VIRTUAL WORKFORCE IN THE KENYA'S HIGHER EDUCATION AND RESEARCH SERVICE SECTOR

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DECLARATION

This Research project is my original work and has not been submitted for a degree in any other learning institution.

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This research project has been submitted for examination with my approval as the university supervisor.

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ABSTRACT

The Kenyan higher education sector has been facing challenges brought about by the changing environment and the desire to remain in the market in the foreseeable future. This has not been easy due to change in technology and modern methods of doing things especially to those institutions that resist change. Virtual workforce has been a very important tool to those institutions that would like to survive the competition in the industry. Majority of the institutions have used virtual workforce and their management have gone an extra mile in providing tools like laptops and I pads to make the virtual working more easy. The employees of these institutions have also contributed to successful implementation of the concept by meeting deadlines given to them and in their willingness to learn new things.

Although the implementation of virtual workforce is expensive to the organization, the drivers or enablers of the virtual workforce outweigh the cost of implementation. These institutions benefit from the virtual workforce by cutting down operational costs, improving on their product/service quality, faster dissemination of information to the users and able to use teleconferencing facilities in operations.

The study established that all the institutions (Kenya's higher education and research service sector) tested were using virtual workforce although the magnitude of implementation varied from one institution to another. The institutions had implemented the virtual workforce in most of their departments since it assisted the operations in various ways depending on each department's requirements. The study results established that these institutions benefited from the use of virtual workforce through cutting operational costs, increased efficiency in their operations and improved products quality hence being competitive in the market.

Some limitations do exist when one is using virtual workforce like lack of conducive home working environment and also lack of ICT skills but, these have not affected the successful application of virtual workforce by these institutions.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Globalization is an issue currently affecting many organizations and is one that has profound implications for the nature of work (Karimi and Konsynski, 1991). Global Offshore Outsourcing is used to describe the exporting of jobs varies widely. Outsourcing is the generic term used when companies contract out certain business functions to an external supplier, eliminating the need to maintain an internal staff necessary to perform that function. Offshore outsourcing is the contracting of these business functions to companies in lower-cost, primarily developing nations (Lieberman, 2004).Offshoring is used to describe multinational corporations relocating work from their domestic sites to foreign locations. Lastly, on-site offshoring occurs when foreign companies bring low cost labor using guest worker visas such as specialty occupations and intra-company transfers to perform work in the U.S. (Hira, 2003).

Many organizations are now benefiting from harnessing virtual work to increase productivity, efficiency, quality, and reduction in reliance on "labor force" skills, to give more strength to "service" strategies and approaches in contemporary industrial workforce. Obviously, the application of modern technology has made it possible to redefine where work is done (Davenport &Pearlson, 1998). A company's workforce has always been its most valuable asset and normally its biggest expense. Attracting and retaining the right talent continues to be a foremost concern for managers. Today, however, many workforces operate in a virtual environment. The proliferation of the virtual team has had a significant impact on managers, who must reconsider traditional management strategies on how to communicate and collaborate effectively, for example in light of the characteristics of remote teams, whose members live in different time zones, rarely or never see one another in person, and communicate primarily via electronic mediums. Townsend et.al. (1998) defines Virtual teams as groups of geographically and/or organizationally dispersed coworkers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task. Virtual teams rarely, if ever, meet in a face-to-face setting. They may be set up as temporary structures, existing only to accomplish a specific task, or may be more permanent structures, used to address

ongoing issues, such as strategic planning. Further, membership is often fluid, evolving according to changing task requirements.

The term "virtual workplace" has been coined to describe the environment in which this "work-anywhere"workforce operates. It is an increasingly globalized environment in which mobile and remote workers are able to leverage technology to stay connected, access applications on demand, and remain productive. These "work-anywhere" workers are judged on results, not hours in the office, and thrive on flexible schedules and new ways of doing work. While there is a great deal of variety within the work-anywhere workforce, one thing these workers have in common is a dependence on technology and a thirst for new devices and solutions (IDC Executive brief, 2001)

1.1.1 Context of the study

Information rich organizations are better placed to embrace the use of virtual workforce. Many in Kenya for example University of Nairobi (UON), Kenya Agricultural Research Institute (KARI) and Kenya Medical Research Institute (KEMRI) transact business conventionally instead of using virtual workforce concept. For example University of Nairobi has classes for same group in different places like Mombasa, Kisumu & Nairobi campuses which are taught by lecturers who avail themselves physically instead of using teleconferencing which will reduce travelling costs, and time taken to teach in three different campuses. The study will cover the Universities and Research institutions in Kenya with an aim of establishing the application of virtual workforce concept in their operations.

1.1.2 The Rise of the Virtual Workforce

Although the modern organization faces a number of challenges in its competitive environment, Bettis, et al. (1995) stated that the imperative for moving from traditional face-to-face teams to virtual teams derives primarily from five specific factors which includes: the increasing prevalence of flat or horizontal organizational structures, the emergence of environments that require inter-organizational cooperation as well as competition, changes in workers' expectations of organizational participation, a continued shift from production to service/knowledge work environments and lastly the increasing globalization of trade and corporate activity.

The emergence of the flat or horizontal organizationis largely a response to intensifying competitive operating environments brought about by increased global competition and recent advancements in both information and transportation technologies. Organizational flattening pushes decision authority to lower levels in the organization, reducing the need for several layers of management. With fewer layers of centralized, hierarchical management structure, organizations become increasingly characterized by structurally and geographically distributed human resources.

While the organization may retain the collective talent it requires, there is a reduction in the opportunity for linkages between remaining employees (e.g. personnel and offices close enough to facilitate traditional interaction). This kind of environment occasions the need to reconstitute the benefits of the large, resource rich organization within the context of the new flattened organization. The number of employees who work remotely has been on a rapid rise for the past few decades. In the U.S. alone, the number of home-based workers rose from 9.5 million in 1999 to about11.3 million In 2005 (U.S census bureau, 2012). Currently, an estimated 20 to 30 million people work at home at least one day a week (U.S census bureau, 2012) .This trend is likely to continue. In a recent study conducted by Forrester (2011), 40 percent of respondents (which included senior leaders and hiring managers at U.S. Fortune 500 companies) said at least 40 percent or more of their company's employees are currently remote workers, and more than half (56%) said they anticipate reliance on virtual teams to multiply in the next one-to-three years.

1.2 Statement of the problem

As companies embark on global initiatives and outsource jobs to other countries in order to stay competitive, the pressure is on top executives and their managers to oversee teams that work efficiently, effectively and collaboratively across different time zones and cultures. However, some research indicates low levels of confidence in the ability of managers to navigate these waters. American Management Association (2012) reported that more than half of respondents in a global study said managing virtual teams will be a vital future competency, but only 36.5 percent believed their managers had mastered the necessary skills required to manage virtual teams effectively. Townsend, et al. (1998) says that virtual teams are often distributed geographically, commonly spanning multiple time zones, working environments, cultures and

languages. Effectively leveraging dispersed resources yields significant returns for organizations. This concept if applied successfully would be more fruitful to service sector especially research organizations that would require data from different areas and respondents dispersed geographically.

Research & Academic institutions for Higher learning in Kenya (see appendix iii, iv & v) that mostly use information in their day to day operations have not made use of the virtual workforce concept; instead they have continued the use of conventional methods which are more costly and less efficient.

Different Researchers have done research on the area. For example, Ejiwale (2008) researched on E-Leadership in Virtual workforce in America and concluded that the increased efficiency of virtual workers does not only result in enhanced productivity, but the added flexibility of virtual work. This study contributes to the current study by showing how best the virtual workforce can be managed. It established that successful management of virtual workforce depends largely on effective communication between managers and the employees that constitute the virtual workforce. Rebecca et al. (2010) researched on the Trends, Challenges and Solutions of global teams in New York and concluded that with the nature of the workforce in constant flux, virtual teams are poised to become an increasingly utilized organizational tool to meet changing business conditions and needs. Their study contributes to the current study by providing information on how interpersonal dimension such as enhancing communication and increasing social presence impact on team effectiveness. Dewey et al. (2010) researched on the globalization of the workforce and found that Globalization of the workforce is a reality in the 21st century. They noted that companies enjoy the availability of a worldwide market but also face tough competition from competitors spanning the world. Companies face economic pressure to use low cost labor. To stay competitive companies need to use the best resources available wherever they may be located. One of the strategies incorporated is the use of virtual teams. This study contributes to the current study by showing the contribution of global teams in a competitive environment.

In spite the growth of virtual workforce in other countries, it's not clear the extent to which this phenomenon has taken root in Kenya and the response of the management.

1.3 Research Objectives

To study the virtual workforce in the Kenya's higher education and research service sector. This will be done through the study of the following specific objectives

1. To find out the extent of the application of Virtual workforce in Kenya.
2. To establish the enablers of Virtual Workforce in Kenya.
3. To find out the management and workforce response to the virtual workforce.

1.4 Value of the study

The study will contribute to the scholarly knowledge to students who might want to do further research on how virtual workforce has been applied in Kenya.

The study will assist the institutions that might want to implement the virtual workplace, with information necessary for smooth implementation by highlighting the areas that require virtual workforce and their budget.

The study will assist in highlighting the factors that drive virtual workforce in Kenya and how it has benefited the institutions that have made use of it in their operations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Virtual Workforce: A Global Perspective

According to Castells (1996), the globalization process involves the flows of capital, commodities, technology, cultural influences, and human resources across national boundaries, thereby creating a networked society. In today's global economy, enterprises have continued to scan the globe to garner the best and effective approach of utilizing human resource with contribution to the total value chain through virtual work. The increased efficiency of virtual workers has enhanced productivity, flexibility of thinking more creatively and the freedom of commuting to work daily. However, as the number of remote workers increases globally, assumptions are often made about their work habits, behaviors and preferences (Gillis, 2003). Globalization of the workforce is a reality in the 21st century. Companies enjoy the availability of a worldwide market but also face tough competition from competitors spanning the world. Companies face economic pressure to use low cost labor. To stay competitive companies need to use the best resources available wherever they may be located. One of the strategies incorporated is the use of virtual teams (Dewey et al., 2010).

A virtual team was defined by HRC Group (2010) as team members separated by boundaries of time and/or distance and who leverage technology to conduct discrete interpersonal, social and economic exchanges of value to deliver an outcome. Members are committed to a common purpose, goal and approach to working together that keeps them mutually accountable for their performance. Such teams can take many different forms: team members may be dispersed in different countries across the globe, or at various locations within a country; they may be located in offices in different parts of a town or city, or in different parts of the same building, in different departments; some members may work from home part of the time or all of the time.

The make-up of virtual teams may also vary considerably. In some cases, the members are relatively permanent; in others, team members may change depending on the stage of a project. Interaction between core team and peripheral members will also vary depending on the nature and scope of the work performed (HRC Group, 2010). Virtual work has been defined by many scholars in different ways and their views are sometimes based on perspectives such as team,

organization and community. For some companies, virtual workers are those who work in truly remote offices, across the country or the globe. For others, virtual workers spend most of their time on the road (Niles 1994). Since distributed work is enabled by information and communication technologies, virtual workforce has also been defined as teams that rely upon electronic communication to accomplish their work. According to Dobrian (2005) virtual workforce is defined as employees who are physically separated from their managers, co-workers and/or immediate reports, even if they themselves work at headquarters or large satellite corporate office.

Virtual work is important because of its increasing prevalence and also because virtual organizations and virtual workers may be the key factors in the "new economy." They often represent highly skilled knowledge workers employed in dynamic, flexible, technology-enabled organizations (Niles, 1994). Virtual workers are often separated from coworkers, supervisors, and other organization members, leading to feelings of isolation, greater need for self-organization, and sometimes greater stress (Dobrian, 1999).

A central theoretical and practical issue in the context of virtual work is whether the distance and dispersion it creates will weaken the relationship between virtual employees and their organizations (Wiesenfeld et al., 1999a). Practitioner-oriented articles report uncertainty and concern about the emerging employee-organization relationship in the context of virtual work. Virtual workers repeatedly report concern about being 'out of sight, out of mind' from their organization (Alexander, 1999). Many virtual workers also admit that their employing organization is "out of sight, out of mind" to them. Theory and research bolster these anecdotal observations, suggesting that virtual work may lead to change or ambiguity in members' perceptions of their relationship to their organization (Desanctis & Monge, 1999).

Cohen and Gibson (2003) suggested three main attributes for virtual teams first as a functioning team interdependent in task management, having shared responsibility for outcomes, and collectively managing relationships across organizational boundaries. Secondly that the team members are geographically dispersed, and finally that they rely on technology-mediated communications rather than face-to-face interaction to accomplish tasks. In essence, team

members are not collocated and definitely use technology-mediated communication such as information and communication technologies.

A virtual team is considered global when backgrounds are culturally diverse, and members are able to think and work with the diversity of the global environment (Desanctis & Poole, 1997). Concisely, global virtual teams are not only separated by time and space, but differ in national, cultural and linguistic attributes, and use information and communication technologies as their primary means of communication and work structure. In short, global virtual teams' most distinctive feature lies in the context, defined as 'a way of life and work in a specific geographical area with its own set of business conditions, cultural assumptions, and unique history' (Desanctis& Poole, 1997). Global virtual teams require innovative communication and learning capabilities among different team members across organizational and geographical boundaries. As a result, the intra-team social interactions and work processes cannot be compared to conventional team structures or treated as such by team managers. The potential advantages of global virtual teams are that they can create culturally synergistic solutions, enhance creativity and cohesiveness among team members, promote a greater acceptance of new ideas and, hence provide a competitive advantage for multinational companies (Norhayati et al., 2004).

2.2. Impact of virtual workforce on productivity

In a changing economic climate, all organizations are looking for ways to improve productivity, streamline processes, save costs, and out perform competitors. One key to achieving that is keeping people and teams across the breadth of the organization (including partners, vendors, outside resources, and potential customers) at the same time to promote common goals and avoid duplication of effort. It is evident that virtual workforce team will have less face-to-face communication than a traditional workgroup. Since there is greater reliance on indirect communication mechanisms, such as voice-mail, e-mail and fax, members of virtual workforce are well advised to learn to use these effectively. Potential managers and supervisors of virtual workforce should possess the necessary skills to navigate the virtual workforce successfully. "As remote workers become the norm and companies expand their reach nationally and globally, tracking employee performance and costs is increasingly difficult-and critical to the bottom line"

(Ejiwale, 2008). Otherwise, its implementation may constitute waste rather than fulfilling its anticipated outcome of increasing productivity. Rebbecca et al. (2010) established that interpersonal dimensions, such as enhancing communication and increasing social presence are two areas that impact virtual team effectiveness. Therefore, it is imperative to improve the effectiveness of communication with the virtual workforce (Ejiwale, 2008)

2.3 Enablers of Virtual workforce

There are several factors that contribute to the escalation of virtual workforce. They include the technology, global sourcing of services, need for business productivity, availability of workforce and cost reduction.

Technology is a contributing factor to the escalation of the virtual workforce. Email use for business is almost a universal institution; and remote workers often use such real-time communication tools as instant messaging and video conferencing solutions or applications like Skype with colleagues and team members. Cloud based file-sharing tools (such as Dropbox and Google Drive) are readily available at little to no cost, and require no on-premise infrastructure or technical expertise to support and maintain. All of these tools are used as a reliable and consistent way for remote team members to collaborate, regardless of their location (George, 2005).

Different communication technologies can be used to support different purposes and participants. Many organizations are using their corporate Intranet to support communication within each virtual team. It's also important to manage the communication among the teams as well as communication between the organization and other stakeholders like customers and suppliers. Creating an integrated communication strategy that addresses all these dimensions is important (Kimble et al., 1997)**.** The increasing technological capability in developing countries is one of the most important events that are driving global companies to realize the possibility of offshore outsourcing of services. This stems from government initiatives and lower cost computer hardware. Global availability of cost effective, high speed digital internet connections, combined with net based and other communications tools such as email, instant messaging, faxes, video conferences, and cellular phones have empowered foreign workers to provide services that do

not necessarily require direct physical contact (Manufacturing & Technology News 2003). According to Baily and Farrell (2004) offshore outsourcing improves the US economy through corporate savings, a better deal for customers, additional exports, repatriated profits, productivity, and new jobs. The most significant benefit is that it lowers corporate costs, which benefits both consumers and shareholders (Lieberman, 2004). The cost savings boost corporate profits, raising investor confidence. Offshoring has become a matter of survival for some U.S. corporations who have to compete globally for market share. U.S. revenues grow when offshore providers create new foreign corporate markets for U.S. products such as telecom equipment and computers. As the standard of living improves abroad, new consumers for U.S. products are created. The main driver of growth in our economy is our prodigious technical change (Aeppel, 2004). Technical change nearly always substitutes for unskilled labor, but it creates new skilled jobs, both by creating new products and processes but also because the maintenance of technology also requires skilled labor. Workers freed up from routine tasks that have been outsourced are often redeployed within the company to higher paying jobs, or on projects that generate greater value-added services or products (Bartlett, 2004).

Fueled by a move toward more mobility, the modern work force is being forced out of the traditional office model and stepping into a new paradigm in the field, at home, on a factory floor, at a customer site, from a partner, abroad, wherever. In this paradigm, organizations must ensure real-time access to company information to enable better decision making, to plan, monitor and track operations centrally, and to drive improved business productivity with greater accuracy and at less cost. Teleworkers have higher employee satisfaction because teleworking fosters a better work-life balance while, reduces commuting costs and, at the same time, can offer a distraction-free environment where they can be more productive (citrix systems, 2010).

The most important economic and strategic enabler behind global outsourcing is the availability of substantial numbers of skilled professionals in other countries who are willing and able to work for much less than their counterparts in the United States (Hira, 2003). A lower wage scale is even more attractive if it comes with a well-educated labor force. Offshoring is seen by many companies as an easier option to consider (Agrawal et al., 2003).

Citrix systems (2010) states that a virtual workforce enables organizations to shift labor costs to lower cost resources, slash travel and expense budgets, and consolidate and reduce fixed facility costs. A virtual workforce gives organizations a greater degree of flexibility to take advantage of lower cost labor regardless of location and engage workers only when and where the business needs. For example, many workers sourced from outlying areas and offshore locations, such as China, India, the Philippines or even Eastern Europe have significantly lower wages than similarly qualified resources. Organizations also look to retain their best talent and avoid the costly loop of recruiting, hiring and training qualified replacements. According to the Turnover Cost Calculator (2006), mid-size organizations spend millions of dollars per year to replace departing employees with new recruits. In addition, workers located in the regions where an organization does business minimizes the amount of travel required for each worker to reach prospects and customers when compared to using out-of-region resources. Online collaboration tools further reduce the need for frequent business travel and enable workers to virtual and still collaborate with peers, managers and customers from anywhere.

Finally, enabling a virtual workforce offers organizations the potential to reduce facility costs the second largest budget item for a typical organization. Facility costs include the real estate office space and also all related fees, often comprising one-third of the typical facility budget. According to The Real Estate Executive Board, the U.S. average real estate cost per headquarters worker is $14,795.98 (Real Estate Executive Board, 2007). Therefore, if an organization of 10,000 employees can implement a successful teleworking program for 20 percent of its employee population, the cost savings opportunity is $29.5 million per year. Similarly, if a company of 5,000 employees mandated teleworking one day a week per employee and instituted a desk-sharing program, the facility cost saving opportunity is $14.8 million per year.

2.4 Challenges

Like any organizational innovation, the introduction of virtual teams will encounter a number of challenges and obstacles. Virtual teams require organizational restructuring and the introduction of new work technologies. The potential for startup problems and deliberate resistance is substantially greater than for changes in structure or technology alone. In discussing virtual

teams with professional managers, the following four areas of potential resistance were consistently identified by Townsend et al. (1998).

Although an increasing percentage of the workforce is computer-literate (and even computer-oriented), a significant number of valuable employees are uncomfortable with computers and other telecommunications technologies. One of the greatest challenges in the introduction of virtual teams is the successful incorporation of valuable, technophobic personnel into the virtual team environment. Part of this problem will be obviated as both computer and telecommunications technologies become more user-friendly. The introduction of graphical operating systems (such as Microsoft Windows 95) opened up computing to a number of new users, and similar introductions of simplified operating systems, intuitive programs, and speech recognition capabilities should encourage even the most technologically recalcitrant to use sophisticated computer systems. In the meantime, organizations can more easily facilitate migration to the virtual team environment by providing training and technical support specifically geared to system novices.

In an environment where one's primary interaction with others takes place through an electronic medium, it is only natural to expect that participants will wonder whether the system is being used to monitor and evaluate them. The free flow of team member's communication, which once might have taken place away from the office, may now be inhibited by concerns about privacy and system security. To counter this problem, organizations must establish clear policy regarding communications privacy, and must then strictly adhere to that policy. Over time, participants will realize that the virtual team system is a safe medium across which to share ideas and concerns.

One of the benefits of the virtual team environment is its ability to efficiently connect people and enable greater levels of productivity. This may result in employees being assigned to more teams, creating a more complex and potentially stressful work environment. Organizations must be careful not to over extend virtual team members and saddle them with levels of responsibility that they cannot reasonably satisfy. One important supervisory role will be to ensure that virtual team members have enough private time to complete their individual assignments and prepare for their team participation.

The introduction of virtual teams will require significant amounts of organizational restructuring. Aside from the reasons detailed above, some resistance will occur because organizational members do not see this particular kind of change as desirable or necessary. To overcome their concerns, management must carefully design implementation program that highlights the contribution that virtual teams will make and ties these contributions to important organizational values (Reger et al., 1994).

Dewey et al., (2010) argues that the challenges associated with virtual teams includes, increasing dependency upon technology, meaning if the technology fails the team is adversely affected secondly is the isolation of team members and lastly more difficult to use typical communication skills that occur in face to face meetings. A cosmopolitan leader is often challenged with managing the complexities of a workforce rooted in various cultures. This is made even more difficult by the requirement of working through time, space, and technology. Dube and Pare (2001) suggested that global virtual teams face more challenges than localized virtual teams. The possible disadvantages are that they tend to have more time consuming decision-making processes and when miscommunication and misunderstandings occur, stress and conflicts among team members are heightened and less easily dispelled.

Geographic dispersion and lack of face-to-face communication create new challenges for members of virtual teams. Research shows that geographic dispersion among people generates negative outcomes, such as a decline in communication, mutual knowledge problems, and work coordination difficulties (Weisband, 2008). Declines in opportunities for communication are even more problematic when such communication lacks face-to-face contact and non verbal cues. People rely primarily on non verbal signals to help them navigate social interactions. These non verbal cues affect both the way in which people work and the quality of their work in a team. The absence of non-verbal cues in turn increases opportunities for ambiguity. This ambiguity implies greater uncertainty, especially when processing information and making sense of various tasks and members' perspectives. Thus, virtual teams need to overcome powerful barriers to effectiveness. Current research suggests that virtual team failure is directly related to the difficulties of building trust, positive relationships across the three boundaries of geographical distance, time zones, and cultural differences (Kimble et al., 2000).

2.5 Management of Virtual workforce

Virtual workforce constitutes employees that operate remotely from each other and from managers. Therefore, managing this emerging workforce successfully depends largely on effective communication between managers and the employees that constitute the virtual workforce (Ejiwale, 2008).

When implementing telework, emphasis should be placed on recruiting the right people (Snell, 2009). Employees well-suited for telework have a strong balance between technical knowledge and social skills. They are adaptable, well organized, and flexible. Their psychological profile is characterized by low levels of neuroticism, resilience, extroversion, and self-confidence. Further, they are always open to new experiences and opportunities to socialize (Conlin, 2009) and are highly self-motivated (Cisco, 2007). Telecommuters require a very different style from managers. They require much more time than the traditional employee to produce a similar level of engagement (Cisco, 2007). However, many of the competencies needed by managers in virtual and local settings are very similar. For example, Whitford (2009) found that transformational and visionary leadership produced the same levels of engagement from local and distance employees. Short, frequent communications with a purpose to help remote employees feel connected and included (Janove, 2004). A manager should make a special point to acknowledge the contribution of remote employees. Informal feedback also becomes critical in engagement (Linkow, 2008). They must know that their work is being noticed and is critical to the group effort (Derven, 2007). Managers must make time for personal interaction, especially if it is done virtually, to compensate for the impersonal means of communication. During these points of contact it is important for managers to always to be available for contact from remote employees (Gerke, 2006). Without a strong connection to their manager, employees can feel isolated or develop closer connections with frequent customers, which can lead them to lose their focus on the company's main goals and strategic objectives.

In a virtual environment trust can be very hard to gain. Managers must keep their commitments to remote employees. Frequent rescheduling or lack of response to questions will very quickly create disengagement and distrust (Gerke, 2006). Performance management is most effective when management and employees agree on how performance will be assessed and measured

(Linkow, 2008). Managing via technology can become demanding, but when a remotely-located employee is clear on their manager's expectations and confident on how they will be assessed, teleworkers will fully enjoy the benefits telecommuting can offer (Cisco, 2007). Managers can facilitate the process by maintaining consistency in their communications and actions towards remote employees. Unfortunately the virtual employment relationship produces less inherent trust than exists between a traditional manager and employee (Merriman et al., 2007).

Remote employees are most productive when allowed to self-manage. They thrive when trusted to perform their job well (Cisco, 2007). Trust goes hand-in-hand with greater decision-making responsibilities and greater autonomy can help foster creativity in remote employees (Derven, 2007). Though leaders sometimes find this the most difficult part of remote management, Software-enabled monitoring as detailed as real-time log-on/log-off systems exist and are available to managers who worry about security risks and the data that is being transferred outside of a company's intranet. However, enabling this type of control can lead to a temptation to "look over the shoulder" of remote employees. Research suggests that while some means of technical accountability may be good, this type of rigid structure is detrimental to employee motivation and productivity. Managers are challenged to find a balance between people and the task at hand - between the two extremes of micro managing and allowing too much distance (Derven, 2007).

2.6 Social, Economic, and Productivity issues

Dewey et al., (2010) argues that Virtual workforce will impact on social, economic and productivity issues through reduction in expenses due to less travel and possibly less office space required, teams can recruit members based upon competency instead of location hence increasing team availability and lastly employees have more flexibility in their schedule. This work arrangement has been found to be advantageous for many firms because it reduces the costs and time associated with employee travel. It also permits organizations to attract and retain top talent because workplace flexibility is increasingly seen as a crucial aspect of job satisfaction for many employees (Bergiel, et al. 2008).

Virtual teams are also valuable to many businesses because team members commonly focus their interests on tasks instead of shared social or cultural environments, which often impact the dynamic within conventional teams (Hamilton et al. 2003). This fosters a working environment that encourages innovation and decreases discrimination by hierarchy, employee impairments, race or age because productivity is more important than other characteristics (Bergiel et al., 2008). The popularity of virtual teams is being driven by social change. Women now constitute nearly one-half of the North American workforce, and in nearly one-half of households, all adults are working. As well, more working adults are pursuing educational opportunities to advance their careers; they therefore need the flexibility that a virtual arrangement provides (Executive office of the president of the United States, 2011). Nortel (2004) argues that although the degree of increased productivity varies with different organizations, increases in employee productivity can be up to 40 percent and increases in employee retention can be as high as 50 percent (AHCCS Virtual office pilot, 2007).

2.7 Future of Virtual Workforce

The world of the virtual team is far from static continuing changes in technology and competitive environments will present new opportunities and imperatives for virtual teamwork. Negroponte (1995) writes, "Computers are getting smaller and smaller". You can expect to have on your wrist tomorrow what you have on your desk today, what filled a room yesterday. As telecommunication technologies continue to evolve, the virtual interface will provide more realistic presence, while simultaneously costing less and becoming easier to use.

Many of these same technological advances will create more virtual interaction in workers' private lives as well. This change will increase employee expectation of working in a virtual mode; as an increasing number of people socialize and shop in cyberspace, these same virtually-savvy people will be expecting a similar experience in their workplace. The economic imperative for virtual teams, combined with changing societal experience of the virtual, may well transform the virtual team from an innovative source of competitive advantage into a dominant organizational form (Negroponte, 1995).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

The Research design used was exploratory research design. The reason for choosing this research design was because such a study had not been done in Kenya. This area was also in the nascent stage and still developing. Therefore not much information and research was available.

3.2 Population

For the purposes of this study the target population was research institutions prescribed by the Ministry of science & Technology (as shown in Appendix iv) and both Public and Private Universities prescribed by the Commission for University Education in Kenya (as shown in Appendix iii & iv respectively). The reason for choosing these groups of institutions was because they mostly deal with information and considering the fact that virtual workforce was in its developing stage in the Kenyan higher education sector, and then the likely institutions that might have started its application are those institutions (Research institutions&Universities). The population was classified into three groups (clusters): Public universities, Private Universities and Research institutions.

3.3 Sample design

From the list of thirty four (34) public universities (appendix iii) and thirty six (36) private universities (appendix iv) prescribed by the Commission for University Education in Kenya, a sample of thirty percent (30%) of the population which is ten (10) and eleven (11) respectively was selected. The sample for the Research institutions of nine (9) was chosen conveniently for those institutions which are within Nairobi from the prescribed list by Ministry of Science & Technology (appendix v). Three questionnaires were sent to each of the university selected conveniently within Nairobi.

3.4 Data collection

The study used a questionnaire to obtain primary data. The researcher preferred to use a questionnaire for this type of research because it is objective (responses are gathered in a standardized way); and it can capture a larger number of respondents within a short period and at

less cost. The questionnaires were distributed to the respondents by a research assistant. The expected respondents in the institutions were either Head of departments or other teaching staff.

3.4 Data analysis & presentation

Data collected was analyzed using both descriptive and inferential statistics. The choice of descriptive statistics were informed by the necessity of systematically summarizing all the data collected and presenting it using statistical measures such as tables, graphs and pie-charts. Excel spreadsheet was used to summarize and compute data collected.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter focused on the analysis of the collected data from the respondents to test the application of virtual workforce in the Kenyan high education and research service sectors. The findings were based on the general objective of the study. Questionnaires were sent to the respondents and the response rate and the expected responses are shown in the table below:

Table 4.1 Questionnaire response rate

Group	Targeted	Obtained	Response rate %	Overall response rate
Public	30	19	63.33	71.11%
Private	33	28	84.84	71.11%
Research	27	17	62.96	71.11%

Source: Primary data

A response rate of 50% is adequate for analysis and reporting (Mugenda, 1999; Ngau, 2004). The overall response rate of 71 percent achieved was therefore considered adequate for answering the questions raised under the research study.

4.2 General information
4.2.1 Respondents Age

This section captured the age of the respondents with a view of knowing the age of the respondents and their distribution in the group. In a technology readiness assessment study (*Assessment County Extension Programs' Readiness to Adopt Technology*) conducted by Oregon state University Extension in 2009, time, money, and training "were identified as key barriers and constraints that keep faculty and staff from adopting technology as useful tools" (Diem et al.,2009). In the case of our study the highest number of respondents was aged 41-50 years with 34 percent followed closely by age of 21-30 years (30%) and then age 31-40 years (23%). This analysis shows that these three age groups (between 21-50 years) support technology adoption and hence the application of virtual workforce in the population tested.

Table 4.2.1 Respondent's age

	Frequency				
Institutions	Private	Public	Research	Total	percentage
Below 20	0	0	0	0	0%
21-30 years	12	4	3	19	30%
31-40 years	6	5	4	15	23%
41-50 years	7	7	8	22	34%
0ver 50 years	3	3	2	8	13%

Source: Primary data

4.2.2 Respondent's Departments

This section aimed to capture information on how the departments for various respondents had used virtual workforce. The analysis below shows that all the departments have used virtual workforce, with Research & Training department scoring 33% followed by information Technology department with 28%. Operations department scores the lowest percentage of 13% of its use of virtual workforce in its operations. This meant that Research & Training department used virtual workforce more than the other departments because of the nature of its operations and the information used by this department must be got from different areas all over the world. It would be very expensive to travel to various countries in search for Research & training material but it is made easier and cheaper to get by virtual workforce. Dewey et.al. (2010) concurred by observing that companies enjoy the availability of worldwide market but also face tough competition from competitors spanning the world. To stay competitive these need to use the best resources available wherever they may be located. This calls for use of virtual workforce.

Table 4.2.2 Respondent's departments

	Observed Frequency				
Institutions	**Private**	**Public**	**Research**	**Total**	**percentage**
Operations departments	3	3	2	8	13%
Research & Training	7	10	4	21	33%
Finance & Administration	8	3	6	17	26%
Information Technology	10	3	5	18	28%
TOTAL	28	19	17	64	100%

Source: Primary data

Chi-square test: This test was done to establish whether the two classifications are independent of one another or not. It aimed at testing whether there was difference in the way each institutions' department had implemented the virtual workforce.

Table 4.2.2.1 Chi square test on the independence of the two classifications

	Expected Frequency			
Institutions	**Private**	**Public**	**Research**	**Total**
Operations departments	3.5	2.38	2.13	8
Research & Training	9.19	6.23	5.58	21
Finance & Administration	7.44	5.05	4.52	17
Information Technology	7.875	5.34	4.78	18
TOTAL	28	19	17	64

The following hypothesis was tested at 5% level of significance

Ho: The two classifications are independent. (No relation between type of education institution and how its departments have implemented use of virtual workforce).

H1: the classifications are NOT independent

The table value of x^2 for 6 degrees of freedom at 5% level of significance was 12.592. The computed value of x^2 of 6.46 was much less than the table value. The hypothesis was accepted and was concluded that no relation between type of education institution and how its departments had implemented use of virtual workforce.

4.2.3Respondent's level of management

This section was intended to capture information on the respondent's level of management in the organization. For proper implementation of virtual workforce in the organization, the concept has to be granted support by employees at all the levels in the organization. According to Bruque et.al. (2007) Information Technology adoption decision covers planning stage to the implementation, Maintaining, and system upgrade stages. Top management comes up with policies and hence they decide on whether the organization should use virtual workforce or not. Middle level management implements the policies and thus they will ensure that the virtual workforce is applied in the operations by all the sections of the organization. Lower level management represents the workers who will use the virtual workforce in the organization. The analysis shows that all the three levels were represented by the respondents with middle level management having 62 percent of the total respondents followed by lower level management with 27 percent and top level management with 11 percent of the total respondents.

Table 4.2.3 Respondent's level of management

	Frequency				
Institutions	Private	Public	Research	Total	percentage
Top management	3	1	3	7	11%
Middle management	17	13	10	40	62%
Lower level management	8	5	4	17	27%
TOTAL	28	19	17	64	100%

Source: Primary data

Figure 4.2.3 Respondent's level of management
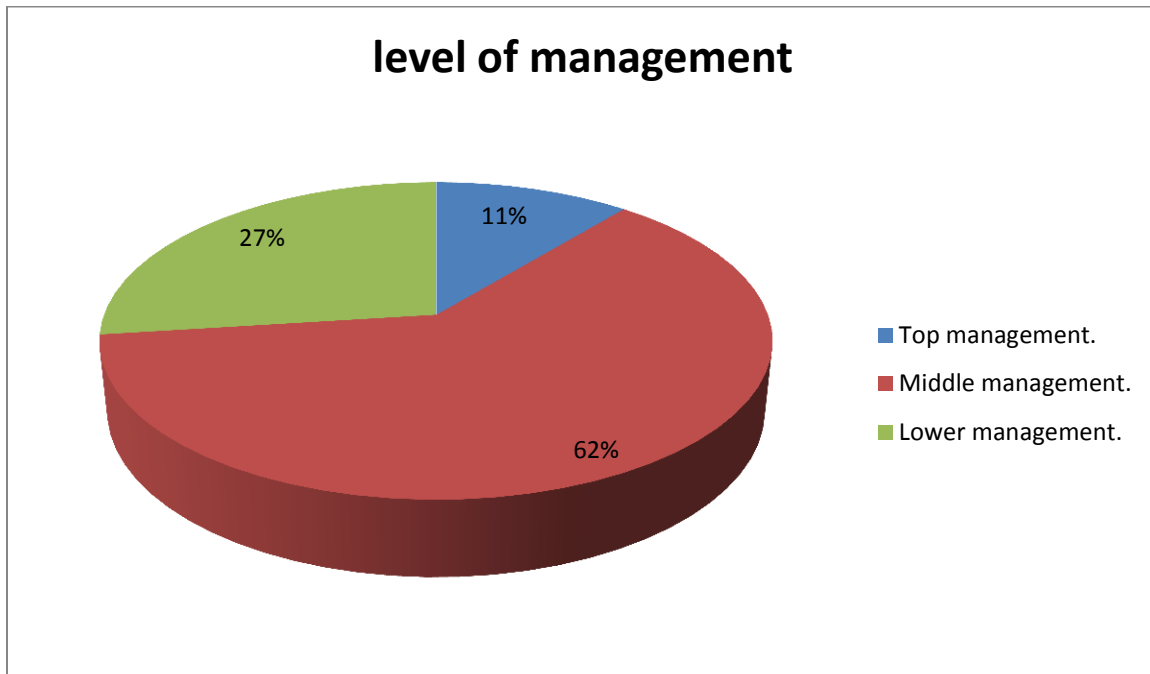
Source: Primary data

4.2.4 Department's distribution

This section aimed to find out if distance apart between the departments could be a factor in determining the application of virtual workforce by employees in various departments. The results indicated that 38% of the respondents whose departments were far apart used virtual workforce, 48% of the respondents whose departments were in the same building but different floors used virtual workforce and 14% of the respondents whose departments were in the same floor used virtual workforce. It therefore meant that virtual workforce was used more by respondents from departments separated by a distance.

Table 4.2.4 Department's distribution

	Frequency				
Institutions	**Private**	**Public**	**Research**	**Total**	**percentage**
Same building	15	10	6	31	48%
Same floor	3	3	3	9	14%
Far apart	10	6	8	24	38%
TOTAL	28	19	17	64	100%

Source: Primary data

4.2.5 Organizations experience in virtual workforce

This section intended to establish the period of experience the respondent's organization had in using virtual workforce. The results of the analysis indicated that 36% of the organizations had used virtual workforce for between six to ten years, 33% of the organizations had an experience in using virtual workforce of over eleven years. This implied that virtual workforce started being used in Kenya over eleven years ago. Only 8% of the total population had no experience in virtual workforce. This implied 92% of the population tested used virtual workforce and since all the levels of management in the organizations were represented in the study, this meant that both management and workforce supported and used virtual workforce.

Table 4.2.5 Organization experience in virtual workforce

	Frequency				
Institutions	Private	Public	Research	Total	percentage
No experience	3	1	1	5	8%
1-5 years	8	5	2	15	23%
6-10 years	10	8	5	23	36%
Above 11 years	7	5	9	21	33%

Source: Primary data

4.2.6 Personal experiences in using virtual workforce

This section intended to establish the period of experience the respondent had in using virtual workforce. The results of the analysis indicated that 50 percent of the respondents had used virtual workforce for over eleven years, 31 percent of the respondents had an experience in using virtual workforce of between six to ten years. This implied that virtual workforce started being used in Kenya over eleven years ago. Only nine percent of the total population had no experience in virtual workforce. This implies 91 percent of the population tested used virtual workforce and since all the levels of management in the organizations were represented in the study, this meant that both management and workforce supported and used virtual workforce.

Table 4.2.6Personal experiences in using virtual workforce

	Observed Frequency				
Institutions	Private	Public	Research	Total	percentage
No experience	3	2	1	6	9%
1-5 years	3	1	2	6	10%
6-10 years	6	9	5	20	31%
Above 11 years	16	7	9	32	50%

Source: Primary data.

Chi-square test: This test was done to establish whether the two classifications are independent of one another or not. It was aimed at testing whether there was difference in the way each institutions' department had implemented the virtual workforce.

Table 4.2.6.1 Chi square test on independence of the two classifications

	Expected	Frequency		
Institutions	**Private**	**Public**	**Research**	**Total**
No experience	2.63	1.78	1.6	6
1-5 years	2.63	1.78	1.6	6
6-10 years	8.75	5.94	5.31	20
Above 11 years	14	9.5	8.5	32
Total	28	19	17	64

The following hypothesis was tested at 5% level of significance

Ho: The two classifications are independent. (No relation between type of education institution and years of experience its employees have in virtual workforce).

H1: the classifications are NOT independent

The table value of x^2 for 6 degrees of freedom at 5% level of significance was 12.592. The computed value of x^2 of 4.24 was much less than the table value. The hypothesis was accepted and the researcher concluded that no relation between type of education institution and years of experience its employees had in virtual workforce.

4.3 Extend of application of virtual workforce in Kenya

This section was aimed at testing extend of application of virtual workforce in the three groups in various activities as shown in the table below. The results of the analysis indicated that the group with the highest score of the activities that used virtual workforce was research institutions. They scored 100% in using virtual workforce in marketing of their products & services. Research institutions mainly deal with research which is mostly done by use of modern technology like

use of internet to search for data and information. The second highest score was by private universities scored 93% in activities; Marketing of their products& services and online submission of results to management. Private universities applied modern technology by use of virtual workforce as a competitive tool so as to out-compete their rivals in the industry who are the public universities. Ejiwale, (2008) observed that organizations used virtual workforce to improve productivity, streamline processes, save costs and outperform competitors. Public universities had the third highest score of 84%. The public universities are slow in implementing new policies due to bureaucracy brought about by their nature of being Government institutions. Government institutions must follow Government regulations and procedures that cause delay in decision making process and hence slow phase of implementation. The average highest score of the application of virtual workforce for the whole population was 89%. This score was in marketing of organization's products and services. This implied that 89% of the respondents used virtual workforce in marketing of organization's products and services. The mean score of the group was 78% implying that 78 percent of the population tested had used virtual workforce.

Table 4.3.1Percentage scores of tasks performed by virtual workforce in group

Activity	Public	private	research	Average
Teaching from Remote site	42	54	59	52
Sharing responsibilities	79	89	88	85
Teleconferencing	68	86	65	73
Online Submissions of results to management	79	93	88	87
Registration of courses, submission proposals online	79	86	94	86
Research for new programs, new research findings	68	89	94	84
Marketing of organizations products/services	74	93	100	89
Keying in raw data for processing is done online	84	85	82	84
Leave application & approval is done online	68	68	53	63
Highest score	84	93	100	89
Mean score				78

Source: Primary data.

4.4 Enablers of virtual workforce in Kenya

This section was aimed at establishing the enablers of virtual workforce in Kenya. Organizations are believed to look for better ways of operations that will help them increase their efficiency and maximize their profits. Due to change in technology and customer requirements, many organizations have adopted modern methods of operations. Virtual workforce is deemed to be one of the modern methods of operation that will enable employees at different locations to be able to work together. This section was testing the main enablers of the virtual workforce that has made organizations adopt virtual working. The results of the analysis indicated that the Enabler with the highest average score was overall cost reduction and increased efficiency (88%). This meant that the three groups valued cost reduction and increased efficiency more than the other enablers or drivers towards their adoption of use of virtual workforce. Citrix systems (2010) argued that virtual workforce enables organizations to shift labor costs to lower costs resources, slash travel and expense budgets, and consolidate and reduce fixed facility costs. The second highest enabler or driver of the virtual workforce by the population tested was increased productivity that scored an average of 76 percent. The lowest average score was 9 percent scored by enabler reduction of activity time. This implied that the population tested did not consider reduction of activity time as an important factor that would make them adopt virtual workforce but considered cost reduction and increased efficiency as important enablers for virtual workforce.

Table 4.4.1Enabler of virtual workforce (percentage scores)

Enabler of virtual workforce to the organization	public	private	research	Average
Overall cost reduction & increased efficiency	74%	89%	100%	88%
Reduction of activity time	5%	11%	12%	9%
Quality of service is improved	53%	64%	71%	63%
Productivity is increased	63%	71%	94%	76%
Faster Dissemination of information to clients/public	58%	82%	76%	72%
Highest score	74%	89%	100%	

Source: primary data

Figure 4.4.1Enabler of virtual workforce (percentage scores)
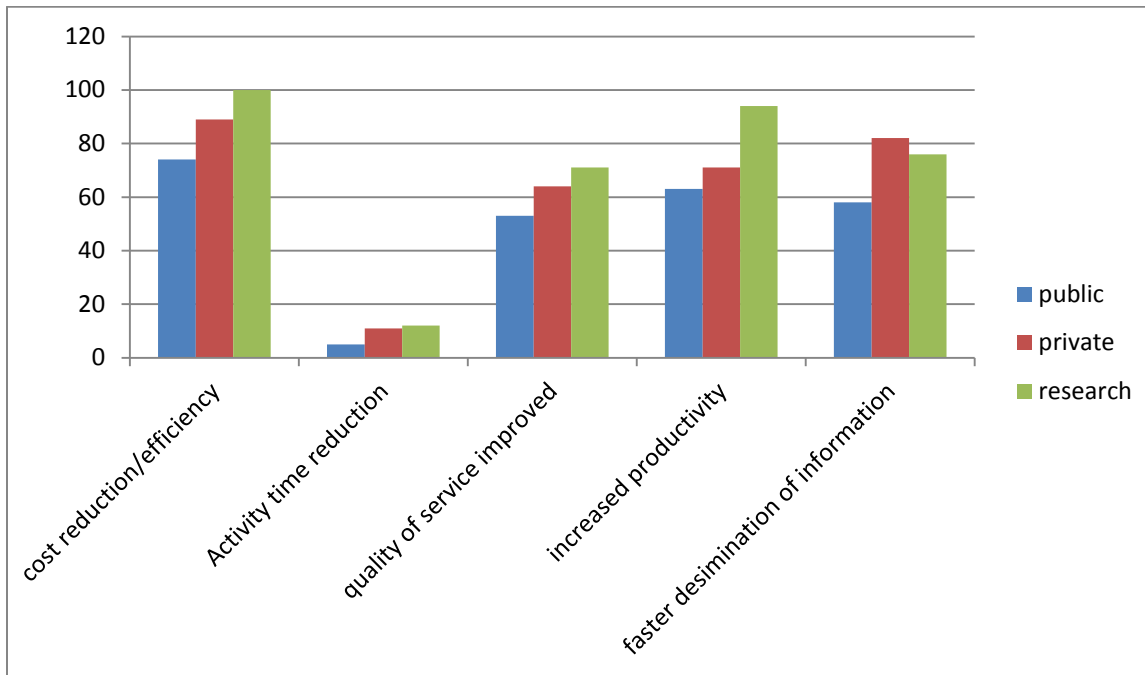
4.5 Management and workforce response to the virtual workforce

This section was aimed at finding out the management and workforce response to the virtual workforce. The findings are analyzed and discussed below:

Table 4.5.1Percentage scores on management and workforce response to support virtual workforce

Issues done by management & workforce to support virtual workforce	public	private	research	Average
Providing internet service at home	26	43	59	43
Providing laptops to the workforce	32	79	50	54
Providing I pads to the workforce	32	39	53	41
Management provides incentives for working virtually	53	54	53	53
Management is flexible in allowing employees to work	79	86	71	79

anywhere(in office or away from office)				
Proper control of workforce by ensuring strict deadlines	79	86	71	79
Management likes physical supervision of their staff.	79	82	82	81
Organization use teleconferencing facilities for their operations	58	82	71	70
Organization has embraced enterprise resource planning (ERP)/ computer systems which are internet based.	47	43	82	57

Source: Primary data.

Figure 4.5.1 Percentage scores on what management and workforce was doing to support virtual workforce

Management support of virtual workforce

Legend: public /19, private /28, Res Inst./17
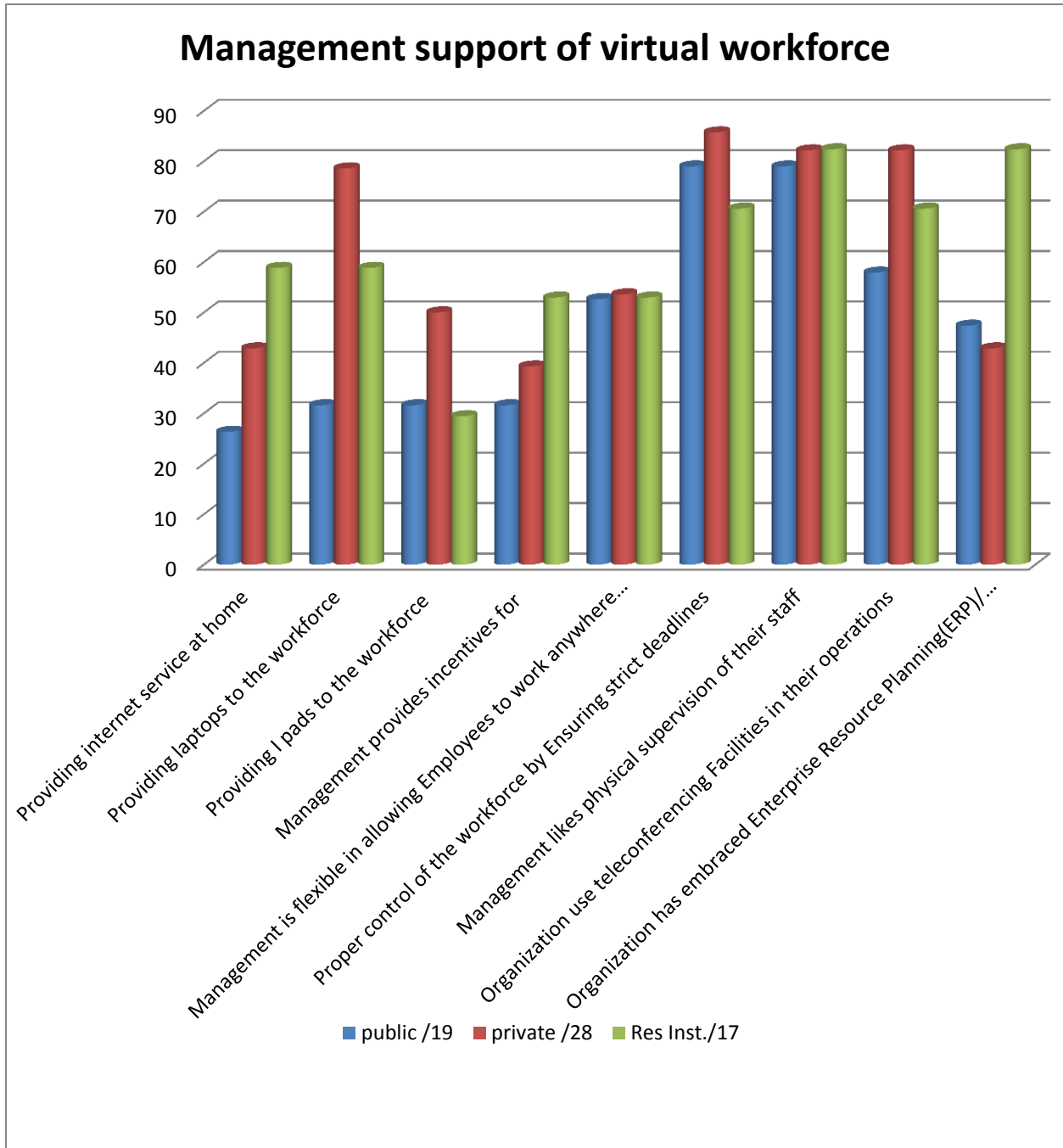
From the above analysis table 4.5.1 and figure 4.5.1 show that the workforce of private universities scored highest in supporting virtual workforce as they met strict deadlines (86%), their management allowed use of teleconferencing facilities in their operations (82%) although

they still supported the idea of physical supervision of their staff by 82 percent. Private universities also took the lead in their flexibility of allowing their employees to work from anywhere (in office or away from office) 54% and they were also the best among the groups in providing laptops (79%) and I pads (50%) to their workforce. This implied that their management and workforce supported the virtual workforce more than for research institutions and for public universities. Private universities are profit making organizations and their main goal is to maximize shareholders wealth unlike public universities and research institutions (mainly owned by Government) whose main aim is to provide services to the public whether making profits or not.

Research Institutions had also shown a good management support for their virtual workforce since they had scored highest among the groups in embracing Enterprise Resource Planning (ERP)/ computer systems which are internet based, they had also scored the highest in provision of internet service at and provision of virtual workforce with incentives.

Although public universities scored above 50 percent in their flexibility of allowing their employees to work away from office, use of teleconferencing facilities and ensuring strict deadlines as a control tool for their virtual workforce, the public universities' management still supported physical supervision of their staff by (79%). The public universities scored the least among the three groups in the overall management and workforce support for the virtual workforce. This is because these are Government institutions that must adhere to Government regulations and guidelines before implementing any policies. They also depend on funding from Government and their budgets might not be enough to implement all the activities in good time.

4.6 Limitations of virtual workforce

This section was aimed at establishing the limitations of virtual workforce, and the findings are analyzed and discussed below:

Table 4.6.1 Limitations of virtual workforce (percentage scores)

Limitations of virtual workforce	public	private	research
I do not have a conducive home working environment	16%	32%	18%
It is difficult for me to work without close supervision	0	0	6%
I do not possess ICT skills to enable work away from office	5%	7%	6%
I cannot keep information confidential	53%	14%	24%

Source: Primary data.

Figure 4.6.1Limitations of virtual workforce
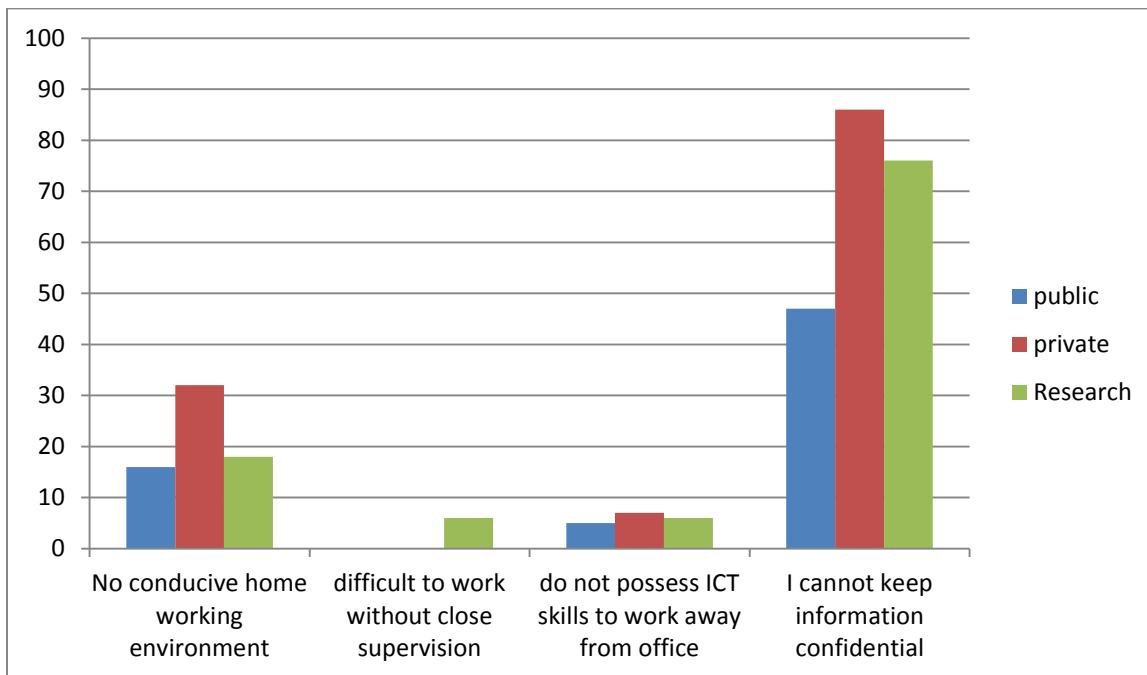
The above table 4.6.1 and figure 4.6.1 show that lack of conducive home working environment, lack of ICT skills to enable work away from office and difficulties by some respondents to work without close supervision were cited as limitations of virtual workforce among the groups. Townsend et.al (1998) observed that although an increasing workforce is computer literate, a significant number of valuable employees are uncomfortable with computers and other telecommunications technologies. However these limitations score below 50 percent implying

that they did not have great influence in the implementation of virtual workforce within the groups. The only important limitation that seems to have had an impact in the application of virtual workforce among the population tested was failure to keep confidential information by the respondents as it scored 53% in public universities. This implied that public universities were not keen on confidentiality of information and thus it affects the use of virtual working that requires high level of confidentiality of information.

4.7 Not adopted virtual workforce

This section was made to be filled only by those respondents who had not adopted virtual workforce in their operations. The section was aimed to establish the reasons that made the respondents not to adopt the virtual working. The results of the analysis indicated that 13 percent of the respondents did not adopt virtual workforce due to lack of internet, while 11 percent did not adopt due to non-availability of computers. This implied that if internet and computers are made available then these respondents will adopt virtual workforce. Only 9 percent did not adopt virtual workforce because they thought that it was not secure and information could leak. This was quite a small number of respondents that could be taught on how best virtual workforce could keep information confidential

Table 4.7.1 Not adopted virtual workforce

Reason for non-adoption of virtual workforce	public	private	Research	Total	percentage
No internet available	3	3	2	8	13%
No computers available	3	3	1	7	11%
Working virtually is not secure since information can leak	3	2	1	6	9%
Virtual workforce cannot handle confidential information	2	2	1	5	8%

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The main objective for this study was to test the application of virtual workforce in the Kenya's Higher education and Research service sector and the areas in which virtual workforce was applied, the enablers of virtual workforce and to test how the management and workforce have respondent to the concept of virtual workforce application.

5.2 Summary of key findings

From the analysis of the findings the results indicated that most respondents from private universities came from information technology department, finance and administration department, research and training department. Most participants in public universities came from research and training department while in research institutions most respondents came from finance and administration department working in the middle level management and lower level management as well with insignificant number of respondents from top management level. This implied that virtual workforce was used in Kenya's higher education and research service sector.

From the study the findings indicated that all the three groups studied (private universities, public universities and research institutions) had more than six years' experience in virtual workforce. The results from particular respondents indicated that a large number of respondents from private universities and Research institutions had more than 11years' experience in using virtual workforce while in public universities the highest percentage of the respondents had between 6-10 years' experience in using virtual workforce. This finding implied that virtual workforce started being used in Kenya over eleven years ago by the private universities and research institutions. Due to changing environment, the public universities were forced by competition and other market forces to use virtual workforce about ten years ago. This observation was also supported by the chi-square test whose results indicated that there was no relation between type of education institution and how its departments had implemented the use of virtual workforce, hence all the institutions used virtual workforce.

Further the results revealed all the three groups had been using virtual workforce although they scored differently in specific activities tested in this study. Research institutions scored the highest in using virtual workforce to market their products, on-line registration of courses and research for new products/programs. Private universities scored highest in use of virtual workforce for submitting results on-line, teleconferencing and on-line keying of raw data for processing. Public universities got the highest score in use of virtual workforce for on-line forwarding of requisition by users and on-line leave application and approval.

All the three groups used virtual workforce with an aim of increasing their productivity, increasing their efficiency, improving their product/service quality and also faster dissemination of information to their clients and public. Research institutions got the highest score for using virtual workforce for increased productivity and faster dissemination of information to the clients and public as a major cause of their use of virtual workforce. This implied that virtual workforce was enabled by increased productivity, cost reduction and increased efficiency, improved product/ service quality among other factors.

The results also revealed that although the management and workforce of the three groups offered support to virtual workforce Private universities were ranked the best in ensuring strict deadlines, allowing use of teleconferencing facilities in their operations, management flexibility of allowing their employees to work from anywhere away from office and lastly providing laptops and I pads to the workforce to facilitate their virtual working. This implied that virtual workforces had got proper support from management and the workforce and that's why it had been used for over eleven years.

5.3 Conclusions

All the three groups had applied virtual workforce in some of their operations although each group had its own reasons for using the virtual workforce. The application of virtual workforce by the three groups in this study was not 100 percent but was above 50 percent and hence significant application of virtual workforce in Kenya was noted from the study findings. Management and workforce support for virtual workforce had also been noted from the study findings with all the three levels of management supporting the virtual workforce. The fast adoption of the use of virtual workforce and the virtual workforce gaining support from both

management and the workforce was as a result of the improved product/service quality, increased efficiency, increased productivity and cost reduction.

5.4 Recommendations

The study recommends that clear management levels should be set aside to address key critical issues arising in the virtual workforce particularly developing working management technique and to ensure they provide adequate responses to challenges and problems by focusing on workforce activities undertaken by the employees. The management should set aside enough funds to implement the virtual workforce in all the departments.

Organizations should in addition have clear framework on how decisions are made and the protocol to be followed to make sure the right decisions are made to avoid employees de-motivation. This will enable to minimize any underperformance which might lead to disservice or dissatisfaction.

Organizations should assess in general the benefits accrued from adopting or getting the right virtual workforce employees to implement the best practice required to optimize the activities of the their organization. This can be achieved by having clear framework on how employees should be recruited in the organization and relevant skills needed to work virtually.

5.4 Limitations for the study

The key limitation of this study was that only public universities, private universities and research institutions were surveyed; hence the conclusion cannot be reached to the total population.

Limited time used and resource constraints, which includes finances to move from one point to another when collecting data for this study was inevitable and thus only institutions within Nairobi were considered and involved in this study.

Another limitation in the course of the study was the limited access to the information especially the primary data which was used as the main analysis data because in some cases the respondents had served the respective organizations for few years and thus could not provide relevant primary data.

The respondents being busy professionals, it was very hard to convince them to take part in the questionnaires and some actually declined taking part in the study, while others did not give in-depth attention to the unstructured parts of the questionnaire and they just filled as a chase away method.

Finally the results showed that selected limitations had partially been encountered in virtual workforce in public universities, private universities and research institutions. The results further revealed that from the selected reasons in this study, most respondents believe that these factors had no impact as to why they had not adopted virtual workforce in their organizations and that the reason for not adopting was influenced by other factors other than factors selected for this study.

5.5 Suggestions for further study

Further research can be carried out on public, private and research institutions operating internally and externally to gather adequate information that can be used to formulate a sustainable framework for advising both organizations on the right framework to use when selecting virtual workforce employees.

The study mainly used primary data to gather information for the research project which was hard to collect and analyze. Further researches should be done using secondary data. Secondary data analysis saves time that would otherwise be spent collecting data and particularly in the case of quantitative data, provides larger and high-quality databases than would be unfeasible for any individual researcher to collect their own. Also secondary data reduces biases.

A survey analysis study can be conducted in all other service industries in Kenya with adequate allocation and devotion of enough time and adequate resources. Upon undertaking a survey, the

researcher should evaluate the results to test whether there is consistency and uniformity from the past researches and this research as well.

This study also suggested that further study especially a comparative study can be conducted by comparing the factors influencing the adoption of virtual workforce in service industry from different geographical areas and remedies and include analysis model to show the exact relationship between organizations performance and virtual employment technique.

A further study should be conducted for other countries to see how they have applied the virtual workforce and make a comparison with Kenya as a country.

REFERENCES

Aeppel,. T. (2004). Offshore face-off: Moving jobs overseas can cut a company's costs; but is it bad for the US economy? Two economists debate the issue. The Wall Street Journal, R-6.

Agrawal, V. and Farrell, D. (2003). Who wins in offshoring? The McKinsey Quarterly, member edition.

AHCCCS Virtual Office Pilot (2007) Arizona AHCCCS Virtual Office Evaluation Project Final Report.Phoenix, AZ: AON Consulting

Alexander, G. (1999). Is telecommuting right for you? Black Enterprise, 29 (11), 61–62

American Management Association. (2012). Developing Successful Global Leaders. USA: AMA

Annndale, VA.(2003). Manufacturing and Technology News.: Manufactures Resource Center (MRC)

Baily, M. N., and Farrell, D. (2004)."Exploding the myths of offshoring". USA: Mcknisey & company

Bartlett, B. (2004). How outsourcing creates jobs for Americans. National Center for Analysis, Brief analysis No. 480, Dallas (USA).

Bergiel, B., Bergiel, E., and Balsmeier, P. (2008). Nature of virtual teams: a summary of their advantages and disadvantages. Management Research News, 31(2), 99-110.

Bettis, R., &Hitt, M. (1995).The new competitive landscape. Strategic Management Journal, 16 (SI): 7-19

Bullock, C., & Klein, J.T. (2011) Virtual Work Environments in the Post-Recession Era. California: Bradman University

Castells, M. (1996).The rise of the network society. Oxford: Blackwell

Cisco.(2007). Understanding and Managing the Mobile Workforce. USA: Cisco Systems, Inc.

Citrix system.(2010). Accelerate business through a cost-efficient virtual workforce. Citrix workforce/white paper.www.citrix.com, USA: Citrix Systems.

Cohen, S.G., & Gibson, C.B. (Eds.) (2003). Virtual Teams that Work: Creating Conditions for Virtual Team Effectiveness. San Francisco: Jossey Bass.

Conlin, M. (2009). Is there a virtual worker personality? Business week Magazine, Bloomberg.

Davenport, T. H.,&Pearlson, K. (1998).Two Cheers for the Virtual Office. Sloan management Review, 39(4), 51-65.

Derven, M. (2007). The remote connection: Leading others from a distance requires set expectations, trust, and unique methods of evaluation. HR Magazine, 52(3).

DeSanctis, G., &Monge, P. (1999). Communication processes for virtual organizations. Organization Science,10, 693–703.

DeSanctis, G., & Poole, M.S. (1997) Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory. Organization Science, 5, 121–47.

Dewey A. S. & Julie P. (2010).Globalization of the Workforce: Virtual Teams a Must. ASCUE Proceedings**.**Columbus: Purdue University School of Technology

Dobrian, J. 1999. Long-distance workers suit long-distance companies. HR Focus, 76, 11–12.

Dube, L. & Pare.G. (2001).Global virtual teams.Communications of the ACM Magazine, 44(12), 71-73.

Ejiwale, A. J. (2008) E-Leadership in virtual workforce. Jackson state university:Proceedings of the 2008 Midwest Section Conference of the American Society for Engineering Education (pp. 4-5).

Eunice, A.,& Kimball, L. (1997).Zen and the art of facilitating virtual teams. In Conference Proceedings, Organization Development Network Annual Conference (pp. 07079-1923).

Executive Office of the President of the United States (2011) – Council of Economic Advisors: work–life balance and the economics of workplace flexibility. USA: Council of Economic Advisors.

Gerke, S.K. (2006). If I cannot see them, how can I lead them? Industrial and Commercial Training, 38(2), 102-105.

George, J. (2005). Global virtual Engineering team utilization in the Engineering, procurement and construction (EPC) industry. Technical report No 49.The Pennsylvania state University perk, PA 16802.

Gillis, T. L. (2003). Managing the virtual workforce requires knowledge of communication behavior foundation findings.Communication, 20 (5).

Hamilton, B.A., &Scandura, T. A. (2003). E-Mentoring: Implications for Organizational: Learning and development in a wired World. Organizational Dynamics, 31(4), 388-402.

Hira, R. (2003). Global outsourcing of engineering jobs: recent trends and possible Implications. USA: IEEE.

HRC, (2010).Virtual Teams: Challenges and Opportunities. USA: HRC Group

IDC, E. B. (2001): Growing workforce demands application access. An IDC Executive Brief.

Janove, J. W. (2004). Management by remote control.[Electronic Version]. HR Magazine, 49 (4), 119-124.

Karimi, J. &Konsynski, B.R. (1991).Globalization and Management Strategies. Journal of Management Information Systems, 7(4), 7-26.

Kimble, C., Li, F., &Barlow, A.(2000).Effective Virtual Teams through Communities of Practice. Management ScienceResearch Paper No.2000/09.Glasgow: University of Strathclyde.

Lieberman, J. I. (2004). "Offshore outsourcing and America's competitive edge: losing out in the high technology R&D and services sectors. Washington, D.C: Office of Senator Joseph Lieberman.

Linkow, P. R. (2008). Meeting the challenges of a dispersed workforce: managing across language, culture, time, and location.Waltham, MA: WFD Consulting.

Merriman, K. K., Schmidt, S. M., & Dunlap-H.D. (2007). Profiling virtual employees: The impact of managing virtually.Journal of Leadership & Organizational Studies, 14(1), 6-15.

Negroponte, N. & Alfred, A.K. (1995). Being digital. New York.

Nilles, J. M. (1994). Making telecommuting happen: A guide for telemanagers and telecommuters. New York: ITP.

Norhayati, Z., Andrea, A. & David, W. (2004).Working Together Apart? Building a Knowledge-Sharing Culture for Global Virtual Teams:Vol 13(1), Blackwell Publishing Ltd, 2004. 9600 Garsington Road, Oxford OX4 2DQ and 350 Main St, Malden, MA 02148, USA.

Nortel. (2004).This is the way, this is Nortel: Teleworking to mobility–over 10 years of evaluation.

Nortel, & Thornburg, L. (2007). Well-designed telework policies help you reap benefits. Society for Human Resource Management.

Virginia.(2007). Real Estate Executive Board.Occupancy expense and space utilization benchmarking survey. The Corporate Executive Board Company, Arlington.

Rebecca, H., Aaron, L., Kurt, J., Maureen, M., Rex F, &Kirsten,S. (2010). Global Teams: Trends, Challenges and Solutions. Center for advanced human resource studies.Cornell University.

Reger, R. K. [et al] (1994).Creating earthquakes to change organizationalmindsets.Academy of Management Executive, 8 (4), 31-46.

Snell, A. (2009). Tackling the challenges of employee engagement.Strategic HR Review, 8 (2), 37-38.

Townsend, A. M., DeMarie, S. M. & Hendrickson, A. R. (1998).Are you ready for virtual teams? HR Magazine, 41 (9): 122-126.

Turnover Cost Calculator(2006): Corporate Leadership Council.

U.S. Census Bureau(2012) Census Bureau Reports Home-Based Workers Number 11 Million in 2005. USA: U.S Department of Commerce.

Weisband, S. (2008). Leadership at a distance: research in technologically-supported work. New York: Lawrence Erlbaum Associates, Inc.

Whitford, T.& Moss, S. (2009). Transformational leadership in distributed work groups: the moderating role of follower regulatory focus and goal orientation. Communication Research.110(10) 1–28.

Wiesenfeld, B. M., Raghuram, S.& Garud, R. (1999). Communication patterns as determinants of organizationalidentification in a virtual organization. Organization Science.10(6), 777-790.

APPENDIX II: QUESTIONNAIRE

SECTION A: GENERAL INFORMATION

General information

This questionnaire is meant to test the application of virtual workforce in the Kenyan service sector. Specifically it will test the areas in which virtual workforce is applied and test how the management and the workforce have responded to the concept of virtual workforce application.

Virtual Workforce is a team that relies on electronic communication to accomplish its work. The team members in this case may be physically or geographically separated from their managers or co-workers. The team members may be working in remote offices, across the country or the globe. These teams rely on technology-mediated communications rather than face-to-face interaction to accomplish tasks.

1. Organization/ Institution Particulars

Name of the organization/ Institution (optional)……………………………………..

2. Respondent Particulars

Age Bracket (tick as appropriate)

(i) Below 20   □

(ii) 21-30   □

(iii) 31-40   □

(iv) 41-50   □

(v) Over 50   □

3. Department (tick as appropriate)

i	operations	
ii	Research & Training	

iii	Finance & Administration	
iv	Information Technology	
v	Other-specify here…………………….	

4. What is your management position in your organization/ institution?

(Top management, Middle management, Lower level management, other specify………………………………………………… (Tick as appropriate)).

5. How are your departments distributed in the organization (Are they in the same building, floor or they are far apart)? ....

…………………………………………………………………………………………..

6. How many years of experience do your organization/ institution has with virtual workforce?

□None

□ 1-5 year

□5-10 years

□>10 years

SECTION B: EXTEND OF APPLICATION OF VIRTUAL WORKING

This section has questions and statements relating to the extent of application of virtual workforce in Kenyan service sector. Kindly respond with the response that matches your opinion. Please tick as appropriate in the boxes using a tick (√) or cross mark (x).

1. How many years of experience do you (personally) have with virtual working (may be with different organizations or institutions)?

□None

□< 1 year

□ 1-5 years

□ > 5 years

2. This part has statements regarding the tasks performed by virtual workforce in your organization/ Institution. Please tick as appropriate in the boxes using a tick (√) or cross mark (x).

	Tasks performed by virtual workforce	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree
1	Teaching from remote sites					
2	Sharing responsibilities in a project via social Media, Electronic resource planning					
3	Teleconferencing-for staff meetings with clients, students etc					
4	Submitting results to management on-line					
5	Registration of courses, submission of research proposals on-line					
6	Research for new programs, new research findings.					
7	Marketing of organizations products/services					
8	Keying in raw data for processing is on-line					
9	Leave application & approval is done on-line					
10	User forwards their requisitions on-line					

SECTION C:

3. For activities performed by your organization with virtual workforce, what facilitates their use or application? (Please tick as appropriate in the boxes using a tick (√) or cross mark (x).

	Activity	YES	NO
1	Overall cost reduction		
2	Activity time is reduction		
3	Quality of service is improved		
4	Productivityis increased		
5	Disseminating information to clients/ public faster.		
6	Overall efficiency increased Due to better technology		

SECTION D:

1. This section has statements regarding the issues that management are doing to support virtual workforce. Kindly respond with the response that matches your opinion. Please tick as appropriate in the boxes using a tick (√) or cross mark (x).

	statement	Strongly disagree	disagree	Not sure	agree	Strongly agree
1	Providing internet service at home					
2	Providing laptops to the workforce					
3	Providing I pads to the workforce					
4	Management provides incentives for Working virtually e.g.allowing officers work at home, or greater flexibility					
5	Management is flexible in allowing Employees to work anywhere (in the office or away from office)					

		Strongly disagree	disagree	Not sure	agree	Strongly agree
6	Proper control of the workforce by Ensuring strict deadlines					
7	Management likes physical supervision of their staff					
8	Organization use teleconferencing Facilities in their operations					
9	Organization has embraced Enterprise Resource Planning(ERP)/ computer systems which are internet based					

2. This section has statements pertaining to the limitations of virtual working. Kindly respond with the response that matches your opinion. Please tick as appropriate in the boxes using a tick (√) or cross mark (x)

	statement	Strongly disagree	disagree	Not sure	agree	Strongly agree
1	I do not have a conducive home Working environment					
2	It is difficult for me to work without Close supervision.					
3	I do not possess ICT skills to enable work away from office					
4	I cannot keep information confidential.					

SECTION E: NOT ADOPTED VIRTUAL WORKFORCE

Reasons for not adapting the virtual workforce

	statement	Strongly disagree	disagree	Not sure	agree	Strongly agree
1	No internet available in the office					
2	No computers available.					
3	Working virtually is not secure since information can leak					
4	Virtual workforce cannot handle confidential information.					

Thank you for your time and cooperation

APPENDIX III: PUBLIC UNIVERSITIES LIST BY COMMISSION FOR UNIVERSITY EDUCATION

Public Universities

Following the enactment of the Universities Act No. 42 of 2012, these institutions individual Acts were repealed. This signified their award of Charters on 1st March 2013:

1. University of Nairobi (UoN)
2. Moi University (MU)
3. Kenyatta University (KU)
4. Egerton University (EU)
5. Jomo Kenyatta University of Agriculture and Technology (JKUAT)
6. Maseno University (MSU)
7. MasindeMuliro University of Science and Technology (MMUST)

University Constituent Colleges were previously established by Legal Orders under their respective mother University Acts. This was replaced after the institutions met the set accreditation standards and guidelines set by the Commission which culminated to their Charter award to be fully-fledged public universities. These institutions are:

1. DedanKimathi University of Technology (DKUT)
2. Chuka University (CU)
3. Technical University of Kenya (TUK)
4. Technical University of Mombasa (TUM)
5. Pwani University (PU)
6. Kisii University (EU)
7. University of Eldoret
8. Maasai Mara University
9. Jaramogi Oginga Odinga University of Science and Technology
10. Laikipia University
11. South Eastern Kenya University
12. Meru University of Science and Technology

13. Multimedia University of Kenya

14. University of Kabianga

15. Karatina University

Public University Constituent Colleges

These were established by a Legal Order under the then Act of the University shown in bracket against each, after requisite verification of academic resources by the Commission for University Education. These are:

1. Murang'a University College (JKUAT)
2. Machakos University College (UoN)
3. The Kenya Cooperative University College (JKUAT)
4. Embu University College (UoN)
5. Kirinyaga University College (KU)
6. Rongo University College (MU)
7. Kibabii Universtity College (MMUST)
8. Garissa University College (EU) - 2011
9. TaitaTaveta University College (JKUAT)

Public University Campuses

1. Kenya Science University Campus (UoN)
2. Kitui University Campus (KU)
3. Ruiru Campus (KU)

APPENDIX IV: PRIVATE UNIVERSITIES LIST BY COMMISSION FOR UNIVERSITY EDUCATION

Chartered Private Universities

These are universities that have been fully accredited:

1. University of Eastern Africa, Baraton
2. Catholic University of Eastern Africa
3. Scott Theological College
4. Daystar University
5. United States International University
6. Africa Nazarene University
7. Kenya Methodist University
8. St. Paul's University
9. Pan Africa Christian University
10. Strathmore University
11. Kabarak University
12. Mount Kenya University
13. Africa International University
14. Kenya Highlands Evangelical University
15. Great Lakes University of Kisumu (GLUK)
16. KCA University
17. Adventist University of Africa

Private University Colleges

Catholic University of Eastern Africa has the following constituent Colleges:

1. Hekima University College (CUEA)
2. Tangaza University College (CUEA)
3. Marist International University College (CUEA)
4. Regina Pacis University College (CUEA)

5. Uzima University College (CUEA)

Universities with Letter of Interim Authority (LIA)

The following universities are operating with Letters of Interim Authority (LIA), while receiving guidance and direction from the Commission for University Education in order to prepare them for the award of Charter:

1. Kiriri Women's University of Science and Technology
2. Aga Khan University
3. Gretsa University
4. KCA University of East Africa
5. Presbyterian University of East Africa
6. Adventist University
7. Inoorero University
8. The East African University
9. GENCO University
10. Management University of Africa
11. Riara University
12. Pioneer International University

Registered Private Universities

These came into existence before the establishment of the Commission for University Education in 1985. They are at various stages of preparedness for the award of Charter:

1. Nairobi International School of Theology
2. East Africa School of Theology

APPENDIX V: RESEARCH INSTITUTIONS OTHER THAN UNIVERSITIES GIVEN BY MINISTRY OF SCIENCE & TECHNOLOGY

1. Kenya Agricultural Research Institute

2. Kenya Trypanosomiasis Research Institute

3. Kenya Medical Research Institute

4. Kenya Marine and Freshwater Fisheries Research Institute

5. Kenya Industrial Research and Development Institute

6. National Museums of Kenya

7. Institute of Primate Research

8. Kenya Wildlife Service

9. Kenya Rangeland Ecological Monitoring Unit

10. Kenya Polytechnic

11. Mombasa Polytechnic

12. Kenya Science Teachers College

13. Kenya Technical Teachers College

14. Kenya Institute of Education

15. Mpara Research Institute