PERCEIVED LINK BETWEEN ADOPTION OF TECHNOLOGY AND EFFICIENCY IN HUMAN RESOURCE MANAGEMENT: A SURVEY OF THE CIVIL SERVICE IN KENYA

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DECLARATION

This research project is my original work and has not been submitted previously in its entirety or in part at any other university or college for any academic award.

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This research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

To all members of my family

You are a fountain of inspiration. Thank you for believing in me.

Special dedications to my dear parents: You have taught me to belief in myself and soldier own even when circumstances seems tough. Your teachings continue to bear fruits every moment in my life.

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The completion of this project was not easy. It has been a joint effort with unforeseen hands. It has impacted me with strong analytical skills which have strengthened me to seek opportunities in the midst of life challenges.

I thank God for walking with me through the tough journey. Lord, your promises remains true forever as in the words of Isaiah, 43:2 which says:

When you pass through the waters,
I will be with you;
and when you pass through the rivers,
they will not sweep over you.
When you walk through the fire,
you will not be burned;
the flames will not set you ablaze.

I have faith that as I journey towards greater heights of discovering my potential, I will always lean on your favour. May the name of the Lord be exalted on high.

My sincere gratitude goes to my supervisor Professor Peter K'Obonyo for his patience, support and intellectual guidance which has facilitated the completion of this project. His unique character has taught me a lot in life and enabled me to build key competences which I belief will guide me in my working life and interaction with society. May the Lord bless you as you continue with the good work. My moderator Madam Florence Muindi – your contribution to the completion of this project has been very valuable.

Many thanks to my employer; Public Service Commission of Kenya, my boss Mrs Wachira, Mr Maina, Colleagues and friends. Your contribution has been valuable. To all my family members: Thanks for cheering me on, throughout the journey.

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ACRONYMS AND ABBREVIATIONS

e-HRM	Electronic Human Resource Management
e-GOVERNMENT	Electronic Government
EPSS	Electronic Performance Support System
GoK	Government of Kenya
HR	Human Resource
HRIT	Human Resource Information Technology
HRM	Human Resource Management
IT	Information Technology
ICT	Information Communication Technology
J. G. L, R	Job grading used in the civil service
SPSS	Statistical Package for Social Science

ABSTRACT

The modern business environment is characterized by turbulence spurred by globalization, technological change, more demanding customers and higher levels of uncertainty which have made management of organizations more challenging than before (Black et. al, 2000). To meet the increasing demand, there is increasing pressure on human resource management to support strategic objectives and focus on value-adding activities. Shrivastava et al., (2003) and Stone et al, (2006) note that one of such changes is the wide contemporary use of Information Technology (IT) in supporting various human resource activities. The objective of the study was find out the extent to which employees believe that adoption of technology has enhanced efficiency in human resource management. The study envisaged perceived link between adoption of technology and efficiency in human resource management as crucial to the success or failure of technological investment. The study design was descriptive survey of perceived link between technology and efficiency in human resource management in the Civil Service in Kenya. The study findings recorded positive results in all the variables related to efficiency in human resource management which included improved communication, sharing information, cost saving, facilitation of culture of transparency, improvement of quality of customer service, enhancement of increased consistency, improved productivity, reduction in lead time taken in recruitment and selection, reduction of operational costs and personalized feedback. On the application of human resource information system in human resource functions, the findings revealed that HRIS was largely adopted in availing online payslips to employees, management of payroll, creating human resource database for human resource planning, posting job vacancies on the website, managing of personal numbers and use of online payment and salary processing. However, the study reflects key aspects of academic findings and practitioner opinions that the use of human resource information system was being adopted more on administrative ends rather than any sort of analytical or decision support ends. The study findings showed a negative perception on use of HRIS in human resource functions that support decision making including training and development, online job evaluation and administration of performance appraisal systems. The study illuminate a path from which the question of adoption of technology in human resource function can be more completely accessed by future researchers. The limiting factors were that the study findings were not applicable at all times since it was a one-time response and the environment keeps on changing. Again, employees from the districts may have held different views considering that many offices had not been provided with internet and necessary infrastructure.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Rapid environmental change, globalization, competition to provide innovative products and services, changing customer and investor demands have become the standard backdrop for organizations. To compete effectively, firms must constantly improve their performance by reducing costs, enhancing quality and differentiating their products and services and speed to the market (Chang & Huang, 2005). These competitive challenges require organizations to take a proactive strategic approach in the market place to achieve maximum effectiveness. Firms have therefore recognized the potential for their people to be a source of competitive advantage (Pfeffer, 1994). Creating competitive advantage through people requires careful attention to the practices that best leverage these assets.

The issue of how to counter the dynamic environment forces falls in the domain of strategic management research. Broadly, strategic management attempts to match or fit an organization with its environment. There is a plethora of approaches suggested in the strategic management literature to achieve this match or fit. The majority of them are biased in favour of economics and thus focus predominantly on the industry determinants of organizational performance (Pfeffer, 1995). Undoubtedly, an organization must remain relevant to its external stakeholder's demands, yet there is need to correct this bias by paying more attention to analyzing firm's internal strengths and weaknesses (Barney, 1995).

To meet the increasing demand, there is an increasing pressure on human resource management to support strategic objectives and to focus on value-adding activities, which consequently leads to the change in job content and the expectations of human resource professionals. Shrivastava et al., (2003) and Stone et al, (2006) note that one of such changes is that the wide, contemporary use of Information Technology (IT) in supporting various human resource activities. Researchers argue that the increasing use of Human Resource Information Technology (HRIT) can improve the performance of HR professionals and make them involved in the company internal consulting activities (Albers et al, 1997).

1.1.1 The Concept of Perception

Perception is the process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment. Research on perception consistently demonstrates that different individuals may look at the same thing yet perceive it differently (Robbins, 2005). Hitt et al., (2006) posit that perception comprises three stages. The first stage involves sensing various characteristics of a person, task, or event. Second is selecting from the data those facts that will be used to form the perception. The last stage is organization of the selected data into useful concepts pertaining to the object or person. At this stage an individual order and sort data in a way that is useful in establishing approaches to dealing with the world.

The level of perception varies depending on the particular person's reference point and their motives. Individuals act and react based on their perceptions not based on objective reality. Therefore, employees may not always perceive the objective existence of technology in human resource management as the organization intends. Whereas adopting technological changes in human resource management is a strategic decision made by management, it is individual employees who interact with those practices. Perception is therefore a critical factor that can influence the success of use of technology in human resource management. Different people may physically see the same thing but they may have their own individual interpretation of what it is. Just like seeing half glass of water; some people may see it as half full while others may see it as half empty depending on their perception. Employee perception is influenced by intelligence, personality, expectations, motivations and interest (Bennet, 1997). Perceptions are developed over time and can change as new information and experiences are acquired.

1.1.2 Human Resource Management

Human Resource Management (HRM) is the strategic and coherent approach to the management of an organization's most valued assets – the people working there who individually and collectively contribute to the achievement of the objectives of the business (Armstrong, 2006). Dessler et al., (1999) says that HRM is management of people in the organizations which consists of the activities, policies, and practices involved in obtaining, developing, utilizing, evaluating, maintaining, and retaining the appropriate number of skill

mix of employees to accomplish the organization's objectives. The goal of HRM is to maximize employee's contributions in order to achieve optimal productivity and effectiveness, while simultaneously attaining individual and societal objectives (Dessler et al., 1999).

Ulrich (1997a) defines four fields for HRM which includes: strategic business partner, change agent, employee champion, company champion and administrative expert. Ulrich (1997a) asserts that the traditional human resource practices of staffing, training, performance management, benefits, regulation, labor relations, will become the table stakes for human resource, with new practices emerging constantly. This calls for high-involvement human resource management systems which offer employers a valuable means of improving operational performance which enhance efficiency and effectiveness.

An organization gains competitive advantage by using its employees effectively, drawing on their expertise and ingenuity to meet clearly defined objectives. Torrington et al., (2005) identified the role of human resource functions with the key objectives which form the corner stone of all HR activities. These include staffing, performance management, change management and administration. He asserts that managing change effectively and efficiently remains one of the core objectives in almost every business.

1.1.3 The Concept of Technology Adoption

The concept of technology in the study has been used to refer to human resource information system that is used to acquire, store manipulate, analyze, retrieve and distribute pertinent information regarding an organisation's human resources (Tannenbaum, 1990). It is a systematic procedure for collecting, storing, maintaining, retrieving and validating data needed by organization about its human resources, personnel activities, and organization unit characteristics. Technology adoption on the other hand will refer to application of information communication technologies tools to deliver data, information, and knowledge to individuals and processes. In the light of aforementioned views, technology adoption will cover a wide range of information processing and computer application in organizations in this study. These information processing will include, Information communication technology, human resource information technology, e-learning, online processing, electronic performance support system, human resource information technology and their

infrastructure including computer hardware and software, those technologies that processes or transmit information to enhance the effectiveness of individuals and organizations.

One of the most salient factors impacting organizations and employees today is advancement in technological change. Technological changes has accelerated investment and innovation in Information Technology (IT) which offers prospects for conducting business in ways that are radically different from the past (Gardner, et al, 2003). One implication is that the nature of work is likely to shift as IT has the potential to change the roles of employees within organizations.

Ajayi (2002) asserts that technological change has been the hallmark of economic development in recent years. An interesting and vital part of that technical change process has been the rapid evolution of Information and Communication Technology (ICT). In addition, unprecedented capabilities of the information technology have dramatically changed the ways in which the public and private sectors operate all over the world. Information communication technology therefore has become a major factor in socio-economic development of every nation (Kelly, 1998).

There are three main frameworks impact of information technology which includes: automation, information and transformation (Zuboff, 1988). The framework is developmental in nature. First, is automation where IT is used primarily to computerize manual systems and reduce the need of personnel to perform routine activities which reduces routine work.

Secondly, is IT information which provides increased effectiveness and benefits for those who use the system (Zuboff, 1988). Lastly, is the transformational impact which may define a company with new business operations and practices. In HR, a transformational impact might foster a new culture or mindset as professionals try to think outside the box to formulate various innovations. IT transformation may also lead HR professionals to create innovative practices or to innovatively deliver HR practices to their clients (LeTart, 1998).

Information technology is used for improvements in a variety of human and organizational problem-solving endeavors through the design, development, and use of technologically based systems and processes that enhance the efficiency and effectiveness of information in a variety of strategic, tactical, and operational situations (Blise et al., 2008). Information

technology makes competition seamless, opens avenues for innovation and increases customer sophistication and elasticity thereby significantly expanding conceptualization of a firm's competitiveness. IT strategic intervention lies in its potential to promote above-average increase in firm level performance, add value to human capital endowments, and enhance the performance gains derived from specialized training (Branzei and Thornhill, 2006).

1.1.4 The Concept of Efficiency

Efficiency is a measure of how well resources are transformed into outputs. Efficiency is assessed according to the use of the key resource (Naylor, 1996). Satyanarayana, (2006) posit that service is the major part of e-government. It is the outcome of one or more processes triggered by user action. The attributes of a good service are efficiency, user convenience, cost effectiveness, reliability, and customer-centricity. He continues to say that efficiency of service connotes speed and timeliness of delivery of service, elegance of the user-interface, quality close to the user expectation and simplicity of user action required for obtaining the service.

The notion of efficiency has been applied in scientific and engineering contexts to the relationship between actual performance and theoretically maximum performance. (Cahill, 1996). A variant on this concept has therefore been adopted in the measurement of performance of economic activities. Economic efficiency is used to express the degree to which observed performance approaches its potential and indicates the success with which economic resources are utilized (Danilin et al., 1985; Todd, 1985). The use of technology in organization has added value in transactions by improving efficiency of transactional services, and improving operational performance. There has also been enhancement of interaction and information sharing which improves the quality of service delivery.

1.1.5 Link between adoption of Technology and Efficiency in Human Resource Management

Information technology completely infuses human resource management processes and human resource departments in today's global networking timeframe. For a long time, digital possibilities have been challenging traditional ways of delivering HRM services within

business and public organizations (Bondarouk, 2009). Human resource functions used to employ IT for administrative processes, primarily payroll processing, with little attention being paid to transformational human resource practices (DeSanctis, 1986). In the modern business environment, organizations are continuing to invest substantially in their information technology further in order to improve operational efficiency and maintain their competitiveness in the market place.

However, it would be prudent for organizations to find out how employees themselves view the impact and the value of Information technology investment. While management may regard the investment in IT as worthwhile, there may be a divergence of opinion among the employees as to the real benefits of IT. Thus, particular attention should be paid on shaping the views of the employees who ultimately determine whether the IT capabilities in an organization are put to use (Bruce, & Gede, 2000).

Ulrich (1997b) says that management of transformation and change requires that the human resource professional create a renewed organization, as a change agent, by ensuring there is capacity for change as well as managing the fundamental culture of the organization. The human resource management department is one functional area that is increasingly utilizing information technology (Gardner et al., 2003). With the growth in IT utilization, practitioners and researchers alike recognize that IT may have a tremendous impact on the different functions and individuals in the organization. Ulrich (1997a) argues that technology will change how work is done in general and how human resource is practiced in particular.

The effective management of human resources requires more than competences in routine management of the human resource functions. Human resource managers need to explore how technology will connect employees without face-to-face contact, link communication pattern, change specific human resource practices like sending resumes through internet, distance learning for training, automated performance reviews and tailored benefit programs (Ulrich, 1977a). Human resource management has to change as the business environment changes. This can be done as a mixture responding to changes in that environment and if predicting such changes and making proactive decisions about the nature of human resource management (Aghazadeh; 2003).

The internet-enabled software which requires the user to work only through an established browser interface, may allow the employee to: update personal information such as home address, emergency contacts, cell phone numbers, changes in dependants; self-enroll on benefits programmes; view pay data, including payroll deductions and tax information; input timesheet data; apply online for promotion opportunities; register for in-house training courses; read the employee handbook, company newsletters and policy and procedure manuals online; update personnel information with newly acquired skills; view accrued paid time off (Aghazadeh, 2003).

Snell, Stueber, and Lepak (2002) observes that human resource managers can meet the challenge of simultaneously becoming more strategic, flexible, cost efficient, and customer-oriented by leveraging information technology. Ulrich and Yeung, (1989) argue that the future HR professional will need business competence, professional and technical knowledge, integration competence and ability to manage change. Developments in information technology have dramatically affected traditional HR functions with nearly every HR function experiencing reengineering of its processes.

Within Porter's framework, the sources of competitive advantage can be derived from how a firm positions itself competitively within an industry and from the way a firm organizes and performs discrete but interdependent activities embodied in its value chain. According to Porter (1991), "Discrete activities are part of an interdependent system in which the cost or effectiveness of one activity can be affected by the way others are performed. Activities involve human resources, purchased inputs, and a 'technology' for performing them, broadly defined to include organizational routine" (p. 102). These assets are only valuable when they fit an organization's competitive strategy (Porter, 1991).

1.1.6 Civil Service in Kenya

The Kenya Civil Service is the policy implementation arm of the Government. In executing this role, it is guided by public policy pronouncements and the attendant development plans and circulars. The Civil Service is constituted by Ministries and Departments which are divided into headquarters and field units (GoK, 2006). The Ministries are responsible for planning and implementing their own programmes. The Civil Service plays a critical role in the socio-economic development of the nation as well as in the maintenance and

improvement of public services. Efforts are continuously being made toward reforming the Civil Service with the objective of making it more professional, responsive to national development challenges and efficient in the delivery of services.

Since independence, the Kenya Civil Service has witnessed tremendous growth both in terms of numbers and the variety of its functions. It has also undergone considerable diversification in its composition, with new cadres and professional categories evolving, over time, in response to the changing needs of the economy (GoK, 1984). The Civil Service therefore constantly adjusts itself to the new demands being placed upon it to keep pace with the progress in the delivery of services to its citizens.

The Government promise to intensify efforts to bring about attitude change in public service to enhance value, transparency and accountability to the citizens of Kenya (Vision 2030). An efficient, motivated and well-trained public service is expected to be one of the major foundations of the vision. This will be made possible by creating a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy.

Towards this end, the government established e-Government as a tool to improve internal efficient and quality of public service delivery and help in the fight against corruption. The goal of e-government is to make the government more result oriented, efficient and citizen centred (GoK, 2008). The e-government focus on redefining the relationship between government and citizens with the objective of empowering them through increased and better access to government services.

1.2 Statement of the Problem

Organizations today face a constantly changing environment which requires them to adapt to change (Robbins, 2005). This, of course, means that human resource management is continuously being required to change. Forster (2005) supports this changing environment statement but goes further in saying that there are many surprises and uncertainties facing organizations, and thus globalization; the fast pace of technological innovation; the ongoing re-definition of the roles and activities of organizations; employers; trade unions and employees; economic and political instabilities; growing ethical and ecological challenge in business; and developments of new economies contribute to the ever-changing environment in which business operates.

The Kenya Civil Service has witnessed tremendous growth both in terms of numbers and the variety of functions. The major challenge facing the civil service is to provide services in an efficient and effective way. Electronic Government provides a framework for improved service delivery and enhanced communication and information provision within government, the public and the business community (GoK, 2006). In the field of human resource management, technology has been applied in service delivery in areas such as payroll management, online job applications system and use of intranet in communication. The Government has also introduced the use of technology in tracking the status of Identity Card and Passport application. A critical factor that can influence the success of use of technology in human resource management is how employees perceive its efficiency. Employees on the other hand are the driving force behind the success of any business.

Researchers in the field of human resource management have focused on human resource practices and firm performance (Arthur, 1994; Huselid, 1995 and Huselid and Becker 1996; Delery and Doty, 1996; Guthrie, 2001) while others have focused on linking competitive strategies to human resource management practices (Schuler and Jackson, (1987;). Moreover, researchers in technology and human resource practices have investigated the impact of IT on managerial decision-making (Nord & Nord, 1995; Syeed & Brightman 1994), attitude toward IT (Ray, Sormunen, & Harris, 1999), user technology acceptance (Davis, 1989). Most of these studies were carried out in the developed countries. The difference in developing countries lay in the context in which managers operated and the special challenges they faced. Therefore, it would not be possible to generalize these studies in the developing countries since they operate under a different context.

A study by Balozi (2010) on the perception of employees on the use of performance contracting as a means of improving performance in the Ministry of Housing found a positive relationship on perception of employees on the use of performance contracting as a means of improving performance in the Ministry. Another study by Osoro, (2010) on employees perceptions of psychological contract violation following implementation of performance contract at the Kenya Forestry Research Institute recorded positive results on employees readiness to perform required tasks and accepting increasing challenging performance standards, and the conclusions were that the perceived psychological contract had not been violated following implementation of performance contract. Further, Lung'ung'u (2011)

carried out a study on perception of employees on the relationship between training and employee performance in the Ministry of Agriculture. The findings were that training enhances employee performance. These studies have been used for demonstrating the employee perception with regard to different human resource practices.

In Addition, Nyakoe (2007) did a study on the extent of use of information communication technology in human resource management in large manufacturing firms. His findings were that they had not adopted modern information technology in human resource management though they were making initiatives towards achieving the implementation process which was costly. None of the studies so far has focused on the perceived efficiency associated with the application of technology in human resource management. It is worth noting that old practices and systems that have evolved over time in a relatively stable environmental context are inadequate to meet the challenges posed by the complex and dynamic business environment of today. This has resulted into integration of technology in all areas of the organization including the human resource function. However, the success of the adoption of technology in human resource depends on the level of its associated perceived efficiency. There exists a knowledge gap on the extent to which employees believe that application of technology in human resource management has enhanced efficiency which this study seek to fill. This research problem leads to the following question: What is the link between adoption of technology and efficiency in human resource management in the Civil Service in Kenya?

1.3 Research Objective

To determine the perceived link between adoption of technology and efficiency in human resource management in the Kenyan civil service.

1.4 Value of the Study

The research envisages the perceived link between adoption of technology and efficiency in human resource management as crucial to the success or failure of technological investment. However, human resource function faces changing expectations which requires integration with technological changes in the wake of globalization of the world economies. The findings of this research are important in providing insight into how the management can shape the perceptions of employees while investing in technology. This will enable them to

strengthen their strategic choices to accommodate the envisaged changes in technology and build positive feedback which would shape the perception of employees.

The study was useful to human resource managers in integrating technology in the human resource functions. It provided insights on the factors to consider when integrating technology in the various functions. It also addressed an area in human resource management which had previously been overlooked and therefore contributed to the existing knowledge on human resource management.

The study also generated a new framework for further research pertaining HRM practices and technological changes. It opened up for more studies and excavated more fertile ground to cultivate what would in future help organizations to make a balance scorecard between human resource and technology.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature related to the aspect of technology adoption and efficiency in human resource management. The source was from management authors, professional journals and scholars.

2.2 Human Resource Management

Human resource management (HRM) is the strategic and coherent approach to the management of an organization's most valued assets – the people working there who individually and collectively contribute to the achievement of the objectives of the business (Armstrong, 2006). The goal of HRM is to maximize employee's contributions in order to achieve optimal productivity and effectiveness, while simultaneously attaining individual and societal objectives (Dessler et al., 1999)

The human resource management function in organizations has gained increasing strategic emphasis, and the importance of its alignment to business strategies is well-acknowledged (Agarwal, & Ferrat, 1999). Schuler & MacMillan (1984) supports this by saying that HRM is an important aspect of every organization with its roles categorized as traditional and specific. Both the traditional and specific roles are important HRM practices. However, these roles have evolved as many changes occur in the environment of an organization. These changes include technological changes, globalization, workforce diversity, changing economic and regulations that have significant impact on the objectives, strategies and practices of an organization.

There has been a dramatic shift in the role of human resource management in recent decades. Traditionally, the HR function has been viewed as primarily administrative, focusing on the level of the individual employee, the individual job, and the individual practice (Becker, Huselid, and Ulrich, 2001), with the basic premise that improvements in individual employee performance will automatically enhance organizational performance. The dramatic shift has resulted in an emphasis on strategy and the importance of HR systems. Thus HR has now emerged as a strategic paradigm in which individual HR functions, such as recruitment, selection, training, compensation, and performance appraisal, are closely aligned with each other and also with the overall strategy of the organization.

Ulrich (1997a) defines four fields for HRM which includes: strategic business partner, change agent, employee champion, and administrative expert. Ulrich (1997b) asserts that the traditional human resource practices of staffing, training, performance management, benefits, regulation, labor relations, will become the table stakes for human resource, with new practices emerging constantly. This calls for high-involvement human resource management systems which offer employers a valuable means of improving operational performance which enhance efficiency and effectiveness. Therefore, success depend primarily on employee's attitude, competencies and skills; their ability to generate commitment and trust, communicate aspirations and work in complex relationships. This calls for the need to employ competitive strategy and effective human resource practices.

The resource based view of the firm overcomes the bias in the mainstream strategic management literature by stressing the importance of firm specific resources that can provide competitive advantage to an organization on a sustainable basis. In contrast to the traditional external perspective of developing strategy to match the environment (Porter, 1985), the resource based view is centered on the internal resource of firm. The assumption is that the origin of competitive advantage lies in processing, acquiring and utilizing internal resources in getting the firm ahead of its competitors. In essence, while the classical strategic management paradigm has an industry to environment focus, the resource based view is firm focused, with emphasis on links among strategy, internal resources of the firm and performance (Wright & McMahan, 1992).

The world of work has been immersed in a process of dynamic, and at times turbulent, changes reflecting the shift from the industrial era to the information age also known as the digital era. Losey (2005) says that technology is advancing so quickly that it is forcing organizations to change their strategies, in some cases, their product mix and changing the way HR is organized and delivered. Zanko (2003) supports the same sentiments and adds that the underlying theme embedded within the HRM trends/issues is that of change. Human resource needs to embrace this change by ensuring that the business has the right people with the right knowledge, skills and abilities, and create a culture that contributes positively towards change.

A priority for HR in the future will be developing positive employment relations. Sparrow cited in Roberts 2003 states that organizations should focus on the different views about which HR practices deliver competitive advantage that can have a major impact on global knowledge transfer. The role of HR in providing sustained competitive advantage can be achieved through recognizing and incorporating many different ideas and perspectives into the management of the human resource function. Likewise, properly managed HR is an integral contributory factor in improving organizational productivity.

The human resource management functions are required to achieve four major goals. First, they are required to be more strategic. Alvares (1997: 9) notes that "the bottom-line business of human resources must be the delivery and/or development of human capital that enable the enterprise to become more competitive, to operate for maximum effectiveness, and to execute its business strategies successfully". Becoming a strategic partner requires that HR functions be involved in the development, planning, formation and implementation of competency-based strategies.

Second, HR functions are also being asked to be more flexible (Wright & Snell, 1998). Policies, programs and practices that were once locked in place are perhaps now adverse to strategic change. Third is the need to control cost. Managers should therefore prioritize where they can best utilize their time, talents, and resources. Finally, while reinventing themselves towards being strategic and flexible, they are required to provide excellent service to managers and employees.

2.3 Technological Change

Technological change has been identified as one of the most salient factors impacting organizations and employees today. It has accelerated investment and innovation in IT which offers prospects for conducting business in ways that are radically different from the past (Gardner, et al, 2003). One implication is that the nature of work is likely to shift as IT has the potential to change the roles of employees within organizations.

Ajayi (2002) asserts that technological change has been the hallmark of economic development in recent years. An interesting and vital part of that technical change process has been the rapid evolution of Information and Communication Technology (ICT). It is notable that the world is experiencing an information technology revolution that has

drastically changed many aspects of the human life, from education, industry, economy, politics to entertainment (Ajayi, 2002). In addition, unprecedented capabilities of the information technology have dramatically changed the ways in which the public and private sectors operate all over the world. Information communication technology therefore has become a major factor in socio-economic development of every nation (Kelly, 1998).

Adoption of technology in delivering human resource practices due to the digital revolution in the world is a tool that organizations can employ to manipulate the performance and behavior of the people on whom they rely on to achieve business success (Breaugh, 1992). Human resource role have been viewed as transitioning from operational, administrative, functionally oriented, and reactive toward more strategic, consultative, business oriented, and proactive (Ulrich, 1997). In the area of human resource management, technological change has been experienced in the use of Human Resource Information System.

Tannenbaum (1990) defines HRIS as a technology based system used to acquire, store, manipulate, analyze, retrieve, and distribute pertinent information regarding an organization's human resources. Kovach et al. (1999) defines HRIS as a systematic procedure for collecting, storing, maintaining, retrieving, and validating data needed by organization about its human resources, personnel activities, and organization unit characteristics. The use of HRIS enables an organization to increase competitiveness by improving operations, producing greater number and variety of HR related reports, shift the focus of HR from the processing of transactions to strategic HRM, make employees part of HRIS and reengineer the entire function of an organization (Becker & Bsat 2002; Broderick and Boudreau 1992).

2.4 Link between Adoption of Technology and Efficiency in Human Resource Management

Accelerated investment and innovation in information technology (IT) offers prospects for conducting business in ways that are radically different from the past (Gardner et al., 2003). To improve operational efficiency and to maintain their competitiveness in the market place, many organizations continue to invest substantially in their information technology capability. Information technology not only provides the means for human resource function to make their contribution, it also enables line managers to become more involved in human resource activities (Shaw, 1994). Technology and human resource management have a broad

range of influences upon each other, and HR professionals should be able to adopt technologies that allow the re-engineering of the human resource function, be prepared to support organizational and work-design changes caused by technology, and be able to support a proper managerial climate for innovative and knowledge-based organizations (Hempel, 2004).

Snell, Stueber, and Lepak (2002) observes that human resource management systems can meet the challenge of simultaneously becoming more strategic, flexible, cost efficient, and customer-oriented by leveraging information technology. Many experts forecast that the use of computers will become the central tool for all human resource professionals. Virtual HR is emerging due to the growing sophistication of IT and increased external structural options (Lepak & Snell, 1998).

Advances in IT hold the promise of meeting many of the challenges of HRM, such as attracting, retaining, and motivating employees, meeting the demands for a more strategic HR function, and managing the human element of technological change in the future (Ashbaugh & Miranda, 2002). There are several theories that have been proposed to explain the widespread of information technology, such as resource-based view, transaction cost theory, media richness theory, coordination theory or social exchange theory. However, these theories have different applicable research domains. Among them, the major theory that has been adopted to interpret the relationship between IT and firm performance is the resource based view proposed by Wernerfelt (1984).

From the resource-Based view (Barney, 1991) it is argued that a resource is strategic when it is scarce. Information and Communication technologies are accessible to all firms, but the assets and capabilities required to bring about changes, in both organizational design and in other elements, are not. This therefore marks the source of the difference in firms' success or failure when they introduce technologies. In this respect, Powell and Dent-Micallef (1997) maintain that ICT alone does not provide sustainable competitive advantages: its use along with complementary human and organizational resources such as a flexible culture, the integration of ICT and the firm's strategy, is what allows firms to obtain competitive advantages. Within Porter's framework, the sources of competitive advantage can be derived from how a firm position itself competitively within an industry and from the way a firm

organizes and performs discrete but interdependent activities embodied in its value chain Porter (1991).

2.4.1 Levels of Application of IT in HRM

Gardner et al. (2003) provides four levels of application of IT in HRM. First is information which is used as electronic database, which could be accessible by anyone, anytime and anywhere within the organization. The information can be the policies, news and publications, from the organization. Although this simple function only needs to provide the information through the website, it benefits the organization through the reduction of printing cost, the instant delivery of the information on-line, and re-accessibility to information at any time.

The second level of application is the automation where IT is used to manage workforce data. At this level the HRIT uses the intranets together with internets. This involves two kinds of data, the individual data of all employees, and the other is the business data, such as the structure of the organization, position arrangement, job scale and so on. These basic data are used for all the HRIT applications for HR function. HRIT automation can reduce the amount of the routine work such as business records, maintenance, which previously must be done manually by human resource professionals (Gardner, et al. 2003).

The third level is the interaction level, which goes beyond simple information publishing and basic automation, and provides advance benefit and effectiveness for HR function (Transley, Newell & Williams, 2001; Gardener, et al. 2003). Individuals can obtain information from the HRIT platform and return the feedbacks. By selectively filtering information, employees can take the initiative to self-plan their career, which turns the job planning from departmental oriented to employee oriented.

The last level of application involves envision of the HR function. From the information to automation to interaction and then to envision, HRIT starts to move the HR function beyond the traditional focus out of the boundaries of HR department, and towards strategic one (Gardner, et al. 2003). Based on the abundant data, HR professionals can obtain the information through data statistics and analysis, like program achievements, assessment, employee training and appraisal record. Further, they can use statistics results to formulate

strategy to meet with the future demand on the human resource of an organization, and plan salary-scale of employees regarding to financial balance trend.

2.4.2 Use of IT in HRM Functions

Information technology has dramatically affected traditional HR functions with nearly every HR function experiencing some sort of re-engineering of its processes. Mesthene (1970) contends that computer liberates people. From this perspective, information technology helps to remove the monotony and make jobs more enriching and satisfying. According to Zuboff, IT tools fall into two types: Automated or information. An automating technology seeks to deskill the processes that make up the work. With this type of technology, greater control and continuity over the work process can be achieved through substituting technology from human labour (Zuboff, 1988). An informating technology, on the other hand, is designed to upgrade or enrich the work processes. Through removing the most boring, repetitious, dangerous and mindless tasks from the work, human labour is left to perform the creative, challenging, intellectual and satisfying aspects of the work (Orlikowski, 1988).

Information technology has brought substantial progress in employees data updates, personnel changes and job requisitions. According to Zuboff (1988), IT automation often reduces the amount of routine work that must be done, potentially providing more opportunities for individuals to think and use their full cognitive capacities. By informating activities, IT bundles information so that HR professionals can access this information and evaluate what was not previously accessible. IT has therefore impacted on HRM major functions like human resource planning, recruitment and selection, training and development, reward management and performance management.

Rapid computing technology has allowed more transactions to occur with fewer fixed resources. It has been used in payroll, flexible benefits administration, and health benefits processing (Ulrich, 2001). The computer technology is designed to improve effectiveness in terms of the accuracy of information or by using the technology to simplify the process. It is especially applicable where large data sets require reconciliation.

E-recruitment has replaced the traditional method of indicating job postings through advertisements. E-recruitment involves posting of vacancies on the corporate web site or on an online recruitment vender's website, and allowing applicants to send their resumes

electronically via e-mail (Galanaki, 2002). According to Romero and Lukaszewsky (2006), one of the main objectives of the e-recruitment process is to share the job vacancies with the biggest amount of potential candidates. Through the use of online recruitment systems, organizations also share important details about the positions available and specific information such as job descriptions, organisation's culture or brand identity and job incentives (Romero & Lukaszewsky 2006). Internet supported recruiting lower costs of recruiting and quickens the process of recruitment. It also enables organization to attract better and more candidates.

E-learning offer a solution to training in remote or disadvantaged locations as well as tailor-made learning that fits the particular needs of the learner. According to Dessler (1999) computer based training reduce learning time by an average of 50%, enhance instructional consistency, mastery of learning, increased retention and increased trainee motivation. Organizations can also make use of Electronic Performance Support System (EPSS) to provide support that is faster, cheaper, and more effective than the traditional methods.

Payroll model automates the pay process by gathering data on employee time and attendance, calculating various deductions and taxes, and generating periodic pay-cheques and employee tax reports. Data is fed from the human resources and time keeping modules to calculate automatic deposit and manual cheque writing capabilities. Sophisticated systems set up accounts payable transactions from employee deductions or produce garnishment cheques (Kumar & Pandya, 2012). The payroll module sends accounting information to the general ledger for posting subsequent to a pay cycle. It produces paychecks on demand, run trial reports, and makes last-minute changes with no hassle.

Relational e-HRM is also concerned with online performance appraisal systems. Organizations make use of managerial self-service, which allows the managers to access employees' information and complete performance evaluations (Geutai, 2003 cited in Payne et al., 2009). Online performance appraisal involves the use of technology necessary to create systems and processes by which the employees are evaluated and rated, according to the performance on their tasks within a company. Dessler (1999) says that Electronic Performance Monitoring means having supervisors electronically observe the employee's output or whereabouts. It involves using computer networks and wireless audio or video links to monitor and record employee's work activities.

However, it would be prudent for organizations to find out how employees themselves view the impact and the value of Information technology investment. While management may regard the investment in IT as worthwhile, there may be a divergence of opinion among the employees as to the real benefits of IT. Thus, managers should pay particular attention to shaping the views of the employees who ultimately determine whether the IT capabilities in an organization are put to use (Bruce & Gede, 2000).

Rodger et al., (1998) contend that users, managers, and employees who are unaware of the value-added potential of the HRIS system will fail in HRIS development and implementation. They therefore suggest that concentration on communicating and educating users to become aware of the value-added potential of HRIS is important for the development and implementation stages. Likewise, Gara (2001) emphasizes that the key areas are getting people in the organization informed and educating management and staff.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the overall methodology that was used to carry out the study. It discusses the research design, the population of the study, sampling design, data collection methods and data analysis.

3.2 Research Design

The research design was descriptive survey of perceived link between technology and efficiency in human resource management in the Civil Service in Kenya. The design was appropriate since data was collected across the Ministries/Departments in the civil service.

3.3 Population of the study

The population of the study was employees of the Kenya Civil Service who are in job groups L to R working in the headquarters of various Ministries/Departments. Employees from Job Group L and above perform supervisory duties and are involved in decision making. They have also acquired substantial work experience and they have witnessed technological changes that have been taking place in their areas of work. Their inputs were valuable in this study. The number of employees in this category (Job Group 'L' – 'R') was nine thousand and seven (9,007) (GoK, 2010).

3.4 Sampling

The researcher drew a sample from the population under study who were issued with a questionnaire to respond to it. A list of 9,007 employees was created to form the sampling frame and distributed according to their Job Groups. The distribution of employees is as shown in Appendix III. The sample size was adopted based on the method of determining a sample size according to the guide (Appendix IV) provided by Krejcie and Morgan (1970). From the guide the required sample at N = 9000 is equal to 368. This was adopted to form the sample size.

The sample size in each Ministry/Department was allocated in proportion to the population (Appendix V). Stratified random sampling was used to determine the specific respondent from the sample frame considering the gender of respondents.

3.5 Data Collection

Data was collected using a survey questionnaire (Appendix II). It was divided into two Parts: Part 'A' was used to collect demographic information and part 'B' on the other hand contained a series of statements measuring employees' perception on the link between technology and efficiency in human resource management with the data captured using a Likert Scale. The questionnaire was administered to the respondents through the drop and pick method. The purpose of the study was explained to them.

3.6 Data analysis

The collected data was organized, coded and analyzed using descriptive statistics. Descriptive statistics and factor analysis enabled meaningful description of the distribution of scores with the use of means and standard deviation. Statistical Package for Social Science (SPSS) was used in analyzing the data.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSION

4.1 Introduction

This chapter focuses on the analysis of the study. Issues covered are demographics of the respondents and descriptive statistics providing discussions of the study findings.

4.2 Response Rate

The study data was collected using a questionnaire administered to civil servants within the selected job groups ensuring gender representation. Out of the targeted 368 respondents, 248 successfully responded by completing the questionnaire, thus achieving a response rate of 67.39% as shown in appendix VII. The response rate was considered statistically sufficient representative and conforms to Mugenda and Mugenda (1999) stipulation that response rate of 60% is good representative.

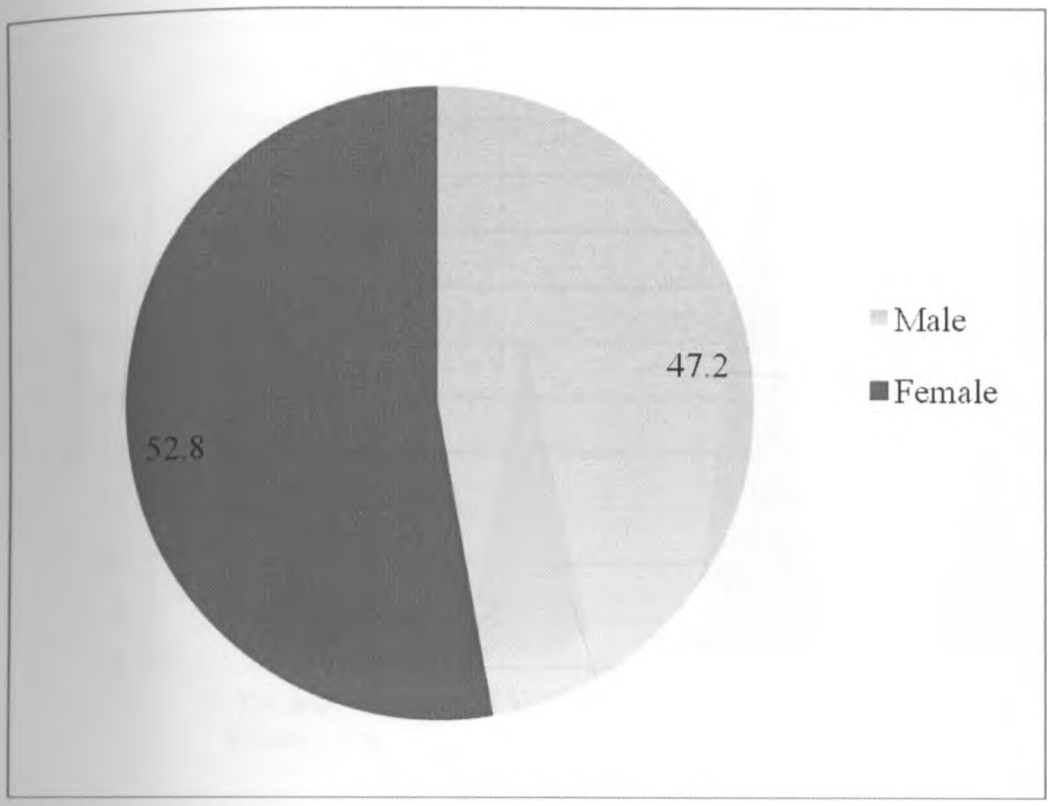
4.3 Demographic Characteristics of the Sample

Demographic characteristics of respondents was based on the gender of respondents, age bracket, highest level of education and years of experience.

4.3.1 Gender of respondents

Respondents were asked to indicate their gender by ticking against the relevant indicator (male or female). Figure 4.1 shows the gender distribution of respondents.

Figure 4. 1. Gender of respondents



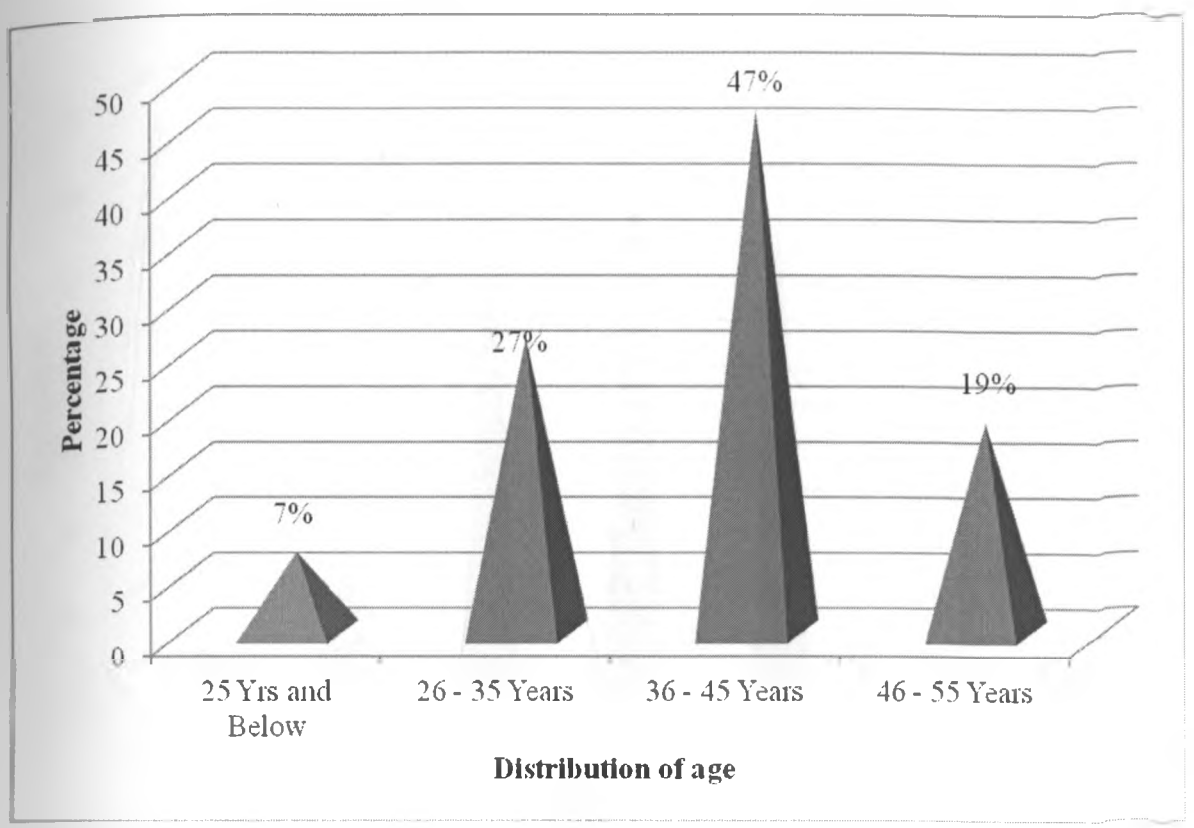
Source: Researcher (2012)

As shown in figure 4.1 female respondents were 52.8% while male respondents were 47.2%. This indicates that female respondents were slightly more than male respondents. However, the difference of 5.6% was not found to be significant and therefore, I have confidence that the sample was free from bias.

4.3.2 Age bracket

Figure 4.2 shows majority of employees were in the age bracket of 36 – 45 years representing 47 % whereas those in the age bracket of 26 – 35 years were 27% followed by the age bracket of 46 – 55 years representing 18% and the least were in the age bracket of 25 years and below comprising of 7%. The study had a wide diversity in age which was found to be important in capturing varied views of respondents. Respondents who were aged between 36 – 45 years possessed substantial work experience and therefore it was considered that they were in a better position to compare the effects of technological developments during their period of employment.

Figure 4. 2. Age bracket

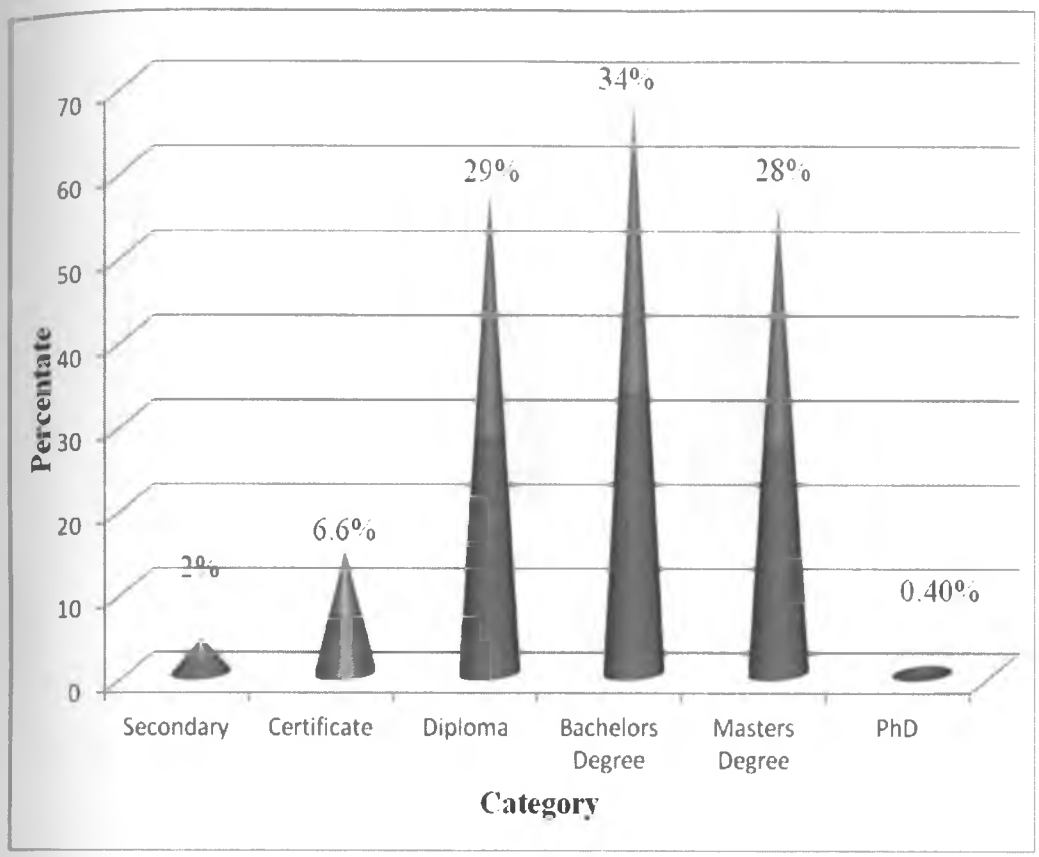


Source: Researcher (2012)

4.3.3 Respondents' level of Education

The level of education of the respondents as revealed in figure 4.3 shows that majority of them (34 %) had Bachelors degree, 28 % had Masters Degree, 29% had Diploma qualification, 2% had secondary education, 6.6% had certificate qualification while only 0.4% had PhD qualification. In general, the study gives a favorable picture concerning their level of education. A substantial number of employees were knowledgeable enough and it was considered that they were able to present favourable views of the perception they had on technology adoption and efficiency in human resource management.

Figure 4. 3. Respondents' Level of Education

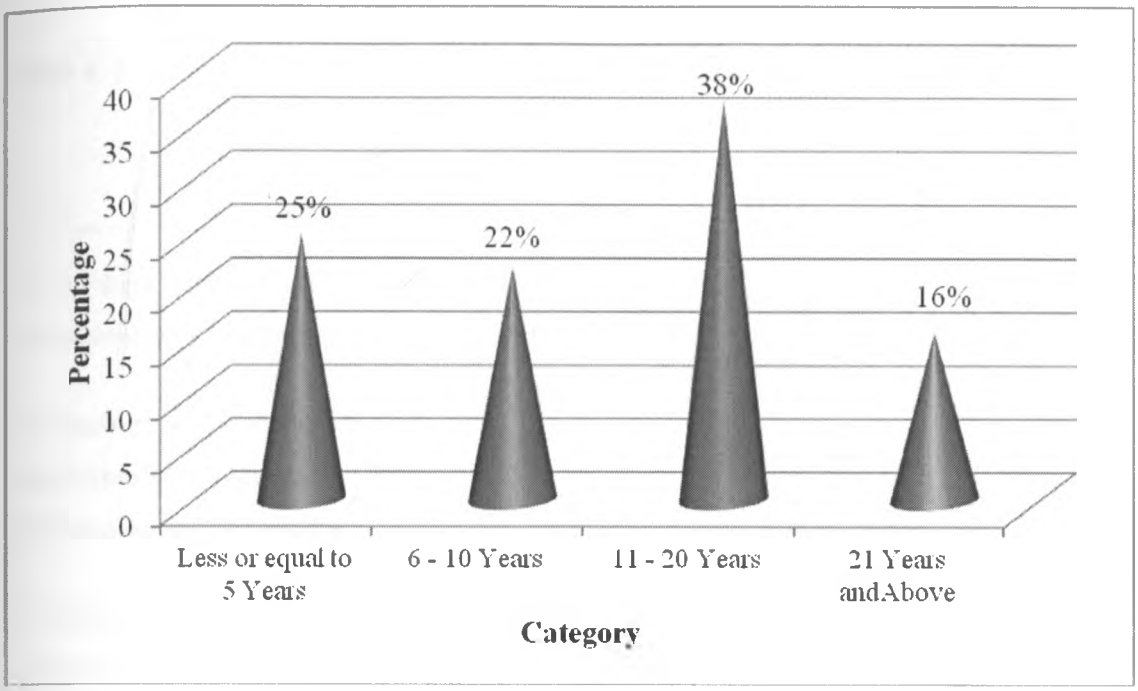


Source: Researcher (2012)

4.3.4 Years of Experience

As shown in figure 4.4, respondents indicated their years of experience in the civil service. Majority of them (38%) had working experience of between 11- 20 years. This was followed by respondents with working experience of less or equal to 5 years, comprising of 25%, those with experience of between 6 -10 years were 22% while those with experience of 21 years and above were 16%.

Figure 4. 4. Experience in the Civil Service



Source: Researcher (2012)

4.4 Perceived Link between adoption of technology and efficiency in Human Resource Management

Respondents were asked to rate, on a five point scale, the extent to which they agreed or disagreed with statements describing perceived link between adoption of technology and efficiency in human resource management. The ratings ranged from 1 representing not at all (lowest,) to 2 representing to a small extent, 3 representing to a moderate extent, 4 representing to a large extent and 5 representing to a very great extent (highest). The study used mean score to determine the highly rated factors. The cut off mean was set as 3.0. Any factor which scored 3 and above as a mean score was considered to have a favourable perception while those which scored below 3 were considered to have low perception.

As depicted in table 4.4, the aspect of technology leading to improved communication had the highest mean score of 4.27%. This agreed with some researchers, who also found that technology provides timely and quick access to information (Lederer, 1984; Tetz, 1973). This indicated that technology had played a major role in improving communication through the

use of e-mails and organization's website. With the use of technology it was possible to reach a wider audience at the same time.

Table 4. 1 Perceived Link between Adoption of Technology and Efficiency in Human Resource Management

Variable	Minimum	Maximum	Mean	Std. Deviation
Technology adoption has led to improved communication collaboration and teamwork	2	5	4.27	.767
Technology adoption has enabled employees in the Ministry to share information and knowledge.	2	5	3.83	.865
Adoption of technology has resulted in cost saving in work performance	1	5	3.59	1.022
Technology adoption has facilitated the culture of transparency	1	5	3.54	.904
Technology adoption has improved the quality of customer service in the Ministry	1	5	3.68	.908
Technology adoption has enhanced increased consistency in information.	1	5	3.82	.840
There has been improved productivity with increased adoption of technology	1	5	3.78	.914
Technology adoption has helped to reduce the time taken in recruitment and selection process.	1	5	3.65	1.125
Technology adoption has led to reduction of operational costs especially manpower requirements, and other overhead costs.	1	5	3.60	.994

The adoption of technology has transformed the way we interact inside the organization and also with the public	1	5	3.61	.880
There has been personalized feedback to clients with adoption of technology.	1	5	3.41	1.006
Total			**40.59**	**10.225**

Source: Researcher (2012)

Respondents also rated the aspect of enabling employees to share information and knowledge high with a mean score of 3.83%. This agrees with the assertion of Zuboff, 1988 that Information Technology automates the manual systems and reduce the need for personnel to perform routine activities. This is because technology enables an organization to create a database with information which can be shared by many people according to the need.

On the aspect of increased consistency in information, respondents mean score was at 3.82. This showed that technology provided increased effectiveness on the information provided as long as correct information was captured from the beginning. According to Ulrich, 2001, rapid computing technology has allowed more transactions to occur with fewer fixed resources. These sentiments are in line with perceptions of respondents regarding the aspect of improved productivity with increased adoption of technology. The variable had a mean score of 3.78.

The Kenya Civil Service endeavors to provide high quality service to its citizens. In this regard the Government established e-Government as a tool to improve internal efficiency and quality of public service delivery. E-government focus on redefining the relationship between government and citizens with the objective of empowering them through increased and better access to government services. This has been perceived positively by respondents having rated the aspect of technology improving quality of customer service high with a mean score of 3.68.

Respondents rated high on the aspect of technology having transformed the way employees interact inside the organization and also with the public with a mean score of 3.61. This was in agreement with the observation of Gardener et al., (2003) that investing in technology offers prospects for conducting business in ways that are radically different from the past. Technology had provided many benefits to the users and changed the way citizens consume e-government services. This also agrees with the perception of respondents that technology has enabled citizens an opportunity to benefit from personalized feedback which had a mean score of 3.41.

The use of technology in Human Resource Management provides an organization with a platform where it can store information in an electronic database which could be accessed any time by anyone. This benefits the organization through reduction of printing costs as well as cost of information delivery. This was well agreed by respondents whose perception rating on the aspect of technology adoption resulting to cost saving in work performance scored a mean of 3.59. This also agreed with the perception of respondents on the aspect of technology adoption reducing operational costs which scored a mean of 3.60.

Respondents felt that technology facilitated a culture of transparency with a mean of 3.59. With the use of e-Government, citizens could easily follow up on their service requirement like in the case of tracking an identification card, passport, following up on appointments which had been published online. This was found to have enhanced the level of transparency by the service providers and at the same time ensuring high customer satisfaction.

Respondents perception indicated that technology adoption had led to an increase in efficiency in all the aspects studied. The findings were in line with Branzei and Thornhill, (2006) who asserted that Information Technology intervention lies in its potential to promote above-average increase in firm level performance, add value to human capital endowments, and enhance the performance gains derived from specialized training.

4.5 Use of Human Resource Information System in Human Resource Functions

Respondents were asked to indicate the extent to which HRIS applications were used to support human resource functions in their Ministry/Department. A likert scale was used to rate the perceptions of respondents. The ratings ranged from 1 representing not at all (lowest,) to 2 representing to a small extent, 3 representing to a moderate extent, 4 representing to a large extent and 5 representing to a very great extent (highest). The study findings are summarized in figure 4.5 which indicate the mean score of each variable under study, maximum and minimum ratings and the standard deviation. The cut off mean was set as 3.0. Any factor which scored 3 and above as a mean score was considered to have a favourable perception while the ones below were considered to have low perception.

Table 4. 2 Use of Human Resource Information System in Human Resource Functions

Variables	Minimum	Maximum	Mean	Std. Deviation
My Ministry use Human Resource Management Information System to create human resource database for human resource planning	1	5	3.73	1.264
Job vacancies in my Ministry are posted on the website.	1	5	3.46	1.155
Training and development in my Ministry is facilitated by use of internet.	1	5	2.71	1.200
My Ministry manages payroll by use of Human Resource Information System.	1	5	3.91	1.080
Employees in my Ministry obtain monthly payslips online by use of e-payslips.	1	5	3.96	1.208

My Ministry uses online payment and salary processing.	1	5	3.77	1.134
Personal Numbers in my Ministry are managed using Human Resource Information System.	1	5	3.43	1.140
Leave requests are processed using Human Resource Information System.	1	5	2.65	1.125
Staff Performance Appraisals in my Ministry are administered online.	1	5	2.24	1.126
There are online health and safety manuals in my Ministry	1	5	2.24	1.078
Employees health programmes in my Ministry are Communicated online.	1	5	2.32	1.094
Job Evaluation in my Ministry is undertaken using Human Resource Information System.	1	5	2.40	1.044
Human resource management decisions are communicated by use of internet.	1	5	2.39	.975
			39.21	**14.623**

Source: Researcher (2012)

As shown in table 4.2, human resource information system was largely adopted in availing online payslips to employees which scored the highest mean score of 3.96. The second highest variable was management of payroll which had a mean score of 3.91. The result reflects key aspects of academic findings and practitioner opinions that human resource information system adopted was used on administrative ends, rather than any sort of analytical or decision support ends. In this case, core personnel information - that which is involved in the day-to-day running of the organization were the most cited areas of human

resource function information which was availed electronically. This agrees with the assertion of Ulrich, 2001 that technology has been used in payroll, flexible benefits administration, and health benefits processing.

Respondents rating on the aspect of use of HRIS in creating a human resource database for human resource planning scored at 3.73. This was attributed to the fact that employee personal data was controlled electronically by use of a personal number and details of service period including date of retirement. This also agreed with the rating of respondents on the aspect of managing personal numbers using the human resource information system which scored a mean of 3.43 and online payment and salary processing which had a mean of 3.77.

Ministries in the civil service had launched websites in order to provide clients with useful information concerning their services. The websites were used to post job vacancies in the Ministries. This was in line with perceptions of respondents who gave a favourable perception rating of 3.46 on the aspect of posting job vacancies on the website. This is in line with the assertions of Galanaki, 2002 that e-recruitment has replaced the traditional method of indicating job postings through advertisements.

The lowest mean ratings were obtained from assessing the perception of training and development in Ministries with a mean score of 2.71, processing leave requests had a mean score of 2.65, online job evaluation programme with a mean score of 2.40, communication of human resource decisions with a mean of 2.39, posting of online health and safety manuals with a mean score of 2.32, and administering staff performance and presence of online health and safety manuals had a mean of 2.24 respectively. The study results showed that human resource information system was largely used for administrative purpose but not to support human resource functions.

HRIS is a system used to acquire, store, manipulate, analyze, retrieve and distribute pertinent information regarding an organization's human resources. It is increasingly recognized as a crucial determinant of effective HRM and a strategic advantage. In the same line of argument, Ashbaugh & Miranda, 2002 says that IT hold the promise of meeting many of the challenges of HRM such as attracting, retaining, and motivating employees, meeting the demands for a more strategic HR function, and managing the human element of technological change in the future. Broderick and Boudreau (1992) asserted that information technology has enormous potential to make human resources more competitive. However, there is need

for organizations to ensure that there is strategic use of HRIS for it to reap the much desired benefits.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMEDATIONS

5.1 Introduction

This chapter presents a summary of the research findings; conclusion and recommendations. Conclusions were drawn from findings of the study in line with the study objectives.

5.2 Summary of Findings

The study objective was to determine the perceived link between adoption of technology and efficiency in human resource management in the Civil Service in Kenya. The study involved a total of two hundred and forty eight (248) respondents. The summary of the findings showed that the population under study held a positive perception that adoption of technology resulted in efficiency in human resource management. All the studied variables on perceived efficiency associated with adoption of technology scored a mean of >3. However, the use of HRIS on the human resource functions was found to be positive in administrative aspects of creation of human resource database for human resource planning, posting of jobs in the website, management of payroll, processing of online payslips and salary, and management of personal numbers.

5.3 Conclusions

The government has been carrying out civil service reforms over the past decade. In line with the said reforms it has developed an ICT policy to progressively transform into an e-government in a coordinated manner. This is in recognition of the economic value and benefits of information and communications technology services. Information and Communications Technology (ICT) is important to the realization of the required improvement in productivity and empowerment of the citizens.

Information technology (IT) is seen as an enabling agent through which organizations can improve their operational efficiency and strategic position in an increasing competitive business environment. At times the decision to invest in IT is based on the fear of being left behind by competitors rather than on the genuine understanding of the real benefits that IT can bring to the organization. Lack of understanding can lead to the organization's inability to generate a shared vision among employees on how to leverage the real potential of IT in its processes. On the other hand, HRIS developed in the Ministries/departments may not be

mature enough to have the capacity of properly incorporated human resource functions. Although HRIS appears to have tremendous promise, it has not been fully utilized according to its potential.

The study has particularly provided empirical evidence that indeed technology adoption in the civil service has largely impacted on the efficiency of human resource management in administrative areas. However, civil service should invest more in the use of technology in core human resource functions. It is worth noting that human resource information system has not been utilized in the major human resource functions like job evaluation, undertaking succession management, the use of online training and development programmes among others which contribute to competitive advantage. Also, Ministries/Departments should use HR IT tools in all HR processes which will sustain all parts of HR from 'recruit to retire' functions. The research presents that the importance of HR – IT usage is getting more and more important not only due to the fact that HR productivity increases but at the same time, the value of the organization increases, including the most important asset – human capital. On the other hand employee perception on technology impacts investment in information technology.

5.4 Recommendations

Use of human resource information system has been advocated as an opportunity for human resource function to be more competitive. Thus all organizations should adopt these strategic human resource management practices in order to improve their organization performance. An important assertion is that the changing nature of a firm's IT human resource has an impact on effectiveness of a firm's competences.

The rationale for the implementation of HRIS varies between organizations. Some use it to reduce costs, to facilitate better communication, and to re-orient human resource operations to increase organization's strategic contribution. HRIS provides management with strategic data in recruitment and retention and in merging HRIS data into large-scale corporate strategy.

In examining the benefits to be derived from use of technology like HRIS Ministries/Departments should consider two extremes, the pure administrative use of HRIS and its strategic use. The goal of both would be to increase organizational value. The basic

form of HRIS is a system used for gaining, storing, manipulating, analyzing, retrieving and distributing pertinent information about an organization's human resources. It is often regarded as a service provided to an organization in the form of information (Tannenbaum, 1990). There need to evolve higher level of HRIS. Lengnick-Hall and Moritz (2003) says that implementation of HRIS will be at three levels which is: information publishing; transactions automation; and changing human resource management to strategic business partner. Overall efficiency and effectiveness of an organization can only be reached through strategic deployment of the information provided by an HRIS.

5.4 Limitations of the Study

The findings were a one-time response raising the question of whether the findings are applicable at all times after the findings. This is because situations in organizations are not static but dynamic so that what held at one time may not hold at other times. Also, the study involved employees working in the Ministries/Departments headquarters in Nairobi which had the necessary internet infrastructure raising the question of whether the study would have resulted in similar findings when extended to the County offices which lacked the necessary infrastructure.

5.5 Suggestions for Further Research

For researchers, the findings of this study illuminate a path from which the question of adoption of technology in human resource function can be more completely accessed. The various human resource functions contained in the study provide a means of understanding the various areas through which technology can be adopted in human resource management function.

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APPENDICES

Appendix 1: Letter of Introduction

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
MBA PROGRAMME

Telephone 020-2059162
Telegrams "Varsity", Nairobi
Telex 22095 Varsity

P O Box 30197
Nairobi, Kenya

DATE 3/10/12

TO WHOM IT MAY CONCERN

The bearer of this letter ..... Hannah N Mwangi .....

Registration No..... D61/60457/2010 .....

is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.

UNIVERSITY OF NAIROBI
03 OCT 2012
P.O. BOX 30197, NAIROBI

IMMACULATE OMANO
MBA ADMINISTRATOR
MBA OFFICE, AMBANK HOUSE

Appendix II: Questionnaire

I am Hannah Mwangi, a student at the University of Nairobi. I am conducting a research study on **"Perceived Link between adoption of Technology and Efficiency in Human Resource Management: A Survey of the Civil Service in Kenya".** The study is being carried out in part fulfillment of the requirements for the award of a Master of Business Administration Degree, School of Business, University of Nairobi.

I kindly request for your response to the questions below. The information provided will be treated in confidence. Please provide your honest opinion.

Section A: Demographic Information

Please tick (√) or answer as appropriate

1 Gender:

Male ☐ Female ☐

2. Age bracket?

25 yrs and below ☐ 26-35 yrs ☐ 36-45 yrs ☐ 46-55 yrs ☐

56 yrs and above ☐

3. Highest level of education

Secondary ☐ Certificate ☐ Diploma ☐ Bachelors Degree ☐

Masters Degree ☐ PhD ☐

4. State your Ministry/Department? .....

5. Please indicate the years of experience in the Civil Service.

Less or equal to 5yrs ☐ 6 - 10yrs ☐ 11 – 20 years ☐ 21 years and above ☐

6. Job Group

J. G. 'L' ☐ J. G. 'M' ☐ J. G. 'N' ☐ J. G. 'P' ☐ J. G. 'Q' ☐ J. G. 'R' ☐

Section B: Information on adoption of Technology and efficiency in Human Resource Management

7. The following statements relate to the impact of adoption of technology and efficiency in human resource Management. Please indicate the extent to which they have influenced the human resource function in your Ministry by putting a tick (√) against the correct response using the following scale.

5 = To a very great extent, 4 = To a large extent, 3 = To a moderate extent, 2 = To a small extent, 1 = Not at all

S/No.	Statement	5	4	3	2	1
i	Technology adoption has led to improved communication, collaboration and teamwork.	[ ]	[ ]	[ ]	[ ]	[ ]
ii	Technology adoption has enabled employees in the Ministry to share information and knowledge	[ ]	[ ]	[ ]	[ ]	[ ]
iii	Adoption of technology has resulted in cost saving in work performance	[ ]	[ ]	[ ]	[ ]	[ ]
iv	Technology adoption has facilitated the culture of transparency	[ ]	[ ]	[ ]	[ ]	[ ]
v	Technology adoption has improved the quality of customer service in the Ministry	[ ]	[ ]	[ ]	[ ]	[ ]
vi	Technology adoption has enhanced increased consistency in information.	[ ]	[ ]	[ ]	[ ]	[ ]
vii	There has been improved productivity with increased adoption of technology	[ ]	[ ]	[ ]	[ ]	[ ]
viii	Technology adoption has helped to reduce the time taken in recruitment and selection process.	[ ]	[ ]	[ ]	[ ]	[ ]
ix	Technology adoption has led to reduction of operational costs especially manpower requirements, and other overhead costs.	[ ]	[ ]	[ ]	[ ]	[ ]
x	The adoption of technology has transformed the way we interact inside the organization and also with the public	[ ]	[ ]	[ ]	[ ]	[ ]
xi	There has been personalized feedback to clients with adoption of technology.	[ ]	[ ]	[ ]	[ ]	[ ]

8. The following statements relate to use of Human Resource Information System (HRIS) in the civil service in Kenya. Please indicate the extent to which your Ministry/Department has adopted technology in the following human resource management functions. Tick (√) against the correct response using the following scale.

5 = To a very great extent, 4 = To a large extent, 3 = To a moderate extent, 2 = To a small extent, 1 = Not at all

S/No.	Statement	5	4	3	2	1
i	My Ministry use Human Resource Management Information System to create human resource database for human resource planning.	[ ]	[ ]	[ ]	[ ]	[ ]
ii	Job vacancies in my Ministry are posted on the website.	[ ]	[ ]	[ ]	[ ]	[ ]
iii	Training and development in my Ministry is facilitated by use of internet.	[ ]	[ ]	[ ]	[ ]	[ ]
iv	My Ministry manages payroll by use of Human Resource Information System.	[ ]	[ ]	[ ]	[ ]	[ ]
v	Employees in my Ministry obtain monthly payslips online by use of e-payslips.	[ ]	[ ]	[ ]	[ ]	[ ]
vi	My Ministry uses online payment and salary processing.	[ ]	[ ]	[ ]	[ ]	[ ]
vii	Personal Numbers in my Ministry are managed using Human Resource Information System.	[ ]	[ ]	[ ]	[ ]	[ ]
viii	Leave requests are processed using Human Resource Information System.	[ ]	[ ]	[ ]	[ ]	[ ]
ix	Staff Performance Appraisals in my Ministry are administered online.	[ ]	[ ]	[ ]	[ ]	[ ]
x	Employees health programmes in my Ministry are Communicated online.	[ ]	[ ]	[ ]	[ ]	[ ]
xi	There are online Health and Safety Manuals in my Ministry.	[ ]	[ ]	[ ]	[ ]	[ ]
xii	Job Evaluation in my Ministry is undertaken using Human Resource Information System.	[ ]	[ ]	[ ]	[ ]	[ ]
xiii	Human resource management decisions are communicated by use of internet.	[ ]	[ ]	[ ]	[ ]	[ ]

Appendix III: Distribution of Population per Ministry

MINISTRY/DEPARTMENT	J.G. L	J. G. M	J. G. N	J. G. P	J. G. Q	J. G. R	Total
Ministry of East African Community	39	46	12	21	14	11	**143**
Ministry of Labour	47	43	150	46	30	23	**339**
Ministry of Agriculture	31	6	2	4	2	0	**45**
Ministry of Cooperative Development & Marketing	18	17	9	13	8	4	**69**
Ministry of Development of Northern Kenya	48	24	9	18	9	15	**123**
Ministry of Education	21	7	3	5	2	1	**39**
Ministry of Energy	22	15	23	31	16	11	**118**
Ministry of Environment & Mineral Resources	18	5	5	13	17	7	**65**
Ministry of Fisheries Development	25	22	12	13	6	10	**88**
Ministry of Foreign Affairs	91	143	73	12	15	15	**349**
Ministry of Forestry	10	8	23	16	2	5	**64**
Ministry of Gender and Children	227	67	60	50	16	27	**447**
Ministry of Higher Education, Science & Technology	7	4	3	3	4	6	**27**
Ministry of Home Affairs - Prisons	24	43	28	25	9	7	**136**
Ministry of Housing	140	44	36	20	10	5	**255**
Ministry of Immigration and Registration of Persons	16	7	11	16	4	7	**61**
Ministry of Industrialization	16	16	12	8	9	7	**68**
Ministry of Information and Communications	67	47	18	25	11	14	**182**
Ministry of Justice and Constitutional Affairs	70	66	56	55	62	46	**355**
Ministry of Lands	53	69	47	20	14	4	**207**
Ministry of Livestock Development	56	29	15	9	7	10	**126**
Ministry of Local Government	18	6	9	13	11	11	**68**
Ministry of Medical Services	50	42	16	21	3	5	**137**
Ministry of Nairobi Metropolitan	36	20	17	15	3	8	**99**
Ministry of National Heritage	20	16	8	11	2	5	**62**
Ministry of Planning National Development & Vision 2030	33	138	67	54	30	10	**332**
Ministry of Public Health	539	95	142	261	90	10	**1,137**
Ministry of Regional Development	186	69	28	28	15	8	**334**
The State Law Office	31	53	12	13	9	7	**125**

Ministry of Roads	133	55	54	18	8	5	**273**
Ministry of State for Defence	16	51	40	42	20	18	**187**
Ministry of State for Public Service	20	19	9	6	4	1	**59**
Ministry of State for Special Programmes	45	27	8	13	14	14	**121**
Ministry of Tourism	474	99	121	586	32	17	**1,329**
Ministry of Trade	19	7	1	17	2	3	**49**
Ministry of Ttransport	156	78	29	39	13	13	**328**
Ministry of Water and Irrigation	46	56	70	23	11	6	**212**
Ministry of Youth Affairs	9	5	2	1	3	10	**30**
State House	13	9	8	9	8	7	**54**
Office of the Deputy Prime Minister and Ministry of Finance	9	3	4	14	7	5	**42**
Office of the President	63	39	30	16	13	8	**169**
Office of the President/Cabinet	25	16	13	31	17	9	**111**
Office of the President/Prov. Admin	130	61	35	12	12	3	**253**
Office of the Prime Minister	12	20	20	6	12	4	**74**
Office of the Vice President and Ministry of Home affairs	23	11	7	10	2	1	**54**
OOP Police	6	3	10	2	0	6	**27**
Public Service Commission of Kenya	18	9	3	5	0	0	**35**
	3,176	**1,735**	**1,370**	**1,689**	**608**	**429**	**9,007**

Source: Data from GoK, (Civil Service), 2010

Appendix IV: Table to Determine Sample Size From a Given Population

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Adapter from: Krejcie R. V., & Morgan D. W. (1970). Determining the sample size for research activities. *Educational and Psychological Measurement,* Vol. 30, 607-610.

Note: **N** - represent population size
S - represent sample size

Appendix V: Sample Size

	MINISTRY/DEPARTMENT	J.G. L	J. G. M	J. G. N	J. G. P	J. G. Q	J. G. R	TOTAL
1	East African Community	1	0	0	1	1	0	**3**
2	Ministry of Labour	1	2	1	1	0	1	**6**
3	Ministry of Agriculture	2	2	6	2	2	1	**15**
4	Ministry of Cooperative Development & Marketing	2	1	0	1	0	1	**5**
5	Ministry of Development of Northern Kenya	0	0	0	0	0	0	**0**
6	Ministry of Education	1	3	5	3	1	0	**13**
7	Ministry of Energy	1	1	1	1	0	0	**4**
8	Ministry of Environment & Mineral Resources	4	2	3	1	1	1	**12**
9	Ministry of Fisheries Development	1	0	1	1	0	0	**3**
10	Ministry of Foreign Affairs	3	4	1	1	1	0	**10**
11	Ministry of Forestry	0	0	0	0	0	0	**0**
12	Ministry of Gender and Children	1	2	1	2	0	0	**6**
13	Ministry of Higher Education, Science & Technology	1	2	1	2	1	1	**8**
14	Ministry of Home Affairs - Prisons	1	0	0	0	0	0	**1**
15	Ministry of Housing	1	1	0	1	0	0	**3**
16	Ministry of Immigration and Registration of Persons	6	3	2	1	0	0	**12**
17	Ministry of Industrialization	1	0	0	1	0	0	**2**
18	Ministry of Information and Communications	2	2	1	1	0	0	**6**
19	Ministry of Justice and Constitutional Affairs	1	1	1	0	0	0	**3**
20	Ministry of Lands	11	3	1	2	1	0	**18**
21	Ministry of Livestock Development	3	3	3	3	3	3	**18**
22	Ministry of Local Government	1	1	1	1	0	0	**4**
23	Ministry of Medical Services	18	5	6	12	4	0	**45**
24	Ministry of Nairobi Metropolitan	0	0	0	1	0	0	**1**
25	Ministry of National Heritage	1	1	0	0	0	0	**2**
26	Ministry of Planning National Development & Vision 2030	2	1	0	8	1	1	**13**
27	Ministry of Public Health	17	3	6	5	2	1	**34**
28	Ministry of Regional	0	0	0	0	0	0	**0**

	Development							
29	Ministry of Roads	6	2	2	1	0	0	**11**
30	Ministry of State for Defence	1	0	0	0	0	0	**1**
31	Ministry of State for Public Service	1	1	1	2	1	0	**6**
32	Ministry of State for Special Programmes	1	0	0	1	0	0	**2**
33	Ministry of Tourism	1	1	0	1	0	0	**3**
34	Ministry of Trade	1	3	1	1	0	0	**6**
35	Ministry of Transport	1	0	0	0	0	0	**1**
36	Ministry of Water and Irrigation	7	4	1	2	1	1	**16**
37	Ministry of Youth Affairs	2	3	2	1	0	0	**8**
38	Office of the Deputy Prime Minister and Ministry of Finance	10	3	3	2	1	1	**20**
39	Office of the President	3	2	1	1	1	0	**8**
40	Office of the President/Cabinet	1	1	0	1	0	0	**3**
41	Office of the President/Prov. Admin	1	0	0	0	0	0	**1**
42	Office of the Prime Minister	1	1	1	2	1	0	**6**
43	Office of the Vice President and Ministry of Home affairs	3	2	1	0	0	0	**6**
44	OOP Police	6	2	2	1	0	0	**11**
45	Public Service Commission of Kenya	1	1	1	0	1	0	**4**
46	State House	1	0	0	0	0	0	**1**
47	The State Law Office	2	2	1	1	1	0	**7**
		133	**71**	**58**	**69**	**25**	**12**	**368**
	Source: Researcher (2012)							

Appendix VI: Ministries in the Kenya Civil Service

Ministry of East African Community

Ministry of Labour

Ministry of Agriculture

Ministry of Cooperative Development & Marketing

Ministry of Development of Northern Kenya

Ministry of Education

Ministry of Energy

Ministry of Environment & Mineral Resources

Ministry of Fisheries Development

Ministry of Foreign Affairs

Ministry of Forestry

Ministry of Gender and Children

Ministry of Higher Education, Science & Technology

Ministry of Home Affairs - Prisons

Ministry of Housing

Ministry of Immigration and Registration of Persons

Ministry of Industrialization

Ministry of Information and Communications

Ministry of Justice and Constitutional Affairs

Ministry of Lands

Ministry of Livestock Development

Ministry of Local Government

Ministry of Medical Services

Ministry of Nairobi Metropolitan

Ministry of National Heritage

Ministry of Planning National Development & Vision 2030

Ministry of Public Health

Ministry of Regional Development

The State Law Office

Ministry of Roads

Ministry of State for Defence

Ministry of State for Public Service

Ministry of State for Special Programmes

Ministry of Tourism

Ministry of Trade

Ministry of Transport

Ministry of Water and Irrigation

Ministry of Youth Affairs

The State House

Office of the Deputy Prime Minister and Ministry of Finance

Office of the President

Office of the President/Cabinet

Office of the President/Prov. Admin

Office of the Prime Minister

Office of the Vice President and Ministry of Home affairs

Office of the President (Police)

Public Service Commission of Kenya

Source: Researcher (2012)

Appendix VII: Response Rate

	MINISTRY/DEPARTMENT	Planned	Rate of Return	Percentage
1	East African Community	3	1	33.33
2	Ministry of Labour	6	4	66.67
3	Ministry of Agriculture	15	9	60.00
4	Ministry of Cooperative Development & Marketing	5	4	80.00
5	Ministry of Development of Northern Kenya	0	0	0
6	Ministry of Education	13	10	76.92
7	Ministry of Energy	4	2	50.00
8	Ministry of Environment & Mineral Resources	12	8	66.67
9	Ministry of Fisheries Development	3	2	66.67
10	Ministry of Foreign Affairs	10	7	70.00
11	Ministry of Forestry	0	0	0
12	Ministry of Gender and Children	6	5	83.33
13	Ministry of Higher Education, Science & Technology	8	4	50.00
14	Ministry of Home Affairs - Prisons	1	1	100.00
15	Ministry of Housing	3	2	66.67
16	Ministry of Immigration and Registration of Persons	12	7	58.33
17	Ministry of Industrialization	2	1	50.00
18	Ministry of Information and Communications	6	3	50.00
19	Ministry of Justice and Constitutional Affairs	3	2	66.67
20	Ministry of Lands	18	15	83.33
21	Ministry of Livestock Development	18	16	88.89
22	Ministry of Local Government	4	2	50.00
23	Ministry of Medical Services	45	28	62.22
24	Ministry of Nairobi Metropolitan	1	0	0.00
25	Ministry of National Heritage	2	1	50.00
26	Ministry of Planning National Development & Vision 2030	13	11	84.62
27	Ministry of Public Health	34	26	76.47
28	Ministry of Regional Development	0	0	0
29	Ministry of Roads	11	7	63.64
30	Ministry of State for Defence	1	0	0
31	Ministry of State for Public Service	6	4	66.67
32	Ministry of State for Special Programmes	2	1	50.00

33	Ministry of Tourism	3	2	66.67
34	Ministry of Trade	6	3	50.00
35	Ministry of Transport	1	0	0
36	Ministry of Water and Irrigation	16	8	50.00
37	Ministry of Youth Affairs	8	7	87.50
38	Office of the Deputy Prime Minister and Ministry of Finance	20	13	65.00
39	Office of the President	8	5	62.50
40	Office of the President/Cabinet	3	2	66.67
41	Office of the President/Prov. Admin	1	0	0
42	Office of the Prime Minister	6	4	66.67
43	Office of the Vice President and Ministry of Home affairs	6	5	83.33
44	OOP Police	11	8	72.73
45	Public Service Commission of Kenya	4	2	50.00
46	State House	1	0	0
47	The State Law Office	7	6	85.71
		368	**248**	**67.39**

Source: Researcher (2012)