give an understanding of the adoption of technology in a given population. It suggests that adoption of technology is determined by four main constituents: social system, innovation characteristics, communication, and time (Rogers, 1995). The adopter characteristic component classifies technology adopters into five classes. The classes include innovators, late majority, innovators, laggards, and early majority. DOI suggests that the adoption of a given technology is dependent with the characteristic of adopters that dominate a given population.

The characteristic of innovation component of DOI identifies five features of an innovation that determines its rate of diffusion in a given population: complexity, relative advantage, triability, observability, and compatibility. DOI suggest that when the technology being proposed meets all these five characteristics, it is more likely to be adopted within the

shortest time. DOI final component, innovation decision process, is concerned with the process that is used to introduce a new idea or technology to a given population. DOI suggest that to facilitate faster adoption of innovations, the decision process should adhere to five steps which are: knowledge, decision, implementation, decision, and persuasion. These steps should happen between items of the same social system, with time and in a series of communication networks.

DOI has offered a theoretical platform to discuss matters pertaining adoption at an international level as well as at an individual level. In conclusion, DOI more inclined towards the environmental dynamics, organizational attributes and system features. However, it is less effective when it comes to explanatory purposes and also not satisfactorily practical in terms of outcome prediction in comparison to other models of adoption.

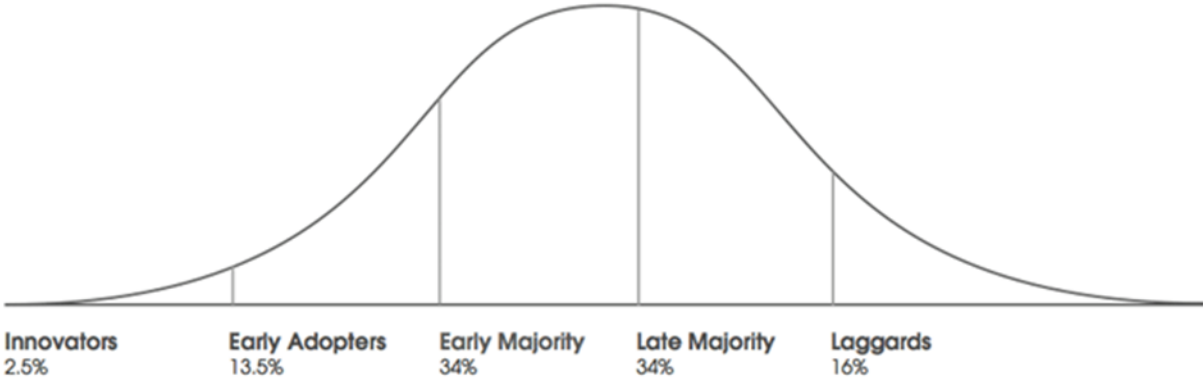


Figure 2.2: Diffusion of Innovations (DOI)

2.2.3 Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT was formulated by Venkatesh (2003) as a model for providing a unified explanation of user's acknowledgement of information technology. Mainly, use of UTAUT is to elaborate on how the user can use an information system and subsequent user behaviour. Venkatesh (2003) gave a comparison of both the differences and the similarities of the eight models which had earlier on been used in regard to information system. The eight models originated from communication psychology, and sociology. Such models include Theory of reasoned Action, TAM, a combination of Theory of Learned behaviour and TAM, DOI, Model of PC Utilization, social Cognitive Theory, and Motivational Model. Identification was made by UTUAT and four information systems acceptance precursors were accepted. They were developed by modelling the preceding fourteen constructs extracted from eight acceptance theories. The important constructs noted are social influence, effort expectancy, facilitating conditions and performance expectancy. Also, for major moderating variables were noted including; age, gender, usage voluntariness and experience.

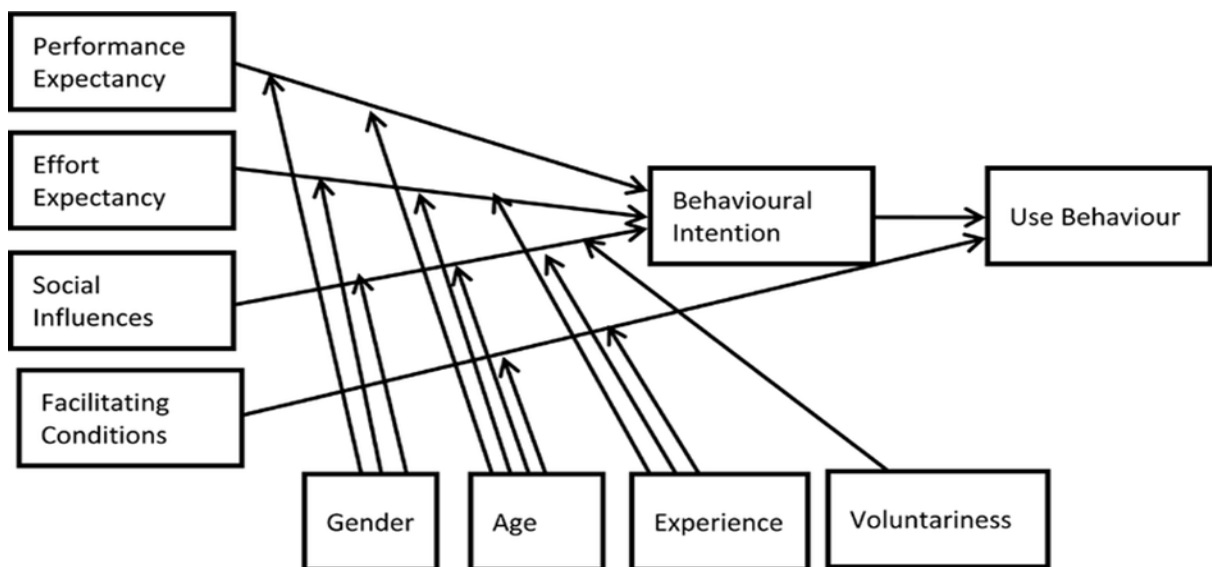


Figure 2.3: Unified Theory of Acceptance and Use of Technology (UTAUT)

2.2.4 Technology Organization Environment (TOE) Model.

Tornatzky & Fleischer (1990) are the developers of TOE. According to TOE framework, there exist three major characteristics that mainly influence the adoption and implementation of technological novelties processes. These are organizational context, technological context as well as the environmental context. The wide spectrum of technological structure includes all technologies, both within and without those available at the market. Organizational context can best be understood in relation to many descriptive measures including formalization, centralization, scope and size, managerial structure and complexity, human resource quality, quantity of internally available slack resources. The environmental context is comprised of important domains that an organization can interact with to carry out its activities. It includes competitors, industry, dealings with government, and ability to access supplied resources. The TOE agenda utilized IT implementation studies, gives a convenient analytical outline that can be utilized in studying the assimilation and adoption of various IT innovation models.

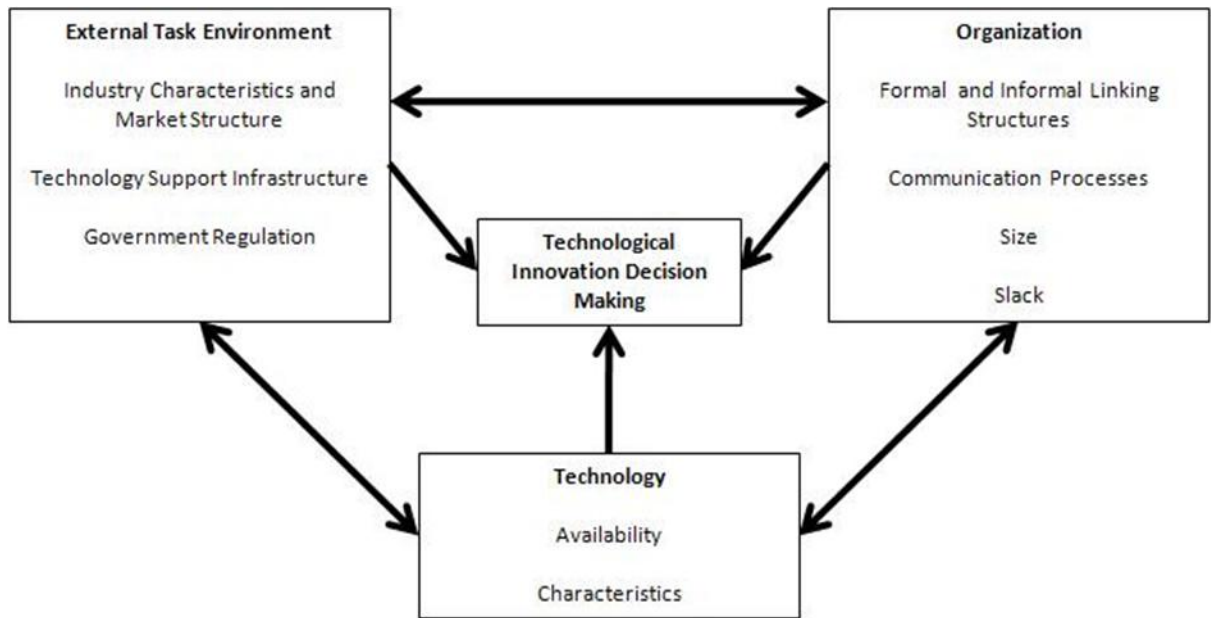


Figure 2.4: Technology Organization Environments

2.3 Cloud Computing Definition

National Institute of Standards and Technology, defines cloud computing as a pay-per-use prototype used to empower convenient, available, on-demand network access to a shared pool of computing resources that are configurable, such as servers, networks, applications, services and storage, that can be swiftly released and provisioned and little or no management service or effort provider interaction (Mell &Grance, 2011). This definition identifies several features essential to cloud computing, which are: (a) on-demand-self-service (whereby computing resources are automatically assigned on the basis of on load), (b) resource pooling and elasticity (every computing resource is produced and grouped together then allocated to users), and (c) Quality of service (resources for users can be controlled and monitored through the internet, regardless of the customers' platform).

Cloud computing is also described as a new model in the form of “... convergence between the agility of business and IT efficiency” (Marston et al., 2011, p.11). Effectually, the cloud computing idea gives businesses an opportunity to use IT services more flexibly compared to predictable inhouse solutions, and often is also affordable. Cloud computing gives more flexibility in terms of computing resource utilization by organization. Since cloud computing gives a connection to a lot of computing devices over the internet, it gives a perception of vast resources (Armbrust et al., 2010)

According to Joshi and Tikar (2015), cloud computing is an example of a computing based on the internet and also allows for shared computer processing resources and data to devices such as computers. The three main categories of cloud computing services: (i) infrastructure as a service (IaaS), (ii) software as a service (SaaS) and (iii) provision as a service (PaaS). IaaS is a service model that provides computer infrastructure on the basis of outsourcing to sustain enterprise operations (Xue & Xin, 2016). PaaS on the other hand is a whole deployment and development atmosphere in the cloud, with resources that gives one an opportunity to deliver anything ranging from simple cloud-based applications to more complex, cloud-enabled enterprise applications. Diversely, SaaS is a provision of any application that is delivered over the policy of the web to an enduse which is leverages the application using a browser (Sindhu & Sindgu, 2017). Unlike the traditional means of access, this is an alternative and a new way used to access software.

2.4 Cloud Computing and Human Resource Management

According to Beer et al. (1984), human resource management (HRM) comprises of all the executive actions and decisions impacting the level of the relation existing between the employees and the organization. “HRM is a unique method to employment management, which aims at attaining the competitive advantage using the premeditated disposition of a capable and highly dedicated workforce, through a collection of structural, cultural, and personal systems (1995, p. 35).

There has been a great and slow change of HRM function from the typical administrative function mainly used to process the payroll, to a more definite direction of managing humans as a resource that is valuable to an organization (Walker, 2001). The progression of the HRM function is presumed to as much costly as to \$US1700 per employee per annual (Khirallah, 2000). HR paper forms are also estimated to cost up to \$20-\$30 in terms of processing, while telephone-based HR forms can go for \$2-\$4 to process. However, Internet based HR forms are cheaper as the cost from 5 to 10 cents (Wagner, 2002).

According to Millers (2009), the introduction of human resource management systems (HRMS) has enabled most HRM processes to be electronic. Traditionally, many businesses were dependent on paper movement but have become computerized partially or wholly. HR managers have adopted technology in administrative activities to develop well-researched strategies and plans, which enable HR planning alignment with overall business objectives.

Another study by Vries et al. (2009) on the introduction of HRMS in Uganda’s health sector indicated that before cloud-based HRMS was employed, the sector was characterized by inaccurate and inefficient information. There was no access to up- to- date information as

officers supplied data they already knew to be erroneous; records would show staff attached to same post or at wrong location. Posts were not categorized in a logical manner according to job positions therefore making data difficult to use for planning purposes. In addition, records could not accommodate registrants with multiple qualifications leading to double counting. Coupled with these deficiencies was slow process of retrieval of files and registration (Vries et al., 2009). There were also delays in paying newly recruited staff. Ghost workers also existed on the payroll reason because it took too long to remove those who had left service. Finally, there lacked transparency in recruitment due to lots of paper work and sequence of steps involved.

Muia (2010) carried out a HRM practices exploratory survey (2010). He noted that the everyday duties of HRM specialists in the public service involves activities such as leave commutation, appointment confirmation, payroll preparation, staff deployment, attendance of meetings, personnel data verification, issues of pension, organizing staff training training of staff, and statutory deductions. Most of these functions can easily be simplified through adoption of digitalized HRMS. Cloud-computing offers a cost-effective solution for the digitization of these HRM functions. As opined by Troshani, Jerram, and Hill (2011) factors influencing the acceptance of human resource information systems (HRIS) in civil department organizations. The research findings stated that the adoption of HRIS was influenced by organizational factors such as human capability and management commitment factors including technological aspects, for example compatibility, and regulatory compliance.

As organizations acknowledge advantage of this function, they are capitalizing the issue of HRMS. Companies realising the importance of HRMS are now integrating the HRMS modules to an integrated Enterprise Resource Planning Systems. Hamerman (2002) said that

ERP is a progression of self-service technology used to sustain managers and employees, providing a forum to deliver information, as well as come up with collaboration and implementation in a company. The major reason for equipping employees by way of online employee management is to attain uniform user interface multiple propositions, employee availability, delivering changing information in real time, and also attain an all-inclusive collaborative work atmosphere. It also enables employees to gain a vast amount of information that concerns them independently. For instance, an education level can be updated. The suite also offers a manifold relationship dimension by use of several applications. Employee Relationship Management landscape is shows the relationship among personal, employee and corporate components (Hamerman, 2002).

2.5 Functions of a Cloud-based HRMS

With the evolvement of HR functions, there has been a proportional increase in the related administrative duties. Some studies have indicated that up to 70% of HR personnel time is mainly utilized on administrative duties (Barron, 2002). Wyatt (2002) carried out a survey and found out that despite the fact that most companies have introduced unchangeable HRMS aptitudes, there is a swift and increased adoption of interactive HRMS. With a lot of administrative functions, it is hard to come up with strategies to retain as well as engage workers. Deloitte recently indicated to consider engagement and retention as their second top most priority, as 79% of the organizations recording a shortage of crucial labour force skills. Moreover HRMS systems enable the organization to concentrate on the most significant asset, which are the people.

HRMS is also responsible for automation of several personnel administration, and receiving updated government and statutory updates on a regular basis. By doing so, the HRMS ensures it is fully compliant, attains maximum profits, keeps track of contributions, audit reports, deductions, and all the actions taking place in an organization (Obeidat, 2012). They also make report retrieval of individual or a group of companies easy, keep full employee records, efficiently track and predict working hours, absenteeism and also bonuses as well as give a real picture of the total workforce expenditure. In doing so, payroll processes are reduced by almost 20% and time spent on tracking workerror will reduce by over 24% (Morozov *et al.*, 2017).

HRMS helps to save time on HR Administration processes allows proper planning on personnel and financial decisions strategically. Aberdeen (2013) conducted a research showing that manual transactions dramatically decrease to 0.1% from 5.9%. Also, it helps increase department cooperation three times higher. Dusmanescu and Martinovic (2011) also found that adoption of HRMS can help organization simplify and accelerate personnel administration functions, control available HR data, reduce labour cost for the HR department, and provide timely and accurate information to the management leading to improved decision-making.

A cloud- based HRMS can also allows the creation of many records for an individual, they also use built-in checklists to come up with new employees and terminate the old ones, enable shifting of personnel between organizations, easy development of policies or organizational rules or with the employee transfer wizard, and add-on of employee as well as company documents (such as Microsoft Word documents, Scanned files, Microsoft Excel Files) to any system records (Mukherjee, Bhattacharyya, & Bera, 2014). It ensures that employee electronic records are easily accessible. All uploaded documents belonging to the employees and

the company have a backup, protected and stored within the database. According to Aberdeen (2013), the things that play an important role are the analytical tools and dashboard in providing HR intelligence to senior management. It is estimated that 33% of top companies can provide human capital management (HCM) dashboards to top business administrators, 50% more than the company average. The intelligence reporting tool obtains the information required for improved reporting. Centred on the Microsoft Excel application, the intelligence module gives the HR a chance to easily come up with reports, evaluate data, and making sound decisions with enhanced visibility. The HR personnel are bound to profit from a comprehensive collection of reports and formulate inquiries on demand.

Cloud-based HRMS also help to secure critical information held by the HR department such as employees' personal information. The cloud-based HRMS utilizes best-practice security to ensure there it gives full control and security (Andress, 2014). Role-based security permits one to outline security configurations reusable sets, which one is able to allocate various users. Thus, it offers strict control of who is able to view particular data or carry out certain actions. The cloud-based HRMS also allows organizations to describe security on zones, navigations such as screens, and business rules up to field level as well as implement passwords rules or incorporate them with Microsoft Active Directory to permit for single login features (Obeidat, 2012). The system captures the every single detail of each attempt to login, explains reasons for login failures and why the password was changed. It also gives a complete audit trail of all activities and changes.

Cloud-based HRMS also support employee self-service (ESS); a solution-based platform that enables employees to access information systems belonging to the corporate human resource

24x7 (Dusmanescu & Martinovic, 2011). ESS enables employees to manage and update their personal details such as bank accounts and information regarding next-of-kin, apply for various types of leave and claims, printing/ viewing their current and previous payslips, complete their performance reviews. On the other hand, managers can authorize transactions, control performance reviews, access the leaves of all their workforce on the player's calendar, manage surveys, and design reports. The ESS topographies can be limited to individuals or group of staffs (Mukherjee et al., 2014). To complete a series of actions, the System helps the user. Several users are involved in the workflow involved. The tasks are assigned to users who initiate, implement and complete the many steps needed to complete a task.

The noticeable and elusive benefits gotten out of ESS solutions have been well recorded (McKenna, 2002; Alexander, 2002; Wiscombe, 2001; Webster & Buchanan, 2002) and comprises of reduced managerial overheads, and letting HR staff handle more demanding tasks, for enhanced data integrity, and enabling of personnel. According to Ordonez (2002) information delivery in presenting ESS is essential in permitting personnel to access the right information at an appropriate time and to carry out as well as process transactions. Therefore, allows the ability to formulate, view and maintain information using multiple access technologies. Other noticeable procedure including reducing the number of staff by up to 40%, and the cost of transaction by half (Wiscombe, 2001) and the saving time needed for processing activities (NetKey, 2002).

2.6 Factor influencing implementation of Cloud-based HRMS

There is a myriad of aspects that can shape the implementation of cloud-based HRMS in organizations. Identification of the specific factors that have the most significant influence on

cloud-based HRMS in public organizations is bound to help managers to develop tailor-made intervention that will improve the adoption of this technology. According to Troshani *et al.* (2011), factors that influence adoption of IT can be divided into three broad categories: organizational factors, technological factors, and the external environment.

2.6.1 Organizational Factors

Organizational factors refer to issues related to internal elements of an organization and are within control of the organization's management. Organizational factors that are commonly identified within the adoption of IT include management commitment, organizational resources, staff capability, organizational culture, and organizational climate. According to Alam, Masum, Bah, and Hong (2016), organization culture is one of the most fundamental issues that should be considered when assessing organizational factors. Organizational culture cites divided norm, morals, believes and expectations within a given organization. The organizational culture effect on adoption of ICT in public sector was captured in the study by Mburugu, Mulwa, and Kyalo (2017), found a significant relationship between organizational culture, the adoption of electronic project monitoring and information system in Kenyan public tertiary institutions.

Organizational climate is another organizational factor that is often linked with ICT adoption in organization. Organizational climate is the psychological atmosphere that depicts the relationship between employees and the organization (Moussa, McMurray, & Muenjohn, 2018). It is largely a function of how employees perceive the work environment and its impact on their wellbeing. A hostile organizational climate emerges where employee perceive that the organization has a poor work environment. The hostile climate becomes a hindrance to the implementation of organizational programmes such as cloud-based HRMS. As Moussa *et al.*

(2018) explained, employees perform their tasks better and more creatively whenever they feel good about their organization.

Another organizational factor that has been found to have an effect the adoption of ICT in organizations is support by senior managers. In his study, Toroitich (2017) found that senior managers' support has a significant influence on electronic procurement implementation in Kenyan counties. Data was collected from a sample of 5 county governments. The study also found out this implementation of e-procurement was impacted by the ICT employee competency level, which is yet another organizational factor. ICT policy is another organizational that is associated with adoption of ICT. The study by Muriithi, Horner, and Pemberton (2016) found that universities that had ICT policy documents for guiding the implementation and use of ICT services and infrastructures were more effective 2in research collaboration.

Barzekar and Karami (2014) examined the organizational factors influencing that adoption of IT in Iranian hospitals. The study noted that organizational factors were among the most critical determinants of successful ICT adoption. Several organizational factors were examined including organizational knowledge, organizational resources, organizational structure, human resource capacity, organizational processes, and organizational values and goals. All these factors were found to have a considerable influence on ICT adoption. However, organizational structure and human resource capacity were found to have the strongest effect on ICT adoption. Barzekar and Karami (2014) recommended that hospitals in the country should work on improving these two areas in order to have a significant improvement in the adoption of ICT.

2.6.2 Technological Factors

Technological factors refer to technical issues that are involved in the adoption of technologies. These issues include availability of a robust ICT infrastructure, complexity of the new technology, and compatibility of the new technology with existing ICT infrastructure. The study by Zhu, Kraemer, and Xu (2006) found that most organizations in developing countries have less developed IT infrastructure, which limits their ability to adopt new technological innovations such as cloud-based HRMS. This finding was further reinforced in the study by Tarus, Gichoya, and Muumbo (2015), who found that lack of affordable and reliable internet bandwidth was among the leading factors that barred Kenyan public universities from adopting the e-learning concept.

In another study, Ndegwa, Kiriri, and Achoki (2016) found that technology had a compelling impact on ratification of donor funded ICT projects by public sector organizations in Kenya. The review involved collecting data from 67 public Institutions using questionnaires. Specific technological factors that were found to have an effect on ICT adoption were perceived usefulness and ease of use of technologies. Using 4 major varsities in Kenya, Muriithi et al. (2016) also found that availability and access to ICT resources was a factor resulting to adoption and access of ICT by university researchers to support collaborative research. Particularly, it was found that the university researchers had limited access to online research databases that required paid subscriptions. Reliability of internet connection was also a major hindrance to the use of ICT in facilitating research collaboration. One of interviewee lamented that they are usually compelled to wait for off-peak hours in order to use Skype to connect with other researchers.

The study Goncalves, Nascimento, Bouzada, and Pitassi (2016) investigated the influence of three technological factors namely technological preparation, technology integration, and information security on the adoption of a digital accounting system by Brazilian public institutions. Results showed that only technological preparation had a numerical significance on adoption of the digital accounting system. Mulwa (2015) derived a statistically significant positive association between availability of adequate ICT infrastructure and adoption of ICT in the delivery of services by the County Government of Kitui. Adequacy of IT infrastructure was assessed in terms of availability of computers and other digital equipment, regular power supply, reliable internet connectivity, and applications to support county operations. Gyaase, Sarfo, and Bediako (2013) also found that obsolete and inadequate equipment and cost of investing in ICT infrastructure were the most significant factors barring the adoption of ICT in the public sector in Ghana.

2.6.3 External Environment

External environment refers to elements that are beyond the control of an organization but that have an impact on the organization's operations. Organizations such as county government are open systems that interact outside institutions and actors (Moussa *et al.*, 2018). Organizations are also influenced by macro forces such as the economic trends, political trend, regulatory issues, sociocultural trends, and technological trends. These external factors are also bound to have a noteworthy influence on the adoption of cloud-based HRMS by public institutions in Kenya. In their study, Goncalves, et al. (2016) found that government regulations were the strongest factor influencing the adoption of a public digital accounting system by

Brazilian public service organizations. The organizations were also motivated by the need to reduce ancillary tax obligation, which is yet another environment factor.

The impact of the legal environment on the adoption of ICT is also captured in the study by Sorrentino (2004), who found that public sector organizations are subject to strict accountability and transparency requirements. Decisions made by these organizations are subjected to supervisions and scrutiny by numerous external bodies such as government auditors and other oversight agencies. Svidronova and Mikus (2015) also found that there was widespread adoption of e-procurement by public agencies in Slovakia because the law obliges all public entities to use e-procurement when making purchases whose value exceeds €200,000. In this case, the legal framework in the country has exerted pressure on government agencies to adopt the use of ICT in procuring goods and services.

Another external environment factor found to have an impact on ICT adoption in public units was political goodwill. As Sorrentino (2004) explained, public organizations are political organizations where decision-making processes must take into consideration political consensus. The study by Imran & Gregor (2005) also noted that authoritarian regimes in Asian limited the diffusion of ICT so as to sustain their political advantage by censoring the kind of information that get to the members of the public. Political instability, unrests, and poor governance were also found to be a hindrance to the adoption of ICT by government agencies. In their study focusing of Huduma Kenya Programme, Commonwealth Association for Public Administration and Management (CAPAM) (2019) also found that political goodwill at the highest level of government created momentum in the adoption of the programme among Kenyans. CAPAM

(2019) observed that due to support by leaders from different political divide, many citizens showed commitment towards enrolling to this programme.

Economic situation is another external environment factor that has been linked with the adoption of ICT by public organizations. The study by Imran & Gregor (2005) observed that countries with high GDP were far ahead of their counterparts with low GDP in terms of adopting ICT in the provision of government services and in facilitating government operations. It was noted that countries with large economies had the resources required to invest in ICT infrastructure such as computer, telephone, and electricity supply. Evans (2018) also noted that public sector organization do not operate in a vacuum but make decision in the context the broader economic environment. An organization that is operating in a vibrant economy is more likely to invest resources in the implementation of ICT solutions. Contrarily, an organization operating in a turbulent economic setting is more prone to save its resources for the very basic essential tasks and services. The study by Bonina and Cordella (2010) however found that tough economic environment could be an incentive for adoption of ICT by government entities with the view of reducing costs and enhancing efficiency. This rationale is particularly logical in the context of ICT outsourcing models such as cloud computing that offer cost advantages to organizations.

2.7 Conceptual Framework

It is defined as a network or a “plane” of linked concepts. The conceptual framework reveals the relationship and linkage that exists amidst the independent and dependent variables. The conceptual framework for this study is present in Figure 2.5.

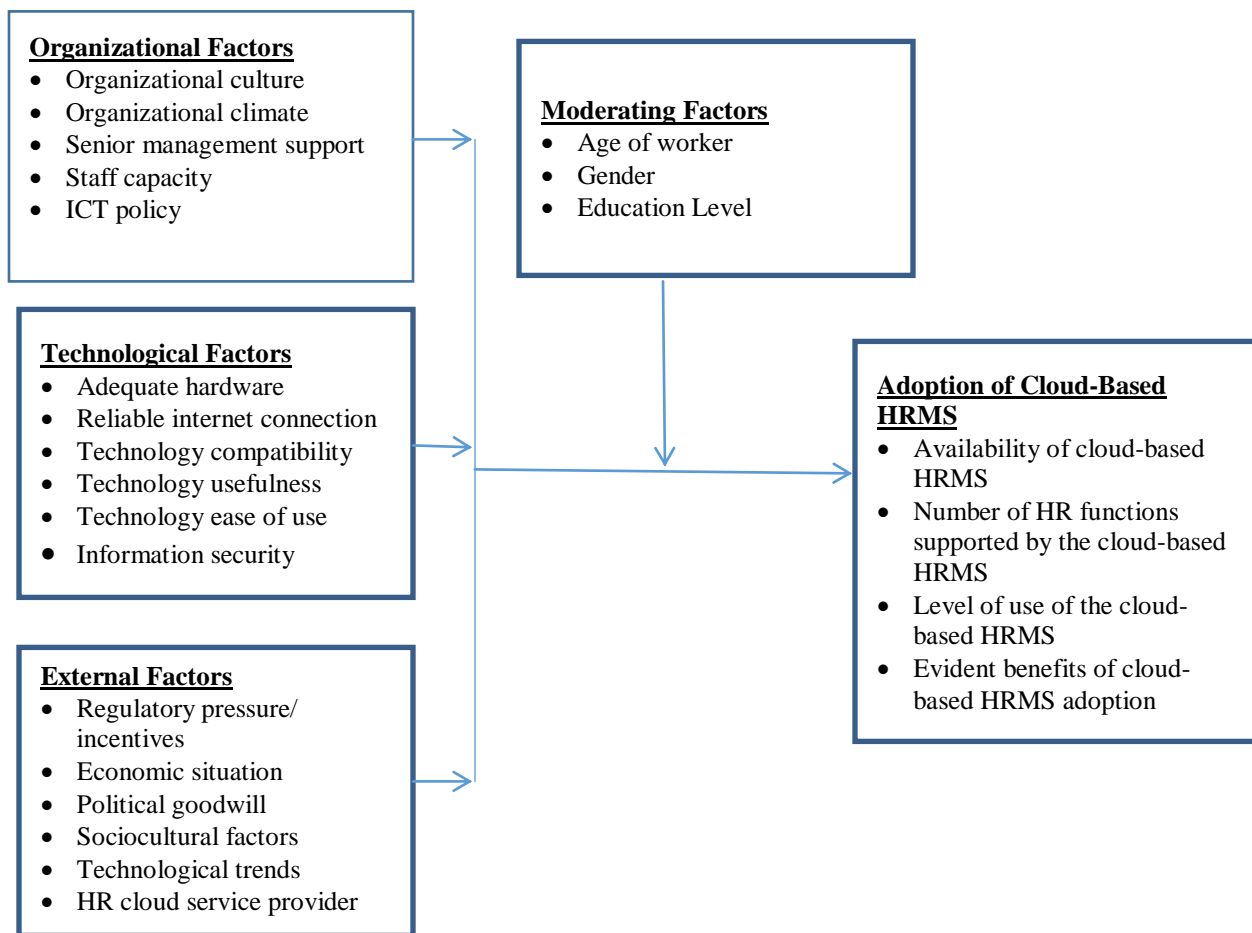


Figure 2.5: Conceptual Framework for Examining Factors affecting Adoption of Cloud-Based HRMS in County Governments

2.7.1 Research Hypothesis

The reverie needed to test the following rationale at 0.05 level of significance:

1. H_0 : Organizational factors do not show statistical impact on acceptance of a cloud- based human resource management system at Nyeri County.
2. H_0 : Technological factors do not retain an indicative effect on adoption of a cloud- based human resource management system at the Nyeri County.
3. H_0 : External environment do not obtain a numeric effect on the selection of a cloud- based human resource management system at Nyeri County.
4. H_0 : Worker's age does not have an ordinal significance moderating effect on the influence of organizational, technological, and external environment on adoption of cloud human resource management system at Nyeri County.
5. H_0 : Worker's gender rejects the drift moderating follow-up on importance of organizational, technological, and external environment on adoption of cloud human resource management system at Nyeri County.
6. H_0 : Workers education level does not have a significant moderating control of organizational, technological, and external environment on adoption of cloud human resource management system at Nyeri County.

2.7.2 Adoption of cloud-based HRMS

Cloud-based HRMS adoption is the dependent variable of the study. This the practice of using both the computer software and hardware applications that are based on cloud computing technology to support HR managements, operations, and the process of decision-making. The term denotes an organization's overall preparedness to migrate HRM processes and systems to

the cloud. Adoption of cloud-based HRMS will be assessed in terms of availability of cloud-based HRMS at the Nyeri County Government, the number of functions supported by the cloud-based HRMS, and cloud based HRMS use level. Usage level is a significant indicator of adoption since a company can have a particular technology in place, but which is not put into use by members of the organization. The final indicator of cloud-based HRMS adoption is the existence of evidence benefits of this system. As Oliveira and Martins (2011) explained, adoption precisely suggests that the new ICT product is used efficiently, which denotes that it must be generating some advantages. External environment, technological, and organizational factors are presumed by the study as the influencers of cloud-based HRMS.

2.7.3 Organizational Factors

Organizational factors refer to issues related to internal elements of a company and are within the organization's management control. The study hypothesized that the adoption of cloud-based HRM in Nyeri County was influenced by organizational factors. The presumed relationship was anchored in the TOE model, which suggests that organizational factors for example management commitment, executive resources; organizational culture, staff capability, and organizational climate determine the adoption of new ideas and technologies in organizations. In this study, several organizational factors were assessed including the organizational culture, organizational climate, senior management support, staff capacity, and ICT policy

2.7.4 Technological Factors

Technological factors refer to technical issues that are involved in the adoption of technologies. The study also hypothesized that technological factors such as availability of a

robust ICT infrastructure, ICT infrastructure complexity, compatibility and the cloud-based technology influence adoption of cloud-based HRMS in Nyeri County. This presumed relationship was also anchored on the TOE model. In this study, technology factors was assessed in terms of availability of adequate hardware, reliable internet connection, technology compatibility, perceived usefulness of the cloud-computing technology, and information security.

2.7.5 External Environment

External environment refers to elements that are beyond the control of an organization but that have an effect on its operations. This study also hypothesized that external environment factors impact cloud-based HRMS adoption in Nyeri County. External environment factors that were assessed include regulatory pressure/ incentives, prevailing economic situation in the county and the country, political goodwill, sociocultural factors, technological trends, and HR cloud service providers.

2.7.6 Moderating Variables

The study also hypothesizes that the effect of the three broad aspects on adoption of cloud-based HRMS is moderated by several variables including age of the HR workforce, work experience of workforce, gender of workforce, and the workers' education level. The influence of these moderating variables is supported by Venkatesh's (2003) UTAUT model.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter addresses mode utilized to collect and analyse data. The clause also addresses population, type of inquiry design, data collection techniques, the sampling design, and the methodology used to analyse data.

3.2 Research Design

This study adopted the descriptive case study design. It involved studying the variables of interest as they exist in the study setting without manipulating them in any way (Malhotra, 1996). This design was selected because the researcher did not have control over the study variables namely organizational, technological, and external environment and thus they could only be studied as they existed in the Nyeri County Government. Descriptive research collects computable information, which is used for statistical inference on target audience by way of data analysis (Penwarden, 2003).

There are three broad types of descriptive research: surveys, observational studies, and case studies. The current study used the case study strategy. According to Walsham (2000) case study methodology is important and thus, there is a need to divert from the traditional information techniques for example a survey focussing on action research schemes, ethnographies, and interpretive case studies. Many studies have made use if case studies to present information systems studies (Chan & Roseman, 2001; Lee, 1989). For instance, Cavaye (1995) employed case study research in analysing inter-corporation structures in information system complexities.

3.3 Target Population

Kuhl (2008) describes target population as all individual who possess characteristics that the study intends to examine. The target populace for this research comprised of all 400 staff employed at Nyeri County Government Headquarter Offices comprising of 30 management staff and 370 operational staffs working across 11 departments (County Government of Nyeri, 2015). These staffs were targeted because they are directly exposed to how HR affairs are managed at the county government as well as directly involved in the utilization of services offered at the county government. These employees are thus in the best position to provide information on the cloud-based HRMS adoption in the management of HR functions.

3.3 Sampling

It is picking out a sample from a population of interest. Whereas, a sample is a small section from which data is collected from a population with the views of analysing results. Determination of sample size is the first step in sampling. Larger sample sizes are more accurate representations of the whole. The sample size of this research comprises 40% of the population. It is suitable size because as denoted by Cohen, (2005) and supported by (Mugenda & Mugenda, 2003). A sample size of 30% or more allows the scholar to gather enough information and promote study reliability as well as allowing for generalization that is applicable. The correct sample size for the study was thus determined to be 160 staffs, which are 40% of the 400 staff working at the Nyeri County Government. Table 3.1 provide a further breakdown of the sample size for both the management and operational level staffs at the Nyeri County Government headquarter offices.

Table 3.1: Sample Size for the Two Categories of Staff

Category of Staff	Population	Sample Size (40% of Population)
Management	30	12
Operational	370	148
Total	400	160

3.3.1 Sampling Method

The clustered random sampling procedure was used to pick the 160 staff from a population size of 400 staffs. In this case, the population of staff was clustered as per the departments. The sampling method is summarized in Table 3.2.

Table 3.2: Sample Allocation by Department

No	Department	Management Sample	Operations Staff Sample
1	Office of the Government and County Secretary	1	4
2	County Public Service Board	2	3
3	Finance and Economic Planning	1	27
4	Health	1	23
5	Education and ICT	1	17
6	Public Administration, Information and Communication	1	29
7	Energy	1	5
8	Agriculture and Livestock	1	10
9	Trade, Industrialization and Tourism	1	2
10	Land and Infrastructure	1	13
11	Water and Environment	1	15
	Total	12	148

This sampling method entailed subdividing the population into internally heterogeneous groups known as clusters and the selecting participants from each stratum using random methods (Mugenda and Mugenda, 2003). This method was preferred because it increases the characterization of the sample by ensuring the sample is selected from the most important subgroups of the population. For management staff, one individual was selected from each department apart from the County Public Service Board where two individuals will be selected. The Public Service Board was allocated two interview slots since it significantly involved the implementation and development of human resource policies. Therefore the views of staff in these departments were critical to the study. The number of operational staff selected from each department was determined by the total number of staff working in the County Government Headquarter offices departments. More respondents were chosen from departments with large number of employees at the county headquarters.

3.4 Data Collection

qualitative and quantitative data were both collected, whereby Computable statistics was assembled from operational workforce through structured questionnaires. Questionnaires method of data collection was preferred because it was easy to administer and generates cloud computing faster response. The questionnaire contained four likert type scales assessing each of the four variables. Observers were enforced to point out their level of agreement with items each on a five-point scale, ranging from 5= strongly disagree to 1= strongly agree. A total of 148 questionnaires were issued out

Qualitative data was collected from the management staff using semi-structured interviews. It is where a list of uniform queries were posed to each of the 12 interviewees. Follow-up questions were then asked based on each interviewee response to the initial questions. Therefore, the follow-up questions varied from one respondents to the next. The objective of using the semi-structured interview approach was so to encourage open discussions that would elicit comprehensive information regarding the study issue. The interview lasted for an average of 25 to 30 minutes.

3.5 Validity and Availability

Validity indicates the extent to which an apparatus measures what it intends to. Content validity, a subclass of validity, is the level at which a measuring instrument indicates enough coverage of the topic under review. Its determination is mainly judgmental and spontaneous (Kothari, 2008). The research instrument validity was assessed by obtaining the input of university research supervisors, who have vast expertise on the research issues. The researchers sought the supervisors views regarding the comprehensiveness, appropriateness, and relevance of each of the items included in the questionnaire and interview guide.

Reliability is connected a measurement procedure precision and accuracy (consistency). Reliability was assessed by conducting a pilot study. This was conducted in the adjacent Kirinyiga County, where data was gotten from 15 operational sample. The resultant data was analysed by the Cronbach alpha method at the threshold of 0.7. Only the questionnaire was subjected to reliability analysis. Table 3.2 presents the reliability analysis results.

Table 3.3: Reliability Analysis Results

Variable	No. of Items	Cronbach's Alpha
Organizational factors	7	0.786
Technological factors	7	0.788
External environment factors	7	0.835
Cloud-based HRMS adoption	7	0.734

As Table 3.3 illustrates, all the four scales had a Cronbach that was above the 0.7 threshold that was set for this study. The questionnaire was thus deemed to be reliable.

3.6 Data Analysis and Presentation

Quantitative and Qualitative analysis was used to process data. The data collected using questionnaires was organized, coded, and computed into the Statistical Package for Social Sciences (SPSS) where it was appraised by both descriptive and inferential statistics. Descriptive statistics summarized data on individual variables. Standard deviation, means percentages, and frequencies were used in the descriptive analysis.

Inferential analysis sought to investigate the effect of each of the three factors that were under study on the adoption of cloud-based HRMS. The multiple linear regression technique was used for inferential analysis. The following models were formulated:

1. $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + e$ for examining factors influencing cloud-based adoption

2. $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4M_1 + \beta_5X_1 X_2 X_3M_1 + \varepsilon$ for examining moderating effect of worker's age

3. $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_6M_2 + \beta_7X_1X_2X_3M_2 + \varepsilon$ for evaluating the moderating effect of worker's gender

4. $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_8M_3 + \beta_9X_1 X_2 X_3M_3 + \varepsilon$ for assessing the moderating effect of worker's education level.

Where, Y= adoption of cloud-based HRMS at the Nyeri County Government, β_0 = constant, β_1 , β_2 , β_3 , β_4 , β_5 , β_6 , β_7 , β_8 , and β_9 = Beta coefficients, X_1 = organizational factors, X_2 = technological factors, X_3 = external environment factors, M_1 = worker's age, M_2 = worker's gender, M_3 = worker's education level, and e = error term. Tables were used to present quantitative analysis results.

Qualitative data was processed using thematic technique. According to Kuhl (2008), this method entail summarized data into themes that are relevant to the objectives of the study. The accounts presented by the senior HR managers during the interview were thus summarized into themes. Results were presented using illustrative quotes.

CHAPTER FOUR
RESULTS AND DISCUSSIONS

4.1 Introduction

The search sought to investigate components affecting the approval of cloud-based HRMS in county government. It explored the extent to which the cloud-based HRMS had been adopted at the Nyeri County Government and factors that have affected its adoption.

4.2 Response Rate

Out of the 160 individuals who were contacted during the research, 117 were able to complete the study by either completing and returning a questionnaire or participating in the interview. This figure translates to an overall of 73.1%. According to Mugenda and Mugenda (2003), that above 70% is excellent in descriptive research. The study by Baruch and Holtom (2008) that analysed 1,607 studies published in different academic journals noted that 52.7% is the average response rate for descriptive studies. Response rate was different for management staff and operational staff as shown in Table 4.1.

Table 4.1: Responses summary obtained in each Stratum

Staff Category	No. of individuals who were Contacted	No. of individuals who completed the study	Response Rate
Management	12	7	58.3
Operational	148	110	74.3
Total	160	117	73.1

As Table 4.1 illustrates, that the response rate of management staff contacted the interview was lower (58.3%) compared to the response rate for the operational staff who were

requested to complete questionnaires (74.3%). The low turnout rate among the management staff was ascribed to the managers' busy schedules owing to the fact that they had numerous work responsibilities.

4.3 Demographic data

This section gives recap of the background information concerning the respondents in the study in regard to the level of education, age, gender.

4.3.1 Gender of Respondents

The gender of respondents was assessed in terms of whether the respondent was male or female. Results are presented in Figure 4.2.

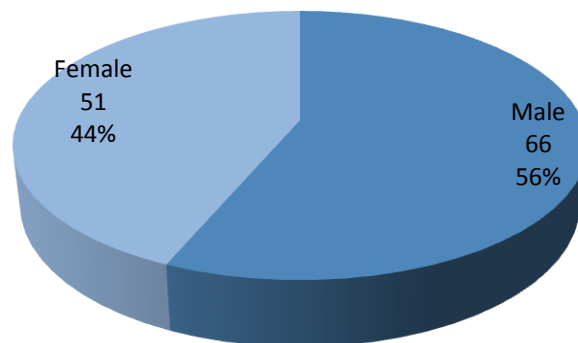


Figure 4.2: Distribution of Respondents by Gender (Author's Own)

As illustrated in Figure 4.2, male respondents (56%) were more compared to female respondents (44%). The test was to ascertain if the sample incorporate the view of both gender and was representative of the population of county government HR workforce in terms of gender. Results show that although there were more male respondents, both genders were

adequately represented in the sample. The distribution is also consistent with a Public Service Commission (PSC) (2016) survey which showed that male constituted the largest portion of the public sector workforce with a representation of 70%.

4.3.2 Age of Respondents

This was also assessed by grouping the participants into five age groups: 20 years and below, 21-30 years, 31-40 years, 41-50years, and above 50 years. Results are summarized in Figure 4.2.

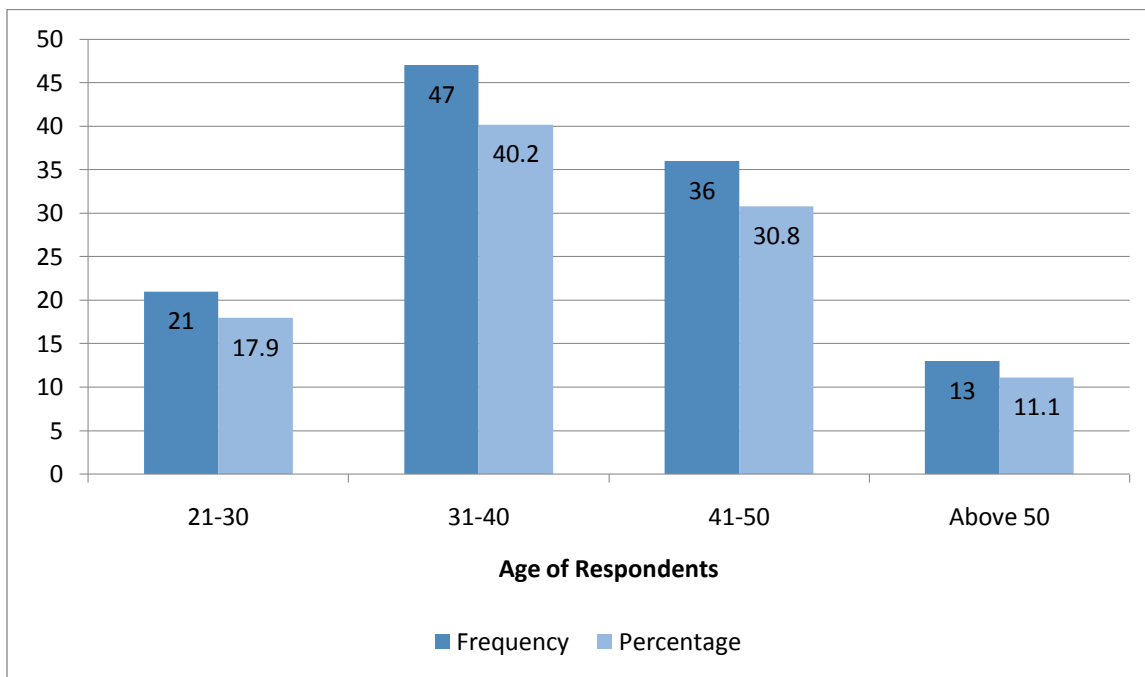


Figure 4.2: Respondents distribution by Age Category (Author's Own)

As Figure 4.2 demonstrates, 40.2% of the respondents were the young and the middle-aged people within the 31-40 years' age bracket, while 30.8% were in the 41-50 years' age bracket. Another 17.9% of the respondents encompassed the 21-30 years age bracket while 11.1% were above 50 years. The practical implication of this finding is that the sample was

inclusive of employees of different age groups and thus reflected the views of different generation employees. The findings also suggest that the case represented the public sector workforce in Kenya where the survey by PSC (2016) found that the most of the staff (76%) were between of 30 and 50 years of age.

4.3.3 Respondents' Highest Education Level

Respondents were grouped into three categories in terms of the highest education attainment: secondary, tertiary colleges, and university degree. Results are presented in Figure 4.3.

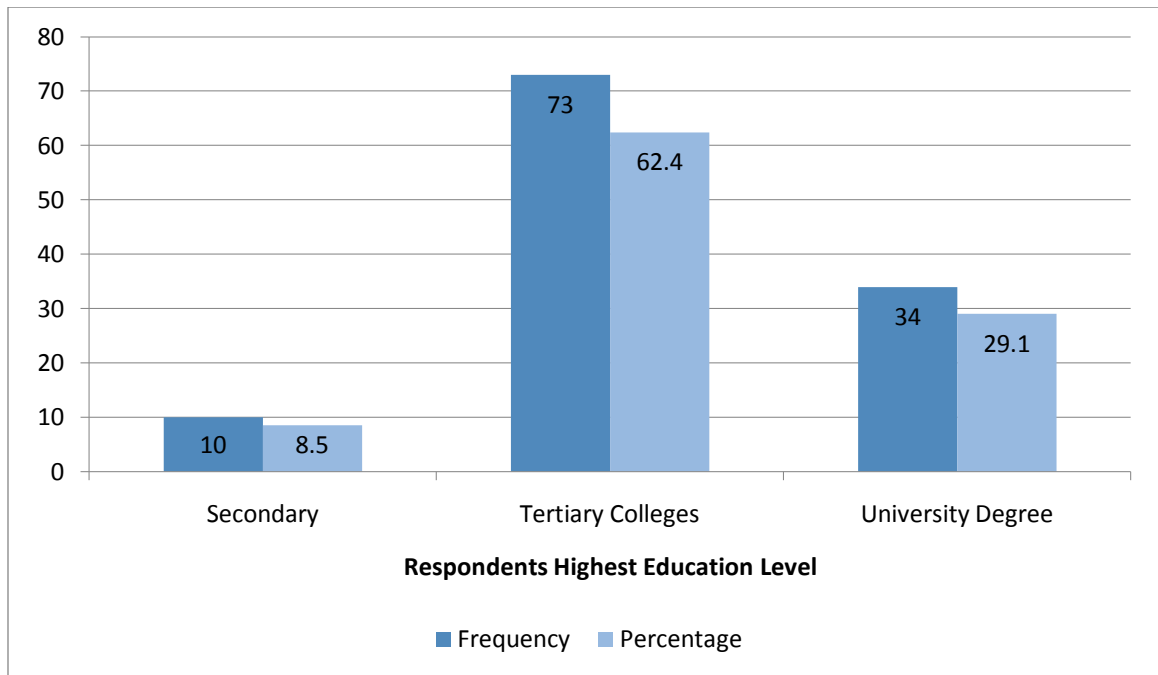


Figure 4.3: Respondents distribution by Highest Level of Education (Author's Own)

Given the education levels of the respondents, majority (62.4%) possessed tertiary college education suggesting that they were qualified and competent workers. They had requisite academic credentials to understand the area of HRMS. This also indicates that the respondents

were capable of giving quality response for the research. A sizeable segment (29.1) of the sample also had the university education level while the other 18.5% attained secondary level of education.

4.4 Descriptive Analysis

The analysis establishes the present situation at Nyeri County Government with regard to cloud-based HRMS adoption as well as various, technological, organizational and external environment factors that have the can affect cloud-based HRMS adoption.

4.4.1 Cloud-Based HRMS Adoption at the Nyeri County Government

Cloud-based HRMS adoption was the dependent variable of this study. To establish the prevailing situation at the Nyeri County Government with regards to cloud-based HRMS adoption, respondents were presented with seven statements and required to note their agreement level with each statement on five-point coverage extending out of 1-strongly disagree to 5-strongly agree. Summarised below are the responses.

Table 4.2: Descriptive Analysis of Cloud-Based HRMS Adoption

S/N	Statement	N	Mean	Rank
A1	Nyeri county has fully adopted cloud-based human resource management system	110	4.32	1
A2	The cloud-based human resource management system is utilized in the county recruit and selection processes.	110	2.30	7
A3	The cloud-based human resource management structure is employed in the facilitation of the county's training and development activities	110	3.74	6
A4	The cloud-based human resource management system is used to expedite payroll management activities	110	4.27	2
A5	The cloud-based human resource management system is used to assist performance management processes	110	3.96	3

A6	The cloud-based human resource management system is frequently used to facilitate HR functions and activities.	110	3.79	5
A7	After adoption of cloud-based human resource management system, the operations of the HR departments have become more efficient and effective	110	3.85	4
Cumulative Cloud-Based HRMS Adoption Score		110	26.24	

As Table 4.2 illustrates, the first statement had the highest mean of 4.32 suggesting that this item had the highest agreement level among respondents. These findings imply that averagely, the respondents approved that Nyeri County has full adopted cloud-based HRMS. Statement A4 demonstrates the second top mean of 4.27 suggesting that the average respondents also concurred with the affirmation that the cloud-based HRMS is used to expedite payroll management activities. The above result is constant with Morozov *et al.* (2017), stating, payroll processing is one of the HR functions that have been revolutionized by the proliferation of HRMS. The application of HRMS in payroll processes has led to reduction of errors more than 20%.

Respondents also agreed with statement A7 that after adoption of cloud-based HRMS, the operations of the HR department have become more effective and efficient. The findings are in line with Oliveira and Martins (2011), who asserted that the term adoption precisely suggests that the new ICT product is productively used, suggesting that it is beneficial to the organization. As per the respondents, the HR department at the Nyeri County government has derived some benefit from the implementation of cloud-based HRMS and thus the adoption process can be deemed successful. This finding was also supported by the qualitative data generated during the interviews with the HR senior managers. One of the managers expressed that:

“The data generated using the cloud-based HRMS enable county managers to easily internalize and make strategic decisions. This capability means that HRMS offer many administrative and strategic advantages for real-time HR planning and informed decision making,” (M3, Interview, 2019)

There are, however, some claims about cloud-based HRMS adoption that respondents did not agree with. For instance, respondents on average disagreed with statement A2 (mean= 2.30), which stated that the cloud-based HRMS is used in supporting county recruitment and selection processes. This finding suggests that the cloud-based HRMS installed at Nyeri County Government offices has not effectively applied in the county’s recruitment and selection processes. Also, respondents were on average not sure with statement A3, which specified that the cloud-based HRMS installed at Nyeri County Government, is used to support county training and development processes.

To obtain a general overview of the current status at the Nyeri County Government concerning the adoption of cloud-based HRMS, the scores assigned on each of the seven items on the adoption scale were summed up to get a cumulative score. As shown in Table 4.2, the mean cumulative cloud-based HRMS for Nyeri County Government was 26.24 out of a highest possible score of 35 (7 items * 5 highest possible score for each item). This score was then converted into percentage by dividing by 35 and multiplying by 100. The percentage score was 75.0%. Therefore, respondents rated the level of adoption of cloud-based HRMS at Nyeri County Government to be 75.0%, based on the seven items on the adoption scale.

4.4.2 Organizational Factors affecting Cloud-Based HRMS Adoption

The first independent variable of study was organizational factors. The expose seeks to determine how deep these affect the adoption of cloud-based HRMS in county governments. In regards to this goal, respondents were given seven statements concerning organizational items that have the potential to affect cloud-based HRMS adoption and with each statement asked to show their level of agreement. The respondents were instructed to use a five-point scale in rating the statement from 1-firmly dispute to 5 strongly accede. Resultants are presented in Table 4.3

Table 4.3: Descriptive Analysis of Organizational Factors

S/N	Statement	N	Mean	Rank
O1	The Organizational culture at Nyeri County government supports the implementation of cloud-based HRMS	110	3.25	4
O2	Organizational climate at Nyeri County government supports the endorsement of cloud-based HRMS	110	3.34	3
O3	Senior management team at Nyeri County government support the appropriation of cloud-based HRMS	110	3.85	1
O4	Adequate resources have been allocated towards the implementation of cloud-based HRMS at Nyeri County Government	110	2.32	7
O5	Nyeri county government staff have the skills needed to use the cloud-based HRMS	110	3.55	2
O6	Staff at Nyeri County Government are committed towards the implementation of cloud-based HRMS	110	3.15	5
O7	Nyeri County Government has a written policy that support adoption of ICT solutions in the management of county operations	110	3.06	6
Cumulative Organizational Factors Score		110	22.51	

As Table 4.3 illustrates, statement O3 recorded the highest mean (3.85). This mean suggests that on average, respondents affirmed that senior management team at the Nyeri County Government supports the adoption of cloud-based HRMS. This view was also reinforced during the interviewee where one of the senior HR management stated that; “The top management at the county has showed high support in recommending the adoption of HRMS,” (M3, Interview, 2019).

Statement O5 had the second highest mean of 3.55, which also suggests respondents averagely agreed with assertion that Nyeri County Government possess the skills needed to use cloud-based HRMS. The findings were in agreement with that of Toroitich (2017), who found that the e-procurement implementation in 5 counties was influenced by the level of employee ICT competency. The study found that training the procurement staff on how to use the e-procurement tool acted as a supportive factor in e-procurement adoption. The impact of staff skill on adoption of cloud-based HRMS at Nyeri County Government was further clarified during the interview where one of the managers affirmed that:

“We have trained our staff on how to use the HRMS to conduct various HR operations. All HR staff have gone through some ICT training programme in a bid to enhance their ICT skills. The vendor who installed the system also conducted some basic training on how to use the system,” (M7, Interview, 2019).

In statement O7, a 3.06 mean suggests that respondents were not sure whether Nyeri County Government has a written policy that supports adoption of ICT solutions in the

management of county operations. ICT policy is another organizational that is associated with adoption of ICT. The study by Muriithi, Horner, and Pemberton (2016) found that universities that had ICT policy documents for guiding the implementation and use of ICT services and infrastructures were more effective in the use of ICT in support research collaboration. The fact that most of the respondents were not sure on whether a written ICT policy exists at the Nyeri County Government, cast doubts regarding the existence of any police. Even if a policy exists, its implementation would be poor given that the majority of the staffs are not aware of its existence.

Statement O4 had the lowest mean of 2.32, which indicates on average that the respondents disagreed that adequate resources have been allocated towards implementation of cloud-based HRMS at Nyeri County Government. Previous studies suggest that resource allocation has a major bearing on the successful adoption of ICT in an organization. This is because resources both financial and human are needed to develop and maintain the infrastructure required to support the optimal functioning of the cloud-based HRMS. Failure to allocate adequate resource as purported by the masses is a hindrance to implementation of cloud-based HRMS at the Nyeri County Government.

Statement O1 also had a relatively low mean of 3.25. This mean indicates that on average, the respondents were not sure with the assertion that the organizational culture at Nyeri County government supports the implemented of cloud-based human resource management system. This finding shows that many respondents had doubts on whether the organizational culture that is prevalent at Nyeri County Government supports adoption of cloud-based HRMS. On a similar note, respondents on average were not sure with the claims that staff at Nyeri County Government is committed towards the implementation of cloud-based HRMS (Statement

06, mean=3.15) and that the organizational climate at the Nyeri County government supports the adoption of cloud-based human resource management system (Statement 02, mean=3.34).

The cumulative organizational factor score was also computed to give a general overview of the extent to which these dynamics affect the adoption of cloud-based HRMS at Nyeri County Government. As Table 4.3 shows, the cumulative organizational factor score was 22.51 out of a highest possible score of 35. When converted into percentage, the score translate to 64.3% ($22.51/35 * 100$). Therefore, the seven units, rated organizational factors on cloud-based ICT adoption to be 64.3%. Given that all the statements were positively worded, this score suggest that the organizational factors were 64.3% effective in supporting adoption of cloud-based HRMS.

4.4.4 Technological Factors effect on Cloud-Based HRMS Adoption

Technological issues were the second independent variable of the study. The study established the extent to which technology impacts the approval of cloud-based HRMS at the Nyeri County Government. Respondents were also given a set of 7 statements relating to technological factors that can influence HRMS adoption and requested to show how much they agree with each statement.

Table 4.4: Descriptive Analysis of Technological Factors

S/N	Statement	N	Mean	Rank
T1	The Nyeri County Government has adequate computers, networks, and other hardware resources need to operate the cloud-based HRMS.	110	3.41	5
T2	Nyeri County Government has a reliable internet connection for supporting the cloud-based HRMS	110	2.33	6
T3	Cloud-based HRMS is compatible with other systems of the county government such as IFMIS and GHRIS	110	3.79	3

T4	The cloud-based HRMS is useful in supporting the majority of county HR functions and activities.	110	4.52	1
T5	The cloud-based HRMS at Nyeri County government is easy to use	110	3.72	4
T6	The cloud-based HRMS is maintained on a regular basis	110	2.19	7
T7	The cloud-based HRMS at Nyeri County Government is fitted with adequate security features.	110	3.93	2
Cumulative Technological Factors Score		110	23.88	

As Table 4.4 demonstrates, statement T4 had the highest mean (4.52). Relatively, respondents strongly agreed that the cloud-based HRMS system is useful in supporting the majority of county HR functions and activities. The TAM theory asserts that perceived usefulness is one of the factors that impact adoption of new ideas or technologies (Legris et al., 2003). From this finding, it is evidence that most of the staffs at the Nyeri County Government HR department perceive the cloud-based HRMS to be useful to their operations. In conclusion, the cloud-based human resource management system at the Nyeri County government is easy to use (statement T5, mean= 3.72). The TAM theory also posits that perceived ease of use is also an issue that determines adoption of new technologies or ideas (Legris et al., 2003).

Statement T7 had the second highest mean of 3.93. This mean indicates that the cloud-based human resource management system at the Nyeri County Government is fitted with adequate security features. This finding is consistent with Andress (2014), who argues that one of the advantages of cloud-based HRMS is that it secures critical information held by the HR department such as employees' personal information. The cloud-based HRMS utilizes the best-practice security over optimum control and security (Andress, 2014). Security based on role gives one an opportunity to outline reusable security configurations sets, which can be assigned

to many users. It offers strict control of individuals to view certain information or carry out certain operations. The finding is also consistent with Obeidat (2012), who explained that the cloud-based HRMS allows organizations describe security on zones, navigation and corporate decides up to the field level, incorporate them with Microsoft Active Directory or implement password policies to activate single login capabilities. The system keeps record of full login attempt details, indicating reasons for password change or login failures and also gives out a complete audit trail of all activities and changes.

Statement T2 had a low mean of 2.33 suggesting that respondents disagreed that Nyeri County Government has a reliable internet connection for supporting the cloud-based human resource management system. The finding suggests that Nyeri County Government does not have reliable internet connectivity, which has a negative implication on cloud-based HRMS approval, This finding is in agreement with an earlier study by Tarus, Gichoya, and Muumbo (2015), who found that lack of affordable and reliable internet bandwidth was among the leading factors that barred Kenyan public universities from adopting the e-learning concept. Muriithi et al. (2016) who found out that unavailability of a reliable internet connection in public universities was a major hindrance to the use of ICT in facilitating research collaboration. On a similar note, respondents also disagreed with statement that the cloud-based HRMS installed at Nyeri County is maintained on a regular basis (statement T6, mean=2.19). Inadequate maintenance of information system leads to frequent downtimes, which becomes a hindrance to the adoption and utilization of the system.

The cumulative technological factor score was also computed by summing up respondents rating of all the seven items in the technology dynamics scale. As shown in Table

4.4, the cumulative technological factors score was 23.88 out of a highest possible score of 35. When converted into percentage, the score translates to 68.2%. Therefore, the effect of technological issues upon the adoption of cloud-based ICT at Nyeri County Government was rated to be 68.2%. All statements were also positively worded, and thus, the score means that technological factors were 68.2% effective in supporting the adoption of cloud-based HRMS at the Nyeri County Government.

4.4.5 External Environment Factors affecting Cloud-Based HRMS Adoption

The final independent variable of the study was external environment factors. The study also sought to determine the extent to which external environment factors. To realize this goal, respondents were also given a set of 7 statement and requested to show how much they agree with each of the five-point overlay ranging from 1-fully disagree to 5- entirely comply. The outcome is summarized in Table 4.5.

Table 4.5: Descriptive search of External Environment Factors

S/N	Statement	N	Mean	Rank
E1	County government laws and regulations support the adoption of cloud-based HRMS.	110	3.98	2
E2	The economic situation in Nyeri County supports cloud-based HRMS enactment.	110	3.21	7
E3	Political goodwill from Nyeri County top leadership towards the implementation of cloud-based HRMS	110	4.20	1
E4	The sociocultural trends in Nyeri County support the adoption of cloud-based HRMS	110	3.37	6
E5	Technological trends in Nyeri County supports the implementation of cloud-based HRMS	110	3.82	3

E6	There are adequate cloud-based HRMS providers in Nyeri County	110	3.77	4
E7	The competitive environment in Nyeri County supports the implementation of cloud-based HRMS	110	3.65	5
Cumulative External Environment Factors Score		110	26.01	

As Table 4.5 illuminates, statement E3 had the highest mean of 4.20. This value suggest that on average, respondents agreed that there is a political goodwill from Nyeri County top leadership towards the implementation of cloud-based human resource management system. This finding agrees with CAPAM (2019) research where it was found that political goodwill has been instrument ICT adoption in the Kenyan public sector. The adoption of ICT has been recognized as one of the strategy for enhancing the efficiency of the public service in the Kenyan economic blueprint known Vision 2030.

Statement E1 had the second highest average being 3.98 suggesting that Nyeri County Government laws and regulations support the adoption of cloud-based human resource management system. This position was ascertained by during the interview where one of the managers narrated that:

“The deploying of ICT in county government operations is not just a strategy for enhancing efficiency, but is also one of the approaches that the county government is using to promote employment for the youths. The Public Procurement and Disposal Act require that 30% of government procurement to allocated to women and youth. The Nyeri County Government has also enacted a number of registration that support the

digitization of services as strategy for creating jobs for the youth,” (M1, Interview, 2019).

Statement E6 whose mean of 3.77, connotes that there are adequate cloud-based human resource management system providers in Nyeri County. Availability of vendors and suppliers of a given ICT service determine adoption of ICT. Adoption becomes difficult when a particular ICT service is not readily available. This finding is also reinforced by statements E5 and E7 where respondents on averaged agreed that technological trends in Nyeri County support the implementation of cloud-based HRMS (mean= 3.82) and that the competitive environment in Nyeri County supports the implementation of cloud-based human resource management system (mean= 3.65). From these findings, it can be established that the proliferation of cloud-based computing technology in Nyeri County had created a competitive market environment that has made it cost effective for the Nyeri County Government to secure this service.

Statement E2 had the lowest mean of 3.21, which indicates that respondents on average were not sure whether the economic situation in Nyeri County supports cloud-based HRMS acceptance. This is consistent with an earlier finding which negates the claim that adequate resources have been allocated towards the application of cloud-based HRMS at the Nyeri County Government. From this finding, it can be determined that the economic situation in Nyeri County has made it difficult for the county government to allocate sufficient resources towards the implementation and maintenance of cloud-based HRMS. This finding may also serve as an explanation to earlier findings were respondents alluded to the fact that there is no reliable internet connectivity and the Nyeri County Government and that the cloud-based HRMS was not regularly maintained.

The cumulative external environment factor score was also computed to get a general overview of how far external environment aspects influence cloud-based HRMS implementation in county administration. As shown in Table 4.5, the cumulative score was 26.01 out of the possible highest score of 35. When converted into percentage, this score translates to 74.3%. In conclusion, effectiveness of the external environment in supporting the adoption of cloud-based HRMS was rated at 74.3%.

4.5 Hypotheses Testing

Regression analysis was conducted to check the relation between the three factors (organizational, technological, and external environment) and the ratification of cloud-based HRMS at the County Government of Nyeri. According to Urdan (2015), linear regression is used to forecast changes to the dependent variable when the independent variables are varied.

4.5.1 Model Summary

The template summary table presents statistics regarding forecasting capabilities of the model usually indicated by r-square value. Table 4.6 is the model summary.

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.722 ^a	.522	.508	2.404
a. Predictors: (Constant), Organization Factors, Technological Factor, External Environment Factor				

As Table 4.6 illustrates, r-square value for the model comprising of Organization Factors, Technological Factors, and External Environment Factors as predictors of cloud-based HRMS

adoption was 0.522. This value suggests that the three factors explained 52.2% of the variations observed in the variation of cloud-based HRMS score. According to Urdan (2015), a model with an r-square value of above 0.25 is useful in predicting social science phenomenon. This is because social science phenomena are highly complex and thus it is difficult to develop a model that captures all the factors that influence their outcome.

4.5.2 Effect of Organizational Factors

The first goal of the investigation was to create administrative issues impact on support of cloud-based HRMS at the Nyeri County Government Offices. It was assessed by multiple regression beta coefficient laid out in Table 4.7.

Table 4.7: Multiple Regression Beta Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	T	P-value
		B	Std. Error	Beta		
1	(Constant)	8.497	1.987		4.276	.000
	Organizational	.238	.092	.234	2.413	.011
	Technological	.284	.098	.258	2.891	.005
	External Environment	.388	.068	.513	5.709	.000

a. Dependent Variable: Cloud-based ICT adoption

As Table 4.7 illustrate, the beta coefficient for organizational factors was 0.238. Since the value is positive, it suggests the presence of a conclusive link amid organizational factors and cloud-based adoption in county government. Specifically, the value signifies that if the supportiveness

of the organizational factors is improved by 1 unit, the cloud-based ICT adoption score would improve by 0.238 units. The significance of this relationship was examined using the t-statistic, which gave a p-value of 0.011. Since p-value is below 0.05, it means that the observed relationship is statistically significant. The null hypothesis was thus rejected and it was connoted that organizational factors have a statistically significant influence on the adoption of cloud-based HRMS at Nyeri County Government.

4.5.3 Effect of Technological Factors

This was has assessed using the multiple regression beta coefficients. As Table 4.7 exhibits, the beta coefficient for technological factors was 0.284. This coefficient is positive which also connotes the existence of a clear relation between technological factors and the adoption of HRMS in county governments. Particularly, as the technological factor score is improved by 1 unit, the adoption of cloud-based HRMS score would improve by 0.284 units. The t-value was 2.891 while the p-value was 0.005. Since the p-value is less than 0.05, it implies that the relationship is numerically significant. The null hypothesis was thus renounced and a conclusion made, technological factors have a definite, reliable and noteworthy consequence on adoption of cloud-based HRMS at Nyeri County Government.

4.5.4 Effect of External Environment Factors

The final intention of this analysis was to determine the outcome of external environment factors on adoption of cloud-based HRMS at Nyeri County Government. As Table 4.7 illustrates, the beta coefficient for external environment factors was 0.388. Since the value is positive, it connotes the existence of a firm relation amid external environment issues and adoption of cloud-based HRMS at the Nyeri County Government. Particularly, the value means that when

the supportiveness of the external environment factors improves by 1 unit, the level of adoption of cloud-based HRMS would improve by 0.388 units. The significance of this relationship was examined using the t-statistics, which gave a p-value of less than 0.001. Since p-value is lower than 0.05 threshold, means that it is statistically significant. The null hypothesis was thereby dropped and an eventuality made that external environment factors have a favorable and substantial effect on the adoption of cloud-based HRMS at the Nyeri County Government.

4.5.5 Combined Effect of External Environment, Organizational and Technological Factors

The account aimed at evaluating the combined conclusion of organizational, technological, and external items on the enactment of cloud-based HRMS in county governments. The unified sequel of the three parameters was assessed using ANOVA statistics as shown in Table 4.8.

Table 4.8: ANOVA Statistics

Model		Sum of Squares	df	Mean Square	F	p-value.
1	Regression	669.101	3	223.034	38.582	.000 ^b
	Residual	612.754	106	5.781		
	Total	1281.855	109			
a. Dependent Variable: Adoption of Cloud-based HRMS						
b. Predictors: (Constant), Organization Factors, Technological Factor, External Environment Factor						

According to Urdan (2015), ANOVA in regression follow the F distribution and its aim is to test whether the model comprising of the independent variable has a statistically different predictive power than a model contain the constant only. As Tale 4.8 illustrates, the ANOVA analysis gave a p-value of less the 0.05 suggesting that the three factors combined had a statistically significant effect on adoption of Cloud-Based ICT in the Nyeri County Government.

From the beta coefficient, external factors had the strongest influence on influencing cloud-based HRMS with a beta coefficient of 0.388 followed by technological factors ($\beta= 0.284$) and lastly organizational factors ($\beta= 0.038$). Therefore, the model for predicting the adoption of cloud-based HRMS in county government is as follows:

$$Y= 8.497+ 0.038X_1+ 0.284X_2 + 0.388X_3$$

Where Y= adoption of cloud-based HRMS at the Nyeri County Government, X_1 = organizational factors, X_2 = technological factors, X_3 = external environment factors.

4.5.6 Moderating Effect of Workers Age

It was also hypothesized that the influence of organizational, technological, and external environment factors on the adoption of cloud-based HRMS by county governments is moderated by the age of workers. To test this hypothesis, a second model was formulated comprising of organizational, technological, and external environment factors, age of workers, and the interaction between age and the three factors (organizational, technological, and external environment). The r-squared and F-values of this model was compared to that of the original model so as to establish whether the addition of age would significantly alter the predictive power of organizational, technological, and external environment factors on adoption of cloud-based HRMS. Outcome presented in Table 4.9.

Table 4.9: Summary for Models 1 and 2

Model	R	R	Adjusted R	Std. Error of	Change Statistics
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		Square	Square	the Estimate	R Square	F			Sig. F
					Change	Change	df1	df2	Change
1	.722 ^a	.522	.508	2.404	.522	38.582	3	106	.000
2	.722 ^b	.522	.499	2.427	.000	.001	2	104	.999
1. Predictors: (Constant), Environmental factors, Organizational factor scores, technological factors									
2. Predictors: (Constant), Environmental factors, Organizational factor scores, technological factors, Age, interaction between age and three independent variables									

As Table 4.9 illustrates, the *r* and *r*-square value remained the same for model 1 and 2. This implies that the predictive power of the three factors did not change even after controlling workers age and the interaction between workers age and the three factors. The *f*-value changed by 0.001 after the introduction of worker's age and the age interaction variable. The *p*-value (*p*=0.999) however shows that the change in *F*-value was not statistically significant. This finding implies that the fourth null hypothesis, which stated that worker's age is not statistically significant in the moderating response on the influence of organizational, technological, and external environment on adoption of cloud human resource management system at Nyeri County was not rejected. The multiple regression coefficients were used to further determine the moderating consequence of workers' age on the influence of each of the independent variables on the adoption of cloud-based HRMS. End Results are presented in Table 4.10:

Table 4.10: Regression Coefficients for Model 1 and 2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.497	1.987		4.276	.000
	Organizational factors	.238	.092	.234	2.413	.011
	Technological factors	.284	.098	.258	2.891	.005
	Environmental factors	.388	.068	.513	5.709	.000
2	(Constant)	8.267	6.024		1.372	.173
	Organizational factors	.242	.131	.038	.320	.013

	Technological factors	.286	.119	.260	2.409	.018
	Environmental factors	.391	.103	.517	3.810	.000
	Age	.029	.698	.007	.041	.967
	Age and factors interaction	-1.706E-6	.000	-.011	-.039	.969
a. Dependent Variable: Cloud-based HRMS Adoption						

As Table 4.10 illustrates, there was a marginal increase in the beta coefficients for organizational, technological, and environmental factors in Model 2 but all the factors remained significant just like in the first model. This implies that the age of workers does not significantly alter the influence of any of these variables on the support of cloud-based HRMS. The beta coefficient for age of workers was 0.029 and its p-value was 0.967 suggesting that the age of workers did not have a compelling effect on adoption of HRMS. The relationship amid age, the three independent variables also did not have a significant influence on adoption of HRMS (p=0.969).

4.5.7 Moderating Effect of Gender

The search also had to determine whether workers gender moderates the influence of organizational, technological, and external environment factors on adoption of cloud-based HRMS. To achieve this goal, a third model was formulated comprising of organizational factors, technological factors, external environment factors, worker's gender, and interaction between gender and three independent variables. This model was compared to the first model comprising of the independent variables only. Results are presented in Table 4.11.

Table 4.11: Summary for Models 1 and 3

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.722 ^a	.522	.508	2.404	.522	38.582	3	106	.000

3	.723 ^b	.523	.500	2.424	.001	.151	2	104	.860
a. Predictors: (Constant), Environmental factors, Organizational factor scores, technological factors									
b. Predictors: (Constant), Environmental factors, Organizational factor scores, technological factors, gender, interaction between gender and three independent variables									

As Table 4.11 illustrates, the r-square for model 3 was 0.523 as compared to 0.522 for model 1 which marks an r-square change of 0.001. Indicating that the addition of gender, and the interaction between gender and three independent variables increased the predictive power of the model by 0.01. The change in F-statistics however showed that the change in the predictive power of the model was not statistically significant (F Change = .001, p=.860). These findings implied that the fifth null hypotheses, which stated that worker's gender did not have an accurate notable resultant on organizational, technological, and external environment leveraging on adoption of cloud human resource management system at Nyeri County was not rejected. Regression coefficients presented in Table 4.12 were used to examine the moderating effect of gender on the influence of each independent variable on adoption of HRMS.

Table 4.12: Regression Coefficients for Models 1 and 3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.497	1.987		4.276	.000
	Organizational factors	.238	.092	.234	2.413	.011
	Technological factors	.284	.098	.258	2.891	.005
	Environmental factors	.388	.068	.513	5.709	.000
3	(Constant)	10.940	5.512		1.985	.050
	Organizational factors	.202	.120	.222	2.016	.048
	Technological factors	.256	.113	.232	2.266	.026

Environmental factors	.346	.106	.458	3.276	.001
Gender	-.609	1.458	-.089	-.418	.677
Interaction between gender and the three independent variables	4.874E-5	.000	.145	.511	.611
a. Dependent Variable: Cloud-based HRMS Adoption					

The beta coefficients for three independent variables marginally declined in the 3rd model but their influence on cloud-based HRMS adoption remained statistically significant. As such the addition of gender and the interaction variable did not significantly alter the influence of any of the independent variables on adoption of cloud-based HRMS in Nyeri County. Gender ($p = 0.677$) and interaction between gender and three independent variables ($p=0.61$) had p-values that are greater than 0.05 suggesting that these variables had no significant influence on cloud-based HRMS adoption.

4.5.8 Moderating Effect of Workers' Education Level

The study had also hypothesized that the education level of workers has a significant influence on organizational, technological and external environment on adoption of cloud human resource management system at Nyeri County. To assess this moderating effect, a fourth regression model was formulated consisting of organizational factors, technological factors, external environment factors, workers' education level, and the interaction between worker's education level and the three independent variables. This model was compared with model 1 comprising of the independent variables only. The predictive power of the two models is summarised in Table 4.13.

Table 4.13: An upshot of Model 1 and 4

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.722 ^a	.522	.508	2.404	.522	38.582	3	106	.000
4	.723 ^b	.522	.499	2.426	.000	.044	2	104	.957
a. Predictors: (Constant), Environmental factors, Organizational factors, Technological factors									
b. Predictors: (Constant), Environmental factors, Organizational factors, Technological factors, Education level, Interaction between education level and three independent variables									

As Table 4.13 illustrates, the r-square value of model 4 remain as 0.522 despite the inclusion of worker’s education level, and the interaction variable into the original model (model 1). There was a marginal increase in the F-value of the model but the increase was not statistically significant (F-change = .044, p= .957). These findings suggest that the addition worker’s education and the interaction variable did not significantly alter the predictive power of the model. The findings thus led to retention of the null hypothesis which stated that worker’s education level does not have a numerical significant moderating consequence on influence of organizational, technological, and external environment on adoption of cloud human resource management system at Nyeri County. The regression beta coefficients presented in Table 4.14 were used to assess the moderating effect of worker’s education level on each of the independent variables on cloud-based HRMS adoption.

Table 4.14: Regression Coefficients for Model 1 and 4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.497	1.987		4.276	.000
	Organizational factors	.238	.092	.234	2.413	.011
	Technological factors	.284	.098	.258	2.891	.005

	Environmental factors	.388	.068	.513	5.709	.000
4	(Constant)	10.514	8.555		1.229	.222
	Organizational factors	.212	.159	.210	2.072	.042
	Technological factors	.263	.131	.239	2.003	.048
	Environmental factors	.362	.145	.479	2.499	.014
	Education	-.296	1.082	-.050	-.273	.785
	Interaction between education level and three independent variables	1.498E-5	.000	.075	.211	.833
a. Dependent Variable: Cloud-based HRMS adoption						

As Table 4.14 illustrates, the beta coefficients for all the three independent variables (organizational, technological, and environmental factors) remained positive and statistically significant in Model 4. This implies that the inclusion of worker's education and the interaction variable did not significantly alter the influence of each of these variables on cloud-based HRMS adoption. In addition, worker's education level ($p=0.785$) and the interaction variable ($p=0.833$) did not have a substantial effect on cloud-based HRMS adoption.

4.5.9 Summary of Hypothesis Testing

Table 4.15 presents a summary of the hypothesis testing analyses.

Table 4.9: Summary of Hypotheses Testing

Hypotheses	Relationship	Beta (p-value)	Results
H ₀₁	Organizational Factor → Cloud-based HRMS Adoption	.038 (.680)	Reject
H ₀₂	Technological Factor → Cloud-based HRMS Adoption	.284 (.005)	Reject
H ₀₃	External Environment → Cloud-based HRMS Adoption	.388 (.000)	Reject
	Moderating effect	F change (p-value)	

H ₀₄	Moderating effect of workers age	.001(.999)	Fail to reject
H ₀₅	Moderating effect of workers gender	.151 (.860)	Fail to reject
H ₀₆	Moderating effect of workers education	.044 (.957)	Fail to reject

CHAPTER FIVE RECOMMENDATION AND CONCLUSION

5.1 Introduction

The Value of this work was to confirm factors affecting cloud-based HRMS adoption in counties with view of developing an adoption framework. This topic presents the achievements, conclusions and recommendations, and areas for further research.

5.2 Achievements

The first achievement made in the study entails determining the current status within the Nyeri County Government with the view of developing cloud-based HRMS. Findings acknowledged that the county state had made noteworthy progress in regards to adoption of cloud-based HRMS in the management of county HR function. The respondents gave the county a cloud-based HRMS adoption score of 74.1%. This is an important achievement as it provides management at Nyeri County Government and other counties adopting cloud computing and other information systems.

Another achievement made in this study entails the identification of area that the Nyeri County Government has not made noteworthy progress in terms of adoption of cloud-based

HRMS. The results showed that although the cloud-based HRMS has been installed at the county government, it is not widely used to support recruitment and selection as well as training and development activities of the county.

The study has also established elements having major outcome on the adoption of cloud-based HRMS in county government. According to findings, external environment factors have the most significant effect on the adoption of cloud-based HRMS with a beta coefficient of 0.409 followed by technological factors. These findings are important because the county government may not have adequate resources to address all the components influencing ratification of cloud-based HRMS. Therefore, identifying the factors that have the greatest effect on adoption will enable county government to know the factors on which to concentrate their improvement efforts.

On each category of factor, the study has pinpointed areas in which the county government has excelled and those in which it has performed poorly. For instance, in organizational factors, the study has established that there is high level of senior authority compliance but the approval of cloud-based HRMS may be hampered by inadequate resource allocation and the organizational culture. In technological factors, adoption is supported by high level of perceived usefulness and security features of cloud-based HRMS while the absence of reliable internet connectivity and regular maintenance are a hindrance to adoption. Pinpointing the specific areas of strength and weaknesses will enable managers to develop more effective and tailor-made solutions for promoting cloud-based HRMS adoption.

5.3 Recommendations

Findings of the study have revealed that although the Nyeri County Government has made notable progress in terms of approbation of cloud-based HRMS, this technology is not optimally utilized to support recruitment and selection, and the training and development functions of the county. To ensure that the county government reaps optimal benefits from this system, the management in HR department should find way of increasing the utilization of the system in recruitment and selection as well as training and development. The system can provide data on the performance of employee and thus inform the development of training programmes.

On organizational factors, findings have shown that inadequate allocation of resources and organizational factor are main barriers to the adoption of cloud-based HRMS at Nyeri County Government. To improve allocation of resources, the management in HR department needs to sensitize individuals involved in budget making process regarding the value and benefits of cloud-based HRMS so as they can increase allocation towards development and maintenance of this system. Training programmes are also need to transform the culture at the county government in favour of the acceptance of cloud-based HRMS.

Regarding technological items, the study has found that unreliable internet connectivity and the absence of regular maintenance are the leading barriers to which cloud-based HRMS is adopted. The county therefore needs to improve on these two areas in order to enhance adoption of cloud-based HRMS. Strategies for increasing allocations towards ICT and specifically cloud-based HRMS may also help resolve the internet connectivity and system maintenance issues.

Regarding external environment factors, findings suggest that the county economic situation might be the leading barrier cloud-based HRMS enactment. On average, the

respondents' felt that the economic situation at the county government did not support the adoption of cloud-based HRMS. Economic situation affects adoption by reducing the amount of resources allocated towards the system's implementation and maintenance process. To address this issue, managers at the HR department need to present a case to decision-makers in the county budgetary process regarding the cost saving benefits of the cloud-based HRMS. They should enlighten the budget makers regarding the economic benefits that the system will bring to the county.

5.4 Areas for Further Research

This investigation was constrained to Nyeri County Government. To promote the generalization of findings, this study should be replicated in other counties. The current study focused on three categories of factors: organizational, technological, and external environment. The items assessed on each category were not so comprehensive due to practical consideration. Future studies should assess the effect of each of these categories of factors independently so as to allow for a more rigorous analysis of each category.

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APPENDIX A: QUESTIONNAIRE

The questionnaire is aimed at collecting information about the adoption of cloud based Human resources management system in county governments in Kenya (case of Nyeri county). The information you will give will be of benefit to the researcher in accomplishing academic goals. 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 answer all questions
- Please put a tick in the answer of your choice

Section A: Demographic Information

1. Please indicate your gender

Male [] Female []

2. Please indicate your age bracket

a) Below 20years []

b) 21-30 years []

c) 31-40 years []

d) 41-50years []

e) 50 Years and above []

3. Please indicate your highest education level

a) Primary School []

b) Secondary School []

c) Tertiary colleges []

d) University Degree []

Section B: Adoption of Cloud-based HRMS

6. The following statements relate to adoption of cloud-based HRMS at your work station. Indicate the extent to which you agree with the statements using the following scale: **5. Strongly Agree 4. Agree 3. Not sure 2. Disagree 1. Strongly Disagree**

S/N	Statement	1	2	3	4	5
A1	Nyeri county has fully adopted cloud-based human resource management system					
A2	The cloud-based human resource management system is used to support county recruit and selection processes.					
A3	The cloud-based human resource management system is used to facilitate the county’s training and development activities					
A4	The cloud-based human resource management system is used to expedite payroll management activities					
A5	The cloud-based human resource management system is used to assist performance management processes					
A6	The cloud-based human resource management system is frequently used to facilitate HR functions and activities.					
A7	After adoption of cloud-based human resource management system, the operations of the HR departments have become more efficient and effective					

Section C: Organization Factors

7. The following statements relate to organizational factors that are likely to affect the adoption of cloud-based human resource management system. Indicate the extent to which you agree with the statements using the following scale: **5. Strongly Agree 4. Agree 3. Not sure 2. Disagree 1. Strongly Disagree**

S/N	Statement	1	2	3	4	5
O1	The organizational culture at the Nyeri County government supports the implemented of cloud-based human resource management system					
O2	The organizational climate at the Nyeri County government supports the adoption of cloud-based human resource management system					

O3	The senior management team at the Nyeri County government support the adoption of cloud-based human resource management system					
O4	Adequate resources have been allocated towards the implementation of cloud-based human resource management system at the Nyeri County Government					
O5	Nyeri county government staff have the skills needed to use the cloud-based human resource management system					
O6	Staff at the Nyeri County Government are committed towards the implementation of cloud-based human resource management system					
O7	The Nyeri County Government has a written policy that support the adoption of ICT solutions in the management of county operations					

Section D: Technological Factors

8. The following statements relate technological factors that are likely to affect the adoption of cloud-based human resource management system in county governments. Indicate the extent to which you agree with the statements using the following scale: **5. Strongly Agree** **4. Agree** **3. Not sure** **2. Disagree** **1. Strongly Disagree**

S/N	Statement	1	2	3	4	5
T1	The Nyeri County Government has adequate computers, networks, and other hardware resources need to operate the cloud-based human resource management system.					
T2	The Nyeri County Government has a reliable internet connection for supporting the cloud-based human resource management system					
T3	The cloud-based human resource management system is compatible with other systems of the county government such as IFMIS and GHRIS					
T4	The cloud-based human resource management system is useful in supporting the majority of county HR functions and activities.					
T5	The cloud-based human resource management system at the Nyeri County government is easy to use					
T6	The cloud-based human resource management system is maintained on a regular basis					

T7	The cloud-based human resource management system at the Nyeri County Government is fitted with adequate security features.					
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Section E: External Factors

9. The following statements relate to external factors that have the potential of affecting the adoption of cloud-based human resource management system in county government. Please indicate the extent to which you agree with the statements using the following scale: **5. Strongly Agree** **4. Agree** **3. Not sure**

2. Disagree **1. Strongly Disagree**

S/N	Statement	1	2	3	4	5
E1	County government laws and regulations support the adoption of cloud-based human resource management system.					
E2	The economic situation in Nyeri County supports the adoption of cloud-based human resource management system					
E3	There is a political goodwill from Nyeri County top leadership towards the implementation of cloud-based human resource management system					
E4	The sociocultural trends in Nyeri County support the adoption of cloud-based human resource management system					
E5	Technological trends in Nyeri County supports the implementation of cloud-based human resource management system					
E6	There are adequate cloud-based human resource management system providers in Nyeri County					
E7	The competitive environment in Nyeri County supports the implementation of cloud-based human resource management system					

Thank you for your cooperation!

APPENDIX B: INTERVIEW GUIDE

Gender of Respondents

2. Age of respondent

3. Respondent's highest education level

3. Has the Nyeri County Government fully adopted cloud-based human resource management system?

4. Please, briefly explain some of the human resource functions that are supported by the cloud-based human resource management system.

5. What are your views regarding the benefits that Nyeri County Government has accrued from the adoption of the cloud-based human resource management system?

6. In your opinion, what organizational factors have shaped the adoption of the cloud-based human resource management system at the Nyeri County Government?

7. In your opinion, what technological factors have influenced the adoption of the cloud-based human resource management system at the Nyeri County Government?

9. And what external environment factors would you say has strongly affected the adoption of the cloud-based human resource management system at the Nyeri County Government?

Thank you for your cooperation!