

**EFFECTS OF THE USE OF INFORMATION COMMUNICATION
TECHNOLOGY ON EMPLOYEE JOB PERFORMANCE AND
PRODUCTIVITY: A CASE STUDY OF CLINICAL OFFICERS AT
KIAMBU COUNTY REFERRAL HOSPITAL**

DANIEL MACHARIA NGEREMA

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DECLARATION

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

Signature Date

Name: Daniel Macharia Ngerema

Reg No: C50/84252/2015

This project has been submitted with my approval as university supervisor.

Signature Date

Dr. Geoffrey Wango

Senior Lecturer

Psychology Department

University of Nairobi

DEDICATION

I would like to dedicate this work to my wife Carol Macharia, my son Leon Ngerema, my brothers Njenga and Kamau, my sisters Wangui and Wambui, my parents Mr and Mrs Peter Ngerema, my colleagues; clinical officers of Kiambu County and in particular those working at Kiambu Level 5 Hospital and the students fraternity of University of Nairobi.

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May Our God bless you all

.

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ABBREVIATIONS AND ACRONYMS

CDSR	Cochrane Database of Systematic Reviews
CD-ROMS	Compact Disc- Read Only Memory Storage
DO	Doctor of Osteopathic Medicine
EHRs	Electronic Health Records
EPRs	Electronic Patient Record Systems
HR	Human Resource
ICIS	Intensive Care Information System
ICT	Information Communication Technology
JD-R	Job Demands Resources
TRA	Theory of Reasoned Action

ABSTRACT

ICTs are progressively gaining acknowledgements as powerful tools of growth and development, particularly in enhancing efficiency and effectiveness in organizations. This research was set to address three goals: to decide the administration frameworks consequences for representative execution and profitability; to look at the impacts of correspondence frameworks on worker execution and efficiency; and, to build up the impacts of data frameworks on worker execution and profitability. A contextual investigation look into configuration was received in this examination. The objective populace was comprised of all the clinical officials working at Kiambu Hospital i.e 82 COs. Statistics inspecting strategy was utilized to choose all the clinical officials to take part in the investigation. Be that as it may, just seventy clinical officers had the option to fill in the instruments for investigation. The information was gathered utilizing surveys and meeting guide. The gathered information was dissected utilizing quantitative and subjective methodologies. for SPSS form 20.0 was utilized to outline the quantitative information into frequencies and rates. The outlined data was displayed utilizing figures, tables and pie diagrams. Inferential insights was utilized to set up connections among free and ward factors, the effect of autonomous variable on the reliant factors, just as test the speculations. Subjective approach was utilized for dissecting the open-ended questions ;they were sorted out as indicated by the topics of the examination and exhibited in a story structure. The data from the open-finished inquiries was incorporated inside the quantitative information.

From the investigation, the accompanying key discoveries were made in regards to the hospital: there was a critical positive connection between independent and dependent variables.

CHAPTER ONE

INTRODUCTION

ICTs imply a great deal of endeavors or organizations that think about remote thought (telehealth), interdisciplinary clinical assistance, and data move (Rouleu et al.,2015). The using ICTs can propel persistent centered social protection at cheap, improve nature of care and information sharing, show prosperity specialists and patients, bolster another sort of association among patients and their prosperity providers, and reduction travel time (Rouleau et al., 2015). This examination will explore the impacts of the utilization of Information Communication Technologies on representative employment execution and profitability in a social insurance setting.

Clinical officers contain some segment of the greatest prosperity provider social event of the therapeutic administrations workforce and everything considered address a critical target for the ICT utilization process. In the CDSR, researchers evaluated the effect of various nursing and clinical record structures on therapeutic practice and social security results. Urquhart et al. (2009) describe clinical nursing record systems as the record of care that is manufactured and sent by clinical-nursing staff or by other accommodating affiliations providers. Ammenwerth et al. (2008)reported that the time experienced overseeing and reporting assignments was longer with automated structures. Bosman et al. (2003) found that the use of a raised thought information structure ICIS among patients after cardiothoracic steady framework impacts clinic works out. The term of the accreditation methodology was longer in that get-together (concerning the choice of patient data), yet in the period following confirmation, the utilization of ICIS lessened the time clinicians spent for documentation by 30%. This time was re-drifted for picked thought. Regardless, the effects of changes to clinical record systems on clinical practice and on understanding results were unassuming). A large portion of the assessments focused on documentation time to perform clinical attempts, which is a touch of the blueprint. There is some degree of hypothetical cognizance on closeness of a positively related between ICT and execution (Castel &Gorriz, 2007; Gutierrez, 2011; Kimani, 2015; Nyakoe, 2014; Rezaei, Majid, Akbarzadeh &Farid, 2014; Allameh& Barden,

2011). Investigators, for example, Gutierrez(2011)have battled that the utilization of ICT prompts higher benefit, more noteworthy fulfillment for the client, and continuously worth creation. Obviously, others, for example, Akunyili et al. (2010)found invalid or negative impacts of ICT on focal points, yields and offer respect. In Spain, Darryl Consulting-Actic (2005) found a positive relationship among data and correspondence progressions and adequacy in different divisions, close by declining periphery returns, showing that updates in profitability lose control after some time. As showed by the hypothesis of complementarities, the central focuses will be dynamically huge if ICT is utilized together with satisfactory complete assets and cutoff points, explicitly ace limits, proactive course and creative culture, abusing complementarities. Sorts of profitability enhancements, because of the usage of ICT, are genuinely identified with the equivalent assets of the firm. Different creators raise the need to locate a near to fit between the association of ICT and equivalent assets, for example, theory, genuine structure, likewise as human and dynamic assets (Belanger, 1998; Bresnahan et al., 2002; Powell and Dent-Micaller, 1997;Ramirez,2001; Walton, 1989).

Rumelt (1983) battled that an advantage is irreplaceable when it is extraordinary. Data and correspondence advancements can befound by every affiliations, in any case the points of interest and restrains required to recognize changes, in both real structure and in different portions, are unquestionably not. In this lies the separations wellspring in institutional prosperity after presenting new advances. Powell and Dent-Micallef (1997) kept up , technology only doesn't give viable points of interest. Or on the other hand perhaps it is the usage close by high grounds, with correlative human and various leveled resources, for instance, a versatile culture, the coordination of ICT and the organization's framework, that empowers firms to get advantages.

A couple of the above refered to audits concentrated on medical caretakers and clinical officials, prominently known as doctor partners in certain countries outside East Africa. It is important that ICT has a job and a more prominent effect on the general strengthening of clinical officials as a major aspect of the bigger social insurance experts, meaning better occupation execution and effectiveness towards arriving at hierarchical goals.It is

in light of this that this examination tried to research the effect of ICT on representative execution and profitability at the Kiambu County Referral Hospital.

1.2. Problem Statement

Despite the well-known advantages of ICTs on the health sector, getting into action in regard to ICTs in the health practice and patients care remains difficult and it changes atb different stages in hospital set-ups (Rouleau .,2015).Impact of ICTs on EP are being hindered by insufficient access rights to the systems. Clinical officers are forced to engage with the launch of ICTs within their practice in patients care, e.g technology of telehealth, with effects on clinical care. The role of management is to facilitate training of employees in ICT systems so that they can have requisite skills and knowledge of the systems (Nyakoe, 2014). With devolution of healthcare in Kenya, the researcher believes that ICTs play an important role in contributing to the efficiency and effectiveness of healthcare services at both County and national levels thereby affecting health practitioners' performance.

It might be noticed that ICT appropriation in the social insurance industry in Kenya is still in its early stages organize. Be that as it may, its potential for development is huge (Kilwake, Matoke, Waliaro, Wanyembi, &Ogao, 2012). There is therefore requirement for serious survey to be done in order to build up the capability of ICT in the human services part particularly in tending to the general execution and efficiency of medicinal services officials. This examination expected to cover this hole by analyzing the impacts of ICT on representative execution and efficiency at the Kiambu County Referral Hospital.

From the space left , there are a lot of concentrates that have been completed on the impacts of ICT on performance (Kimani, 2015; Nyakoe, 2014; Rezaei, Majid, Akbarzadeh&Farid, 2014; Allameh& Barden, 2011). In any case, the vast majority of them have their own confinements, for example, topographical inclusion, procedure and setting of examination. This investigation proposed to cover these holes, by analyzing the

impacts of ICT on worker execution in the wellbeing segment, with explicit reference to Kiambu County in Kenya, specifically the Kiambu County Referral Hospital.

1.3. Study Purpose

The motivation behind this examination was to establish the effects of the utilization of ICTs on representative execution and profitability

1.4.Objectives

The study was guided by the following objectives:

1. To decide the impacts of the utilization of ICT the board frameworks on worker execution and profitability.
2. To analyze the impacts of utilization of correspondence frameworks on representative execution and profitability.
3. To set up the impacts of utilization of data frameworks on representative execution and efficiency.

1.5. Research Questions

1. What are the impacts of utilization of the executives frameworks on worker execution and profitability ?
2. What are the impacts of utilization of correspondence frameworks on worker execution and efficiency?
3. What are the impacts of utilization of data frameworks on representative execution and profitability?

1.6. Hypotheses

The following theories were listed for endorsement or distortion:

Management systems have a huge positive effect on worker execution and efficiency.

Communication systems significantly affect worker execution and efficiency.

Information systems positively affect representative execution and efficiency.

1.7. Assumptions of the Study

ICT knowledge in management, communication and information systems can be utilized in multiple fields and corporations in Kenya, such as in health, hence the results are more generalizable to organizations in other sectors besides the health sector.

1.8. Coverage and Challenges

The exploration venture was restricted to the reason for the examination, whose Independent Variable (Information and Communication Technologies) and Dependent Variables (worker execution and productivity) were examined utilizing an organized survey by the scientist. This examination didn't manage communication and different frameworks; rather, the scientist focused on ICT frameworks that help the electronic catch, stockpiling, preparing and trade of data, to be specific: the medical clinic ICT the board frameworks, correspondence frameworks and data frameworks, and how they influence representative execution and profitability. There was the restriction of accessibility of adequate time with Clinical Officers as respondents inferable from their tight and occupied timetables. Likewise, the analyst needed to make exceptional game plans with them before the day of information assortment.

1.9. Justification of the Study

Clinical officers comprise one of the biggest specialist organization gathering of the medicinal services workforce, henceforth such a significant objective for the ICT usage process (Rouleau, Gagnon and Cote,2015). Associations should grasp IT instruments and administrations in order to have a focused edge and improve administration conveyance to their clients. As degenerated social insurance turns into the request for the day, advancing toward development, and the worldwide plan of medicinal services discusses unfurl in the Kenyan and worldwide settings, there is the need to similarly consider the consolidation of ICTs use in human services. This accompanies a decent amount of advantages and difficulties also.

Studies have been done on this theme crosswise over various segments of world economies, including wellbeing, yet very little has been done on ICT and medicinal services in Kenya. In such manner, all the more should be done on the difficulties confronting data innovation use in associations in Kenya (Kamiti, 2015), especially how ICT impacts administration conveyance in medicinal services in accordance with specialists' presentation and efficiency. Along these lines, this examination on the effect of ICT on worker execution and profitability at the Kiambu County Referral Hospital was defended

1.10. Definition of Operational Terms

Employee Performance: This is the achievement by a representative of a given undertaking estimated against present known gauges of precision, finish (the planned exertion and enthusiasm of the two administrators and workers in prosperity and security programs), cost and speed (Ratna&Kaur,2016).

Information Communication Technology (ICT): These comprises of carefully empowered advances that help the electronic catch, stockpiling, preparing, and trade of data so as to advance wellbeing, anticipate ailment and malady, and oversee constant ailment (Rouleau, Gagnon and Cote,2015).

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Perceived usefulness (PU): Davis (1989) portrays it as how much an individual will be convinced that using a particular structure would improve their movement execution.

Productivity: This involves the quality of patient healthcare and safety, and the time efficiency achieved with ICT use in healthcare practices.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

Section shows, scholastic work previously studied ,areas of information technology and employee performance. The reviewed literature has been sourced from online articles, journals, books and publications. The review is shown in regard to .: information, communication technology with its components, impacts of innovation on wellbeing and security; effect of innovation on execution and productivity; effects of the executives frameworks on representative execution and efficiency; impacts of correspondence frameworks on worker execution and productivity; effects of data systems on performance and profitability.

2.2. ICT and its components

ICTs are getting into the industries and other very core fields . IT use in jobs, by people has in the last twenty years of 21st century has improved gradually .Computing digitally together with telecommunications use and linking several computers to create one network and internet has matured at this indicated duration. Peter Drucker (1954) noted that management should be aware that technology fits in various industries. On the contrary, any industry is always impacted upon introduction of technologies. Organizations at the world stage have transformed the how they trade by adopting the information change. And the effects can be viewed in the ways companies, their suppliers and their customers relates.

As indicated by Mair et al. (2012) as refered to in Rouleau et al. (2015),e-wellbeing (that is, the utilization of developing data and correspondence innovation, particularly the web, to improve or empower wellbeing and social insurance) can be isolated into four spaces: the executive systems; correspondence structures; computerized decision genuinely steady systems and, information innovations.The management structures join ICTs, for instance, electronic prosperity records and patients/singular records. Correspondence systems, on the other hand, are media transmission structures used when customers are a

detachment isolated in space or possibly time This sort of correspondence happens in synchronous or nonconcurrent ways between wellbeing experts, or between wellbeing experts and patients. It incorporates a concentrated on sharing of data between unequivocal people who accept undeniable occupations in diagnostics, the officials, directing, preparing or reinforce benefits and fuse email and propelled cells (telemedicine and telecare systems).

The motorized decision sincerely strong systems imply robotized PC based structures that target supporting clinical practice inside clinical principles and care giving out care subject to confirmation and best practices. These sorts of structures are for the most part worked continuously and incorporate decision help that starts from mechanized thinking (for example an item program) rather than a person. By then there are other ICT portion, called information structures, which are portrayed as the using on the web frameworks to learn on prosperity information in this particular circumstance. Online resources and e-prosperity doors of recouping information systems (Mair et al., 2012).

2.3. Effects of Innovation on well-being

The discipline of well-being has broad scope and in promoting the highest standards of mental, social and physical employees' wellbeing, that is the "whole person", in all fields thus preventing workers from their working conditions' adverse effects on health .In order for an occupational program to succeed ,the inputs of both the employees and their bosses should be integrated and particularly in the fields of education, toxicology ,safe engineering, hygiene, ergonomics and psychology etc. The new technology introduction, the protection of human beings against communicable diseases e.g sanitary hygiene diseases, malaria conditions linked to infections wastes handlers, road traffic accidents injuries, etc

2.4. Effects of Technological Advancement on Job Performance and Productivity.

Job Performance implies achieving of a specific task or work estimated through present known benchmarks of fulfilment, cost, precision and speed. Utilizing innovation will undoubtedly profit the association as long as you put moral thought into it, alongside person's and gathering's exhibition act of spontaneity. On one hand, there is decrease of the labourer's outstanding task at hand through headway of innovation; while on the other the representatives number required to chip away at a given errand additionally lessens prompting misfortune employments . Associations go through innovative progression to keep with patterns available. Innovative drifts as of now influencing HR center around esteem that HR brings to the association. An even more predominant, consolidated and flexible mechanical structure parts is the result when the enthusiasm for an unrivaled execution is high.

Gainfulness is a more prominent measure of the most eagerly watched pointers, of long stretch money related potential outcomes.

Rising gainfulness is the best approach to making possible unending improvement in lifestyles. Changes in development are the fundamental wellspring of interminable addition in productivity, yet different transient components can impact both certified and "evaluated" effectiveness. For example, workers may work all the more energetically during times of advance what's more, firms may utilize their capital resources significantly more really by running age lines on additional advancements. The two components can provoke effectiveness climb as firms fabricates returns to scale up; along these lines, a couple of scientists fight that there is no enduring effect as such it should be restricted, when long stretch particular change is assessed.

Kimani (2015) led an examination on the effect of data innovation on hierarchical execution at Population Services Kenya. The point of the examination was to decide the degree of utilization of data innovation and its association with authoritative exhibition. An elucidating study configuration was utilized for the populace, containing the whole

Population Service Kenya staff at 438. Essential information was gathered utilizing a semi-organized poll directed electronically while 311 (71%) of the populace established usable surveys. Discoveries uncovered a positive connection between its degree use and authoritative execution, with results demonstrating that IT use at Population Services Kenya clarified 82.4% of the hierarchical exhibition.

Allameh and Barden et al (2011) did an investigation on the impacts of data correspondence innovation on HR efficiency at the Mobarekeh Steel Complex in Isfahan, Iran. The point was to explore the impacts of the data correspondence innovation measurement on workforce profitability. The measurable populace of the examination was every one of the supervisors and staff individuals working in various zones identified with data correspondence innovation. A survey (with Cronbach's Alpha Coefficient of 75%) was utilized as the information assortment strategy. Discoveries of the examination showed that elements of data frameworks (web, office robotization and web) influenced the human asset profitability at the Mobarekeh Steel Complex, Isfahan.

Nyakoe (2014) ascertained effects of ICT on KenGen's performance and establish the challenges of using ICT at the firm. This study had 302 participants, all of them employees of KenGen, working in different departments and levels. Feedback was given through answering listed questions to meet study objectives, then analyzed with the help of SPSS. Findings indicated that ICT had facilitated production of ad hoc reports, improved quality of work that in turn enabled the availability of reliable information on power generation and facilitated knowledge sharing and building on each other's ideas in real time. ICT had thus enabled KenGen to empower its employees and facilitated employee learning.

Another study was completed by Rezaei, Majid, Akbarzadeh and Farid (2014) on the impacts of data innovation on worker efficiency at the Shahr Bank in Shiraz, Iran. The purpose of the examination was to break down how IT impacts the productivity and HR. After an overview of the speculative establishment with the individuals, 8 HR records . benefit. perceived including motivation, creativity and advancement, soul of power,

works out, work time decline, work satisfaction and HR soul. Results exhibited that there was a positive association among IT and human resource productivity.

Ratner and Kaur (2016) led an investigation on the effect of data innovation on work related components like e-Health and security, work fulfillment, execution, efficiency and work-life balance. The investigation was directed utilizing polls. This investigation had 100 members from CMC and Barco constrained. Accommodation Sampling technique was utilized. Discoveries uncovered that presentation of new innovation has a more noteworthy huge effect on execution, furthermore work fulfillment, wellbeing and wellbeing, work-life equalization and profitability. A few factors influences the obstruction of acknowledgment of these advances, including most noteworthy training earned, earlier PC experience, age, accessibility of innovation, PC competency and institutional support (Surej, 2015).

2.5. The Effects of Management Systems on employee performance and Productivity

2.5.1 Age

Mahdi and Al-Dera (2013) found no critical distinction in utilizing ICT between two gatherings of instructors dependent on age and experience Specifically, the examiners saw that in increasingly energetic male teachers, who were continuously experienced, were even more as regularly as conceivable related with successful ICT use. Concerning PC helped language learning in guidance, the proposal has been attempted with different organization in Saudi Arabia (Mahid& Al-Dera, 2013), resulting to no fundamental separations in utilizing ICT for language educating in relationship with the ELTs' age and experience.

2.5.2 Gender

Automated detach suggests the opening between individuals, nuclear families, business and geographic regions at different monetary levels regarding opportunities to get to information and correspondence propels ICT usage variously. Even more expressly, the sexual direction electronic separate shows the under-depiction of females in the ICTs-

related fields.(Bucy, 2000; Castano, 2005; Fink and Kenny, 2003; Korupp & Szydlik, 2005).

Informative making has routinely observed first and second automated division. First moved hole as referred to in Castel et al (2010) proposes the opening in access to new progresses. For example, as appeared by the e-Living Survey (Raban, 2004), the sexual heading hole in the PC was high in express nations, with an on a very basic level continuously basic opening in web use of up to 18%. The best openings in PC and Internet use were in Italy and Germany (Castel et al., 2010). Second Digital division audits the opening for the aggregate and power of the new improvements use. Seeing light and liberal clients, outcomes of the e-Living Survey (Raban, 2004) indicated that over 60% of ladies are light clients, while they watched out for just 40% of the astounding clients gathering.

As Dholakia and Kshetri (2002) battle, individuals seem, by all accounts, to be invested huge energy in different assignments and have different tendencies. The sex gap was up 'til now enthusiastic by 2008 as per the accurate office of the European Communities (Eurostat), as referred to in Castel et al. (2010).

2.5.3 Educational level

As indicated by Wikipedia.com, a clinical official (CO) is a gazetted official who is qualified and approved to rehearse medication. A clinical official performs general and concentrated restorative and authoritative obligations, for example, analysis and treatment of illness and damage, requesting and translating medicinal tests, performing routine therapeutic and surgeries, alluding patients to different professionals and overseeing wellbeing offices, establishments, ventures and frameworks. The double Diploma in Clinical Medicine and Surgery is the standard capability for clinical officials, granted on fulfillment of a four-year preparing program which advanced from different projects that were created to prepare restorative professionals in the East African protectorate during the 1920s and which currently takes after the North American four-year MD and DO therapeutic school programs rather than the six-year MbChB program presented a lot later and increasingly normal in region nations.

The present preparing pursues worldwide rules and the two capabilities are granted together on fruitful finish of an exhaustive nine-trimester program of full-time study, down to earth and assessments which are secured more than three years prompting a fourth required year of temporary position in an instructing emergency clinic. A fifth and 6th residency specialization years are embraced after enrollment by the Clinical Officers Council, and three years of work involvement with general prescription which prompts the honor of a general degree in clinical medication or a specific certificate in pediatrics, orthopedics, psychiatry and emotional well-being, anesthesia, conceptive wellbeing and different claims to fame. As of now there are groups of Clinical Officers graduating with a Bachelor of Science in Clinical Medicine and Community Health from MKU, J.K.U.A.T and Egerton University among other premier institutions of higher learning in Kenya.

Organizations have spent and keep on spending significant measures of cash to make data innovation foundation and internet learning openings. Consequently, resources are required to accomplish innovative ability and actualize better types of showing rehearses which improve the understudy learning experience (Surej, 2015). "In Universities people can be set up as understudies for an advanced world by enabling them to do their ventures and different works including the utilization of data innovation assets." The exercises help the understudies to change their job from beneficiaries of substance to dynamic members and accomplices of the learning procedure (Roblyer, 2006) as referred to in Surej (2015).

2.5.4 Experience

PC experience can be characterized as a person's presentation to utilizing PCs ; aptitudes, capacities increased through that introduction (Ball and Levvy, 2008, Thompson et al., 2006). Related knowledge in utilizing PCs is a noteworthy impact of whether and to what degree a personnel will utilize data innovation, showing reason (Summers and Vlosky, 2001; Wozney et al., 2006).

Akinjide (2015) noted that the number of years spent in teaching career affect teachers' use of computers in negative manner.

Systematic reviews by Stevenson et al. (quoted in Rouleau, 2015) on the use of electronic records highlighted nurses' experiences with electronic patient record systems (EPRs) in their practice, whereby they expressed dissatisfaction over a period of time. Seemingly, the frameworks didn't bolster their individualized consideration, they were not easy to understand, and they were not generally bedside available. Motel different surveys which inspected the impacts of EHRs on time the executives. A significant finding was that utilizing bedside terminals and focal station work areas spared 24.5% and 23.5% of the time attendants spent reporting during their day of work.

2.6. Effects of CS On EP and Productivity

2.6.1 Age

A couple of research pros (Morley, 2011; Mahdi and A-Dera, (2013) indicated that yet progressively energetic teachers were required to be progressively capable, when in doubt age doesn't seem to have a colossal impact in the coordination of ICT in the homeroom, yet increasingly young educators have increasingly raised degrees of ICT aptitudes (Alazam, Bakar, Hamzah&Asmiran, 2012)

General age contrasts being utilized and outlooks were in like manner found, and these may result from the particular preparing applications used by year 7 and 11 understudies at school (Colley and Comber, 2010). A study directed by Harris, Staker and Pollock (2013) found that absolute PC presentation was more prominent at home than at school and expanded with age. PC exercises fluctuated with age and sexual orientation and turned out to be progressively social with expanded age simultaneously parental inclusion diminished. Room PC utilize was found to bring about higher introduction designs. High utilization of home and school PCs was related with one another. Affiliations fluctuated relying upon the kind of IT presentation measure (recurrence, ssmean week after week hours, normal and longest span). The recurrence and length of youngsters PC introduction were related with a mind boggling interaction of the earth of utilization, the member's age and sex and other IT exercises.

2.6.2 Gender

Massourou et al. (2015), established that ICT level use by the members, and strengthening in the utilization of ICT, didn't present a measurably critical distinction between sexes. All the more as of late presented applications, for example, email, getting to the web and utilizing CD-ROMS demonstrated no general sexual orientation contrast in recurrence of utilization (Colley and Comber, 2010). Youngsters still adored PCs more, were progressively confident in their use and, not under any condition like as of now, sex-made them not as much as youngsters who held the least inspiring tempers., proposing that their way to deal with PCs might be affected by social weight of sexual orientation stereotyping. The level of ladies who routinely utilize the web is a lot of lower than that of guys, fantastically developed nations, where the opening beats 10 %.

2.6.3 Education level

As per Massourou et al. (2015) the instructive degree of chairmen displayed no contrast among people, and the most elevated rate (48.6% and 38.1%) individually was seen in the classification of those having a postgraduate capability. A clinical official can graduate and join the workforce in at least four schedule years, just as give therapeutic benefits inside the full extent of family and crisis drug or inside a smaller degree relying upon their territory of specialization. Enlistment by the Clinical Officers Council qualifies one for render therapeutic administrations in any open or private restorative foundation, or to rehearse prescription freely as a private professional in Kenya.

2.6.4 Experience

Similarity and earlier PC experience altogether impacts the apparent usability and frame of mind towards utilizing instructive innovations (Surej, 2015; Massourou et al., 2015; Mazmanian et al., 2005). Mazmanian et al. (2005) examined on the social impact of blackberry and how it was presented in the every day living of experts uncovered that these correspondence involved 3 significant dualities having clashing ramifications for living Plymouth individuals: ceaselessly and a synchronicity, independence and compulsion, commitment and withdrawal ,making it hard for individuals to separate from work and mixing among individuals.

Bakker and Derks (2010) looked into on the effect of email gave by PCs and advanced cell gadgets dependent on work requests assets structure. Consequences of the investigations indicating which parts of email correspondence could be viewed as requests and which as assets, and consequently convolute our working life. The weight that accompanies representatives association in messages correspondence expands adaptability in communicatsion however prompts loss of harmony among home and work life.

2.7. Information Systems impact on employee performance and Productivity

2.7.1 Age

Age may be influential in some cases but not in others. Mahdi and Al-DeraSa'ad (2013) and Jegede (2009) established that age made no difference among teacher's views towards lifting digital technologies in knowledge transfer and studying. However, Padmavathi's study (2013) established that even though there was no difference in age on teachers' perceived use of computers, there was a difference in age on how teachers used computers.

2.7.2 Gender

The sex computerized separate decreases when the degree of capabilities expands (Castel et al., 2010). Castel et al, in their sex contemplations further noticed that ladies have more conceivable outcomes to get to ICTs from home while for men it is from the investigation or work environment. It is generally acknowledged that men will in general lead in utilizing new advancements and to increase critical advantages from doing as such, both at home and at work. From one viewpoint they found that level of ICTs use is higher among men. Then again, results affirmed that ladies likewise introduced lower frequencies of ICTs use.

2.7.3 Educational level

Schelin (2003) as refered to in Massorou et al. (2015) contends that ICT contributes successfully to the organization, coding, stockpiling and preparing of an enormous

measure of advanced data made while Slenning (2000) recognized that the presentation of data innovation refreshes numerous parts of exercises in the instructive network; the fundamental being the correspondence among them and the educating practice. The utilization of data and correspondence innovation (ICT) in instruction is viewed as an educating and learning device, yet in addition a significant methods for authoritative association. Instructive the board is a significant viewpoint as it experimentally indicates the fundamental managerial capacity of instructive foundations and learning associations (Athanasoula-Reppa, 2008).

2.7.4 Experience

There is satisfactory proof that PC experience assumes a significant job in innovation acknowledgment (Ball and Levy, 2008). While presenting his theory Venkatesh et al. (2003) found that PC knowhow is an important arbitrator as to the impact of earlier PC experience on data framework utilization. Todd and Taylor (1995) learnt that past PC usage over a time fundamentally impacts and determines aim to utilize data frameworks, for example, saw usability, helpfulness and demeanor. The investigation was directed among 430 experienced and 356 inexperienced potential clients of an understudy data framework.

As indicated by Bosman et al. (referred to in Rouleau, 2015), Using ICIS among cardiothoracic post-careful patients influences the attendants activities. The period it took to concede a patient for the technique was longer, enlisting and entering the information, with respect to the patient yet in the period following confirmation (enrollment stage utilizing ICIS diminished the time by 30%. This time was reallocated to understanding consideration. Be that as it may, the impacts of changes as respects nursing record frameworks on nursing practice and on tolerant results were unobtrusive. The vast majority of the investigations focused on documentation time in performing nursing assignments, which is a little piece of the training (Rouleau, 2015).

2.8. Theoretical Framework

This study applies two major theories which were selected due to their interrelatedness and varied use in the adoption of ICT.

2.8.1. Innovation Diffusion Theory

The theory started in correspondence to clarify how after some time, a thought or an item would in general increase energy (Bhatti, Olsen, & Pederson, 2011; Buchanan, Cole, & Keohane, 2011; Rogers, 2003; Walker, 1969). The idea or opinion thus diffuses, that is, it spreads through a particular population or in a social system. As indicated by Rogers, an individual will almost certain receive a development in the event that it is predictable with their convictions, qualities and clients. Similarity is one of the builds in this hypothesis and alludes to how much a potential adopter sees an advancement to be in consistence with their direction, for example, socio-social qualities, convictions, needs and past encounters (Moore & Benbasat, 1991). Along these lines, the hypothesis contends that individuals' mentality towards an innovation is one of the key determinants of its selection.

2.8.2. Acceptance of Technology Model

This theory was advanced by Fred D. Davis in 1989, Morris, Davis, & Davis, 2003; Venkatesh, & Bala, 2008). It demonstrates how clients utilize innovation. The model battles that anyway customers will all in all recognize and use development., there are various elements that impact the basic leadership forms, including how and when they will utilize it. This incorporates two ideas presented by Davis (1989), that is, saw usability (PEOU) and saw value (PU) Davis (1989). The hypothesis contends that a person's convictions about handiness and convenience are the significant determinants of reception and utilization of data frameworks in any association (Lu et al., 2003 as referred to in Surej, 2015). It is thus established in a few mental hypotheses, for example, social conduct and the hypothesis of contemplated activity (TRA). Social conduct recommends that a person's convictions will impact their demeanors which thusly impact their

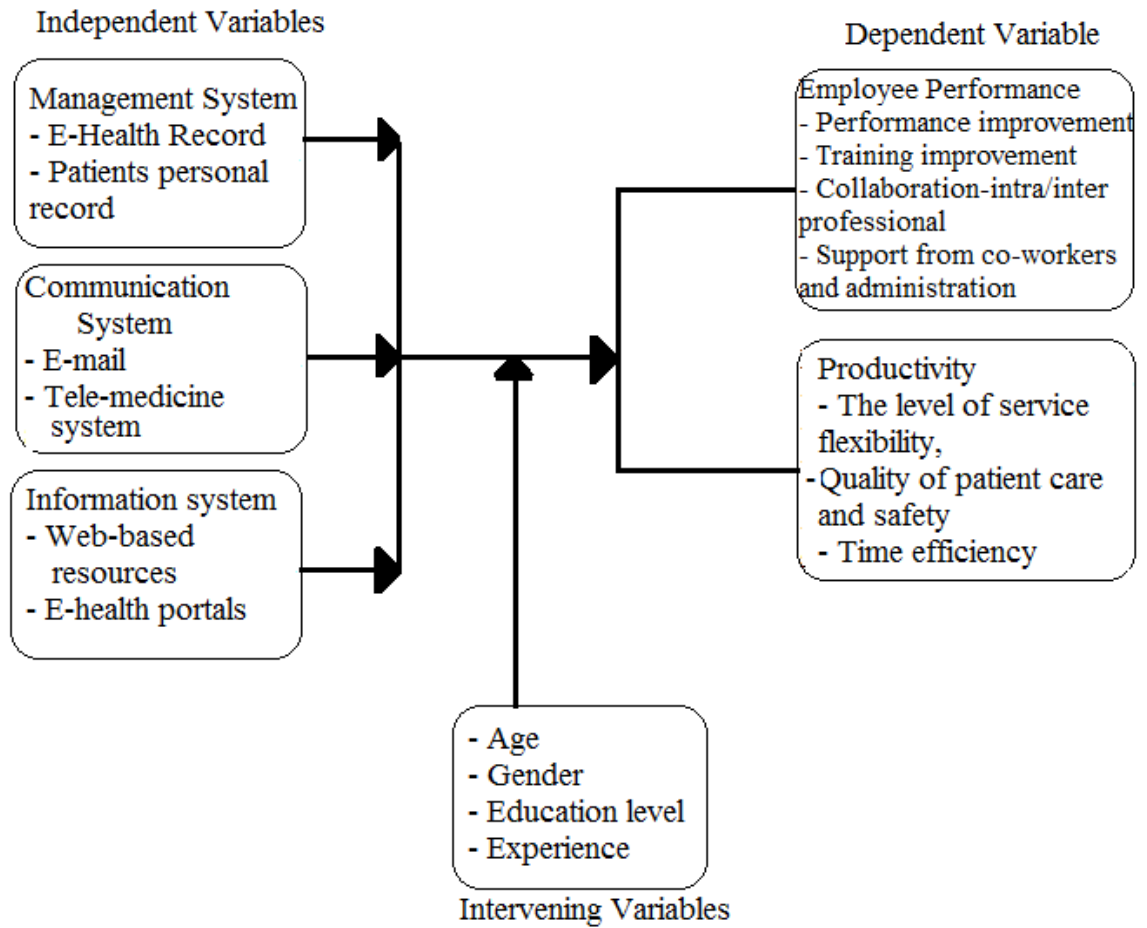
expectations and create the conduct (Adams, Nelson, and Todd, 1992; Ajzen, & Fishbein, 1980).

In light of ICT reception as presented by Fred Davis (1989), saw helpfulness will influence the degree to which representatives accept that utilizing a data framework will upgrade their work execution. Another determinant of data framework selection, as per the Theory of Reasoned Action, is the apparent convenience, which alludes to the 'degree to which people accept that utilizing a data framework is a bother free mental exertion (Lu et al., 2007 as referred to in Surej, 2015). The hypothesis has been tried, approved and reached out by a few scholars because of the capacity to foresee the utilization and reception of different data frameworks. Consequently the hypothesis is significant in application and commitment to this examination.

2.9. Conceptual Framework

Information and communication technologies (management, communication and information systems) and employee performance and productivity are the independent and dependent variables respectively. Management systems were measured in terms of e-health records and patients' personal records; communication systems in terms of e-mail use and telecare services, while information systems were looked at in terms of Web-based resources and e-health portals. Alternatively, employee performance was measured in terms of performance improvement, training improvement, intra/inter professional collaboration and support from co-workers and administration; while productivity was measured in regards, of health-sensitive outcomes, namely the level of service flexibility, quality of patient care and safety and time efficiency. These dimensions were mediated by the intervening variables, namely the employee's age, gender, level of education and experience. Dubois et al., (in Rouleau et al., 2015).

Figure 2.1



CHAPTER THREE

METHODOLOGY

3.1. Introduction

Section spread show examination was directed and considers the examination . structure, territory of the examination, target masses, test size and assessing procedure, the investigation instruments and managing of the examination. It in like manner discusses data arrangement strategy, data assessment and the ethical considerations got

3.2. Research Design

Gall and Borg (2007), introduced this as an exploration configuration alluding to the way toward making an observational test to help or discredit a case. The scientist utilized a descriptive Study design which includes portraying, recording, investigating and deciphering conditions that exist. This examination utilized a Case Study inquire about plan for the explanation: that it is valuable in portraying the attributes of a particular populace. All things considered, the scholar had the option to increase a more profound comprehension of the impact of ICT on worker execution, efficiency at Kiambu County Referral Hospital.

3.3 Region

The research was conducted at the Kiambu Referral Hospital. This is because the hospital serves a lot of people within the County and also from Nairobi, meaning that although it is in an urban setting, it serves an urban population as well as a significant Level 5 hospital.

3.4. Targeted Population

Target was the clinical officers working at the Kiambu Level 5 Hospital. This is because the clinicians are manages patients ,every now and then involving wide variety of patients in the hospital, making their performance and productivity to beat the centre stage of the hospital operations. The total target population was all the 82Clinical Officers at the facility.

3.5. Size of the sample and Technique

This includes all the 82 Clinical officers serving at the Kiambu County and Referral Hospital. Census sampling technique was utilized in arriving at the sample as it was considered to be quite small. Census sampling technique is always convenient in situations where the population is small, for the purpose of inclusivity of everyone.

3.6. Tools of Study

Formulated questionnaire and an interview schedule that were suitable in the context of this study. Involved partly unstructured questions to also allow for expression of the researcher's personal opinions that were descriptively analyzed. The questionnaires were filled by both clinical officers who were the employees, and also by the members of the management of the Hospital. In addition, a follow up was made using an interview schedule in order to clarify any issues related to ICT performance. The interview on the other hand comprised of non-closed ended questions which were based on the research questions.

3.7. Study instruments pilot

A pilot investigation was done at TL5 Hospital to maintain a strategic distance from irreconcilable situation. Here 10 clinical officials were viewed as enough for the activity. The analyst applied Cronbach's Alpha Scale, which is generally applied in quantitative research considers, as a correlation in unwavering quality insights. From the dependability test an estimation of .738 was the result (Appendix IV). Consequently the instruments were viewed as dependable.

3.8 Procedure of collecting data

This was done using structured and partially unstructured questionnaires. Before the collection were notified about this research and how to go about the listed questions.

3.9. Data Processing and Analysis

For objectivity, information gathered from the selected respondents was analyzed quantitatively and qualitatively. Then computation mean scores, percentages, standard

deviations and variance, as well as regression and correlation co-efficient computation was done to show the impact of ICTs, as Independent variable, on employee performance and productivity which were the dependent variables, achieved via SPSS version 20.0 in information coding and graphical presentations. On the other hand, the data obtained from the questions listed were analyzed qualitatively and shown in a narrative form and integrated within the quantitative data.

3.10. Ethical Considerations

The analyst searched authorization to do the investigation from the University of Nairobi, Department of Psychology. The analyst at that point applied for an examination grant from NACOSTI. Assent additionally sought at the administration of the Kiambu County Referral Hospital to enable him to gather information from the workers. He watched the moral set of accepted rules in completing this examination. The respondents were guaranteed of adherence to the classification rule and defending of their eventual benefits. He didn't require any of them to compose their name on the polls.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1. Introduction

Section covers the information examination and introduction of discoveries on the impacts of the utilization of data correspondence innovation on representative occupation execution and efficiency among clinical officials at the Kiambu County Referral Hospital. It is composed as pursues; reaction rate, foundation data, ICT Management Systems use and representative execution and efficiency, Communication Systems use and worker execution and profitability, and Information Systems use and worker execution and efficiency.

4.2. Response Rate

82 copies of lists of questions to the clinical officers were given at the Kiambu County Referral Hospital. Be that as it may, not the entirety of the respondents had the option to totally fill in the surveys and return them for investigation. Out of the eighty two polls, just seventy were slowly filled and returned for investigation. This meant a reaction pace of 85.4%.

Table 4.1: RR

Variable	F	Per cent
Response	70	85.4
Non-Response	12	14.6
Total	82	100

4.3 Background Information

The participants indicated background information and the following are the results.

Figure 4.1: Gender

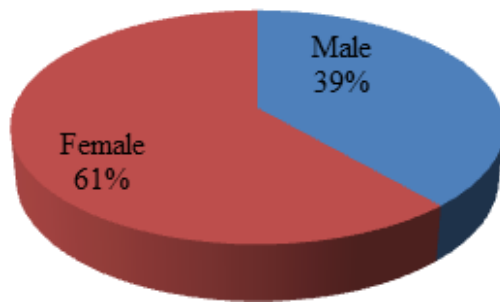


Figure 4.2: Age Bracket

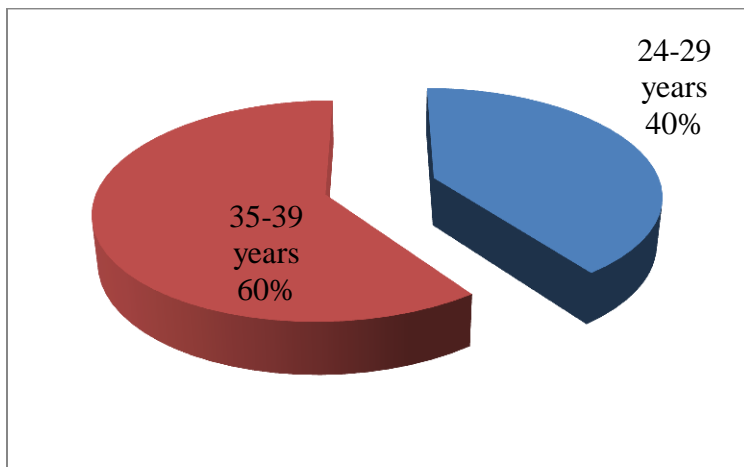
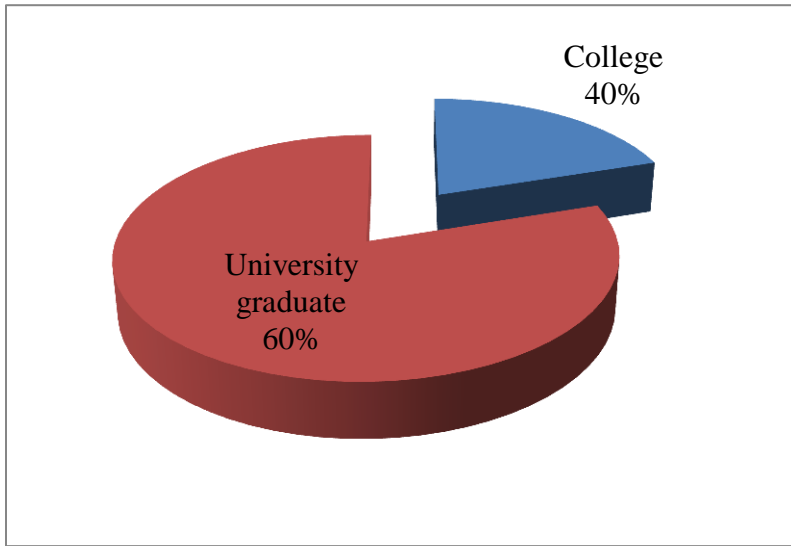
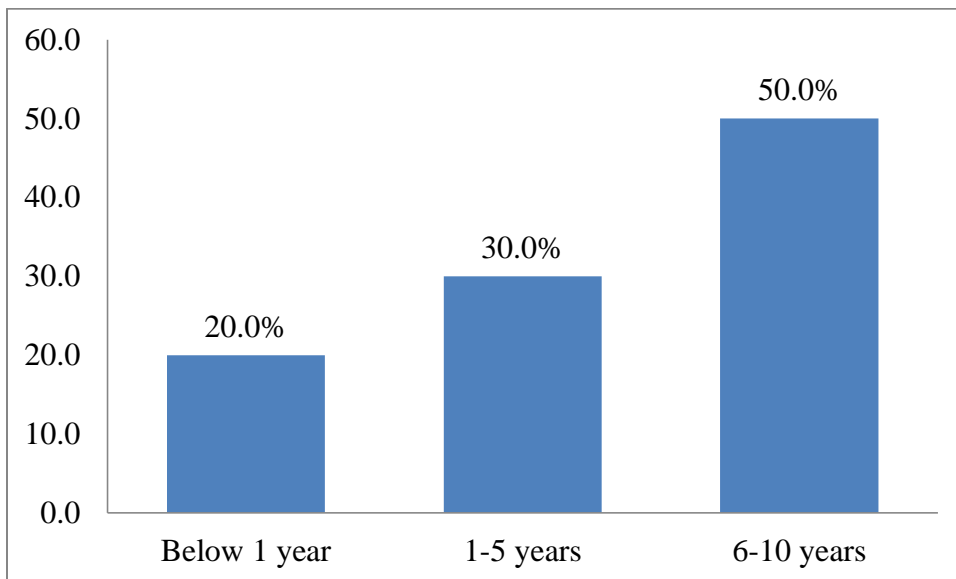


Figure 4.3: Education Qualification



60% were university graduates. The remaining 40% had only completed college education. This shows that all the participants have received basic training in their area of professionalism.

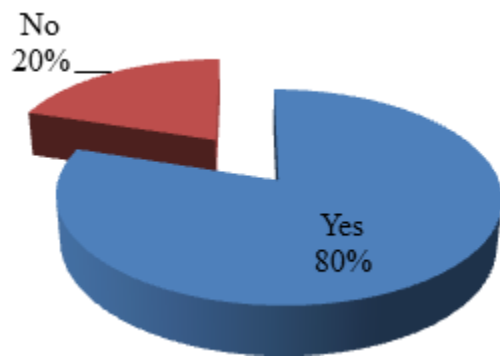
Figure 4.4: Working Experience



4.4. ICT Management Systems Use and EP and Productivity

One destination here, was deciding the impacts of the utilization of ICT the executives frameworks on representative execution and profitability at Kiambu County Referral Hospital. Various things were investigated in order to answer this goal. These included familiarity with the administration frameworks utilized in the clinic, key administration frameworks utilized, impact of ICT administrations on representative execution and efficiency, and the degree to which the executives frameworks influence execution and profitability.

Figure 4.5: Awareness of the management systems used in the hospital



80% indicated that they were while the remaining 20% indicated they were not. Further, participants next question was to list some of the management systems being used at the hospital. From the responses, the key systems pointed out were the health record system and the information management system.

The participants had to give feedback about the level of agreement to statements on influence of the use of ICT management systems on employee productivity and performance (See Table 4.2).

Table 4.2: ICT Management System Use and Employee Performance and Productivity

Statements	SD	D	N	A	SA
	%	%	%	%	%
1. The utilization of Electronic wellbeing records has helped clinical officials to decrease the occurrence of therapeutic mistake by improving the precision and clearness of restorative records			30	-	70
2. EHR makes the health information available, which facilitates the effectiveness of clinical officers at work.	-	-	10	20	70
3. EHR has helped clinical officers in reducing the duplication of tests.	-	-	20	40	40
4. The use of EHR helps in reducing delays in treatment and in making better decisions.	30	20	20	10	20
5. Utilization of the patients' personal records is important in decision-making processes.	-	-	-	10	90
6. The patients' personal records make it easier for treatment purposes and hence increase efficiency in treatment processes.	-	-	-	10	90

. While 70% firmly concurred that the utilization of electronic wellbeing records has helped clinical officials to decrease the rate of therapeutic mistake by improving the precision and lucidity of medicinal records, 30% stayed unbiased. When requested to demonstrate whether EHR made wellbeing data accessible and encouraged the viability of clinical officials at work, 70% unequivocally concurred, 20% concurred and the staying 10% were impartial..

The respondents further gave their responses regarding the other ways in which they felt the use of management systems affected performance and productivity at the hospital. Most of them reported that it helped in improving the management of patients' records and in following up on cases. For instance, one of the clinical officers argued:

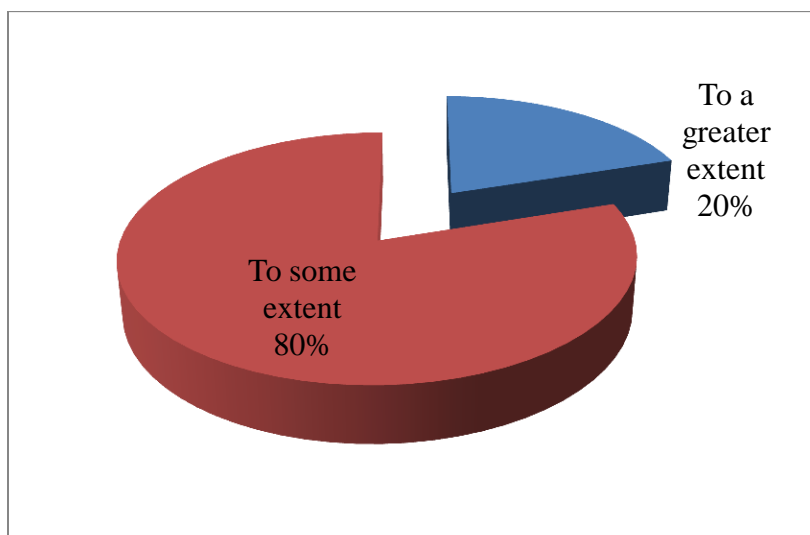
The utilization of management systems in the hospital has helped a lot in facilitating proper maintenance and storage of records. Moreover, it also helps the clinical officers to have a proper and easier follow up of medical cases. Lastly, there is easier retrieval of patients' records. (Clinical Officer 5, 2019)

Another clinical officer pointed out:

The use of the management systems has created some sense of orderliness in the referral hospital when it comes to attending to patients. It also makes it easier in referral cases because they can be done faster as compared to the previous years where there were no such systems in place. (Clinical Officer 2, 2019)

Lastly, responses were also provided on the extent to which management systems affected employee performance and productivity at the Kiambu County referral hospital.

Figure 4.6:



As shown in the figure, a majority of the research participants (80%) indicated that the use of management systems affected employee performance and productivity to some extent. This was additionally bolstered by 20% who showed to a more noteworthy degree.

A relapse examination was done to set up whether there was a critical connection between the executives frameworks and representative execution and efficiency. Model outline and Analysis of Variance tables were utilized to condense the relapse data.

Model summary and Analysis of Variance tables were used to summarize the regression information.

Table 4.3: Model Summary for Management Systems

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.332 ^a	.110	.097	3.82948

a. Predictors: (Constant), Management Systems

Table 4.4: Analysis of Variance (ANOVA) results between Management Systems and Employee Performance and Productivity

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	123.484	1	123.484	8.420	.005 ^b
	Residual	997.216	68	14.665		
	Total	1120.700	69			

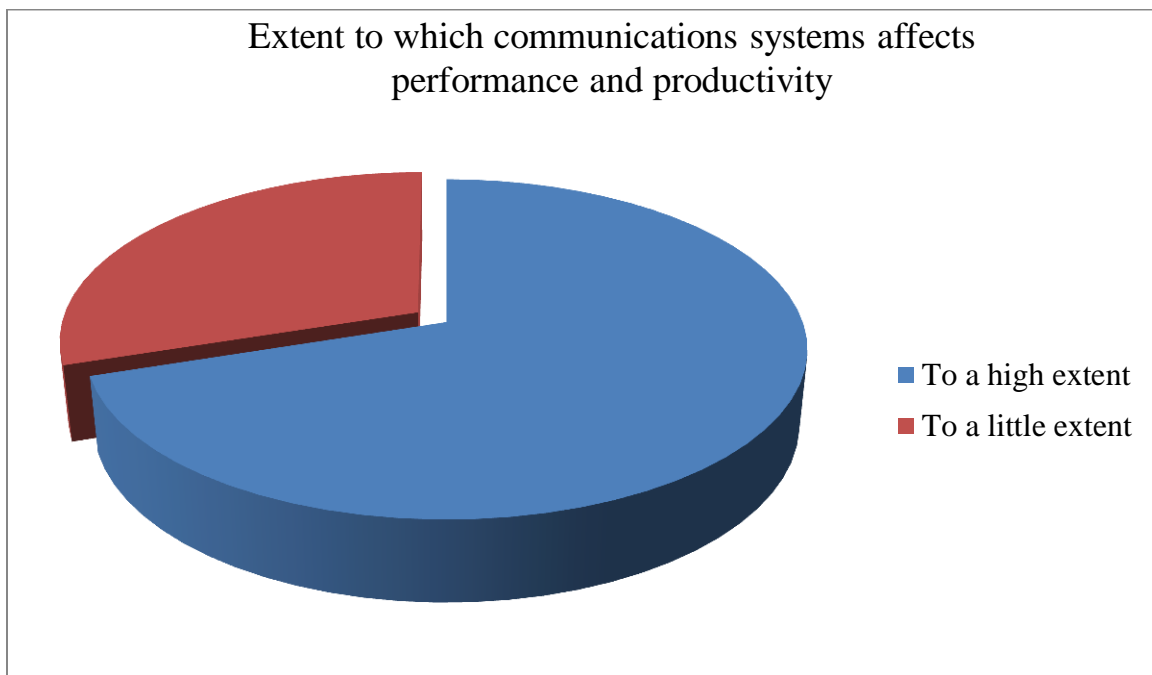
a. Dependent Variable: Employee Performance and Productivity

b. Predictors: (Constant), Management Systems

4.5. Communication System Use and Employee Performance and Productivity

Establishing the use of communication systems on employee performance and productivity at the Kiambu County Referral Hospital. First, participants indicated whether the extent to which communication system used impacts EP and productivity. The responses are summarized in Figure below

Figure 4.7: Extent to which communication system affects performance and productivity in the Hospital.



Whereas a majority of the research participants (70%) indicated that the system was effective, there were few (30%) who indicated that it was very effective. This shows that the communication systems in the hospital may be fairly adequate in promoting a positive communication flow for the clinical officers.

Table 4.5: Influence of Communication Systems on Employee Performance and Productivity

Statements	SD	D	N	A	SA
	%	%	%	%	%
1. The communication systems facilitate easy access to information crucial for clinical officer's performance.	-	-	30	-	70
2. Clinical officers often use the email for sharing information with other officers in the hospital.	40	-	20	10	30
3. The use of mobile phone by some of the patients has made it easier for quick response in case of emergencies.	-	-	-	30	70
4. Telecare facilitates regular communication with the patients and this makes the monitoring process easier.	-	20	20	20	40

Whereas a majority (70%) agreed strongly that the communication systems facilitate easy access to information crucial for a clinical officer's performance, 30% were neutral. In terms of email usage, 40% strongly agreed and agreed that clinical officers often use email for sharing information with other officers in the hospital. Alternatively, 40% strongly disagreed with the statement. However, 20% were impartial.

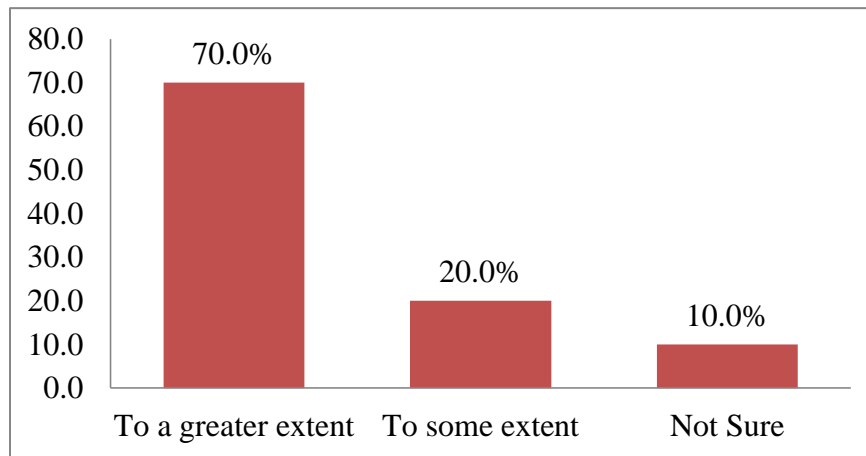
All participants (100%) strongly agreed . with the statement that the use of mobile phone by some patients has made it easier for quick response in case of emergencies. Whereas 60% strongly agreed and agreed that Tele-care facilitates regular communication with the patients, and that this makes the monitoring process easier, 20% disagreed. A few (20%) were impartial.

Further, the respondents were asked to explain other ways in which communication systems influence performance and productivity. Some of the other ways suggested

included easy access to information concerning a patient from other departments, fast-tracking progress of patients living far away from the hospital, good timing of results, improved patient's treatment, properly organized rota duties, proper time management, quick emergency response and quick consultations, and reduced misunderstanding.

Finally, responses were also provided on the extent to which communication systems affect performance and productivity of employees at the Kiambu County Referral hospital.

Figure 4.8: Extent to which Communication Systems Affect Performance and Productivity



The model summary and ANOVA table were used to present the results obtained.

Table 4.6: Model Summary for Communication Systems

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.760 ^a	.578	.572	2.63621

a. Predictors: (Constant), Communication System

Table 4.7:

Model		Sum of Squares	Df	Mean Square		F	Sig.
	Regression	648.129	1	648.129	93.262		.000 ^b
1	Residual	472.571	68	6.950			
	Total	1120.700	69				

a. Dependent Variable: Employee Performance and Productivity

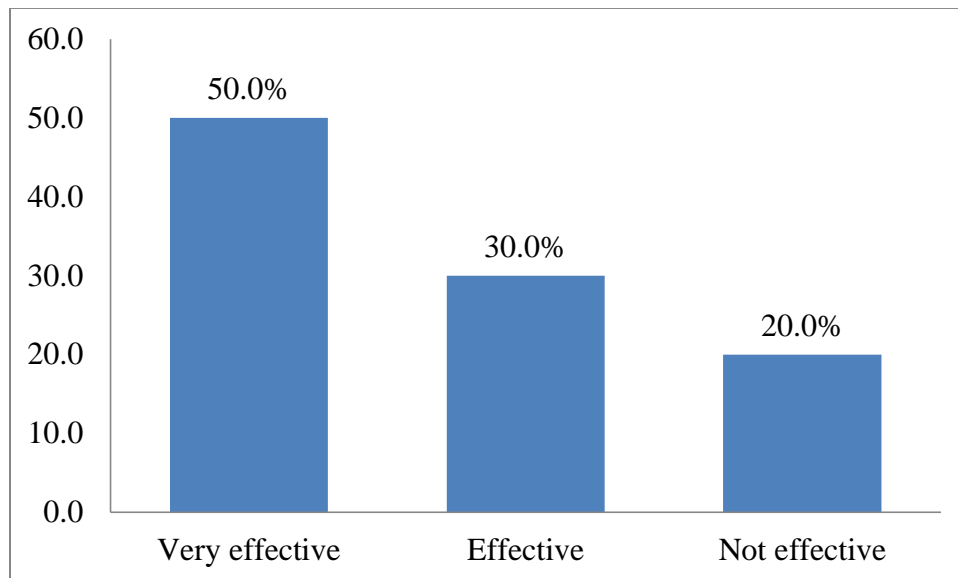
b. Predictors: (Constant), Communication System

As shown in Table 4.7 above a p-value of 0.000 is obtained, which is less than 0.05 with 69 degrees of freedom. Therefore, the alternative hypothesis is accepted and concluded, that communication systems have a significant impact on employee performance and productivity at Kiambu County Referral Hospital.

4.6. Information System Use and EP and Productivity

The third target of the investigation was to build up the impacts of utilization of Information System on representative execution and efficiency at Kiambu County Referral Hospital. All things considered, the respondents were solicited to demonstrate the viability from data frameworks, the impact of data frameworks use on representative execution and profitability, different manners by which data frameworks influence execution and efficiency, and the degree to which data frameworks influence execution and profitability.

Figure 4.9: Effectiveness of IS on EP and Productivity



A half (50%) of the clinical officers indicated that the information systems were very effective. This was supported by 30% who indicated that it was effective. The remaining 20% however indicated that the information systems were not effective.

Table 4.8: Influence of IS Use on EP and Productivity

Statements	SD	D	N	A	SA
	%	%	%	%	%
1. Utilization of web-based resources has made it easier to access information which is relevant to clinical officer's profession.	40	-	20	10	30
2. Access to web-based resources makes learning of new	-	-	50	10	40

	concepts in the profession easier hence increasing productivity and performance.					
3.	Clinical officers are able to retrieve information from the web without much challenge.	-	-	30	40	30
4.	The hospital has an e-health portal where information that can be used for treatment purposes is stored.	40	10	30	10	10
5.	The integration of information systems within the referral hospital has made on-job learning easier and faster hence increasing productivity.	-	-	20	50	30

A half of the research participants (50%) remained neutral on the statement whether access to web-based resources makes learning of new concepts in the profession easier hence increasing productivity and performance, 50% remained positive by strongly agreeing and agreeing respectively.

With regards to whether clinical officers are able to retrieve information from the web without much challenge, 30% were neutral, 40% agreed and 30% strongly agreed with the statement respectively.

When asked to indicate whether the referral hospital has an e-health portal where information that can be used for treatment purposes is stored, 50% strongly disagreed and disagreed respectively. On the other hand, whereas 20% were positive by strongly agreeing and agreeing with the statement, 30% remained neutral.

An overwhelming majority (80%) agreed that the integration of information systems within the referral hospital had made on-job learning easier and faster hence increasing productivity. A few (20%) however remained neutral to the statement.

On the other ways in which information systems influence performance and productivity, the respondents explained that it helps in explaining the challenging areas and enhances knowledge update and learning, proper time management, quality service, proper knowledge sharing, easier consultations and quick consults. However, a few pointed out that there were some challenges experienced with the information system. In the words of one clinical officer:

The information system which has been provided in my department is not easily accessible. This is largely attributed to lack of internet connection. As such, it becomes ineffective in enhancing my productivity and/or performance in the department. (Clinical Officer 10, 2019).

Another clinical officer reported:

There are long queues which are experienced. This is due to the maintenance of the system which has been a challenge for quite some time now and hence it slows down the work done in the hospital. (Clinical Officer 20, 2019).

Figure 4.10: Extent to which Information Systems Affect Performance and Productivity

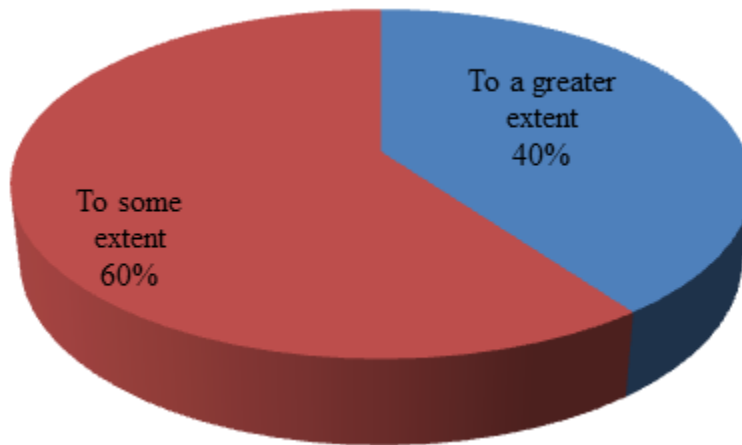


Table 4.9: Model Summary for Information System

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.749 ^a	.560	.554	2.69142

a. Predictors: (Constant), Information System

As shown in Table 4.9, the R square is 0.560 and R is 0.749 at a 0.05 significance level. This indicates that 56.0% of the variation on employee performance and productivity is influenced by information systems. The implication is that there exists a positive

significant relationship between information systems and employee performance and productivity at the Kiambu County Referral Hospital.

Table 4.10: Analysis of Variance (ANOVA) results between Information Systems and Employees' Performance and Productivity

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	628.126	1	628.126	86.713	.000 ^b
	Residual	492.574	68	7.244		
	Total	1120.700	69			

a. Dependent Variable: Employee Performance and Productivity

b. Predictors: (Constant), Information System

According to the table, a p-value of .000 was obtained. This means that there is a positive significant effect between information system and employee performance and productivity. Hence, the alternative hypothesis is accepted and concluded that information systems have a positive impact on employee performance and productivity at the Kiambu County Referral Hospital.

4.7. Employee Performance and Productivity

The respondents were given a number of questions on the dependent variable. For instance, they were asked to indicate whether they were satisfied with their performance. In response all of them (100%) indicated that they were. The researcher went ahead and asked them to further indicate their extent of agreement or disagreement with various statements regarding performance and productivity at the hospital.

Table 4.11: Employee Performance and Productivity

Statements	SD	D	N	A	SA
	%	%	%	%	%
1. The introduction of ICT in the hospital has increased the performance and productivity of clinical officers.	-	-	20	40	40
2. The access to information through ICT has helped improve training of clinical officers.	-	-	-	50	50
3. Utilization of ICT has increased collaboration	-	-	30	40	30

	among the staff.					
4.	ICT has increased the flexibility of service provision at the hospital.	-	20	20	40	20
5.	Through the monitoring systems, quality of patient care and safety has improved at the hospital.	20	10	20	30	20
6.	ICT has also reduced treatment and monitoring delays at the hospital.	20	40	10	-	30

In terms of increased performance and productivity, 80% strongly agreed and agreed that the introduction of ICT in the hospital has increased the performance and productivity of clinical officers. A few (20%) however remained neutral with the statement.

With regards to training, all the respondents (100%) were positive by strongly agreeing and agreeing to the statement that access to information through ICT has helped improve training of clinical officers. When asked to indicate whether Utilization of ICT has increased collaboration among the staff, 40% agreed, 30% strongly agreed and the remaining 30% were neutral.

Table 4.12: Model Summary for the Multiple Linear Regression for all Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.814 ^a	.663	.648	2.39201

a. Predictors: (Constant), Information System, Management Systems, Communication System

Table 4.13: Analysis of Variance (ANOVA) Results for the Optimal Regression

Model						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	743.067	3	247.689	43.289	.000 ^b
	Residual	377.633	66	5.722		
	Total	1120.700	69			

a. Dependent Variable: Employee Performance and Productivity

b. Predictors: (Constant), Information System, Management System, Communication System

CHAPTER FIVE

SUMMARY OF THE FINDINGS, DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

This section exhibits the synopsis of the discoveries, talks, ends and suggestions of this investigation on the impacts of the utilization of Information and Communication Technologies on representative execution and profitability at the Kiambu County Referral Hospital. Likewise displayed in the part are recommendations for further investigations.

5.2. Summary of the Findings

The findings on the various objectives presented in the analysis chapter are summarized in this section:

5.2.1. ICT Management System Use

Whereas 80% of the respondents were aware of the management systems used in the hospital, 20% were not. The key systems that was pointed out by the respondents were the health record system and the information management system. Whereas 70% strongly agreed that the use of electronic health records has helped clinical officers to reduce the incidence of medical error by improving the accuracy and clarity of medical records, 30% remained neutral. 70% strongly agreed, 20% agreed and the remaining 10% were neutral on the statement that EHR makes the health information available and this in turn facilitates the effectiveness of clinical officers at work.

In terms of medical error, 70% strongly agreed that the use of an ICT Management System reduced medical error by improving the accuracy and clarity of medical records. With regards to test duplications, 80% strongly agreed and agreed that the use of electronic health records helped to reduce the duplication of tests.

On treatment delays, 30% strongly disagreed, 20% disagreed, 20% were neutral, 10% agreed and 20% strongly agreed with the statement that the use of EHR helps in reducing

delays in treatment and in making better decisions. All the respondents (100%) strongly agreed and agreed that utilization of the patients' personal records is important in the decision making process. Moreover, 90% strongly agreed that patients' personal records made it easier for treatment purposes hence increasing efficiency in the treatment process. It was further reported that the use of a management system helped in improving the management of patients' records in the hospital and in following up on cases.

An overwhelming majority (80%) indicated that the use of management systems affected employee performance and productivity to some extent. In the model summary of management systems, the coefficient of determination indicates that 11% of the variation on employee performance and productivity is influenced by management systems; hence, a significant positive relationship exists between management systems and employee performance and productivity ($p=.005$).

5.2.2. Communication Systems Use

Whereas 70% indicated that the system was effective, 30% indicated that it was very effective. Whereas 70% strongly agreed that the communication systems facilitate easy access to information crucial for clinical officer's performance, 30% were neutral. In terms of email usage, 40% strongly agreed and agreed that clinical officers often use the email for sharing information with other officers in the hospital. On the other hand, 40% strongly disagreed with the statement.

All the respondents (100%) were positive by strongly agreeing and agreeing with the statement that use of mobile phone by some of the patients had made it easier for quick response in case of emergencies. Whereas 60% strongly agreed and agreed that tele-care facilitated regular communications with the patients and this made the monitoring process easier, 20% of the clinical officers disagreed.

Some of the other ways suggested included easy access to information concerning a patient from other departments, fast-tracking progress of patients living far away from the hospital, good timing of results, improved patients treatment, properly organized rota

duties, proper time management, quick emergency response and quick consultations, and reduced misunderstanding.

Majority (70%) indicated that the use of communication systems in the hospital affected performance and productivity of employees to a greater extent. The model summary of the communication system indicates that 57.8% of the variation on employee performance and productivity is influenced by communication systems. One can then draw the conclusion that communication systems have a significant impact on employee performance and productivity at the Kiambu County Referral Hospital ($p=.000$).

5.2.3. Information System Use

Half (50%) of the clinical officers indicated that the information systems at the Kiambu County Referral Hospital were very effective. This was supported by 30% who indicated that it was effective. Whereas 40% strongly disagreed that utilization of web-based resources had made it easier to access information that was relevant to the clinical officer's profession, 30% strongly agreed with the statement.

Whereas 50% remained neutral on the statement whether access to web-based resources makes learning of new concepts in the profession easier hence increasing productivity and performance, 50% remained positive by strongly agreeing and agreeing respectively. With regards to whether clinical officers are able to retrieve information from the web without much challenge, 30% were neutral, 40% agreed and 30% strongly agreed with the statement respectively.

Half (50%) strongly disagreed and disagreed that the referral hospital had an e-health portal where information that can be used for treatment purposes is stored. An overwhelming majority (80%) strongly agreed and agreed that the integration of information systems within the referral hospital had made on-job learning easier and faster hence increasing productivity. On the other ways in which information system influences performance and productivity, the respondents explained that it helps in explaining the challenging areas and enhances knowledge update and learning, proper

time management, quality service, proper knowledge sharing, easier consultations and quick consults. However, a few pointed out that there were some challenges experienced with the information systems.

The model summary for the information system indicates that 56.0% of the variation on employee performance and productivity is influenced by information systems. Hence, it can be safely concluded that Information Systems have a positive impact on employee performance and productivity at the Kiambu County Hospital ($p=.000$).

5.2.4. Employee Performance and Productivity

All the respondents (100%) indicated that they were satisfied with the performance of the ICT systems in place at the Kiambu County Referral Hospital. In terms of increased performance and productivity, 80% strongly agreed and agreed that the introduction of ICT in the hospital had increased the performance and productivity of clinical officers. All the respondents (100%) were positive by strongly agreeing and agreeing to the statement that the access to information through ICT had helped improve training of clinical officers. When asked to indicate whether utilization of ICT has increased collaboration among the staff, 40% agreed, 30% strongly agreed and the remaining 30% were neutral.

On the issue of service flexibility, 40% agreed, 20% strongly agreed, 20% disagreed and 20% remained neutral that ICT has increased the flexibility of service provision at the hospital. Whereas 50% strongly agreed and agreed that through the monitoring systems the quality of patient care and safety had improved, 30% strongly disagreed and disagreed respectively. With regards to the treatment and monitoring delays, 40% disagreed and 20% strongly disagreed that ICT has also reduced treatment and monitoring delays at the hospital. On the other hand, 30% of the respondents strongly agreed with the statement.

The coefficient of determination indicates that 66.3% of the variation on employee performance and productivity is influenced by Management, Communication and Information systems. Therefore it is concluded that Information, Management and

Communication Systems have a positive significant influence on employee performance and productivity at the Kiambu County Referral Hospital ($p=.000$).

5.3 Discussions

From the analysis, this study was able to establish that ICT usage had an effect on the productivity and performance of employees at the referral hospital. This concurs with a number of studies. For instance, one carried out by Kimani (2015) at Population Services Kenya established that the utilization of ICT explains 82.4% of the organizational performance. The same case also applies in the context of this study, whereby the model summary showed that 66.3% of the variation on employee performance and productivity was influenced by Management, Communication and Information Systems.

The findings have also shown that through technology, clinical officers are able to acquaint with information that is vital to the development of their profession in this technology-oriented society. This concurs with an earlier observation by Slenning (2000) that acknowledged that the introduction of information technology updates many aspects of activities in the educational community; the basic being the communication between them and the teaching practice. The use of information and communication technology (ICT) in education is not only considered a teaching and learning tool, but also an important means of administrative organization.

It was also noted that the utilization of information and management systems facilitated easy retrieval of information that was vital in decision-making as well as treatment of patients. In supporting this finding, Schelin (2003) as cited in Massorou et al (2015) argued that ICT contributes effectively to the administration, coding, storage and processing of the huge amount of digital information created. Moreover, it was established in the study that management and communications systems helped in reducing a lot of delays in the treatment process, as well as facilitating easy referral and updates of patients on the go.

In their study on the effects of information communication technology on human resources productivity at the Mobarekeh Steel Complex in Isfahan, Iran, Allameh and Barden et al (2011) found that dimensions of the information system (internet, office automation and internet) affect human resource productivity. This is further supported by the hypothesis in this study whereby it was established that there is a significant relationship between information systems and employee performance and productivity.

The findings by Nyakoe (2014) revealed that ICT had facilitated production of ad hoc reports, improved quality of work, enabled availability of reliable information on power generation and facilitated knowledge sharing and building on each other's ideas in real time. ICT enabled KenGen to empower its employees and facilitated employee learning. All these aspects are found within the management and information systems. This study was able to reveal that 66.3% of the variation on employee performance and productivity is influenced by Management, Communication and Information Systems.

Moreover, the study concludes that Information, Management and Communication systems have a positive significant influence on employee performance and productivity at the Kiambu County Referral Hospital ($p=.000$). This is in line with a previous study done by Rezaei, Majid, Akbarzadeh and Farid (2014) on the effects of information technology on employee productivity at Shahr Bank (case study of Shiraz, Iran). The study showed that there is a positive relationship between IT and human resources productivity. In addition, the study conducted by Ratner and Kaur (2016) on the Impact of Information Technology on Job Related factors like e-Health and safety, job satisfaction, performance, productivity and work-life balance shows that following the introduction of new technology, job performance is the most affected factor, then job satisfaction, safety and health, productivity and work-life balance.

5.4. Conclusions

From the analysis and summary of the findings, there are a number of conclusions which are made. It is concluded that the use of ICT management systems has helped a lot in improving the performance and productivity of the clinical officers in the study. Some of

the ways in which it has been of significance include reducing the incidence of medical error by improving the accuracy and clarity of medical records, as well as reducing test duplications. However, there are still some issues in addressing treatment delays and decision-making based on the information obtained from the systems, and this is affecting the full effectiveness of ICT management systems at the hospital.

The communication systems being used at the hospital such as the internet, emails and mobile phones are having a significant influence on the performance and productivity of the clinical officers despite some few technicalities. Issues such as lack of internet affect the effectiveness of the email in accessing information online. However, in general, communication systems have improved the response rate to emergency cases as well as follow-up of patients. It can further be concluded that communication systems have facilitated easier access to information concerning a patient from other department, fast-tracking progress of patients living far away from the hospital, good timing of results, improved patients' treatment, properly organized rota duties, proper time management, quick emergency response, quick consultations and reduced misunderstanding.

The effects of information systems are also experienced at the referral hospital. These include explanation of challenges through access to information, enhanced knowledge update and learning, proper time management, quality service, proper knowledge sharing, easier consultations and quick consults. However, there is still a challenge affecting the effectiveness of the information system, which is delays especially due to lack of proper maintenance of the system and internet connection. Moreover, the maintenance challenge also contributes to long queues hence slowing down the work progress at the hospital.

5.5. Recommendations

As it has been presented in the conclusions and summary of the findings, information communication technology proves to have a great impact on the overall performance and productivity of employees at the Kiambu County Referral hospital. However, to enhance its full effectiveness a number of recommendations need to be taken into consideration. First, there is need for proper training to the clinical officers on how to effectively utilize

ICT in their day-to-day activities. Programmes should be put in place for on-job technical training on ICT usage in handling patient records for the clinical officers.

The hospital needs to invest on stable internet connection. This is because most of the ICT systems, to function appropriately, require an internet connection that is constant and not fluctuating. The hospital should take measures to address any interruptions to the internet connection as it may affect the proper functioning of the systems.

Maintenance of the system should be done periodically to avoid unexpected interruptions. This is because maintenance sometimes affects normal operations when it is being undertaken. Hence, certain periods should be set for maintenance and communicated on time to the staff and patients so as to avoid long queues and delayed services.

The ICT systems should be developed to be more friendly and useable to the employees as well as patients. This will make it easier and faster for service provision.

5.6. Suggestions for Further Studies

This study concentrated mainly on the effects of information communication technology use on employee job performance and productivity, and in one referral hospital. There is therefore need for further studies to be carried out, especially in the context of hospitals that have different branches in different locations and refer patients from one branch to another in situations where further examination and treatment may be required.

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APPENDICES

Appendix I: Introduction Letter

University of Nairobi

P.O Box 30197

Nairobi.

Date:

Dear Sir/Madam,

RE: LETTER OF INTRODUCTION

I am a student at The University of Nairobi Main Campus, taking a Master of Psychology degree in Industrial and Organizational Psychology in partial fulfilment of this degree award. I am conducting a study on *Effects of the use of Information Communication Technology and Employee Job Performance and Productivity, A Case Study of Clinical Officers at Kiambu County Referral Hospital.*

For the purpose of completing this research work, I would wish to collect data through questionnaires. I will be very grateful if you could kindly extend to me some assistance I will need to have the questionnaires completed. This information is purely for the purpose of my academic research work and therefore it shall be treated with strict confidentiality. A copy of the final report shall be given to you on request.

Thank you in advance, I look forward to your assistance.

Yours Faithfully,

Daniel Macharia Ngerema

Appendix II: Questionnaire for Clinical Officers

This questionnaire seeks information on organizational change. It is part of my studies for a Master of Psychology degree. Kindly fill in the information required. You can Tick (✓) or write down the information. All information collected shall only be used for academic purposes and as such shall be treated with utmost confidentiality.

Section A: Background Information

1. Gender (Tick (✓)) Male Female
2. Age (Tick (✓))
 - a) 24 - 29 years
 - b) 30- 34 years
 - c) 35-39 years
 - d) 40-44 years
 - e) Above 45 years
3. Highest education completed (Tick (✓))
 - a) College
 - b) University Graduate
 - c) Post Graduate
 - d) Others, Please specify: _____
4. How long have you been working as a clinical officer? (Tick (✓))
 - a) Below 1 year
 - b) 1-5 years
 - c) 6-10 years
 - d) 11-15 years
 - e) 16-20 years
 - f) Above 20 years
5. How long have you been working as a clinical officer in this hospital? (Tick (✓))
 - a) Below 1 year
 - b) 1-5 years
 - c) 6-10 years
 - d) 11 - 15 years
 - e) 16 - 20 years
 - f) Above 20 years

Section B: Influence of Management Systems on Performance and Productivity

6. Are clinical officers aware of the management systems which are used in the hospital for enhancing performance and productivity? (Tick (✓)) Yes No

If yes, what are the key management systems utilized by the hospital for managing performance and productivity>

6. Indicate the extent to which you agree with the following statements regarding the management systems and employee productivity and performance at the hospital. Likert scale [(1) = strongly disagree; (2) = disagree; (3) = neutral; (4) = agree and (5) = strongly agree]

No	Statements	SD	D	N	A	SA
1.	The use of Electronic health records has helped clinical officers to reduce the incidence of medical error by improving the accuracy and clarity of medical records.	1	2	3	4	5
2.	EHR makes the health information available which facilitates clinical officers' effectiveness at work.	1	2	3	4	5
3.	EHR has helped clinical officers in reducing the duplication of tests.	1	2	3	4	5
4.	The use of EHR helps in reducing delays in treatment and in making better decisions.	1	2	3	4	5
5.	Utilization of the patients' personal records is important in the decision-making process.	1	2	3	4	5
6.	The patients' personal records make it easier for treatment purposes hence increasing efficiency in treatment process.	1	2	3	4	5
Key: SA- Strongly Agree, A- Agree, UD- Undecided, D- Disagree, SD- Strongly Disagree						

7. In what other ways does the management system affect the performance and productivity of clinical officers at the hospital?

8. To what extent has the management system affected clinical officers' performance and productivity at the hospital? (Tick (√))

- a) To a greater extent []
 b) To some extent []
 c) Not at all []
 d) Not sure []

Section C: Influence of Communication Systems on Productivity and Performance

9. How can you rate the effectiveness of the communication systems utilized at the hospital? (Tick (√))

- a) Very effective []
 b) Effective []
 c) Not effective []
 d) Not sure []

10. Indicate your extent of agreement or disagreement with the following statements regarding the influence of communication systems on employee productivity and performance at the hospital. Likert scale [(1) = strongly disagree; (2) = disagree; (3) = neutral; (4) = agree and (5) = strongly agree]

No	Statements	SD	D	N	A	SA
1	The communication systems facilitates easy access to information crucial for our performance.	1	2	3	4	5
2	We often use email for sharing information with other officers in the hospital.	1	2	3	4	5
3	The use of mobile phone by some of patients has made it easier for quick response in case of emergencies.	1	2	3	4	5
4	Telecare facilitates regular communications with the patients and this makes the monitoring process easier.	1	2	3	4	5
Key: SA- Strongly Agree, A- Agree, UD- Undecided, D- Disagree, SD- Strongly Disagree						

11. In what other ways has communication systems influenced your performance and productivity at the hospital?

12. To what extent do the communication systems influence your performance and productivity? (Tick (√))

- a) To a greater extent []
 b) To some extent []
 c) Not at all []
 d) Not sure []

Section D: Influence of Information System on Performance and Productivity

13. How can you rate the effectiveness of the information systems utilized in the hospital? (Tick (√))

- a) Very effective []
 b) Effective []
 c) Not effective []
 d) Not sure []

14. Indicate your extent of agreement or disagreement with the following statements regarding the influence of communication systems on employee productivity and performance at the hospital. Likert scale [(1) = strongly disagree; (2) = disagree; (3) = neutral; (4) = agree and (5) = strongly agree]

No	Statements	SD	D	N	A	SA
1	Utilization of web-based resources has made it easier to access information which is relevant to our profession.	1	2	3	4	5
2	Access to web-based resources makes learning of new concepts in the profession easier hence increasing productivity and performance.	1	2	3	4	5
3	I am able to retrieve information from the web without much challenge.	1	2	3	4	5
4	Our referral hospital has an e-health portal where information that can be used for treatment purposes is stored.	1	2	3	4	5
5	The integration of information systems within the referral hospital has made on-job learning easier and faster hence increasing productivity.	1	2	3	4	5
Key: SA- Strongly Agree, A-Agree, UD- Undecided, D-Disagree, SD-Strongly Disagree						

15. To what extent do the information systems influence your performance and productivity in the hospital? (Tick (√))

- a) To a greater extent []
b) To some extent []
c) Not at all []
d) Not sure []

16. In what other ways does the information system influence your performance and productivity at the hospital?

Section E: Employee Performance and Productivity

17. Are you satisfied with your performance at the hospital?
(Tick (√))Yes []No []

18. Indicate your extent of agreement or disagreement with the following statements regarding the performance and productivity at the hospital. Likert scale [(1) = strongly disagree; (2) = disagree; (3) = neutral; (4) = agree and (5) = strongly agree]

No	Statements	SD	D	N	A	SA
1	The introduction of ICT in the hospital has increased my performance and productivity.	1	2	3	4	5
2	The access to information through ICT has helped improve my training in the profession.	1	2	3	4	5
3	Utilization of ICT has increased collaboration among the	1	2	3	4	5

	staff.					
4	ICT has increased the flexibility of service provision at the hospital.	1	2	3	4	5
5	Through the monitoring systems, quality of patient care and safety has improved at the hospital.	1	2	3	4	5
6.	ICT has also reduced treatment and monitoring delays at the hospital.	1	2	3	4	5
Key: SA- Strongly Agree, A-Agree, UD- Undecided, D-Disagree, SD-Strongly Disagree						

19. What are the measures that can be put in place to enhance the effectiveness of ICT on the performance and productivity of employees at the Kiambu County referral hospital?

20. Any other comments

Thank you for your cooperation

Appendix III: Interview Guide for Clinical Officers

1. What are the effects of Management Systems on employee performance and productivity at Kiambu County Hospital?

2. What are the effects of Communication Systems on employee performance and productivity at Kiambu County Hospital?

3. What are the effects of Information System on employee performance and productivity at Kiambu County Hospital?

1. Are you satisfied with your performance at the hospital?

(Tick (√))Yes []No []

Explain your answer

5. What are the measures that can be put in place to enhance the effectiveness of ICT on the performance and productivity of employees at the Kiambu County referral hospital?

6. Any other comments

Thank you for your cooperation

Appendix IV: Reliability Test Results

➔ Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	9	90.0
	Excluded ^a	1	10.0
	Total	10	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.738	33

